

## Advanced graphite project with compelling economics to help plug the supply hole

Black Rock Mining (ASX: BKT) is developing the Mahenge natural graphite project in Tanzania, in which it holds an 84% stake. Mahenge is one of few large-scale advanced natural graphite projects globally, making it well positioned to progress to development and production given significant natural graphite demand and our expectations of increasing graphite pricing.

### Mahenge ticks the boxes on scale, quality, margin

Mahenge is a highly attractive natural graphite deposit with many favourable characteristics, including high grade, low impurities, large flake size, and low strip ratio. The significant resource (16.6Mt contained graphite) makes Mahenge the world's fourth-largest graphite deposit. This would support a mine life well beyond the nominal 26 years proposed in the company's enhanced DFS, which was updated in October 2022. At full rates, Mahenge could produce ~350kt/year of graphite concentrate (~97% total graphite content), a scale on par with Syrah's Balama Project<sup>1</sup> but with a higher-quality deposit.

### Modular approach lowers risk, improves returns

BKT is employing a capital-light, high-returning four-stage approach to developing Mahenge. Module 1 production of 1.0Mtpa feed/89ktpa concentrate is proposed to be delivered for capex of US\$182m (MSTe US\$200m), with future expansions funded out of operational cash flow (up to 4.0Mtpa). This modular approach will allow Mahenge to keep pace with growth of the natural graphite market and with demand from key customers. Importantly, BKT is well advanced with product qualification (a multi-year process) and has already secured high-quality offtake contracts, including a strong partnership with BKT shareholder POSCO, a South Korean steel and metals company that is the largest ex-China battery anode producer.

### Valuation: Risked, diluted NPV of A\$0.52/share

Our valuation is based on our financial analysis of BKT's flagship Mahenge Project. After applying a 65% risk weighting to account for outstanding project risks (financing, construction, commissioning) and dilution for a A\$141m equity raise at A\$0.20/share to fund BKT's equity contribution to the project (we assume 50:50 debt and equity), **We value BKT at A\$0.52, fully diluted, implying an upside of 224% to the current share price.**

Key catalysts for BKT to unlock this valuation upside are securing project financing (debt and equity), signing any further binding offtakes (particularly large flake), and commencing early works and ordering of long-lead items.

Key risks include inability to access funding, project delays, escalation in capital costs, a fall in the graphite price, inability to sell large flake into the high-value markets, and key person dependence.

<sup>1</sup> The Balama Project is considered one of the largest and highest-grade graphite deposits in the world, with a total resource estimate of over 1bn tonnes of graphite ore.



**BLACK ROCK**  
MINING LIMITED

Black Rock Mining (ASX:BKT) is a mining company focused on graphite projects in Tanzania. The main project is the Mahenge Graphite Project, a world-class deposit of high-quality graphite ore. The goal is to become a leading producer of high-grade graphite for use in lithium-ion batteries and other high-value applications.

<https://blackrockmining.com.au/>

Stock	ASX: BKT
Price	A\$0.16
Market cap	A\$152m
Valuation	A\$0.52

#### Share price catalysts

1H CY23	POSCO signing the full-form offtake agreement & US\$10m prepayment
Q1 CY23	Credit-approved term sheets for project debt.
Feb 23	Confirmation with Urbix for prepayment for offtake rights
CY23	Potential sell-down of a stake in the Project to provide funding

#### BKT share price (A\$)



Source: FactSet

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## Exhibit 1 – BKT: Company Summary

BLACK ROCK MINING						BKT.AX
<b>Year end FY2023</b>						
<b>MARKET DATA</b>						
Share Price	A\$/sh					0.16
52 Week Low	A\$/sh					0.12
52 Week High	A\$/sh					0.33
Market Cap (A\$m)	A\$m					157
Net (Debt) / (Casj) (A\$m)	A\$m					(26)
Enterprise Value (A\$m)	A\$m					132
Shares on Issue	m					983
Capital Raise	m					704
Potential Diluted Shares on Issue	m					1,687
<b>INVESTMENT FUNDAMENTALS</b>						
		Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
Reported NPAT	A\$m	(3)	(6)	(3)	(19)	14
Underlying NPAT	A\$m	(3)	(6)	(3)	(19)	14
EPS Reported (undiluted)	¢ps	(0.5¢)	(0.5¢)	(0.2¢)	(1.1¢)	1.4¢
EPS Underlying (undiluted)	¢ps	(0.5¢)	(0.5¢)	(0.2¢)	(1.1¢)	1.4¢
P/E Reported (undiluted)	x	N/A	N/A	N/A	N/A	11.7
P/E Underlying (undiluted)	x	N/A	N/A	N/A	N/A	11.7
Operating Cash Flow / Share	A\$	(0.00)	(0.00)	(0.00)	(0.01)	0.01
Price / Operating Cash Flow	x	(66.7)	(37.4)	(59.2)	(13.6)	14.3
Free Cash Flow / Share	A\$	(0.00)	(0.01)	(0.03)	(0.13)	(0.03)
Price / Free Cash Flow	x	(47.4)	(13.4)	(5.8)	(1.2)	(4.7)
Free Cash Flow Yield	%	-2.1%	-7.4%	-17.3%	-80.2%	-21.1%
Book Value / Share	A\$	0.04	0.06	0.11	0.10	0.11
Price / Book	x	4.10	2.84	1.41	1.57	1.46
NTA / Share	A\$	0.04	0.06	0.11	0.10	0.11
Price / NTA	x	4.10	2.84	1.41	1.57	1.46
Year End Shares	m	849	977	1,681	1,681	1,681
Market Cap (spot)	A\$m	136	156	269	269	269
Net Cash / (Debt)	A\$m	11	26	120	(95)	(52)
Enterprise Value	A\$m	125	130	149	365	321
EV / EBITDA	x	(46.4)x	(21.8)x	(39.1)x	(39.1)x	2.4x
Net Debt / Enterprise Value		(0.1)	(0.2)	(0.9)	0.7	0.4
<b>PRODUCTION AND PRICING</b>						
		Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
Ore Mined	kt	-	-	-	-	1,107
Graphite Concentrate Produced	kt	-	-	-	-	87
Graphite Basket Price	US\$/t	-	1,160.3	1,081.5	1,133.0	1,187.5
AUDUSD	:	0.75	0.70	0.71	0.71	0.71

12-Month Relative Performance vs S&P/ASX Metals & Mining					

Profit & Loss (A\$m)					
	Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
Revenue	-	-	-	-	145
Expenses	(3)	(6)	(3)	(3)	(90)
<b>EBITDA</b>	<b>(3)</b>	<b>(6)</b>	<b>(3)</b>	<b>(3)</b>	<b>54</b>
D&A	(0)	(0)	(0)	(0)	(12)
<b>EBIT</b>	<b>(3)</b>	<b>(6)</b>	<b>(3)</b>	<b>(3)</b>	<b>42</b>
Interest	0	0	0	(16)	(22)
Tax	-	-	-	-	(6)
<b>Underlying NPAT</b>	<b>(3)</b>	<b>(6)</b>	<b>(3)</b>	<b>(19)</b>	<b>14</b>
Exceptionals					
<b>Reported Profit</b>	<b>(3)</b>	<b>(6)</b>	<b>(3)</b>	<b>(19)</b>	<b>14</b>

Balance Sheet (A\$m)					
	Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
Cash	11	26	261	45	188
Receivables	0	1	-	-	10
Inventory	-	0	-	-	16
PP&E	0	1	43	238	302
Exploration	22	30	30	30	30
Other	-	-	-	-	-
<b>Assets</b>	<b>34</b>	<b>57</b>	<b>333</b>	<b>314</b>	<b>546</b>
Creditors	0	2	-	-	17
Debt	-	-	141	141	241
Other	0	0.73	1	1	3
<b>Liabilities</b>	<b>0</b>	<b>2</b>	<b>142</b>	<b>142</b>	<b>260</b>
<b>Shareholder's Equity</b>	<b>33</b>	<b>55</b>	<b>191</b>	<b>171</b>	<b>184</b>

Cashflow (A\$m)					
	Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
<b>Net Cash From Operations</b>	<b>(2)</b>	<b>(4)</b>	<b>(5)</b>	<b>(20)</b>	<b>19</b>
Capex	(0)	(0)	(42)	(196)	(76)
Exploration	(1)	(7)	-	-	-
Other	-	-	-	-	-
<b>Net Cash From Investing</b>	<b>(1)</b>	<b>(7)</b>	<b>(42)</b>	<b>(196)</b>	<b>(76)</b>
Equity	14	26	141	-	-
Borrowings	-	-	141	-	100
Dividend	-	-	-	-	-
<b>Net Cash From Financing</b>	<b>14</b>	<b>26</b>	<b>282</b>	<b>-</b>	<b>200</b>
Effects of FX	(0)	0	-	-	-
<b>Net Increase / (Decrease) in Cash</b>	<b>11</b>	<b>15</b>	<b>235</b>	<b>(216)</b>	<b>143</b>

Source: Company reports, MST Access.

## Investment Thesis: Geology and Geography Make Mahenge a Compelling Graphite Project – Ready to Tap into Growing Demand

### Company Profile: Shovel-Ready Project at World-Class Deposit

The Mahenge Project (Mahenge or the Project) is a Tier-1, shovel-ready graphite project located 450km by road from Tanzania's largest port, Dar es Salaam. BKT holds an 84% stake in the Project through a joint venture company, Faru Graphite Corporation (Faru), while the Tanzanian Government owns the remaining 16% (free carry<sup>2</sup>).

### Mahenge: a very substantial graphite resource – geologically and geographically blessed

The Mahenge project boasts one of the world's largest graphite mineral resources, measuring 213Mt at 7.8% total graphitic carbon (TGC). It holds the second-largest Ore Reserves worldwide, with 70mt at 8.5% TGC. These Ore Reserves support a mining operation that can produce up to 350kt/year of graphite.

The Mahenge deposit features high-quality graphite ore with low impurities and large flake size. The ore requires minimal processing to produce very high-grade concentrate. This sets it apart from the majority of other graphite deposits. Around 60% of the graphite produced at Mahenge would be well-suited for high-value end-use products requiring large natural flake size, while the remaining 40% would be highly suitable for the expanding battery anode market.

### Benefitting from experienced management

BKT's management team is made up of individuals with extensive experience in these areas, including Daniel Pantany (GM Engineering & Technical), who worked on Syrah's Balama project from the early stages to commissioning and whose insights have been incorporated into the design of Mahenge.

### Financing is moving quickly with discussions underway

BKT will need ~US\$200m to build the Mahenge Project, ideally 50% debt and 50% equity. BKT will explore financing options that best benefit shareholders, including traditional debt and equity, selling offtake rights, and divesting a stake at the project level. BKT is progressing in discussions with various lenders, having received indicative terms. Several prospective lenders are scheduled to conduct site visits to the Mahenge project in February 2023 and the company is hoping to receive credit-approved term sheets shortly thereafter.

We believe the recent approval of the 26-year Special Mining License (September 2022) and updated capital expenditure estimates puts BKT in a solid position to advance financing discussions.

### Macro Outlook: Graphite Poised to Be Lithium 2.0 – A Critical Role in Batteries

While the importance of lithium-ion batteries (LIB) is widely understood, the crucial role that graphite plays in the anode for all types of LIBs is often overlooked, with LIBs requiring 7–10x more graphite than lithium.

Due to supply shortages and rapid acceleration of EV demand, lithium prices have risen significantly (+800%) in recent years. Ongoing deficits are predicted in the graphite market in the near future; as an example, Benchmark Mineral Intelligence forecasts deficits to exceed the entire natural graphite market (1.2mt in 2022) in 7 years.

<sup>2</sup> free carried interest means the interest derived from holding shares of which the holder enjoys all the rights of a shareholder but has no obligation to subscribe or contribute equity capital for the shares. The Tanzanian government's equity share of capital will be repaid through profits from the Mahenge project.

## Customer Offtake: Indication of Quality Deposit with Largest Non-Chinese Anode Producer as Key Customer

BKT is well advanced compared to the peer group of prospective graphite projects, having received critical battery qualification for the Mahenge ore. This investment in time and money to achieve qualification from key offtake partners has significantly de-risked end markets for the Project by proving its capability to create high-purity graphite concentrates and opens the door for offtake partners.

Over 90% of Mahenge's Module 1 (89kt/year) large and fine flake production is already under binding offtake or option agreement. This includes a binding agreement with South Korean company POSCO for 100% supply of LOM fines (<150 microns) from Module 1. POSCO is the largest manufacturer of anode material outside of China and we also note that POSCO holds a 12.8% shareholding in BKT, which we believe to be a strong indication of POSCO's confidence in the quality of the product and its commitment to the Project's success in order to meet POSCO's own significant internal battery production ambitions.

POSCO has an ambitious plan to expand its anode production from 40ktpa of natural graphite in 2022 to an estimated 150ktpa by 2030. To support this effort, POSCO has entered into an offtake agreement with BKT, providing 30ktpa of -100 mesh material. To our knowledge, POSCO has no other graphite concentrate offtake agreements, and no other graphite developer has passed its rigorous qualification process.

BKT has comparable volumes of uncommitted graphite concentrate offtake (~30ktpa) for its Modules 2, 3 and 4. In our view, it is likely that POSCO, a company with ambitious growth plans, would be interested in securing additional offtake from BKT to ensure a stable and secure supply chain.

### Potential Near-Term Catalysts

- 1H CY23: Confirmation of POSCO signing the full-form offtake agreement and US\$10m prepayment
- Q1 CY23: Credit-approved term sheets for project debt. Mandating (and naming) lead arrangers expected to follow shortly thereafter
- Feb 2023: Confirmation of agreement with Urbix for prepayment for offtake rights for fines in Module 2 to finance development
- CY23: Potential sell-down of a stake in the Project to fund development and reduce dilution (subject to attractive pricing)

We note that POSCO may exercise its right to a seat on BKT's Board, which it holds as long as it maintains a stake of at least 10% in the company. This demonstrates a long-term commitment to the success of the Project and we would expect this to be well-received by the market.

### Recent Events (2022)

- September: Approval of Special Mining Licence (SML)
- October: Released front-end engineering design (FEED) work stream and enhanced DFS update
- December: Signed with TANESCO for grid power supply to Mahenge
- Q4: Completed relocation and resettlement plan at the Mahenge project site

### Valuation: Risked NPV of A\$0.52/Share (fully diluted)

**We value BKT at A\$0.52, fully diluted, implying an upside of 224% to the current share price.** The valuation assumes A\$141m (US\$100m) in equity is raised at A\$0.20/share, increasing the share count by 72%. The analysis is based on a discount rate of 12% and a risk weighting of 65%.

Current share price fails to reflect value of the high-quality Mahenge deposit, which is shovel ready and has secured offtake agreements. The valuation excludes the added potential for growth in the graphite market, should prices trend similarly to those of lithium. We believe graphite is under-appreciated with strong structural tailwinds, and we see the potential for tight medium-term fundamentals in the graphite market.

