



**SARYTOGAN**  
GRAPHITE

**THE**

**ULTRA HIGH PURITY**

**KAZAKH GIANT**

28 August 2023

INVESTOR PRESENTATION



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Giant and exceptionally high-grade Indicated and Inferred Mineral Resource of 229 Mt @ 28.9% TGC<sup>1</sup> with low mining costs.



Ultra-high-purity of 99.99% TGC<sup>2</sup> achieved by flotation, alkaline roasting and thermal purification, far exceeds battery grade.



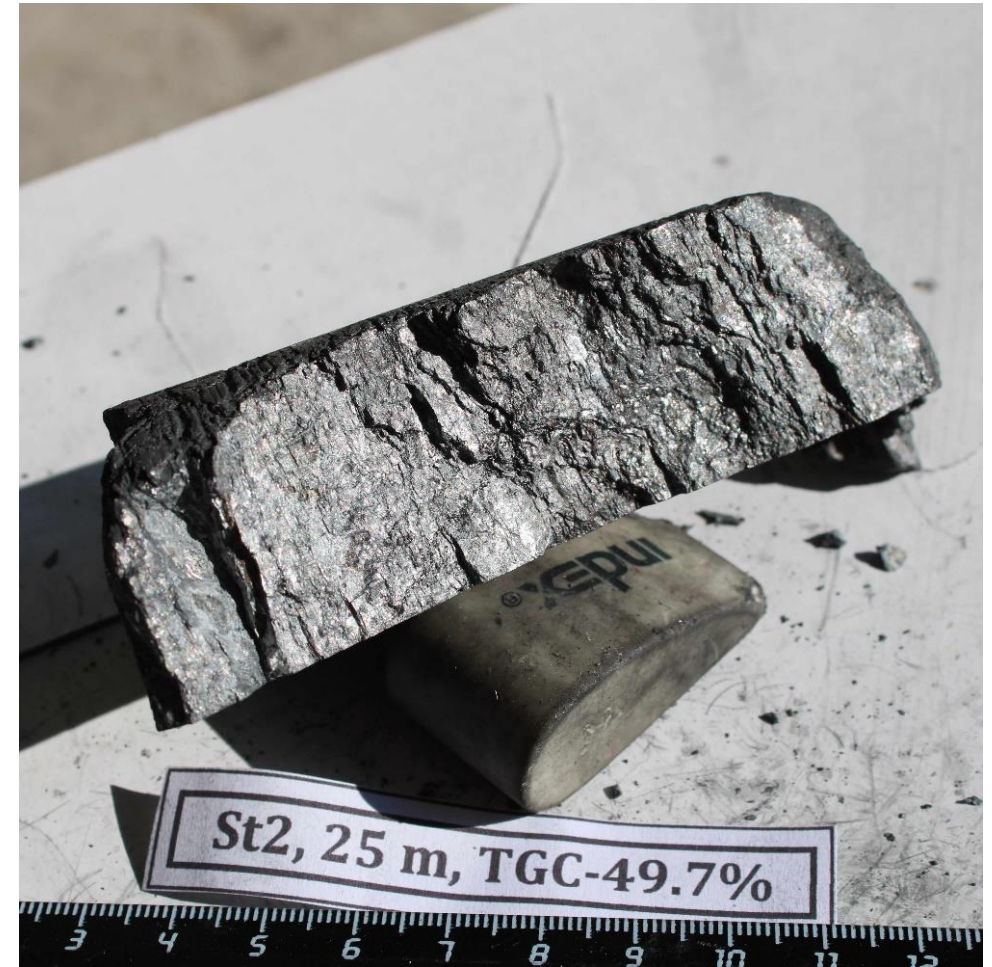
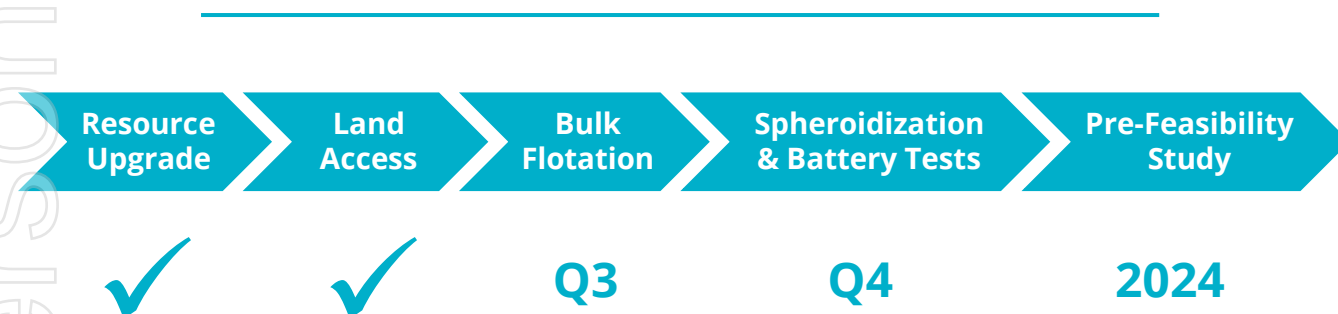
Kazakhstan is an established mining jurisdiction ideally located between the largest battery manufacturers in Europe and China.