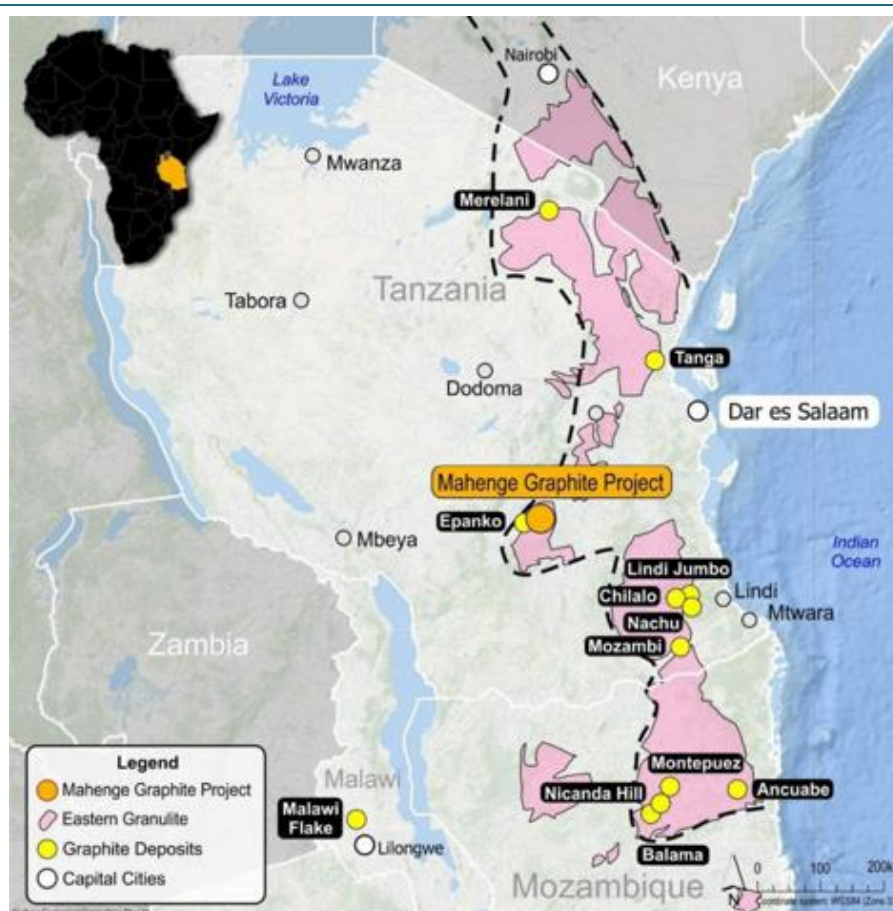
## The Mahenge Project: Ready, Set, Build - The Trifecta of Shovel Ready, Great Geology, and Infrastructure in Place

The Mahenge Project (Mahenge or the Project) is a Tier-1, shovel-ready graphite project located 450km by road from Tanzania’s largest port, Dar es Salaam (see Exhibit 2). The Project is contained within 255km<sup>2</sup> of exploration tenements in the Ulanga district. The Mahenge deposit is the fourth-largest (JORC compliant) contained graphite resource in the world.

BKT owns 84% of the Project, through a joint venture company, Faru Graphite Corporation (Faru), with the Tanzanian Government owning the remainder 16% (free carry).

The Project site is located in the Mahenge mountains at an elevation of 1,500 m above sea level, characterised by steep hills, valleys and linear slope gradients of 70–85%. The terrain is well-drained, with rapid water infiltration and runoff on mountain slopes.

Exhibit 2 - The Mahenge Project site location



Source: BKT.



## Licencing and Permitting

In September 2022, BKT was awarded a Special Mining License (SML) that covers an area of 35km<sup>2</sup> and is valid for 26 years, a significant increase from the previous 10-year Mining License. This approval is significant as obtaining a Mining License can often be a lengthy and challenging process.

Within this SML, BKT has been granted an exemption to the usual requirement for SML developers to issue 5% of stock to local interests and list 30% of stock on the Dar es Salaam Stock Exchange. We view this exemption as positive for the Project, helping to de-risk the financing process.

## Infrastructure

The Mahenge Project is situated in a prime location with easy access to critical infrastructure.

### Roads

Access to the Project site is predominantly by sealed and local gravel roads. An existing unsealed road will provide initial access to the Project site. The road will be upgraded to a single-lane unsealed road.

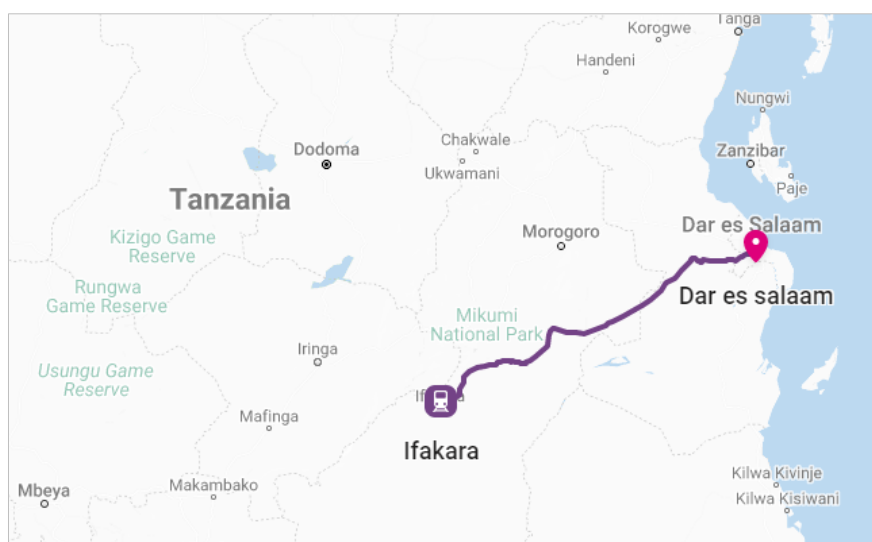
The Project site can be accessed via an existing public unsealed road 4.5km long. Future access to the Project Site will be via an alternative road that follows the route of an existing dirt track. This route is approximately 8 km long, and a new dual lane unsealed road will be constructed.

### Rail

The Project site has access to a rail connection 70km away, providing both freight and passenger transportation between Ifakara and Dar es Salaam port. The concentrate product (in containers holding 20x 1t bulk bags) will be transported by road to Ifakara, then by rail 350km to the Dar es Salaam port for export (Exhibit 3), taking ~11 hours.

Discussions are underway with the rail authority (TAZARA) regarding an agreement to secure access to rail capacity, rolling stock and rail siding construction.

Exhibit 3 - Ifakara (Station) to Dar es Salaam



Source: RometoRio, Ifakara (Station) to Dar es Salaam.

## Port

The Graphite concentrate product will be exported out from Dar es Salaam Port (Exhibit 4). Dar es Salaam is the principal port of Tanzania, handling ~95% of Tanzanian international trade.

The port handles a wide range of cargo, including containers, bulk goods, and liquid bulk and has facilities suitable for export of containerised graphite concentrate. The port has consistent annual operations and is not seasonal.

Dar es Salaam port underwent modernisation and expansion in recent years to increase its capacity and improve efficiency.

BKT has engaged the Port Authority (TICTS) and established sufficient capacity exists.

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### Exhibit 4 - Dar es Salaam Port

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Source: WorldCargo News.

## Power

Access to grid power (220kV) via the national grid is available 70km away at Ifakara. The national electric supplier (TANESCO) has completed studies to upgrade the power supply to Mahenge, providing grid power to the project site.

BKT expect that the construction of a 67km 220kV transmission line, substation and 7km 33kV transmission line from substation to site to take 2 months. Grid power is expected to cost ~US\$0.08/kWh.

The use of grid power differentiates BKT by offering low-cost, reliable power, positioning the Mahenge project in the lower cost quartile. It also enhances BKT's ESG credentials by sourcing ~40% from hydroelectric sources which is expected to increase to 60–70% hydro by June 2024 when the new hydro power scheme is due to be commissioned. Additionally, it fosters a mutually beneficial relationship with the local community by contributing to the electrification of nearby villages.

## Water

The process plants will use water from the raw water dam (RWD), which is replenished by rainfall and has an annual net positive balance of 700mm. During periods of low rainfall, water will be conveyed to the RWD from pumping stations at the Mbaha River, Mdindo Stream, and bore fields. Potable water will be produced at the accommodation village and delivered to the process plant areas as needed. The water treatment plant will use water from the bore field system.

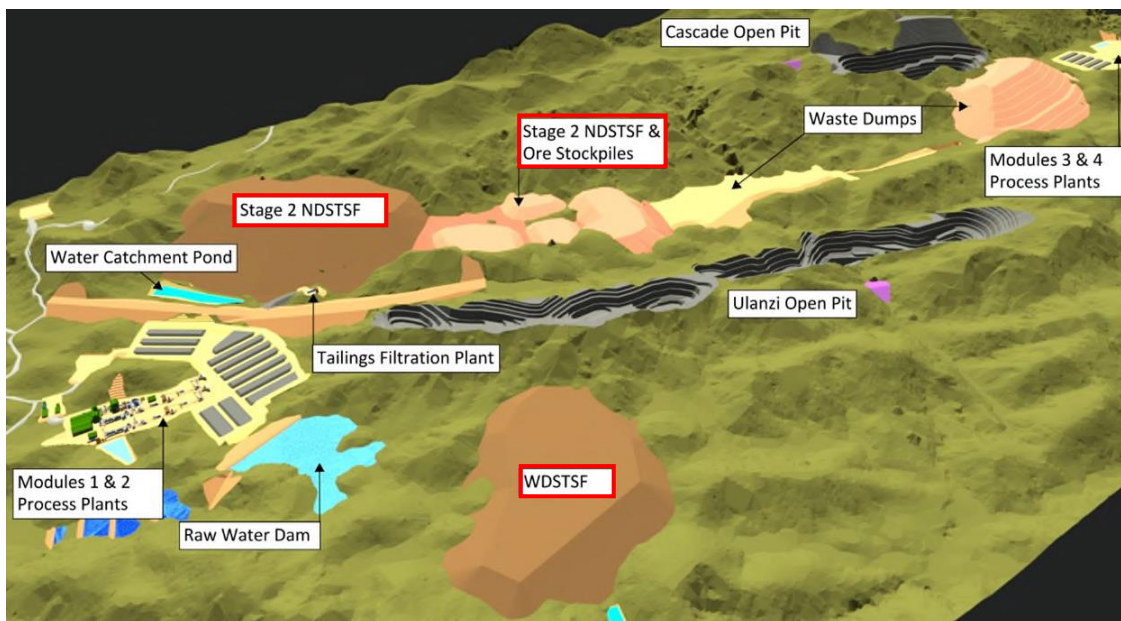
## Tailings

Tails dewatering and dry stacking will be used, providing benefits such as eliminating the risk of tailings dam failures, reducing complexity, and requiring less infrastructure.

Although dry stack tailings storage facilities (DSTSF) may have higher costs, it is now considered industry best practice, offering significant environmental and safety advantages. We note that many mining companies are also moving towards this method.

Three areas have been designated for dry stacking, as outlined in Exhibit 5.

Exhibit 5 - The LOM dry stacks (Stage 1 Northern DSTSF, Stage 2 Northern DSTSF & Western DSTSF)



Source: BKT

## Geology: A World-Class Deposit

From a geological perspective, the Mahenge graphite deposit is a world-class deposit. It has the world's second-largest reserve, a very low stripping ratio (0.8:1), continuity in grade across the deposit, low levels of deleterious impurities, and large flake size.

The Mahenge Project is located within the Proterozoic Mozambique Orogenic Belt extending throughout eastern Africa (Exhibit 6). Structurally, the Mahenge region has undergone intense deformation forming a unique sequence of different types of rocks, like marble, mafic and felsic gneisses and graphitic schists, all part of the Mahenge Synform<sup>3</sup>. The Mineral Resources are located on the western flank of the synform, dipping 60° and 80° towards the east.

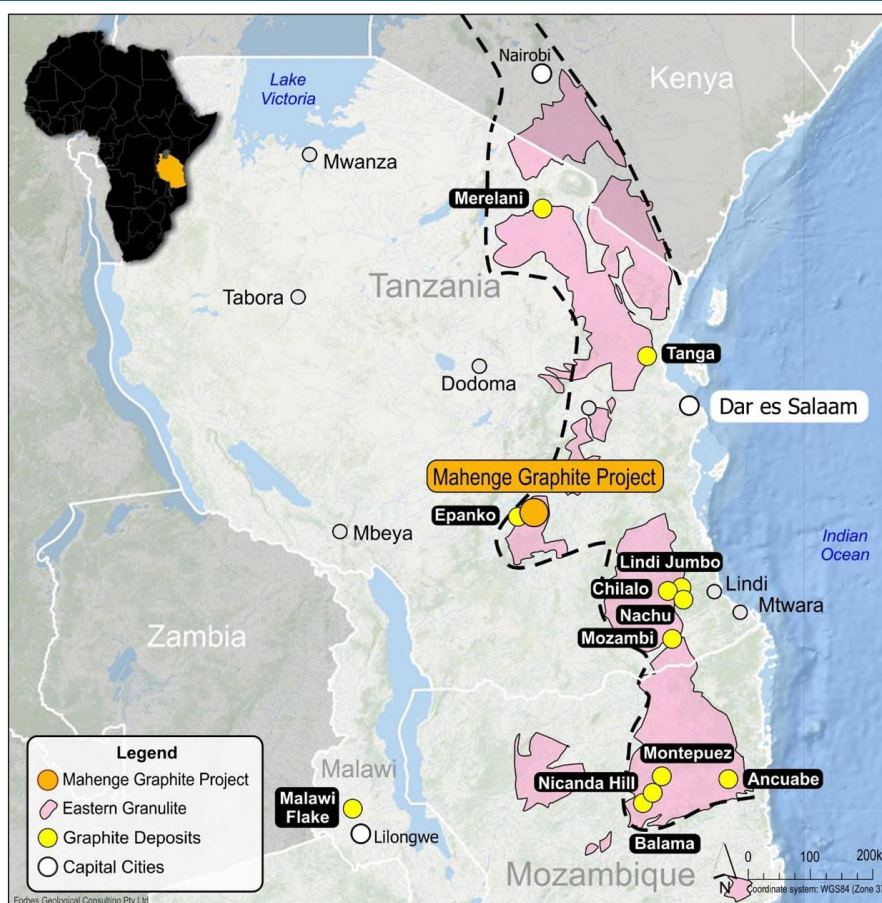
Directional variograms<sup>4</sup> have been used to study the distribution of mineralisation (TGC). The deposit was found to have good continuity and a consistent grade.

<sup>3</sup> A synform is a deformation of rock due to tectonic forces. It is formed when compression in one area causes an uplift and folding in another area (concave).

<sup>4</sup> A statistical tool used to understand the spatial variability of a measure, such as mineralisation.



Exhibit 6 - Geological location of the Mahenge Graphite Project



Source: BKT.

**Understanding the geology: a comprehensive approach**

The Mineral Resource estimate was based on mapping surface outcrops, drilling in multiple pits and trenches, and using both reverse circulation (RC) and diamond drilling (DD) methods. Resource modelling was developed using information from 175 RC drill holes and 66 DD holes with a grid spacing of 100m x 100m, 100m x 50m, and 50m x 50m to ensure geological and grade continuity.

A 4–5% total graphitic carbon cut-off was used for the grade envelopes to ensure continuity of the zone.

3D geological models were made by defining the footwall and hanging-wall boundaries based on changes in the gneissic units, which also reflect a decrease in graphite grade.

**Resources: a multi-decade resource with more to come**

Mahenge has a JORC-compliant Mineral Resource Estimate of 213mt at 7.8% TGC (Exhibit 7) and an Ore Reserve of 70mt at 8.5% TGC (Exhibit 8). The Mahenge mineral resource is the world’s second-largest graphite reserve.

The Mineral Resource has been classified based on confidence in the geological model, continuity of mineralised zones, drilling density, confidence in the underlying database and the available bulk density information.

## Exhibit 7 - JORC compliant Mineral Resource Estimate and Ore Reserve

Category	Tonnes (Mt)	Grade (%TGC)	Contained Graphite (Mt)
<b>Ore Reserves</b>			
Probable	70.5	8.5	6
<b>Total Ore Reserves</b>	<b>70.5</b>	<b>8.5</b>	<b>6</b>
<b>Mineral Resources</b>			
Measured	31.8	8.6	2.7
Indicated	84.6	7.8	6.6
<b>Total Measured and Indicated</b>	<b>116.4</b>	<b>8</b>	<b>9.3</b>
Inferred	96.7	7.4	7.2
<b>Total Measured, Indicated and Inferred</b>	<b>213.1</b>	<b>7.8</b>	<b>16.6</b>

Source: BKT.

## Exhibit 8 - Global Mineral Resource Estimate for the Mahenge Graphite Project

Prospect	Category	Tonnes (Mt)	Grade (% TGC)	Contained Graphite (Mt)
<b>Ulanzi</b>	Measured	19.6	8.8	1.7
	Indicated	46.2	8.2	3.8
	Inferred	48.7	7.8	3.8
	<b>Sub-total</b>	<b>114.5</b>	<b>8.1</b>	<b>9.3</b>
<b>Cascade</b>	Measured	12.1	8.3	1
	Indicated	20.8	8.3	1.7
	Inferred	27.3	7.9	2.2
	<b>Sub-total</b>	<b>60.2</b>	<b>8.1</b>	<b>4.9</b>
<b>Epanko</b>	Measured	-	-	-
	Indicated	17.6	6.4	1.1
	Inferred	20.8	5.9	1.2
	<b>Sub-total</b>	<b>38.4</b>	<b>6.1</b>	<b>2.3</b>
<b>Combined</b>	Measured	31.8	8.6	2.7
	Indicated	84.6	7.8	6.6
	Inferred	96.7	7.4	7.2
	<b>Total</b>	<b>213.1</b>	<b>7.8</b>	<b>16.6</b>

Source: BKT.

### Geological specification: the right quality

Grade is not necessarily the most important metric in assessing graphite quality (discussed further below: see 'Graphite: quality more important than grade'). A larger flake size<sup>5</sup> and a lower level of impurities significantly increase the quality and value of the final product.

The Mahenge graphite deposit has been shown to be low in deleterious impurities. Furthermore, test work revealed the graphite particle size distribution (PSD) is largely composed of large flakes, with 70% of concentrate being over 150 µm.

In our view, these qualities differentiate the Mahenge Project from many others and help to make it a tier-one graphite asset.

<sup>5</sup> Flake (large) size graphite has superior properties relative to smaller flake, including higher conductivity and better mechanical strength

## Construction: A Staged Approach Across 5 Years

BKT expect construction to take 20 months from final investment to Module 1 commissioning, while our conservative modelling assumes 24 months.

The construction of Mahenge will be executed in a staged approach, with mining and processing ramping up across the first 5 years. We view this staged approach as sensible and strategic because it:

- defers capital costs
- allows a staged development process
- allows later stages to be funded with cashflow from operations
- ensures market shocks associated with significant increases in available volume can be managed.

Modular processing plants will be constructed, each having a nameplate capacity of ~1mtpa, providing a concentrate of ~87ktpa.

The processing plants are located strategically to minimise travel distances, with modules 1 and 2 ~800m north of the Ulanzi open pit and modules 3 and 4 ~800m south of the Cascade pit.

The two plant locations have been strategically placed downhill from the pit locations, ensuring the haul trucks drive downhill when full and uphill when empty, demonstrating the planning team's operational awareness.

## Mining: Optimising for Improved Productivity

A conventional truck-and-shovel operation will be utilised across the three deposits, with the Project having a very low life of mine (LOM) strip ratio of 0.8:1.

BKT plans to utilise contractor mining (rather than owner-operator), with contractors providing machinery, maintaining the mobile fleet, and managing the day-to-day running of the operation.

An onsite laboratory for analysis will be used to enable a quick turnaround of results.

### Adapting equipment for a staged approach

The mining fleet increases in line with BKT's staged approach. 45t excavators and 20t dump trucks will construct site access and develop initial mining areas. In year 2, the fleet will be upgraded to 90t excavators and 55t dump trucks to take advantage of improved conditions, enabling higher productivity and lower operating costs.

The mining fleet build-up from pre-production through the first five years is shown in Exhibit 9.

Exhibit 9 – Mining fleet build-up: first five years

EQUIPMENT	PRE-PROD.	YR 1	YR 2	YR 3	YR 4	YR 5
20t dump truck	3	8	-	-	-	-
55t dump truck	-	-	11	15	17	17
45t excavator	1	1	-	-	-	-
90t excavator	-	-	3	3	3	3
Front End Loader	1	2	2	3	4	4
Drill rig	1	1	3	3	3	3
Dozer	1	2	2	3	3	3
Grader	1	2	3	4	5	5
Water Truck	1	2	2	3	4	4

Source: BKT.

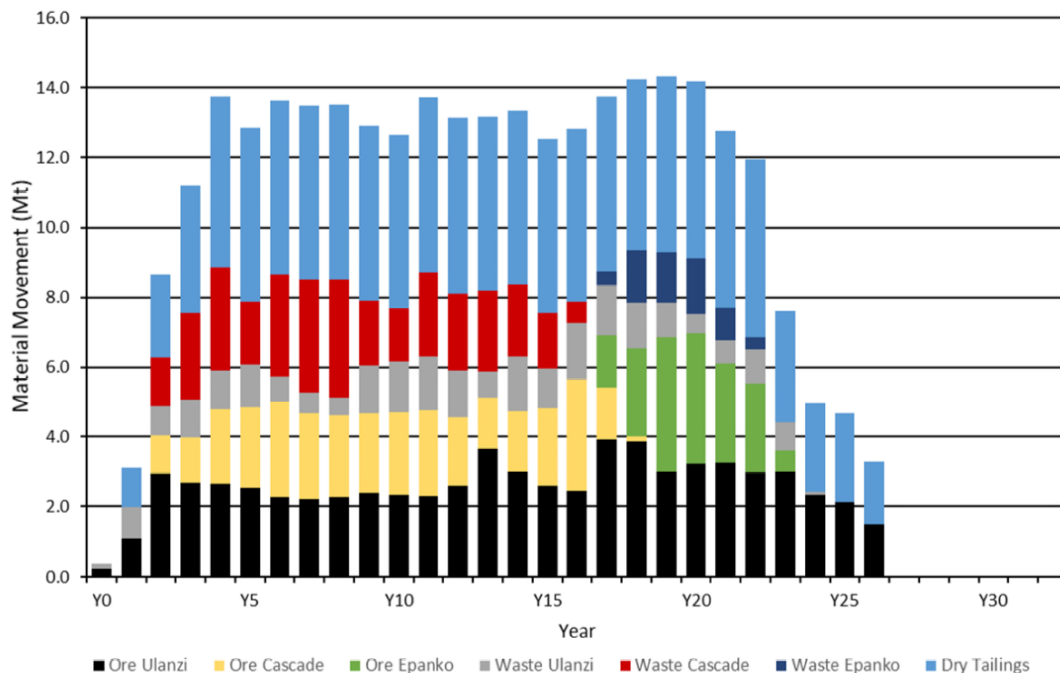
The mining equipment will be provided by the contractor and not purchased.

### Production schedule: providing continuous feed

Mining activities are sequenced and scheduled to provide continuous ore feed to the processing plant, minimising stockpile inventory and providing a managed waste rock schedule.

Exhibit 10 shows the total material movement according to the schedule in the enhanced DFS (eDFS) throughout the LOM.

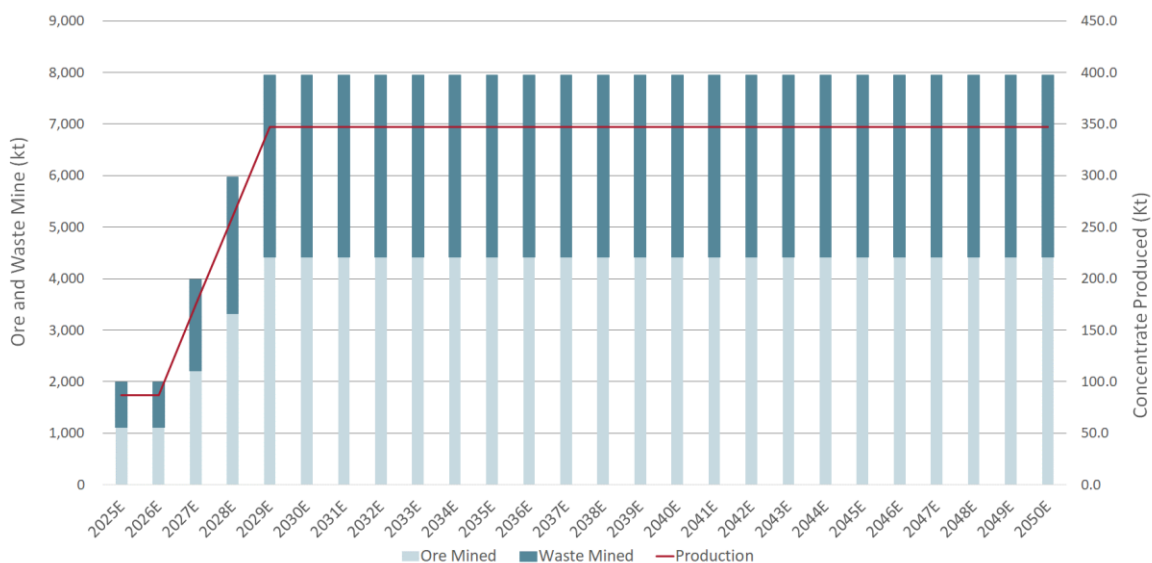
Exhibit 10 – Scheduled material movement



Source: BKT.

As displayed in Exhibit 11, our production forecast for the Mahenge Project has a conservative ramp-up approach. In the first year, we expect 1,107ktpa of ore to be mined, increasing to 4,415ktpa by year five. Over the life of the mine (LOM), we anticipate a concentrate of 347ktpa will be produced.

Exhibit 11 – Scheduled material movement and annual ore production: MST forecasts



Source: MST Access.



## Mineral Processing: A Simple Crush, Grind, Float Circuit to Produce >97% TGC

The processing plant is a simple concentrator plant using standard crushing, grinding, and flotation technology.

The plant will produce graphite concentrate with a minimum grade of 95–97.5% TGC and has the ability to upgrade to 99% TGC without chemical or thermal processing. The high-purity concentrate obtained using conventional flotation processing is due to favourable metallurgy and differentiates the Mahenge Project from many others.

The plant will be constructed in a four-staged modular approach, with each stage having a nameplate capacity of 1.061mtpa, average feed grade of 8.13% TGC, and recovery of 92.8%.

Exhibit 12 – Key process parameters for the LOM

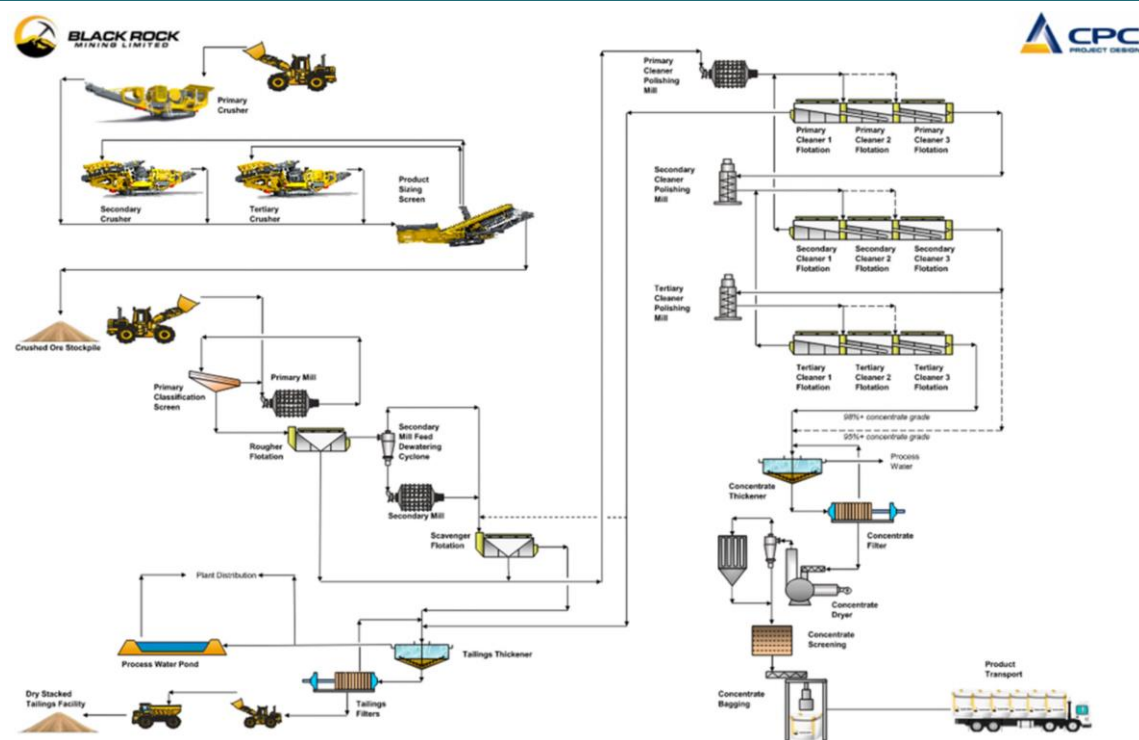
Parameter	Units	Module 1	Module 2	Module 3	Module 4	Total
Commence Operation	year	1	2	3	4	-
Process Throughput*	kt/y	1,061	1,061	1,061	1,061	-
LOM Ore Treated	Mt	27.3	25.9	21.7	20.0	95.0
Average Feed Grade	TGC %	8.24	8.19	7.96	8.06	8.13
Recovery	%	92.8	92.8	92.8	92.8	92.8
Avg. Concentrate Grade	TGC %	97.3	97.3	96.1	96.1	96.8
Graphite Concentrate	Mt	2.15	2.03	1.7	1.6	7.4

\*Plant throughput is expected to run up to 1.15mtpa with oxide and transition ore feed during the first 5 years.

Source: BKT.

The design for the four processing modules is shown in Exhibit 13.

Exhibit 13 – The Mahenge Project simplified process diagram



Source: BKT.

## Operational Readiness: Building the Foundation

BKT has developed operational readiness plans that provide a detailed and comprehensive approach to ensure the required systems, processes, and resources are properly functioning before execution.

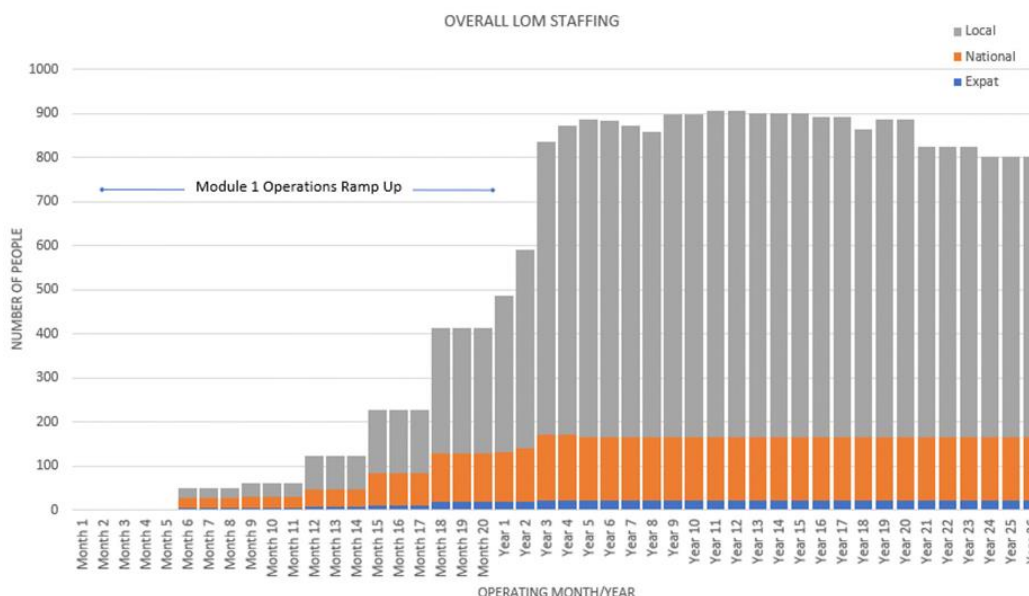
We note the importance BKT has put on developing these systems, procedures, and processes. We consider this critical in developing the right workplace culture and see it as vital for a successful operation.

## Recruitment Strategy

Initially, the Mahenge mine will be developed by a mining contractor, with support from an owner’s team comprising of a mine manager, mine planners, and technical services specialists. The processing facility will be manned primarily by a Tanzanian workforce and led by a Tanzanian leadership team. This approach aims to foster acceptance and pride among government officials and local communities in the Project.

The LOM staffing is expected to be 800–900 staff and will be ramped up as shown in Exhibit 14.

Exhibit 14 – Expected labour ramp up over the LOM



Source: BKT.

## Marketing and Offtake Strategy

### De-risked with Successful Qualification of Product

BKT has de-risked the Project by proving its capability to create high-purity graphite concentrates, reaching 97-98%. This was completed with the largest pilot plant program in the industry, which processed over 600t of ore.

BKT has secured initial customer product acceptance before building and commissioning the processing plant. This is strategically important as it allows BKT to design and build its processing plant based on the customer’s needs, differentiating BKT from other graphite producers who did not receive qualifications prior to construction.