Established in-country team progressing exploration and approvals.

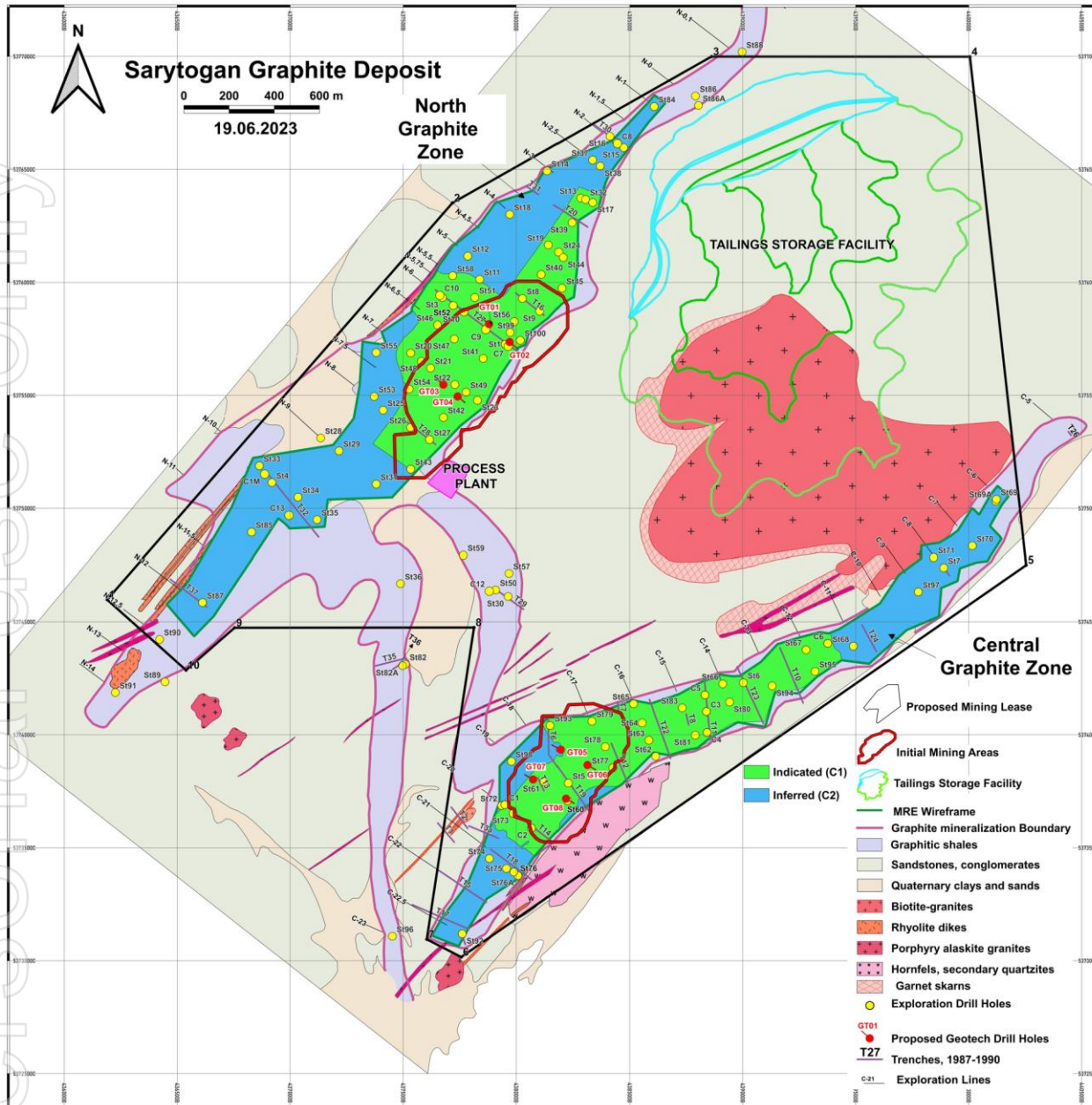


Test work scaling up and Pre-Feasibility Study (PFS) underway.



High grade sample from the Sarytogan Graphite Project

# The Project - Mineral Resource and Preliminary Mine Layout



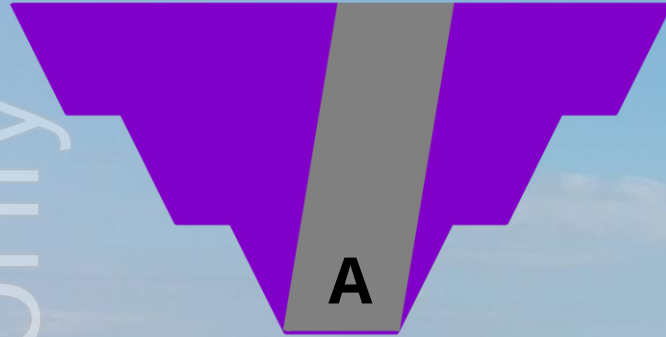
Zone (>15% TGC)	JORC <sup>1</sup> Classification	In-Situ Tonnage (Mt)	Total Graphitic Carbon (TGC %)	Contained Graphite (Mt)
North	Indicated	87	29.1	25
	Inferred	81	29.6	24
	Total	168	29.3	49
Central	Indicated	39	28.1	11
	Inferred	21	26.9	6
	Total	60	27.7	17
Total	Indicated	126	28.8	36
	Inferred	103	29.1	30
	Total	229	28.9	66