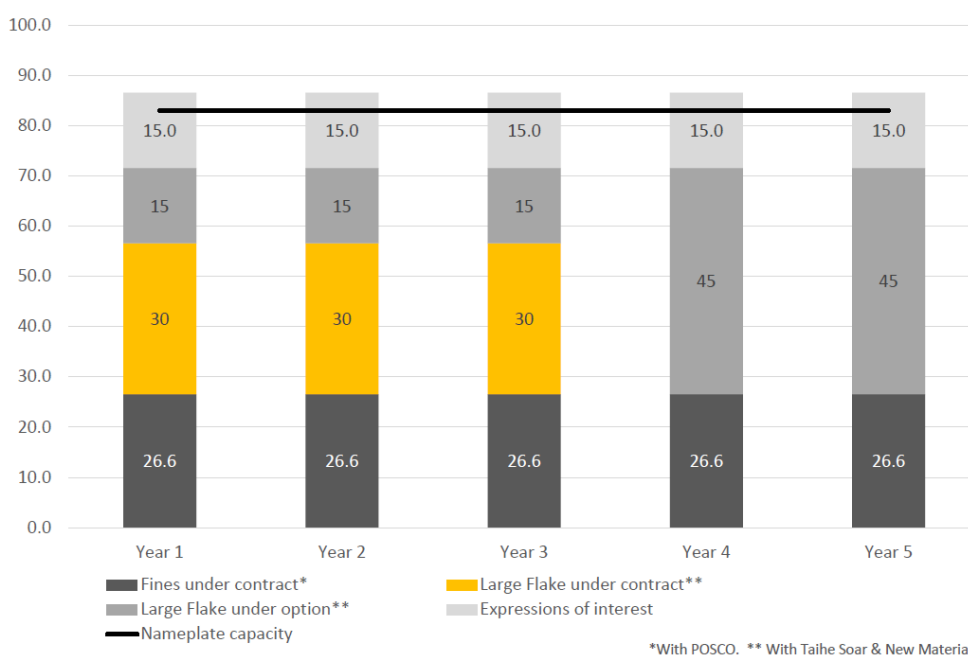
The importance of BKT’s successful qualification of its graphite product cannot be overstated. We note that many graphite developers and producers (such as Syrah Resources) still have not achieved product qualification.

### Offtake Agreements: Indication of Top-Quality Product

Over 85% of Mahenge’s Module 1 production is under binding offtake or option agreement (Exhibit 15). BKT’s offtake agreements consists of the following:

1. **POSCO** (South Korea): a binding agreement for 100% supply 25–30ktpa of LOM fines (-100 mesh) from Module 1
2. **Taihe Soar** (China): 20ktpa of +100, +80, +50, and +32 product (refer to Exhibit 24 for product size explanation), 3yrs (initial term) plus an option for an additional 10ktpa over this same initial term
3. **Qingdao Yujinxi New Material** (China): estimated annual volume 10ktpa, 11% of total volume, of +100, +80, +50, +32 product, 3yrs (initial term) plus an option for an additional 5ktpa over this same initial term

Exhibit 15 – Mahenge offtake for Module 1 (83ktpa)



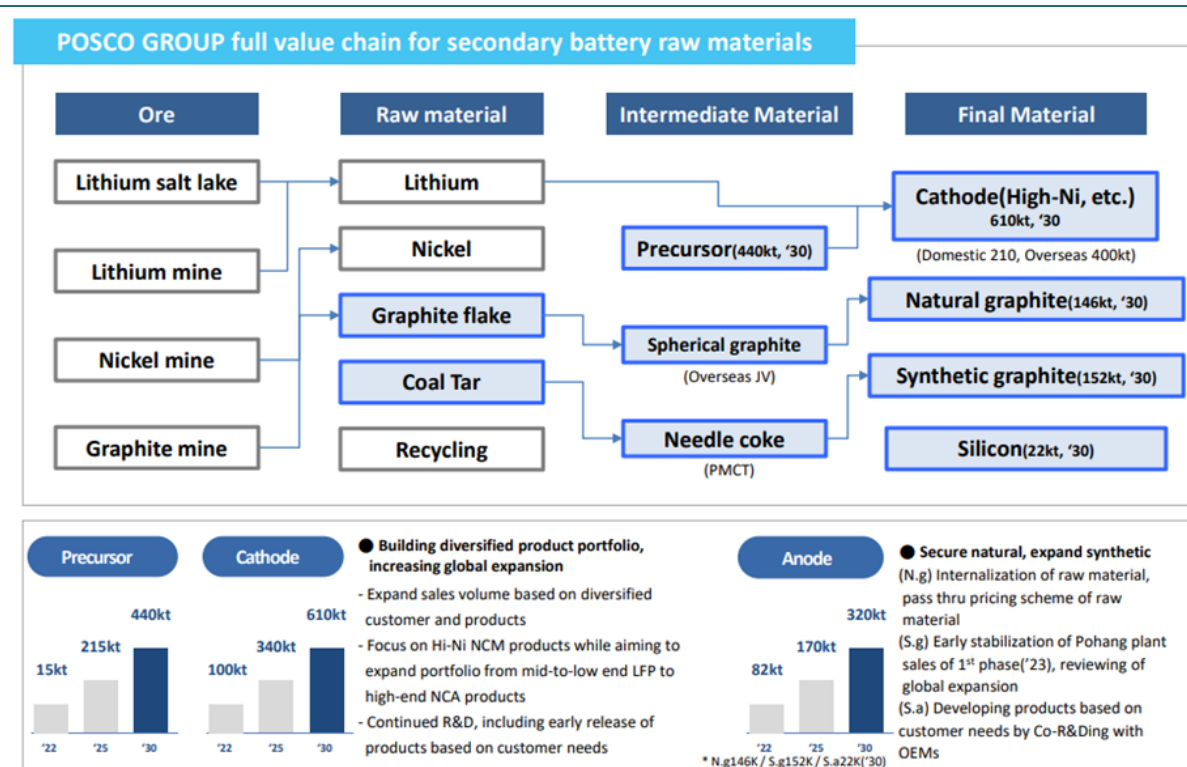
Source: BKT.

## POSCO: BKT teaming up with the largest anode producer outside of China

POSCO, a South Korean steel and metals company, is a leading manufacturer of lithium-ion battery anodes using natural graphite, synthetic graphite and silicon-based anodes.

**POSCO’s projected anode growth suggests huge potential need for BKT graphite:** It is the largest anode producer outside of China, producing 82kt in 2022 (40kt natural, 40kt synthetic, 2kt silicon), and plans to increase production to ~320kt by 2030<sup>6</sup> (~150kt natural, ~150kt synthetic, ~20kt silicon). The projected growth alone would hypothetically require the entire production of the -100 mesh fines product from all four modules of the Mahenge mine.

Exhibit 16 – Energy materials – full value chain (POSCO Chemical)



Source: BKT.

Given the typical yield to spherical graphite (SPG) in China is ~35%, POSCO’s graphite concentrate consumption is set to grow from 114ktpa in 2022 to 417ktpa (simply dividing the natural graphite anode figures in Exhibit 16 by 0.35).

**We believe POSCO would likely be interested in additional offtake, given its growth plans:** Interestingly, POSCO’s planned fines offtake agreement with BKT (for the -100 material) only represents ~30ktpa of graphite concentrate. To our knowledge, POSCO does not have any other graphite concentrate offtake agreements with any other parties and no other graphite developer has passed its rigorous qualification testing process.

BKT has comparable volumes of uncommitted graphite concentrate offtake (~30ktpa) for its Modules 2, 3 & 4. In our view, it is likely that POSCO, a company with ambitious growth plans, would be interested in securing additional offtake from BKT to ensure a stable and secure supply chain.

We view the strategic partnership of BKT and POSCO as significant. We note that POSCO is the largest anode manufacturer of anode material outside of China and consider this of strategic importance. We also note that POSCO has acquired 12.8% of BKT shares, which we believe to be a strong indication of POSCO’s confidence in the quality of BKT’s ore and POSCO’s commitment to the success of the Project.

<sup>6</sup> Source: [POSCO Chemical 3Q 2022 Earnings Release, 24 Oct 2022, Slide 13](#)



## Urbix

Urbix is the only US company that produces natural battery-grade graphite for use in EVs and battery storage systems. The framework agreement is conditional on Urbix providing a 'substantial' prepayment or equity to secure offtake for Mahenge Module 2.

Under the Agreement, the parties have until early February 2023 to meet conditions. In our view, the expiration of the Option Agreement allows BKT to initiate competitive talks with other parties (including POSOC) for Module 2 fines.

Conversations with Urbix are still in progress, and we note that Urbix recently entered into a Joint Development Agreement with a major South Korean battery manufacturer, SK On (on January 18, 2023), which serves as validation of Urbix's graphite processing technology.

## Taihe Soar

Taihe Soar is a Chinese company that specialises in producing and supplying graphite products, including anodes, for the battery industry. The company is based in Liuyang, Hunan province, China, and is one of the leading graphite manufacturers in China.

## Qingdao Yujinxi New Material

Qingdao Yujinxi New Material Co., Ltd is a Chinese company based in Qingdao, a port city in Shandong province. The company is a professional manufacturer of graphite products, such as natural flake graphite, amorphous graphite, and expandable graphite.

## Tanzania: Favourable Business Environment Attracts Multinational Corporations, Fuelling Growth

The United Republic of Tanzania (which includes the island of Zanzibar) is an East African country bordering the Indian Ocean. Tanzania is a former British colony that gained independence in 1961 and became a republic within the Commonwealth of Nations a year later. As of 2021, Tanzania's population was estimated at 63.6m.

Tanzania has generally been considered politically stable, with peaceful transitions of power and limited instances of civil unrest. It is a one-party dominant state, with the Chama Cha Mapinduzi (CCM) having been in power since 1961.

Over the past decade, Tanzania has achieved relatively strong economic growth and declining poverty rates. Inflation has fallen to low single digits (see Exhibit 17), and economic growth is buoyant, averaging 7.6% per year in the 10 years prior to the pandemic. Poverty, while still widespread, is heading downwards. Exports are booming, public finances are sound, debt ratios are low, and foreign exchange reserves are ample.

Exhibit 17 – Tanzania's economic data

MAIN ECONOMIC DATA	2020	2021	2022e
GDP (USD bn)	64.40	70.28	77.51
GDP per capita (USD)	1,110	1,176	1,260
Growth rate (% of GDP)	2.0*	4.30	4-5%
Inflation rate (%)	3.28	3.69	4.4
Unemployment rate (%)	9.7**	9.3**	n/a
Fiscal balance (% of GDP)	-0.8%	-3.4%	-2.8%
Current account balance (% of GDP)	-1.81	-3.29	-4.28
Total external debt (% of GDP)	18.8	18.8	18.7
Debt-service ratio (% of exports)	14.8	14.9	11.5
Reserves (months of imports)	5.6	6.6	5.0

\* Slowdown due to COVID Pandemic

\*\*estimate

Source: IMF, World Economic Outlook & World Bank.

### Mining in Tanzania: A More Stable and Supportive Operating Environment

Former Tanzanian President John Magufuli (2015–2021) took a hostile and adversarial stance toward overseas investors. Mining regulations saw a major overhaul over 2017–2019, which led to a period of elevated uncertainty for investors in the country.

In March 2021, President Magufuli's death prompted a change in the country's previous hard-line stance. President Samia Suluhu Hassan was sworn in as Tanzania's first female president and has stated her "commitment to the development of the mining sector", with the aim of the mining sector accounting for 10% of the country's GDP by 2025 from 4.8% in 2021.

Details of the Mining (State Participation) Regulations of 2022 (SPR) are seen in Appendix 1. While higher government ownership of mining projects remains in place (16% non-dilutable free carried interest), there are strong signals that there will be a more stable operating environment for mining companies in the future.

### New Projects Signal Stronger Confidence in Tanzania's Regulations

Several major miners have announced substantial investments in recent quarters, showing confidence in the country's new Government. In January 2022, BHP announced it would invest US\$100m in the Kabanga nickel project – its first investment in Africa since the company spun off its coal operations as South32 in 2015. We view this as a strong indication that the country has made a turnaround in attracting investment in the mining industry. The combination of a new, more investor-friendly government, clear communication from the new President, and the entrance of major players is a positive indication for mining companies doing business in Tanzania.

## Graphite Explained

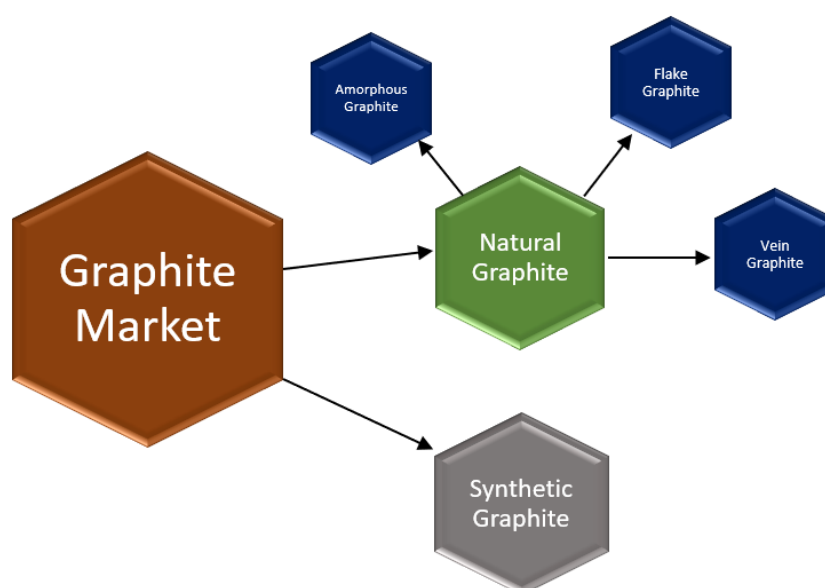
### What Is Graphite?

Graphite is a naturally occurring form of carbon with a hexagonal crystal structure. It has a wide range of industrial and commercial uses due to its unique properties, such as its high thermal and electrical conductivity, chemical stability and lubricating properties, and high strength and hardness.

### Classification of Graphite: Natural vs Synthetic Graphite

The graphite market consists of two types of graphite: natural and synthetic. Although both are called graphite, they are two different commodities with unique properties.

Exhibit 18 – Graphite market by type



Source:

**Natural graphite** is classified into three categories for commercial purposes.

- **Amorphous graphite:** the lowest-quality (with a 75%–90% graphite concentrate), lowest-priced, and most abundant form of graphite. Amorphous graphite accounted for 21% of natural graphite production in 2020.
- **Crystalline flake graphite:** a mid-range quality product with grades ranging from 75% to 97% graphite. Flake graphite represents 79% of natural graphite production. Flake graphite ore is usually processed via froth flotation resulting in a concentrate 85%–98% Total Graphite Content (TGC).
- **Vein or lump:** the rarest, most valuable and highest-quality type of natural graphite. The only commercial deposits are in Sri Lanka, where veins are up to 3 metres thick. The ore is mined by hand, resulting in a high-grade product with up to 99% TGC.

**Synthetic graphite** is produced by heat treatment (graphitisation) of hydrocarbon materials above 3,000°C for up to several days. High-temperature processing transforms the precursor carbon forms into a graphite structure and vaporises impurities. As a result, synthetic graphite is more than 99.9% graphite. Synthetic graphite is significantly more expensive and has a much larger CO<sub>2</sub> footprint.

## Applications of Graphite

Common uses of graphite are seen in Exhibit 19.

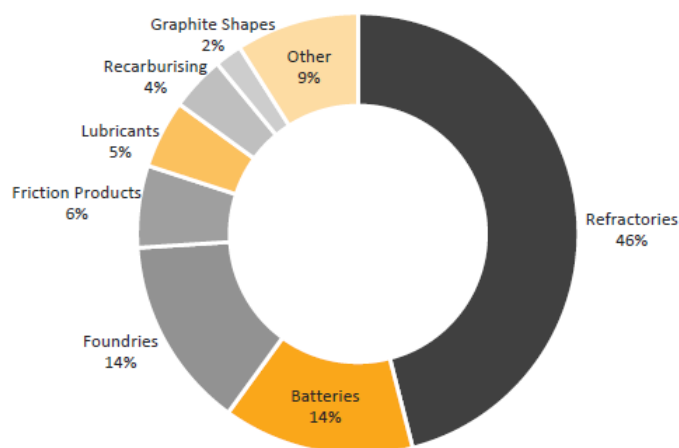
Exhibit 19 – Main uses of graphite

Application	Description
<b>Lithium-ion batteries</b>	Used as an anode material in lithium-ion batteries (LIB).
<b>Refractories</b>	Used in the production of refractory materials, which are used to line high-temperature furnaces and reactors.
<b>Lubricants</b>	Used as a lubricant in various industrial processes, including in the production of machine parts and in the mining and drilling industries.
<b>Nuclear power</b>	Used in the production of nuclear power, specifically as a moderator to slow down neutrons in the reactor core and control the fission process.
<b>Fuel cells</b>	Used in the production of fuel cells, which convert chemical energy into electricity.
<b>Graphite composites</b>	Used to produce graphite composites, which are used in various industrial applications such as aerospace, automotive, and defence industries.
<b>Pencils</b>	The main component of pencil leads.
<b>Other uses</b>	Used in the production of coatings, inks, ceramics, and other industrial products.