- Graphitic shales enriched by contact metamorphism from intrusion of granitic dome
- Mineral Resource is vast; project size will be determined by the market, not the resource
- Geotech and hydro drilling completed 2023

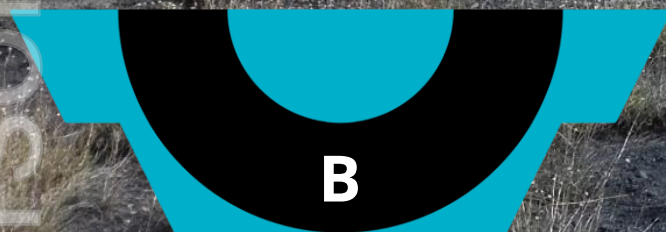
<sup>1</sup>Refer: ASX announcement 27/3/2023




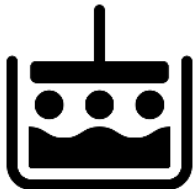



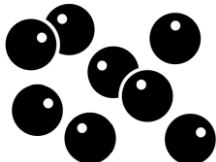

# The Project - Grade is King



Hypothetical	Mine A	Mine B
Grade	10%	30%
Strip Ratio	3:1	1:1
Process, Product	same	same
Mining Costs	\$ 6X	\$ X
Processing Costs	\$ 3Y	\$ Y

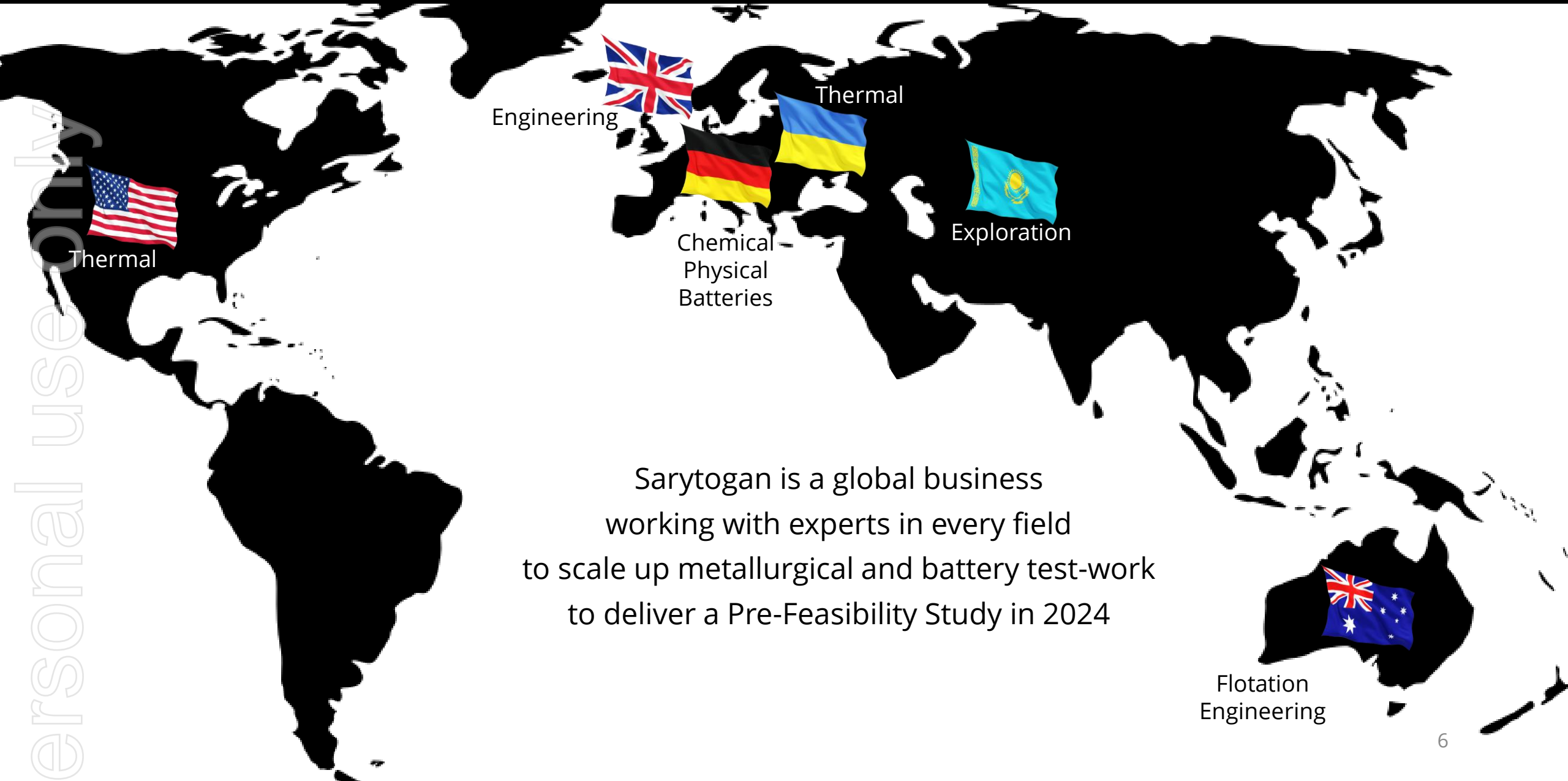


This example is hypothetical only and provided to illustrate the effect of grade and strip ratio on mining economics. There are many other factors that influence mining economics. The examples are not intended to represent the SarytoGAN Graphite Deposit or any other graphite deposit.