Source: BKT, MST.

The breakdown of global consumption of natural graphite by application is shown in Exhibit 20.

Exhibit 20 – Global consumption of natural graphite in 2018 by application



Source: BKT.

### Key application: lithium-ion batteries

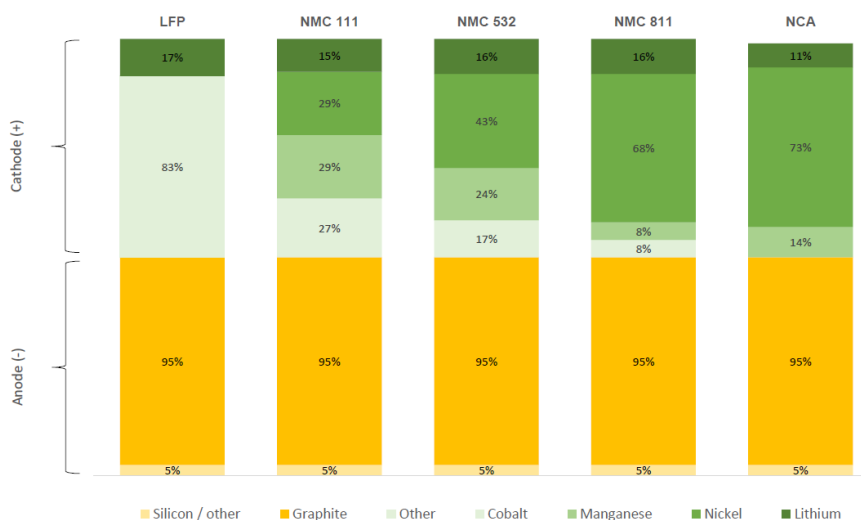
Graphite is the most important anode material for LIBs and is the dominant anode material, regardless of battery chemistry (see Exhibit 21). LIBs have two electrodes: an anode (negative) and a cathode (positive). Graphite is a critical material within the anode, as it has the following advantages:

- stores lithium-ion well when the battery is charged
- has long-term cycle stability
- delivers a flat-voltage discharge profile, providing almost full power until discharged.



Graphite is essential to all types of Li-ion batteries, with a 75KWh battery pack containing ~70kg of graphite compared with ~10kg of lithium.

Exhibit 21 – Graphite is the dominant anode material, regardless of battery chemistry



Source: BKT.

## Qualification Process

Graphite qualification is necessary for OEMs to ensure their products meet specific performance standards. For example, a battery manufacturer who provides a warranty for a certain number of charging cycles must ensure that the graphite used in the anode is suitable for that specific application. This is done by determining the properties and characteristics of the graphite through a series of tests and evaluations, verifying it meets the requirements for the intended use. Samples with high impurities impact the anode's performance and are likely to be classified as non-suitable.

The process of qualifying graphite for batteries involves four stages, as shown in Exhibit 22.

Exhibit 22 – Qualification process for the battery market

Testing Stage	Description
<b>First</b>	Testing a small sample of up to 5kg to determine if the graphite has the desired properties like low levels of deleterious elements, and suitable physical properties like Tap Density.
<b>Second</b>	Constructing batteries using samples of up to several hundred kilograms of the graphite.
<b>Third</b>	Testing up to 20t of the material by using the batteries constructed in the second stage with end users.
<b>Fourth (Optional)</b>	a final stage of testing may be required, involving up to 100t of graphite per product grade.

Source: BKT.

The qualification process must be representative of the overall ore body. It is expensive (~A\$25m) and takes years (~3-4) to achieve. We see this as a major hurdle for many projects.

Securing customer contracts is only possible through qualification. We note that BKT has completed the qualification process for the Mahenge ore and view this as a differentiating feature of the Project relative to other graphite developers and producers.

## Graphite: Quality More Important than Grade

Although resource tonnes and graphitic carbon content (grade) are key metrics in assessing projects, the evaluation of graphite projects is more complex. Key attributes (in addition to size of deposit and grade) are product purity and flake size distribution. A deposit with high grade but poor product quality is likely to be less desirable than a deposit with lower grade but a better-quality product. For example, a high-grade ore with high deleterious impurities will need more processing, reducing product size, which in turn reduces the product quality and sale price.

Exhibit 23 – Examples of approximate prices relative to graphite product flake size and purity

Market Terminology	Mesh Size	Microns	Purity	Price (US\$/t)
Jumbo flake	+48	>300	90 – 97%	~2,000
Large flake	-48 to +80	180 – 300	90 – 97%	~1,300
Medium flake	-80 to +100	150 – 180	90 – 97%	~1,100
Small flake	-100 to +200	75 – 150	90 – 97%	~750
Fines	-200	<75	80 – 85%	~450

Source: Graphite Focus

### Purity: understanding the importance

Purity (the proportion of graphite to deleterious elements after processing) is particularly important for higher-value end uses such as LIBs and is a key determinant in saleability of the product. Any deleterious elements left in the product after processing can negatively impact its quality and performance. Impurities (e.g. vanadium, uranium, tungsten) reduce, or even eliminate, suitability for these high-value applications.

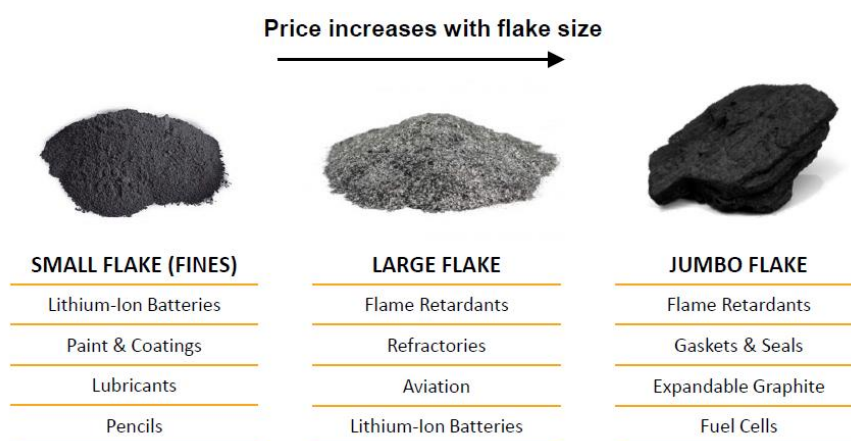
Moreover, further processing to remove deleterious elements increases operating costs and reduces recoveries, while also reducing product size, which decreases sale price.

### Flake size: larger flake attracts a higher price

Flake (large) size graphite has superior properties relative to smaller flake, including higher conductivity and better mechanical strength. Larger flake size also allows for greater surface area which increases conductivity. Large flake graphite is more resistant to fracturing and cracking. This increased strength and durability makes it more suitable for use in high temperature and pressure applications.

Larger-flake graphite has higher purity and is easier to process, lowering costs. Large flakes can be crushed and ground further to produce smaller flakes, but smaller flakes cannot be transformed into larger flakes.

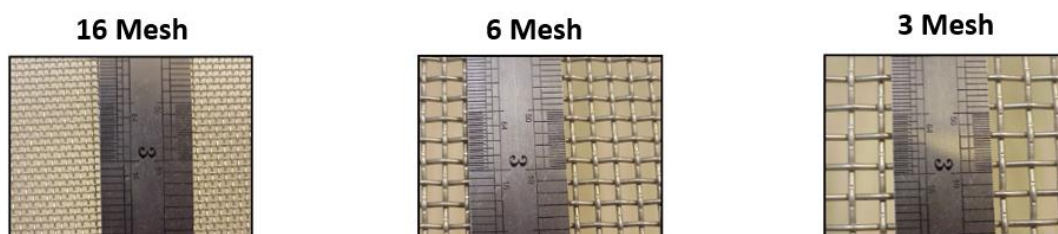
Exhibit 24 – Graphite prices increase with flake size



Source: BKT.

Graphite flake size is determined by passing it through sieves with different mesh openings to measure its particle size distribution. The mesh size, or number of openings per inch, is used to classify the size of the flake. For example, a 200-mesh powder would have 200 openings per square inch, meaning the particles are very fine. A minus (-) sign before the mesh size means particles smaller than the specified size will pass through the screen, while a plus (+) sign means particles larger than the specified size will be retained on the screen.

Exhibit 25 – Understanding mesh sizes



Source: ESPI Metals.

## Processing Graphite

The specific process used to concentrate graphite varies depending on the type of graphite ore and the desired end-use of the graphite. The process typically involves all or some of the steps outlined in Exhibit 26.

Exhibit 26 – General methodology for processing graphite

Process	Description
<b>Crushing and grinding</b>	The graphite ore is crushed and ground to a fine powder using equipment such as jaw crushers, cone crushers, and ball mills.
<b>Concentrating</b>	The graphite powder is then processed to remove impurities. This is done using a variety of techniques such as flotation, gravity separation, and magnetic separation.
<b>Purification</b>	If required, this is done using chemical methods such as acid leaching, oxidation, or heat treatment. (Note: Mahenge’s ore does not require this process)
<b>Polishing</b>	The removal of surface imperfections and impurities, to create a smooth, consistent surface.
<b>Sizing and classification</b>	The spherical particles are then classified and sized according to their specific application.
<b>Coating</b>	The spherical particles may be coated with a variety of materials to improve the performance of the anode material in lithium-ion batteries.

Source: MST.

Mahenge’s ore requires straightforward processing and does not need leaching or heat treatment. The ore can get to 97% TGC using a very simple crushing, grinding and flotation process and goes from 97% to 99% TGC using a mechanical bead polishing process.

We note that Mahenge's ore is unique, as it is capable of achieving a high purity level of 97% TGC with just flotation, which is not achievable with most other graphite deposits.

## Global Graphite Market: Strong Growth

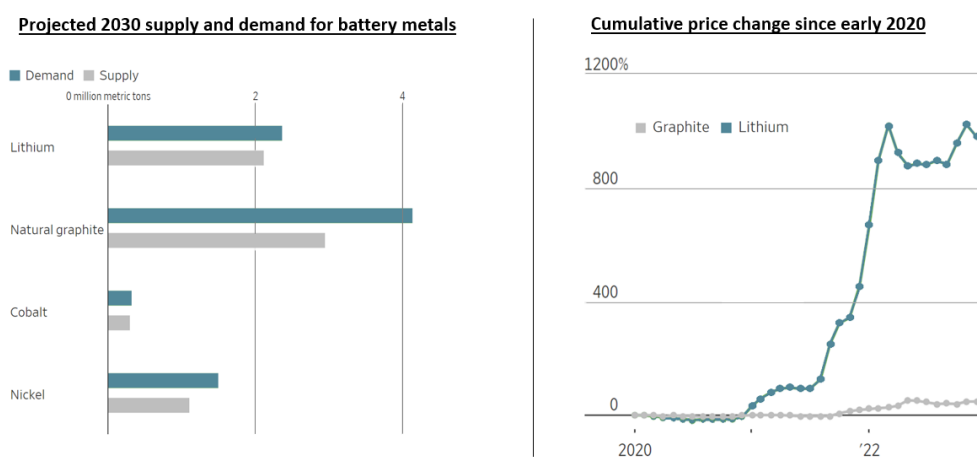
The global graphite market is growing, driven by increasing demand for graphite in various applications such as lithium-ion batteries (LIBs), fuel cells, and steelmaking.

In 2022, China accounted for ~80% of world production and consumption of natural graphite, with an estimated global production of 1.2mt and reserves of 320mt.

### Demand: Poised to Be Lithium 2.0

Lithium and graphite are considered strategic minerals, and both are essential for the production of LIBs. Prices for lithium have risen significantly (+800% since early 2020) due to supply shortages caused by car manufacturers not investing in developing new sources in a timely manner. Similar shortages are predicted in the graphite market in the near future.

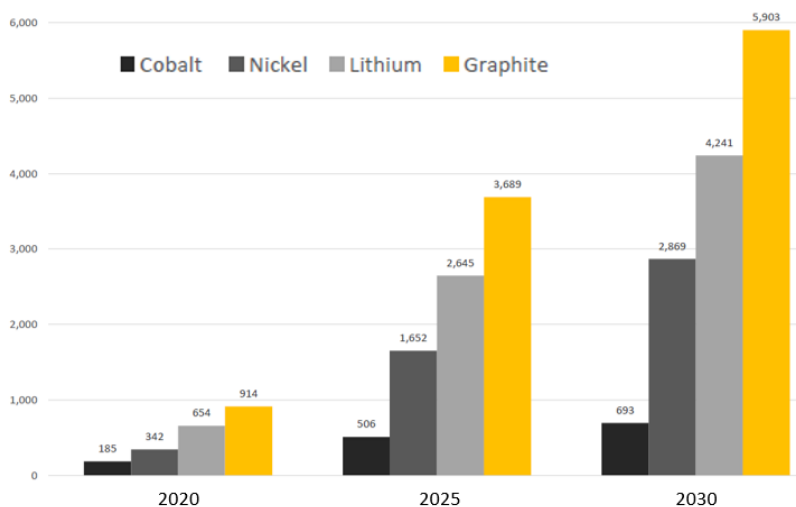
Exhibit 27 – Projected supply and demand for battery metals vs. prices of lithium and graphite



Source: Benchmark Mineral Intelligence.

Benchmark Mineral Intelligence forecasts that natural graphite demand will increase from 1.2mt in 2022 to 3.7mt in 2025 (+208%) and 5.9mt in 2030 (+224%), as shown in Exhibit 28. This represents a compound annual growth rate (CAGR) of 9% from 2022 to 2030.

Exhibit 28 – Raw material demand growth (Kt)



Source: Benchmark Mineral Intelligence (Jan 2022), BKT.

### Fastest growing application: lithium-ion batteries

As discussed earlier, graphite is essential to all types of LIBs, with a 75KWh battery pack containing **~70kg of graphite**, compared with **~10kg of lithium**.

The LIB industry is the primary driver of future graphite market growth over the short term. The market share of EVs is expected to increase as major economies transition away from fossil fuels. The EU, USA, and China are driving this transition through mandates and targets, including:

- US: requiring 50% of new vehicle sales to be electric by 2030
- China: mandating 40% of car sales to be EVs by 2030
- EU: targeting 30m EVs by 2030.

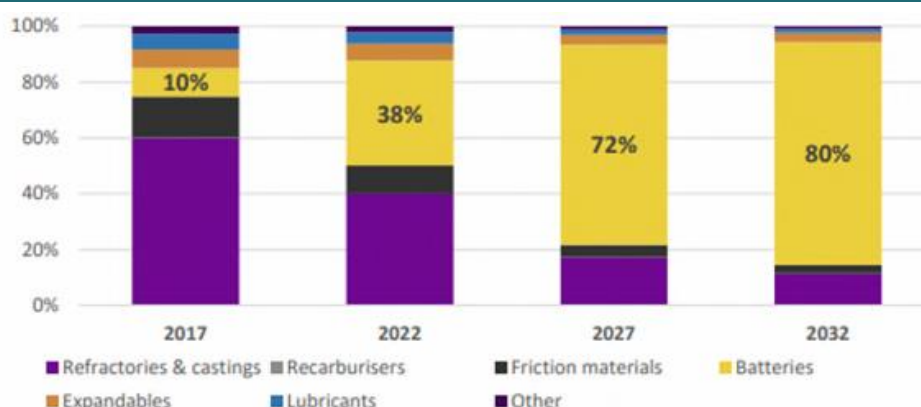
By 2032, LIBs will dominate graphite's end-use market due to the growth in EV demand. Exhibit 29 shows natural graphite demand by application, with batteries representing most of the expected growth.

According to the International Energy Agency (IEA), global EV sales reached 4.4m in 2020, despite the impact of the COVID-19 pandemic on the global economy. The IEA predicts that annual global EV sales will reach 30m by 2025 and 58m by 2030. This represents a compound annual growth rate (CAGR) of 17% from 2020 to 2030.

According to a report by IDTechEx, the global market for EVs is expected to reach \$2.5tn by 2040, with sales of electric cars, buses, and trucks forecast to reach 41m per year by 2040.

Regardless of which forecasts are used, it is unanimously agreed that EV sales will experience a substantial rise in the upcoming years. This surge in EV sales will result in significant increases in the demand for anode materials.