Mining	Grinding & Flotation	Alkaline Roasting	Purification Options	Spheroidization	Battery Market
 <p>229 Mt @ 28.9% TGC<sup>1</sup></p>	 <p>85.1% TGC<sup>2</sup></p>	 <p>99.70% TGC<sup>3</sup></p>	<div style="border-bottom: 1px solid black; padding-bottom: 5px;"> <p>Acid</p>  <p>99.87% TGC<sup>3</sup></p> </div> <div style="padding-top: 5px;"> <p>Thermal</p>  <p>99.99% TGC<sup>4</sup></p> </div>		 <p>99.95% TGC</p>

- Sarytogan has now demonstrated graphite purification to ultra-high purity.
- Ongoing test-work will optimise and simplify the flowsheet.
- To be evaluated in the PFS underway.

# The Project – Global Test Work Excellence



Engineering



Thermal



Chemical  
Physical  
Batteries



Exploration



Thermal



Flotation  
Engineering



Sarytogan is a global business working with experts in every field to scale up metallurgical and battery test-work to deliver a Pre-Feasibility Study in 2024

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## Mining in Kazakhstan

- Similar semi-arid land area to West. Aust.
- Mining code based on West. Aust.
- 40% of global uranium supply<sup>1</sup>
- 12<sup>th</sup> in global mining value<sup>1</sup>
- 13<sup>th</sup> largest oil producer<sup>1</sup>

Corporate income tax: 20%; mineral royalty: 3.5%;  
other taxes: 1.5%

Geopolitical alternative to China who dominates  
graphite mining (64%) and anode manufacture  
(89%)<sup>2</sup>.

Affordable containerized rail to Europe and China.

# Kazakhstan - Regional Infrastructure Advantages



170km by highway to the large industrial city of Karaganda.



6km from bitumen road to project.



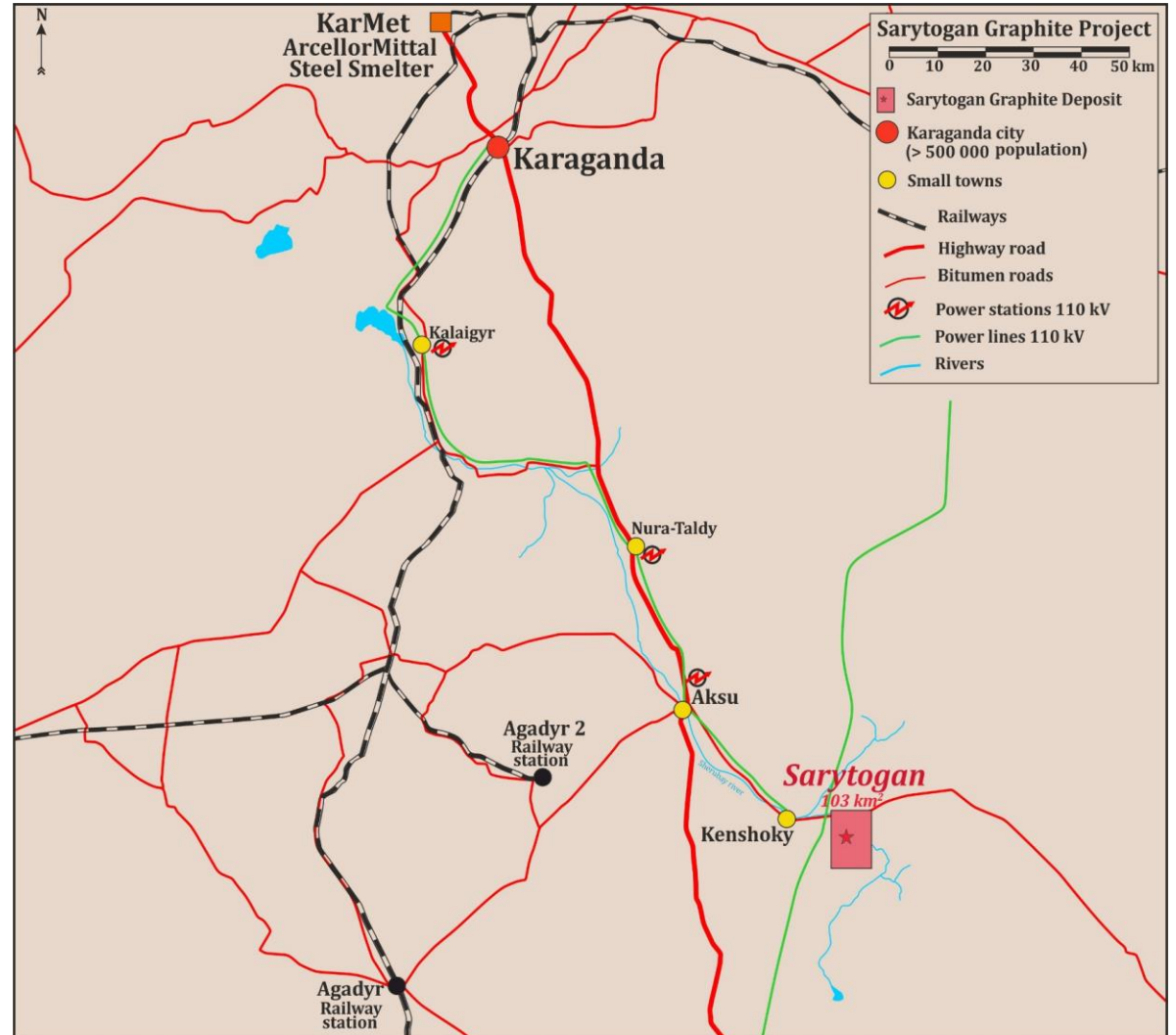
68km from nearest railway station.