Exhibit 29 – Natural graphite demand by application

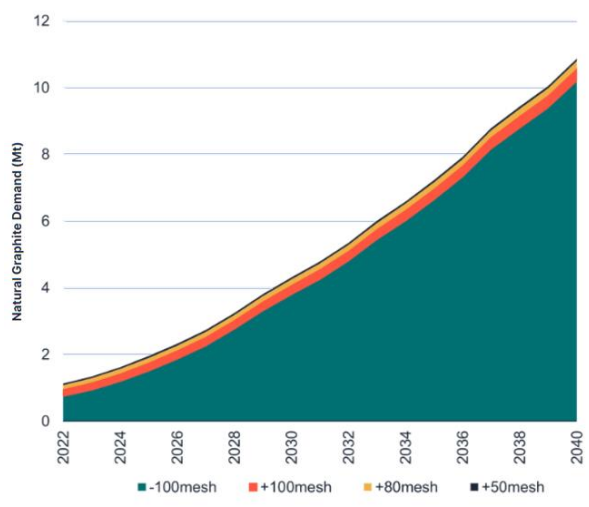


Source: BKT

According to Benchmark Mineral Intelligence, almost all the increase in demand for graphite will come from fine battery anode graphite (-100), as illustrated in Exhibit 30. Exhibit 31 shows the market growth by application type and flake sizes, suggesting Mahenge's product basket has high growth potential.



Exhibit 30 – Natural graphite demand by type



Source: Benchmark Mineral Intelligence Q2 2022, Flake Forecast.

Exhibit 31 – Demand profile for natural graphite

Graphite Use		Market Growth (stage)	Jumbo	Large	Medium	Fine	Powder
Size	micron mesh		>300	300-180	180-150	150-75	<75
Grade (%TGC)			+32	+50	+100	-100	-200/-325
Mahenge Product mix			94%+	94%+	94%+	94%+	80%+
			5%	54%	9%	32%	
Lithium Ion Batteries		High (early)	[Progress bar]				
Refractories & Foundries		Moderate (mature)	[Progress bar]				
Graphite shapes		High (Emerging)	[Progress bar]				
Recarburisers		Moderate (mature)	[Progress bar]				
Friction Products		Moderate (mature)	[Progress bar]				
Graphite shapes		Moderate (mature)	[Progress bar]				
Lubricants & coating		Moderate (mature)	[Progress bar]				
Carbon brushes		Moderate (mature)	[Progress bar]				

Source: MST, Table and market growth sourced from Syrah, revised by MST to show the Mahenge Project.

### Supply: Lack of Diverse Suppliers and a Likely Deficit

China dominates the graphite processing industry, with the majority of graphite processing taking place in the country due to low costs, lack of strict environmental regulations, and abundant graphite in the market. Currently, China accounts for 70-80% of the world’s graphite production and is the sole producer of synthetic graphite used in LIBs.

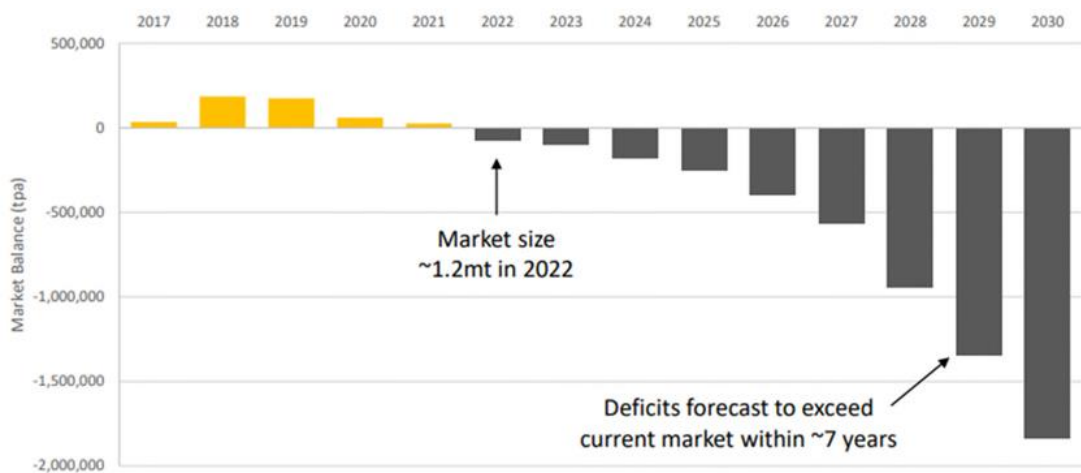
Given the essential nature of graphite as well as its concentration of supply from China, the US government has deemed graphite a mineral ‘critical to its national security and economy’ and is taking active steps to diversify its supply.

Currently, Benchmark Mineral Intelligence is predicting substantial graphite supply deficits over the coming years. According to their sources:

- the market already faces a deficit (CY2022), with the deficit growing each year
- in 2029 market deficits will exceed graphite supply by a factor of four
- there will be a shortfall of 8Mt by 2040.

To fill this gap, the mining industry must produce nearly 8x more graphite over the next 18 years or 97 natural graphite mines will need to be built by 2035, assuming an average size of 56,000 t/year.

Exhibit 32 – Structural deficits in natural graphite predicted from 2022



Source: Benchmark Mineral Intelligence, BKT.

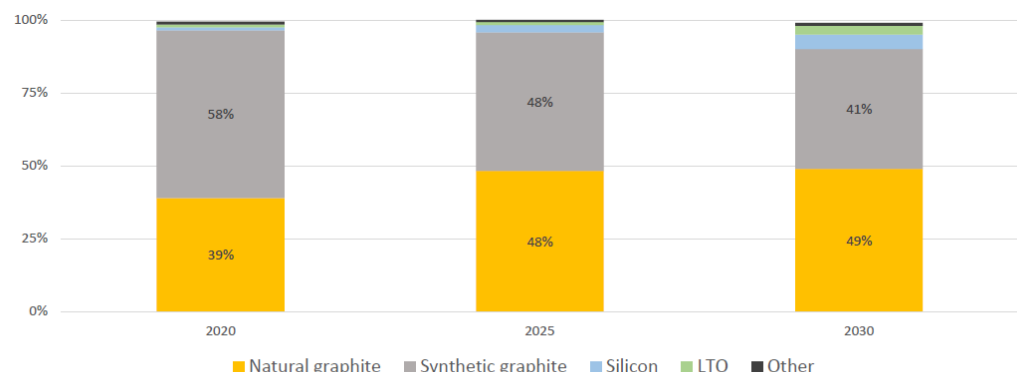
**Substitution? What substitution?**

Silicon, touted as a potential alternative, can store ten times as much charge as graphite anodes. However, silicon swells significantly more than graphite in charge/discharge cycling, causing cell instability, capacity degradation and reduced cycle life.

As such, silicon by volume as an anode material is expected to grow by only 3% in the coming years (Exhibit 33). Graphite is expected to remain the preferred and most widely used active anode material for mass-market batteries, particularly for EVs.

It is noteworthy that synthetic graphite cannot be intercalated with silicon. Therefore, the higher the amount of silicon desired for a battery, the greater the need for natural graphite. As depicted in Exhibit 33, the demand for natural graphite in LIBs is projected to rise from 182kt to 2,805kt, representing a 15-fold increase in the volume of natural graphite from 2020 to 2030.

Exhibit 33 – Graphite expected to remain the predominant LiB anode material



Demand for LIBs	kt	kt	kt
Synthetic graphite:	179	625	1,438
Natural graphite	182	1,079	2,805

Source: Benchmark Mineral Intelligence, BKT.

Solid-state batteries are said to be the holy grail of battery technology. However, at present, solid-state batteries are at a low level of technological readiness, with high production costs and scalability concerns. As one battery expert put it, commercial production might take another 20 years and potentially another 20 years after that.

## Pricing

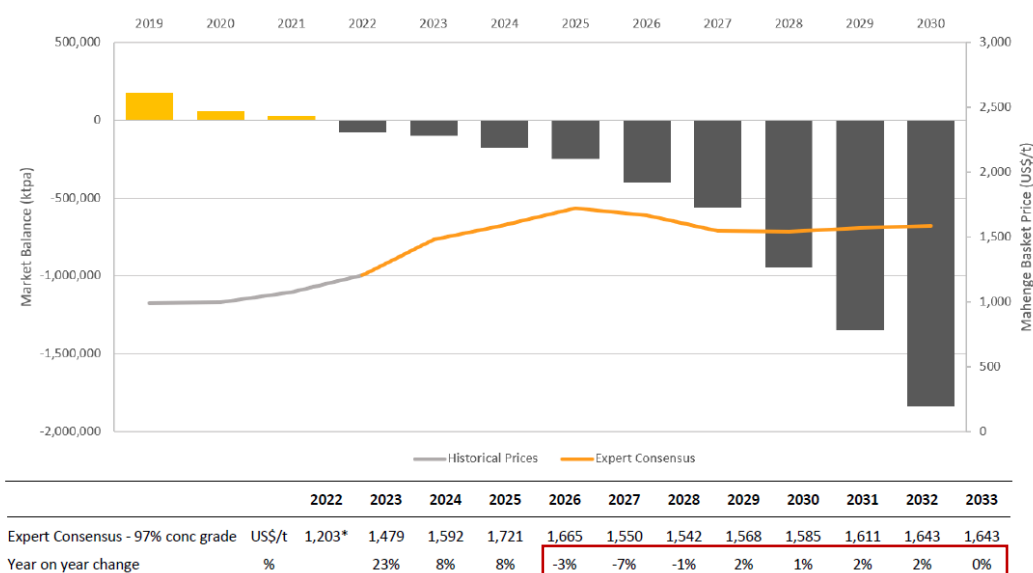
There are no standard quoted prices for natural graphite and no spot or futures market. Commodity prices are subject to negotiation between buyer and seller and depend on carbon content, flake size and distribution (for crystalline flake), and the amount and nature of impurities.

However, BKT has moved towards a more transparent method of graphite pricing. The binding offtake with POSCO is to be referenced from the Asian Metals Flake Graphite Index, whilst the binding offtake with their two existing Chinese customers is to be referenced from indices RefWin and ICC Sino.

From a broader perspective, Fastmarkets is expecting natural graphite demand to outstrip supply and effectively forecasting a basket price for Mahenge’s graphite products of US\$2,563/t over the first 10 years of production, compared to a current basket price of ~US\$1,200/t.

Exhibit 34 shows the forecast prices of expert consensus. When this price forecast is overlaid on the predicted structural deficits, the price forecasts for natural graph appear very conservative.

Exhibit 34 – Expert consensus graphite price forecast vs structural deficits

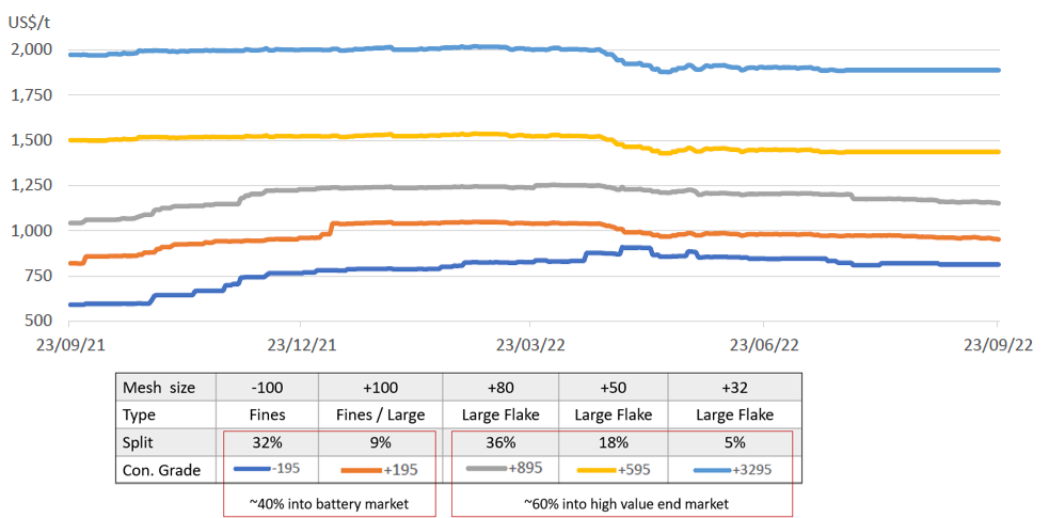


Source: BKT, based on expert consensus, comprises average graphite forecast prices provided by Benchmark Mineral Intelligence, Fastmarkets and Wood Mackenzie.

Exhibit 35 illustrates the historical pricing for Mahenge’s 5 different graphite products. The -195 and +195 products, which constitute around 40% of the basket, are intended for the battery market. The remaining 60% of the basket will be directed towards high-value end-use products.

It is important to note that if the market for fines rallies and prices experience a substantial increase, the Project has the capability to crush large flake and sell it in the fines market.

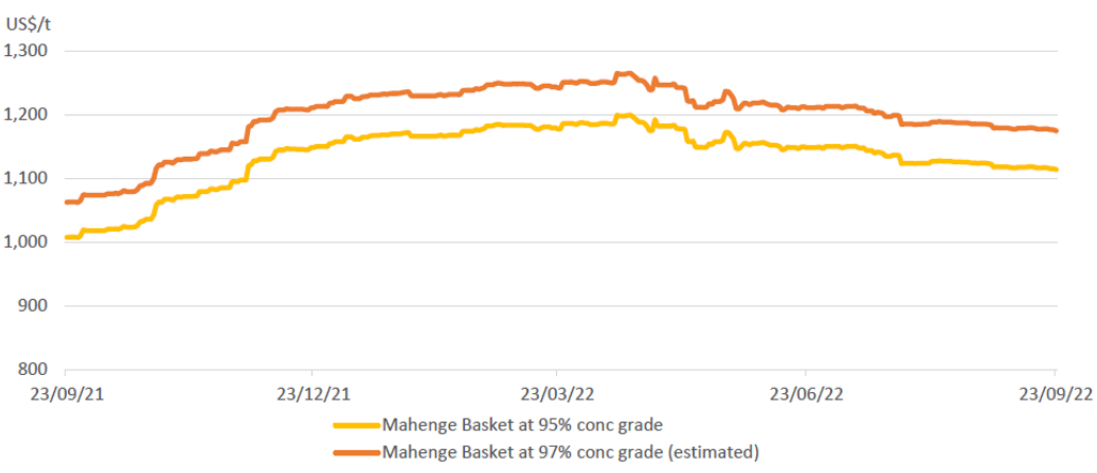
Exhibit 35 – Graphite prices over past 12 months for Mahenge's 5 products



Source: BKT.

The orange line in illustrates the current spot price of the basket, which is around US\$1,200/t in comparison to the all-in sustaining costs (AISC) of US\$518/t. This implies that the Project would be profitable today with a >50% EBITDA margin and does not rely on rising price assumptions.

Exhibit 36 – Graphite prices over past 12 months for Mahenge's basket



Source: BKT

## Valuation: A Unique Low-Risk Operation with Robust Economic Fundamentals

**We value BKT at A\$0.52, fully diluted, implying an upside of 224% to the current share price.** Our valuation is based on our financial analysis of BKT's flagship Mahenge Project.

We believe that graphite is a crucial mineral that is currently undervalued in the market. Its various industrial applications, along with the growing demand for it in lithium-ion batteries and fuel cells, suggest strong potential for market fundamentals. The exceptional geology and approved ore qualification of the Mahenge project, combined with the alignment of POSCO, the largest ex-Chinese anode manufacturer, with BKT, further emphasises the potential of the Mahenge project.

### Valuation Summary

In Exhibit 37, we have presented a summary of our valuation. The analysis is based on a discount rate of 12% and a probability risk weighting of 65%.

We value the net assets at A\$873m compared to the current market value of A\$152m. We have placed a 65% risk probability on the Project, which we view as conservative. The valuation assumes A\$141m (US\$100m) in equity is raised at A\$0.20/share, increasing the share count by 72%.

#### Exhibit 37 – Base-case valuation summary

Black Rock Valuation				
	Discount rate	Risk weighting	AUD\$m	AUD\$/sh
Mahenge	12.0%	65.0%	795	0.47
<b>Total operating assets</b>			<b>795</b>	<b>0.47</b>
Corporate/SG&A	12.0%		(42)	(0.03)
Net cash/(debt)			120	0.08
Provisions			(0)	(0.00)
<b>Net Asset Value</b>			<b>873</b>	<b>0.52</b>
Current Share price				0.16
Upside				<b>227%</b>

Source: MST estimates.

#### Base-case valuation – risked NPV of A\$0.52/share, fully diluted

Our base case, risked NPV-based valuation for BKT is A\$0.52/share on a fully diluted basis.

Current share price fails to reflect value of the high-quality Mahenge deposit, which is shovel ready and has secured offtake agreements. The valuation excludes the added potential for growth in the graphite market, should prices trend similarly to those of lithium. We believe graphite is under-appreciated with strong structural tailwinds, and we see the potential for tight medium-term fundamentals in the graphite market.



## Key Assumptions

Our base-case NPV valuation is built upon a mine plan which aligns with that compiled by the technical experts under the recently published eDFS. The critical assumptions are shown in Exhibit 38.

We have used a 12% discount rate (nominal) due to being in Africa and assumed A\$200m in initial development capital. Our graphite basket price (avg. initial 10 years) of US\$1,458/t is conservative relative to expert forecast<sup>7</sup>, providing upside if prices increase above forecast. In addition, we assume a project timeline that commences construction in CY2023 and achieves first production in CY2025 after a construction period of approximately 24 months. We regard this timeline as reasonable given the location of the project and our knowledge of other mining projects in development.

We assume BKT will need ~US\$200m to build the Mahenge Project, funded by 50% debt and 50% equity (at a 20c issue price). Importantly, our valuation does not incorporate the benefit of any additional potential project expansions.

### Exhibit 38 – DFS assumptions underpinning our base-case valuation

Assumptions	MST
<b>PROJECT ASSUMPTIONS</b>	
Project Ownership (%)	84%
Strip Ratio (waste : ore)	0.8
Ore Reserve Grade (% TGC)	8.2%
Concentrate Grade (% TGC )	97.3%
Average Recovery (%)	92.8%
Average Material Mined (ktpa)	7,261
Average Ore Mined (ktpa)	4,034
Mine Life (years)	26
Development Capex (A\$m)	200
Debt to equity	50:50
Ore Reserve (kt)	70,500
<b>COST &amp; FINANCING ASSUMPTIONS</b>	
Discount Rate (%)	12%
Inflation Rate (%)	3%
Debt interest rate	12%
Share price for Equity raising (A\$/share)	0.20
<b>PRICING &amp; EXCHANGE RATE ASSUMPTIONS</b>	
AUDUSD	0.71
Graphite Price (Real) (US\$/t)	1,238
Basket Price Price (US\$/t) - Average first 10 years	1,458
Royalty Rate (%)	3%
Corporate Tax Rate (%)	30%

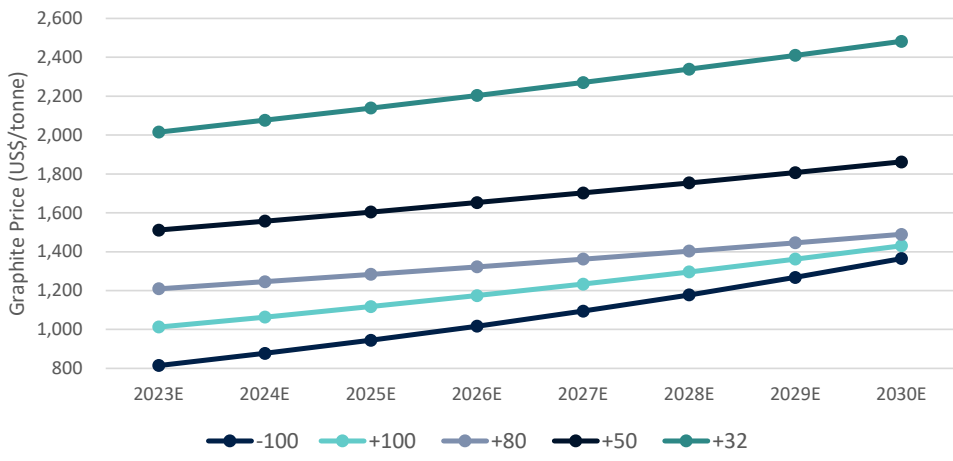
Source: MST.

### Our pricing forecast

Our graphite basket pricing assumptions for the Mahenge Project are displayed in Exhibit 39. Our forecast predicts that the -100 mesh fines price increases at an annual rate of 7.5%, the +100 price will grow at 5% per annum, and the rest of the basket will grow at a rate of 3% per year. These prices are conservative and any exceedance in these provides BKT significant upside.

<sup>7</sup> Fastmarkets is effectively forecasting a basket price for Mahenge's graphite products of US\$2,563/t over the first 10 years

Exhibit 39 – Our graphite price forecast

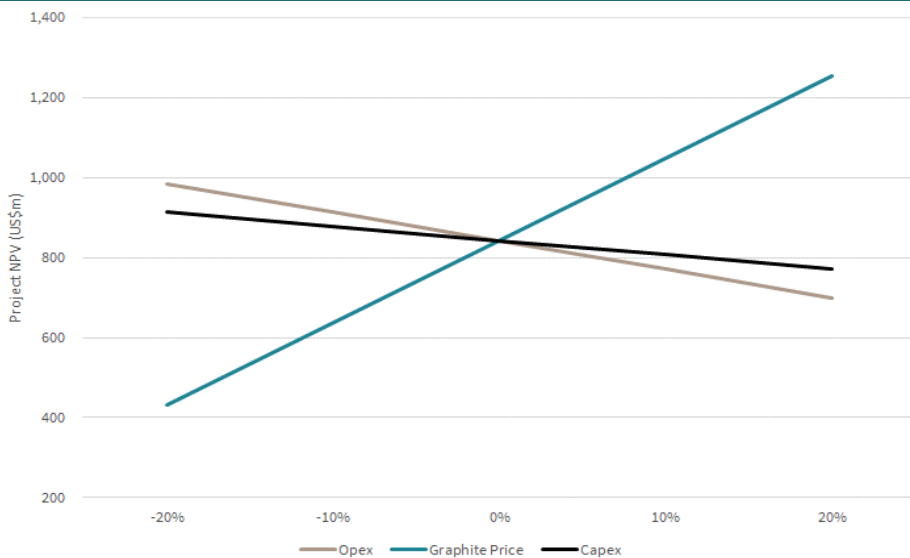


Source: MST Access.

### Key sensitivities

As shown in Exhibit 40 our valuation is most sensitive to assumptions on the graphite price and to a lesser extent the AUD/USD exchange rate and capital costs.

Exhibit 40 – Sensitivity analysis to key financial modelling assumptions



Source: MST Access.

## Positive Catalysts for Share Price and Valuation

### Funding of project

The funding of capital expenditure relating to major resource developments for small companies is always a significant challenge. Therefore, delivering a competitive funding package for the project would be a major de-risking catalyst for the stock.

### Binding offtake agreement

BKT has established a non-binding MOU with POSCO, the world's largest ex-Chinese battery anode manufacturers. The importance of having reliable, stable graphite supplies to meet their customer's future product requirements. Therefore, we view the MOU as an indication of a future offtake agreement with BKT.

### Other potential share price catalysts

- **Graphite price increase:** The valuation and share price sentiment is highly sensitive to graphite prices. Increases in the price of graphite would positively affect the valuation.
- **USD depreciation:** The valuation is highly sensitive to the USD/AUD. USD depreciation would have a positive effect on the valuation.

## Risks to Share Price and Valuation

We have outlined the key risks to the share price and valuation below, noting that early-stage mining projects have various critical risks.

### Company-and project-specific risks

- **Access to funding:** the availability of funding for the Project is not guaranteed. A lack of sufficient funding could have a negative impact on the stock.
- **Delays to development:** any delays in moving into construction, post-funding, would be a negative for the stock and would gradually see the information from the eDFS become less current and, therefore, less reliable.
- **Inability to sell large flakes into high-value markets:** ~60% of BKT's basket consists of large flake graphite, which can be sold in the high-end market. If there is a lack of demand for this product, BKT will have to crush and grind the graphite into a finer form to sell into the fines market, resulting in reduced revenue and increased operational costs.
- **Key person dependence:** individuals, including the CEO, may have relationships and experience critical to advancing the Mahenge Project. The loss of such personnel may significantly compromise BKT's ability to advance the Project.
- **Cost inflation:** inflation is becoming a global theme and is particularly concerning in the mining industry. If operational or capital costs increase without a corresponding increase in the commodity price, the Project's margins will be reduced which could impact the economics and viability.

### Macro risks

- Graphite price – this is the key valuation sensitivity
- Foreign exchange rates
- Increasing interest rates and the potential impact on the cost of debt finance
- Technology – lithium-ion battery becoming redundant due to substitution

### Country-specific risks

The Mahenge Project, operating in Tanzania, may face several country-specific risks. For example changes in government policies or regulations could significantly affect the project's success.

- **Political instability:** any government policies or leadership changes could impact the Mahenge project, as it may cause adverse changes in laws, taxes, or other regulations that could increase costs or decrease revenues.
- **Regulatory environment:** with any adverse changes in regulations or laws potentially impacting the project's success.

## Financials: Robust Margins and Staged Development Should Deliver Strong Project Returns

The Mahenge Project is characterised by a relatively low development capex (~US\$200m), a long mine life (~26 years), and high EBITDA margins (~50%).

The high-value product offered by the geology of the deposit significantly contributes to its revenue potential, while its location near existing infrastructure, simple processing and low strip ratio and labour costs help to keep the cost structure low. These factors create a solid foundation for the Project's financial success.

BKT recently announced (10 Oct 2022) the outcome of the Mahenge FEED work stream and eDFS update. The key achievements of this study included:

- finalisation of project execution strategy and key technical decisions
- optimised plant design
- technical documents for detailed plant design
- commercial graphite product types confirmed to customer specifications
- a refined budget, scope, and schedule for the Project
- documented project procedures and systems and preparation
- progress of tenders for key long lead procurement items.

All forecasted prices within BKT's study were estimated with an accuracy of  $\pm 10\%$ .

BKT's financial analysis shows an NPV of US\$1,376m (10% NDR) and IRR of 36% (post-tax, ungeared, and after 16% free carry), as shown in Exhibit 41. In comparison, our financial analysis forecasts an NPV of US\$842m (12% NDR) and IRR of 30%.

We believe that our estimations, particularly regarding graphite prices, are conservative, which provides BKT significant upside if graphite prices follow a similar trajectory to lithium.

Exhibit 41 – Financial performance summary

Financial Performance Summary	Unit	BKT	MSTe	Comments
Project Life	Years	27.5	28	An extra 6 months to construct the project
Operating Life	Years	26	26	No Change
Graphite Price (Avg. Real)	US\$/t	1,731	1,238	We estimate a 28% lower than BKT
Initial Development Capital Costs	US\$m	182	200	We estimate a ~10% increase
Total Project Development CAPEX (4 modules)	US\$m	510	560	We estimate a ~10% increase
C1 Cost over first 10 years (Real)	US\$/t	466	476	We estimate a 2% higher
AISC over first 10 years (Real)	US\$/t	518	550	We estimate a 6% higher
NPV (Post-tax, ungeared, and after 16% free carry)	US\$m, real	1,376	842	We estimate a 39% lower than BKT
IRR (Post-tax, ungeared, and after 16% free carry)	%	36%	30%	We estimate a 15% lower than BKT

Source: BKT, MST.

### Capex: Managing Costs in an Inflationary Environment

As per the FEED work, the capex estimates for the development of the Project, including a contingency allowance of 13.8% (US\$22m/US\$160m), is US\$182m. A breakdown of BKT's capex estimation by segment is shown in Exhibit 42.

## Exhibit 42 – Updated initial capex for Mahenge Graphite Project

Activity	eDFS, July 2019 US\$M	eDFS Update, Sept US\$M	Change %
Mining	10	11	3%
Ifakara	1	1	-7%
Process Plant	51	70	38%
Infrastructure	14	29	106%
Site Support	2	1	-29%
Indirect costs	10	6	-39%
Owners Costs	13	25	92%
Village / Resettlement	3	17	466%
Contingency	11	22	97%
<b>Total</b>	<b>116</b>	<b>182</b>	<b>58%</b>

Source: BKT.

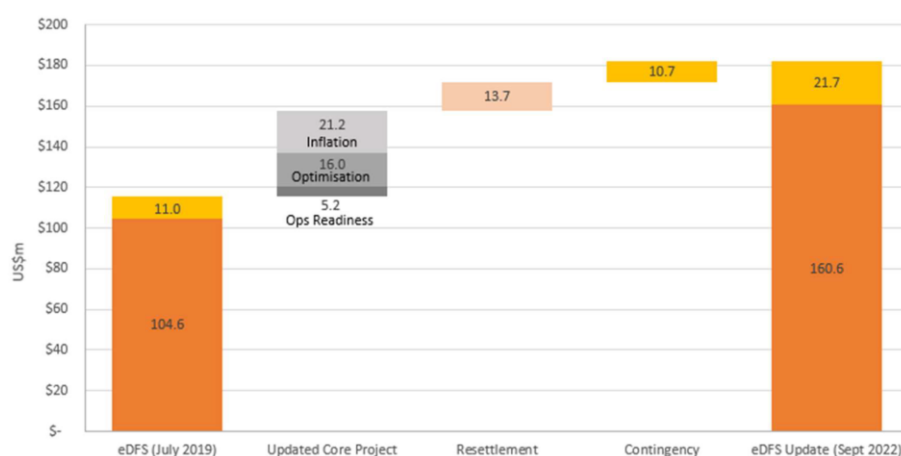
The rise in capex since the eDFS in July 2019, shown in Exhibit 43, is due to:

- inflation in building materials, labour, energy and other consumables (32%)
- optimisation and debottlenecking improvements to improve flowsheet and provide operational flexibility for high-purity graphite concentrates (24%)
- increase in relocation and resettlement costs for adhering to global ESG standards and community engagement (21%)
- additional contingency (16%).

Given the current economic climate and considering recent capex announcements for other mining projects, we believe that a 58% capex increase is moderate, especially considering that 24% is from optimisation (i.e., 21% due to inflation over a 3-year period).

In our view, this further de-risks the Project and provides a strong indication that the Project has efficient design. In addition, we believe that the moderate increase in capex offers a solid foundation for ongoing financial discussions, allowing them to progress at a faster pace.

## Exhibit 43 – Updated initial capex for Mahenge Graphite Project



Source: BKT.

We have been conservative and estimated a capex of US\$200m, as shown in Exhibit 44, implying a 10% increase in BKT's forecast.



## Exhibit 44 – Our capex forecast

Activity	eDFS Update, Sept	MSTe	Change - eDFS
	US\$M	US\$M	Sep vs MSTe %
Mining	11	12	10%
Ifakara	1	1	10%
Process Plant	70	77	10%
Infrastructure	29	32	10%
Site Support	1	1	10%
Indirect costs	6	7	10%
Owners Costs	25	27	10%
Village / Resettlement	17	19	10%
Contingency	22	24	10%
<b>Total</b>	<b>182</b>	<b>200</b>	<b>10%</b>

Source: BKT, MST.

## Opex

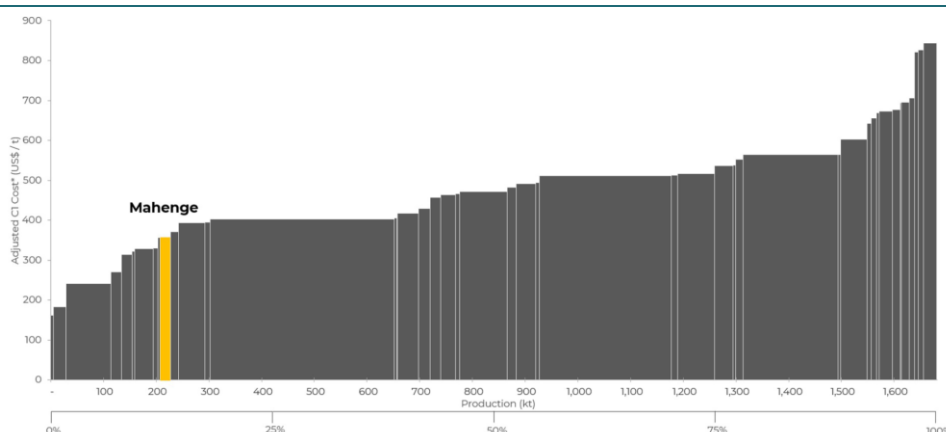
BKT has estimated an operating cost summary for the Mahenge Project's first 10 years (Exhibit 45), with a C1 cost of US\$466/t. We have increased C1 cost slightly and assumed US\$476/t.