Sufficient water supply available.



Skilled local workforce.

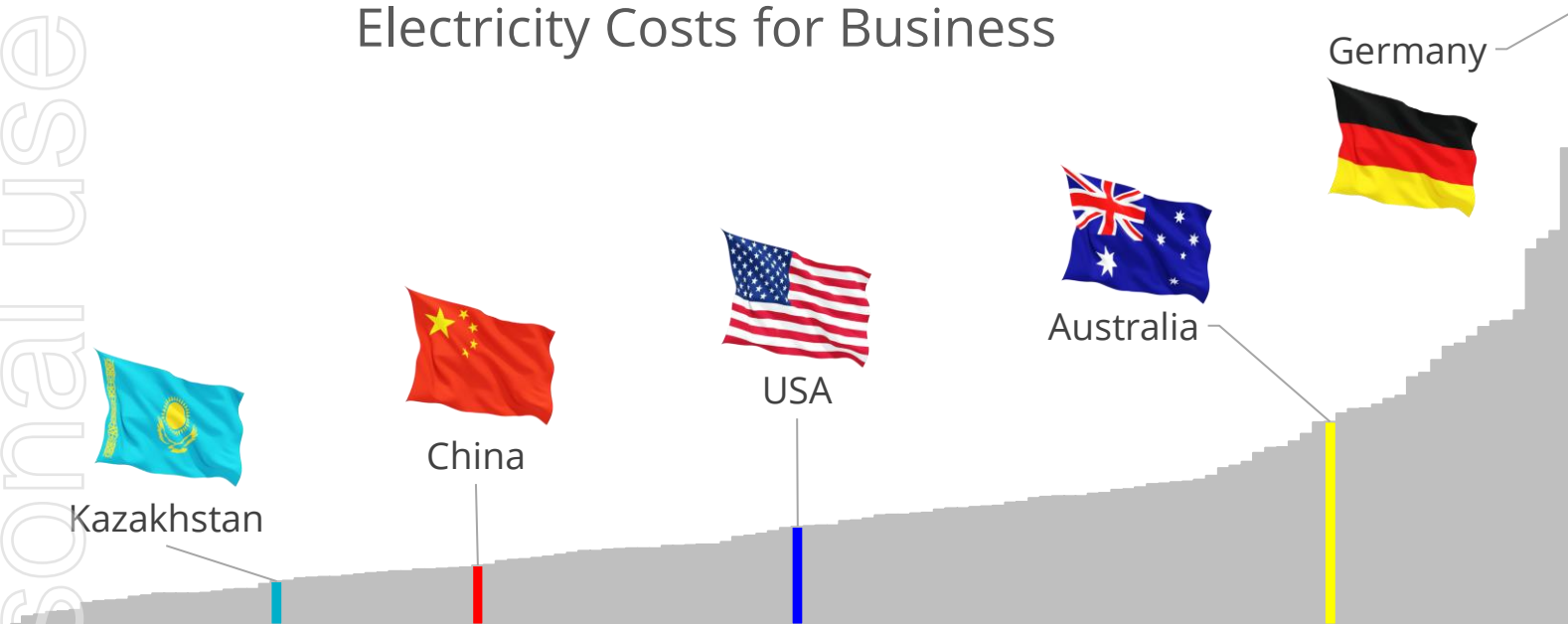




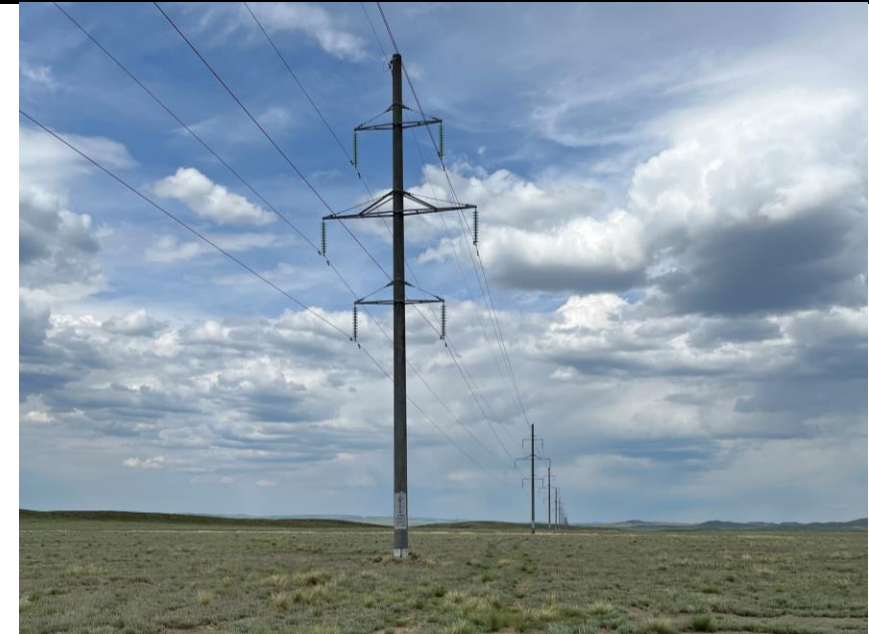
# Kazakhstan - Lowest Quartile Power Costs Including Renewables

- Kazakhstan's power cost is in the lowest quartile globally
- 110 kv powerline 2 km from the project (pictured)
- 35 kv powerline 15 km from the project
- 50 MW Solar farm is 100 km from the project (pictured)

## Electricity Costs for Business



133 countries - December 2022 - data source [www.globalpetrolprices.com](http://www.globalpetrolprices.com) - includes power, distribution and taxes



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# The Market - Graphite is the major raw material in all EV battery types