## Exhibit 45 – Operating cost estimate, BKT estimate vs MST assumption

Area	US\$/t	US\$/t
	graphite product - eDFS	graphite product - MSTe
Mining	191	201
Processing	143	144
Administration	14	14
Logistics, Transport & Freight	118	116
<b>Total</b>	<b>466</b>	<b>476</b>

Source: BKT, MST.

Based on data from Benchmark Mineral Intelligence, we note that a peer analysis confirms Mahenge's first-quartile position on the global cost curve.

 Exhibit 46 – 2024 adjusted C1 cost curve<sup>8</sup>


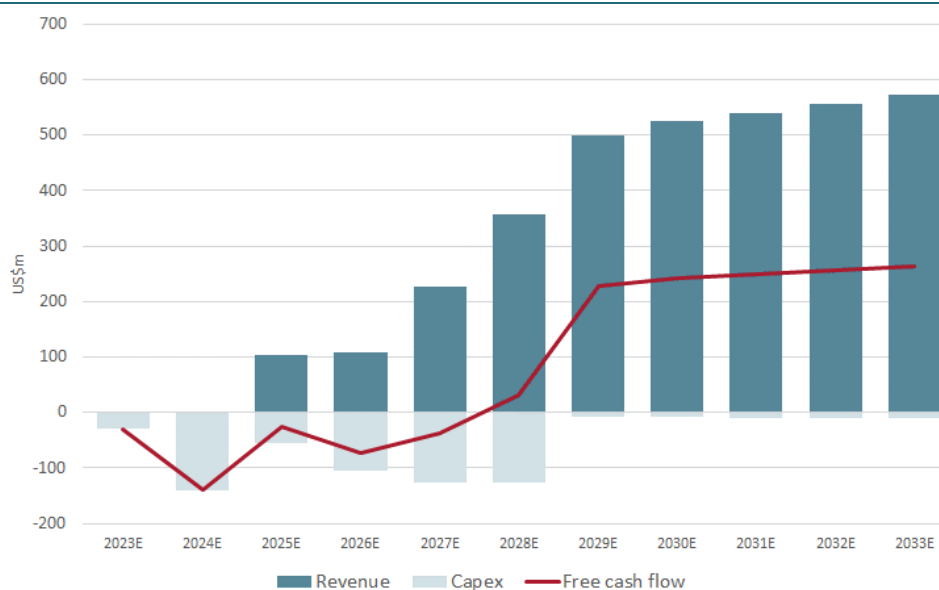
Source: Benchmark Mineral Intelligence Flake Graphite Report Q2 CY22, BKT.

<sup>8</sup> C1 Costs adjusted for flake size distribution: Based on forecast pricing for 94-95% in 2024, Mahenge's average price is forecast to be US\$107/t above the peer average due to a higher proportion of large flake. Mahenge's Adjusted C1 Costs of US\$359/t are based on C1 Costs of US\$466/t less the US\$107/t for above average revenue compared to the peer group. Ignores the benefit of Mahenge's higher purity concentrates of up to 98% which could potentially improve BKT's relative position by up to ~US\$40-60/t per 1% above 95% pricing.

## Revenue, Capex and Free Cash Flow Forecast

Our forecasted revenue, capex and free cash flow are shown in Exhibit 47.

Exhibit 47 – MST’s forecast revenue vs capex vs free cash flow



Source: MST.

## Cash Position: Maintaining Good Capital Management

The company had cash reserves of A\$11.0m as at 31 December 2022.

BKT's cash balance dropped by A\$9m to A\$11m in the quarter, with A\$6.5m being a one-time compensation payment to local landowners (the Resettlement Action Plan), which is now almost completed (only A\$66k outstanding).

Excluding the one-time payment, the cash burn for Q4 would have been approximately A\$2.5m.

With A\$11m at bank and a monthly cash burn of less than A\$1m, BKT is well-funded to move forward with its financial stage.

## Financing Strategy: US\$200m Needed to Build Mahenge

BKT will need ~US\$200m to build the Mahenge Project, ideally 50% debt and 50% equity.

BKT is actively exploring a variety of options to secure financing with the goal of achieving the best outcome for shareholders. The options being considered include traditional debt and equity financing, as well as alternative options such as selling offtake rights and divesting a stake at the project level.

We note that BKT is making progress in discussions with various lenders, having received indicative terms, and several lenders are scheduled to conduct confirmatory site visits to the Mahenge project in February 2023. BKT is aiming to have credit-approved term sheets by the end of Q1 2023 and then proceed to appoint lead arrangers.

We believe that the recent approval of the Special Mining License in September 2022 and updated capital expenditure estimates, with no significant increase, put BKT in a solid position to advance financing discussions. We note that several groups have already signed confidentiality agreements and are undertaking due diligence.

We have assumed A\$141m debt at 12% and A\$141m equity raised at A\$0.20 (~704m new shares).

## Board and Management:

### Board of Directors

**Richard Crookes – Chairman:** Mr Richard Crookes is a geologist with more than 34 years' experience in global resources development, operations, financing and investment. He is the Managing Partner of Lionhead Resources and was previously Chief Geologist and Mining Manager of Ernest Henry Mining (now Glencore), Executive Director of Macquarie Bank's Metals Energy Capital (MEC) Division where he led resources financing and principal investments, and a founding Investment Committee member and Investment Director of EMR Capital where he focused on deal origination.

Mr Crookes is currently an Executive Director of ASX-listed Lithium Power International Ltd (ASX:LPI) formerly a Non-Executive Director of Barton Gold Holdings (ASX:BGH) and Non-Executive Chairman of ASX-listed Highfield Resources Ltd (ASX:HFR).

Mr Crookes is a fellow of FINSIA and holds a BSc Geology from the University of Plymouth, a Diploma of Applied Finance, and is a member of the Australasian Institute of Mining and Metallurgy (AusIMM) and the Australian Institute of Company Directors (AICD).

**John de Vries – Managing Director and Chief Executive Officer:** Mr. de Vries has over 30 years' experience in the mining industry. He started his career in 1984 working for WMC Resources and held operational roles such as Underground Manager, Senior Mining Engineer and Manager Mining. In 1998, he moved to AMC Consultants to become a Principal Mining Engineer responsible for Mine Optimisation. In 2003, he joined Orica Mining Services as Global Business Manager, Advanced Mining Solutions before moving to BHP Billiton in 2007 as Manager Strategic Mine Planning.

Most recently, from 2011 to 2015, he was General Manager Technical Services for St Barbara. After his success with St Barbara, Mr. de Vries took an 18-month sabbatical before joining Black Rock Mining.

Mr. de Vries holds a Bachelor of Engineering, Mining, a Master of Science in Mineral Economics, a Graduate Diploma in Economic Geology, a Graduate Diploma in Financial Markets and is Advisory Committee Member-Mining of MRIWA. Mr. de Vries holds a WA First Class Mine Managers Certificate of Competency. He is a member of the AusIMM, a fellow of FINSIA and a member of SME.

**Ian Murray – Non-Executive Director:** Mr Murray joins Black Rock with over 20 years' corporate experience in the publicly listed resources sector. Between 1997 and 2005, he held positions including chief financial officer and chief executive officer with DRDGold Ltd. Mr Murray oversaw DRDGold's major acquisitions, restructures and stock exchange listings. During this time, Mr Murray also served on the board of South African gold refinery Rand Refinery Limited and the internet-based commodity investment platform GoldMoney.com. He has also held senior management positions for companies such as KPMG, Price Waterhouse, and Bioclones.

More recently, as Chief Executive Officer, he successfully delivered Gold Road Resources Gruyere Project.

Mr Murray graduated with a Bachelor of Commerce (B Com) in 1987 from the University of Cape Town and is a member of both the South African Institute of Chartered Accountants and the Institute of Chartered Accountants of Australia and New Zealand and is a member of the Australian Institute of Company Directors.

### Management

**Steuart McIntyre - GM Corporate Development:** Mr McIntyre is a well-versed mining analyst with an extensive 16-year background in the field. His previous positions include working as a mining analyst for both Royal Bank of Canada and Blue Ocean Equities, as well as serving as an associate at Cutfield Freeman, a London-based corporate finance firm that specialises in the mining industry. He holds degrees in Civil Engineering and Commerce from the University of Sydney, as well as a diploma in corporate finance from the London Business School.

**Daniel Pantany, GM Engineering & Technical:** Mr. Pantany is a seasoned Civil Engineer with almost 25 years of experience in developing mining projects in Africa and Australia. He has held a diverse range of roles in project delivery, such as EPCM, EP, and lump sum EPC contracts. Most recently, he worked with CPC Engineering, and was seconded as a Project Engineering Manager for Syrah's Balama project. He has also been the Study Manager for Mahenge at BKT since 2018.

Daniel is an important asset to the Mahenge project. He has been involved with the Syrah's Balmar graphite project from the initial front-end engineering design phase to commissioning. He has a wealth of knowledge and valuable insights gained from his experience that are being incorporated into the design of this Project.

**Paul Sims, CFO:** Mr Sims is a highly qualified finance executive in the resources industry, with over 25 years of experience in various commercial and financial roles at companies such as BHP, Western Mining Corp, Minara Resources, and Karara Mining. He has extensive expertise in debt financing, project management, and cost control. He holds a Bachelor of Business degree from Curtin University and is a Fellow of CPA Australia.

**Greg Wheeler, CCO:** Mr. Wheeler is a skilled finance and commercial manager with a career that began at PwC. He spent 10 years with ship manufacturer Austal, where he managed the global business's finance, Accounting, IT, and HR functions. Later, he joined the global trading and shipping company Wellard during a period of significant growth, including a public listing, and was responsible for financial systems and processes.

**Rae Wyatt, GM People, Culture & Sustainability:** Mr Wyatt is a seasoned HR professional with 15 years of experience in the resources industry, specifically in project development and engaging with communities. She has recently held senior positions at Clean TeQ (Sunrise Metals), Gold Road, and MacMahons. She holds a degree in commerce from Curtin University in HR and Industrial Relations and is a graduate of AICD.

## ESG: Building a Strong ESG Culture

BKT has a strong commitment to ESG and understand the risk mitigation created by implementing policies and practices that align with best practices. This is demonstrated in BKT's commitment to the Equator Principles<sup>9</sup> (EP4) and IFC Performance Standards<sup>10</sup>.

These principles are a set of guidelines that provide a framework for assessing and managing environmental and social risks associated with projects in developing countries. To ensure compliance, BKT is in the process of undertaking significant baseline studies, stakeholder engagement and investment to assess the environmental and social impacts of the Project and its related infrastructure.

Compliance with these standards differentiates BKT from its comparable peers and will play an essential role in fostering goodwill whilst also likely contributing to the success and longevity of the Project.

### Environment

BKT has committed to maintaining the highest possible standards of environmental consideration within their Tanzanian Project. The Company is currently undertaking a significant study to assess the environmental impacts of both the Project and its associated infrastructure.

Currently, 80% of the project site has already been cleared for farmland. However, only 15% of the landscape is being actively farmed.

An Environmental impact study was also completed between December 2016 and January 2017. The assessment did not indicate any contraindications for the Project.

### Waste and Tailings Management

Tailings will be disposed of via dry stack mill residue facilities (DSMRSFs). Currently, there are two areas proposed for the DSMRSFs, a northern stack (to be commissioned first), providing a total life of 15.8 years, and a western stack (to be commissioned later in the project life), which will store the final 13.2 years of mill residue production.

Overall, the use of dry stacking will allow the Company to reduce the environmental and safety risks of the Project, as this approach offers a superior solution for tailings management on their site. Specifically, the dry stacking approach lowers the project risk, as opposed to other methods, due to the region's positive net rainfall and the mine is located within the headwater region of Tanzania's largest river's catchment basin.

Initial waste rock generated from the mining operation is to be used for the construction of key mine-specific infrastructure. Beyond that, the remaining waste will be deposited in a central waste dump, east of the Ulanzi deposit and west of the Cascade deposit.

### Water

The water making up the raw water dam will be sourced from nearby waterways for much of the year, and in times of low rainfall, the water for the dam will be pumped in via an overland pipeline.

Surface water will be removed from the DSMRSFs by internal finger drains. This system will deliver water to an external pond downstream of each DSMRSF. Water collected will be monitored and pumped to either the

<sup>9</sup> The **Equator Principles** are a set of guidelines for financial institutions that provide financing for large-scale projects. The principles aim to ensure that such projects are developed in a manner that is socially responsible and environmentally sustainable.

<sup>10</sup> The **IFC Performance Standards** are guidelines developed by the International Finance Corporation (IFC) to promote sustainable development and responsible business practices in the private sector. They provide a framework for managing environmental and social risks and impacts associated with development projects and are intended to be used by companies and financial institutions seeking IFC financing or advisory services.



process plant or to the Raw Water Dam for reuse in processing. The DSMRSFs have also been specifically designed to withstand the Tanzanian wet season, and BKT has also planned extensive additional contingency measures (if needed) due to the inherent stability risks posed to dry stack mills during periods of high rainfall.

## Social

The social aspects of Black Rock's business will be critical in determining the success and longevity of its operation in Tanzania (as the Barrick Gold litigation clearly demonstrates).

Within the current project area, there is a population of approx. 1,500 people.

## Local Community

The construction of the operation will require Black Rock to compensate current landowners and resettle the affected local community through the construction of a new village. Overall, it is estimated that total compensation and resettlement plan will cost approx. AUD\$11.5m. The village will be constructed approx. 2km north of the mine and will consist of the following: 297 houses; public primary school and kindergarten; 2 churches; dispensary; marketplace; access roads; and provision of utilities to the resettlement area.

BKT has also committed to onboarding as much local talent as possible and, where not currently possible, to look internationally. However, BKT plans to further develop local talent within areas where the current labour force lacks the required skills with time. To do this, Black Rock is looking to implement trainee, intern and apprenticeship programs in the medium to long term to deliver on this commitment.

## Governance

BKT have adopted The Corporate Governance Principles and Recommendations as published by ASX Corporate Governance Council.

- The company applies the ASX Corporate Governance Council Principles and Recommendations.
- The Board's qualifications are appropriate for the business
- The Board has three members
- The Board has adopted a remuneration structure, risk assessment and policies that are predominantly in line with market practices. The board has separate risk, nomination, remuneration and audit committees.

## Board of Directors

The Board is responsible for the corporate governance of Black Rock. The Board develops strategies for Black Rock, reviews strategic objectives and monitors performance against those activities. The specific goals and responsibilities of the Board are outlined in BKT's Corporate Governance Statement.

The Board consists of three directors. The Board intends to maintain a Board Skills Matrix to ensure that the Board has the skills to discharge its obligations effectively.

The three members of BKT's Board of Directors have many years of experience in the minerals industry and a strong complementary range of technical, financial, managerial and directorship skills.

The Board consists of members, of which two are independent, and one is the CEO; therefore, satisfying the 50% Board independent rate, as per the ASX guidelines.

## Appendix 1: Details of Mining Legislation in Tanzania

In September 2022, the Government of Tanzania issued the Mining (State Participation) Regulations Government Notice Number 574 of 2022 (the SPR 2022), directly impacting every mining company or person holding a Mining Licence (ML) or Special Mining Licence (SML) in Tanzania.

Key highlights of the SPR 2022:

- The regulations require ML or SML holders to, within 90 days from the date of publication of the SPR 2022 (23 September 2022), give notice to the Mining Commission to initiate negotiations to enable the Government to acquire a shareholding in the project venture.
- The joint venture (JV) arrangement with the Government must be governed by a Framework Agreement substantially in the form set out in the First Schedule of the SPR 2022.
- The Government equity interest must comprise of:
  - the mandated **16% and above non-dilutable free carried interest (FCI) shares;**
  - shares acquired by the Government through contributing its reversionary mineral rights;
  - shares acquired through quantification of tax expenditures enjoyed by the mining entity; and
  - shares mutually negotiated and agreed upon between the Government and the mining company.
- The FCI shares are now expressly regarded as preferred shares which entitle the Government to dividend.
- The mining company has an obligation (under certain prescribed circumstances) to issue loan notes to the Government, representing a percentage of FCI shares.
- In negotiating the percentage of FCI shares to be issued to the Government over and above 16% consideration must be given to the extent of Government development of the public infrastructure servicing the mining venture.

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