## THE KEY MINERALS IN AN EV BATTERY

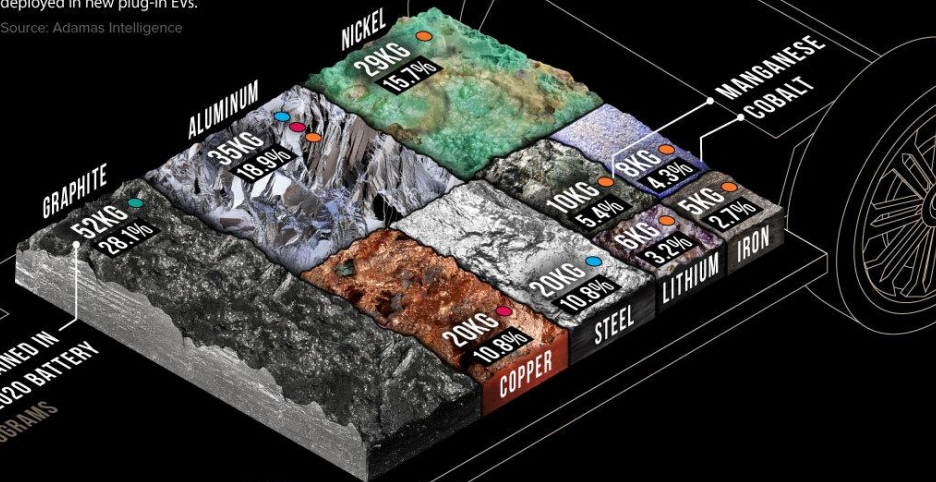
Lithium-ion batteries harness the properties of various minerals to power electric vehicles.

The cells in the average lithium-ion battery with a 60-kilowatt-hour (kWh) capacity contain around 185kg\* of minerals.

CELL PART: ANODE, CATHODE, CURRENT COLLECTORS, CELL CASING

In 2021, nickel-based cathodes powered 80% of the battery capacity deployed in new plug-in EVs.

Source: Adamas Intelligence



AMOUNT CONTAINED IN THE AVG. 2020 BATTERY IN ALL CATEGORIES

\*based on the weighted average of battery compositions on the market in 2020. Does not include materials in the electrolyte, binder, separator, and battery pack casing.

Source: Transport and Environment



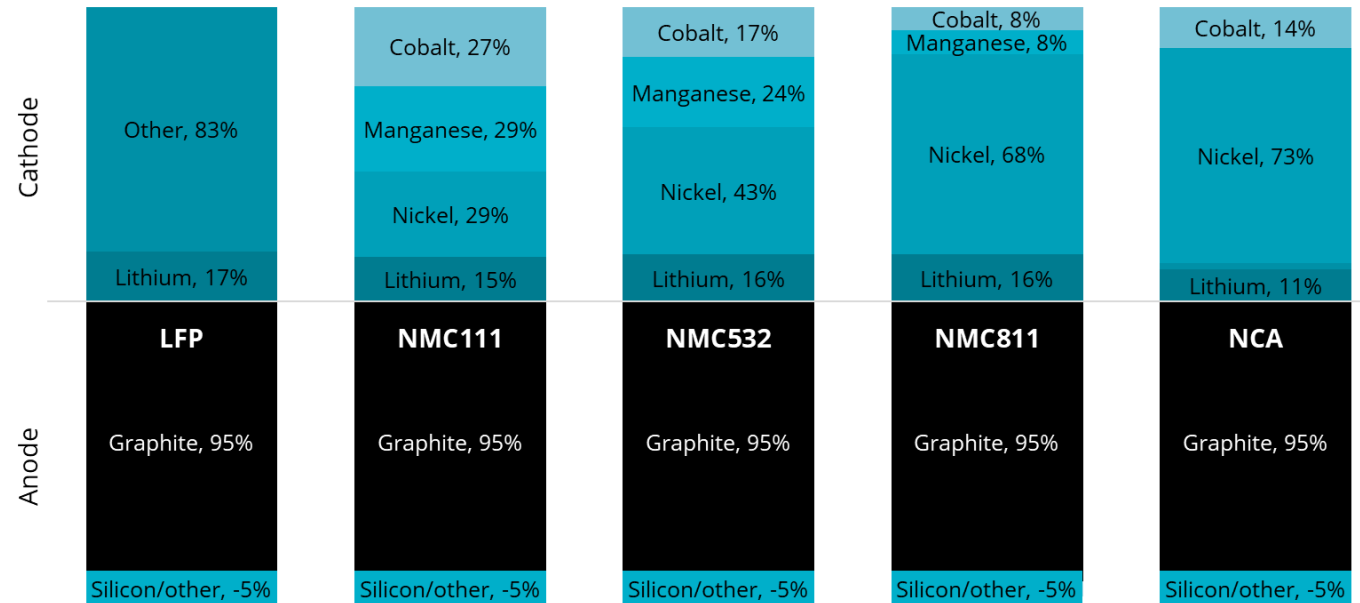
Aluminum and copper foils are typically used as current collectors for the cathode and anode, respectively.



Cobalt is the most expensive battery metal, increasing battery life and energy density.

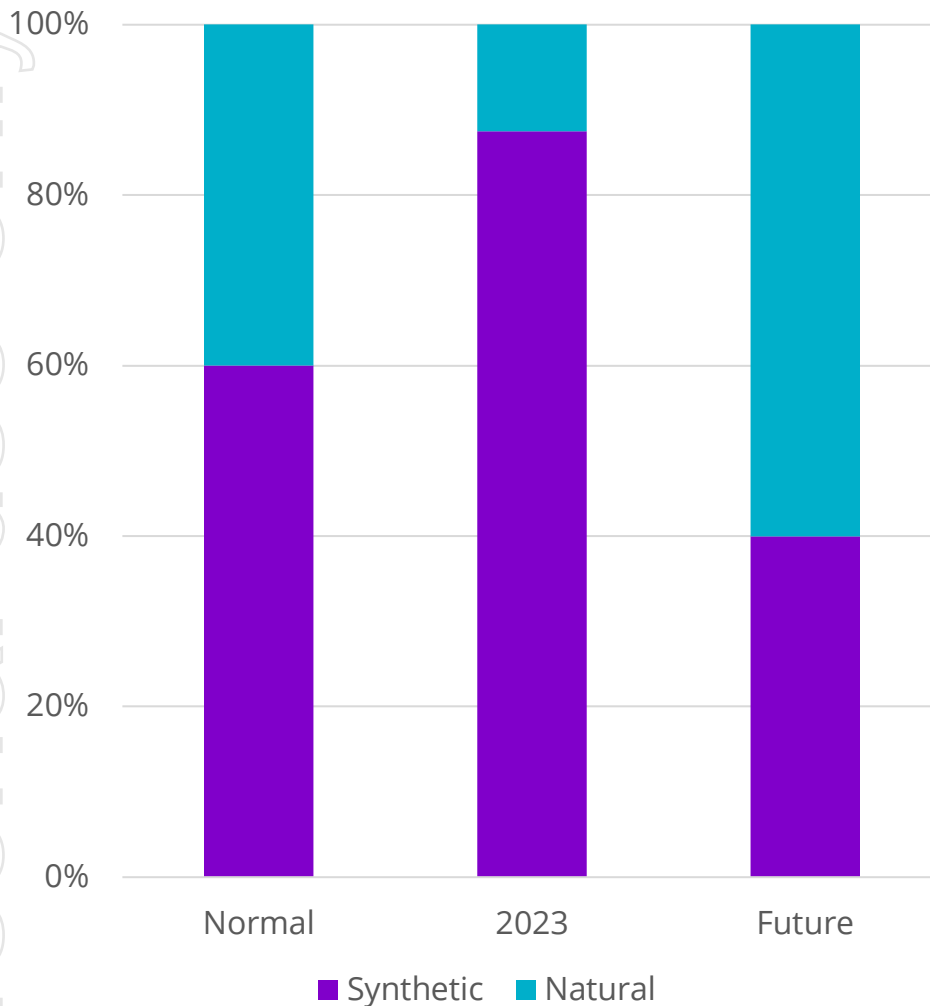
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- Graphite is the major raw material in EV batteries.
- The EV battery anode is always graphite, regardless of battery chemistry.
- Silicon is limited to 5% as any anode performance gains are not matched on the cathode





### Active Anode Blend



- Natural graphite has been created by geological forces over millennia.
- Synthetic graphite requires expensive and CO<sub>2</sub> intensive treatment of fossil fuel by-products.
- China has rapidly expanded synthetic graphite production in 2023 to meet EV demand.
- Policies will mature and insist on greener, lower-cost and high-quality natural graphite.
- Natural graphite demand will be supercharged as a growing proportion of a growing market.

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## HOW MANY MINES DO WE NEED?

As the lithium ion battery revolution gains momentum, **Benchmark** forecasts just how many mines need to be built to keep up with the exceptional volumes of demand for key raw materials expected by 2035.



■ 2022 Supply Vs 2035 Demand ■

Average Mine/Plant Size

No. of Mines/Plants Needed

Natural Graphite

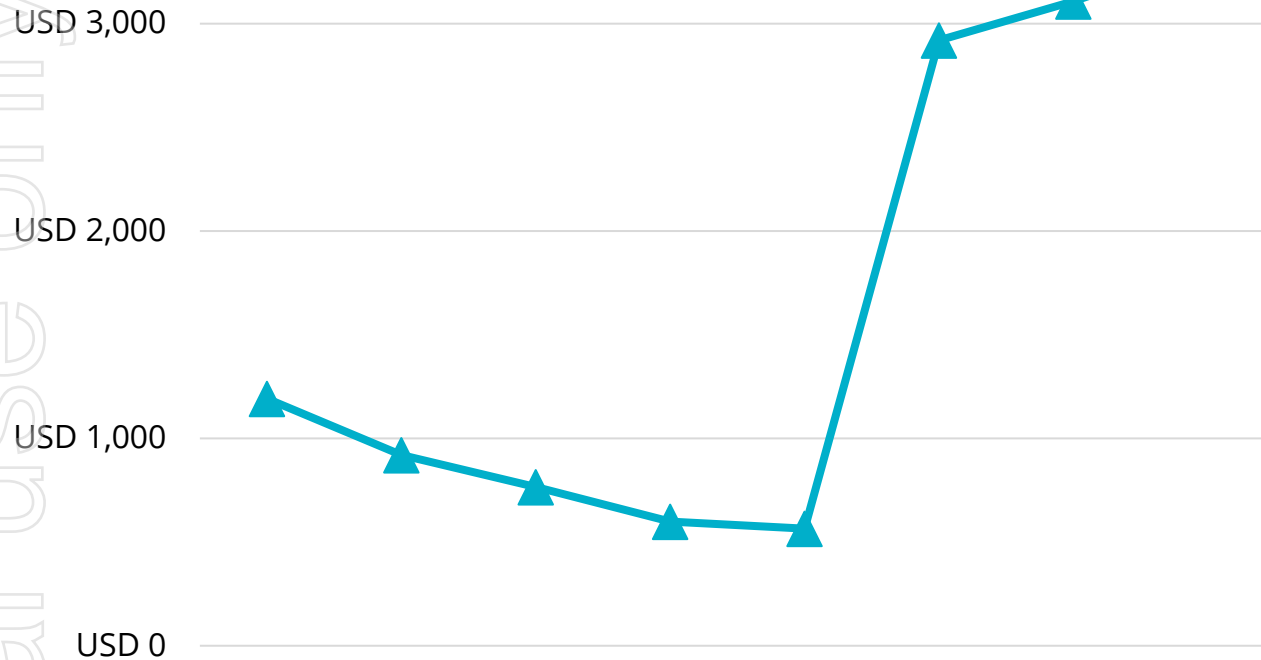


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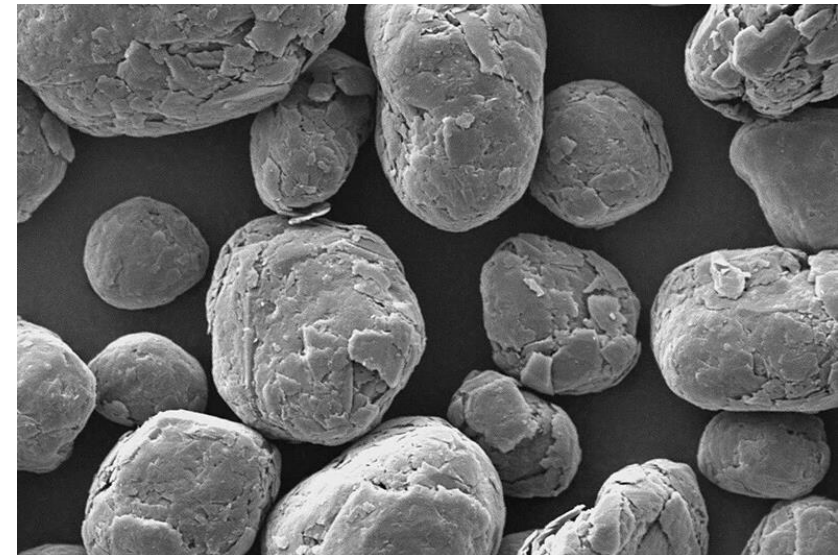




## Graphite Product Prices



- Traditional industrial uses requires coarse flake graphite (e.g. refractory uses, brake linings, lubricants etc)
- Li-ion batteries require ultra-fine high-purity spherical graphite (example below)

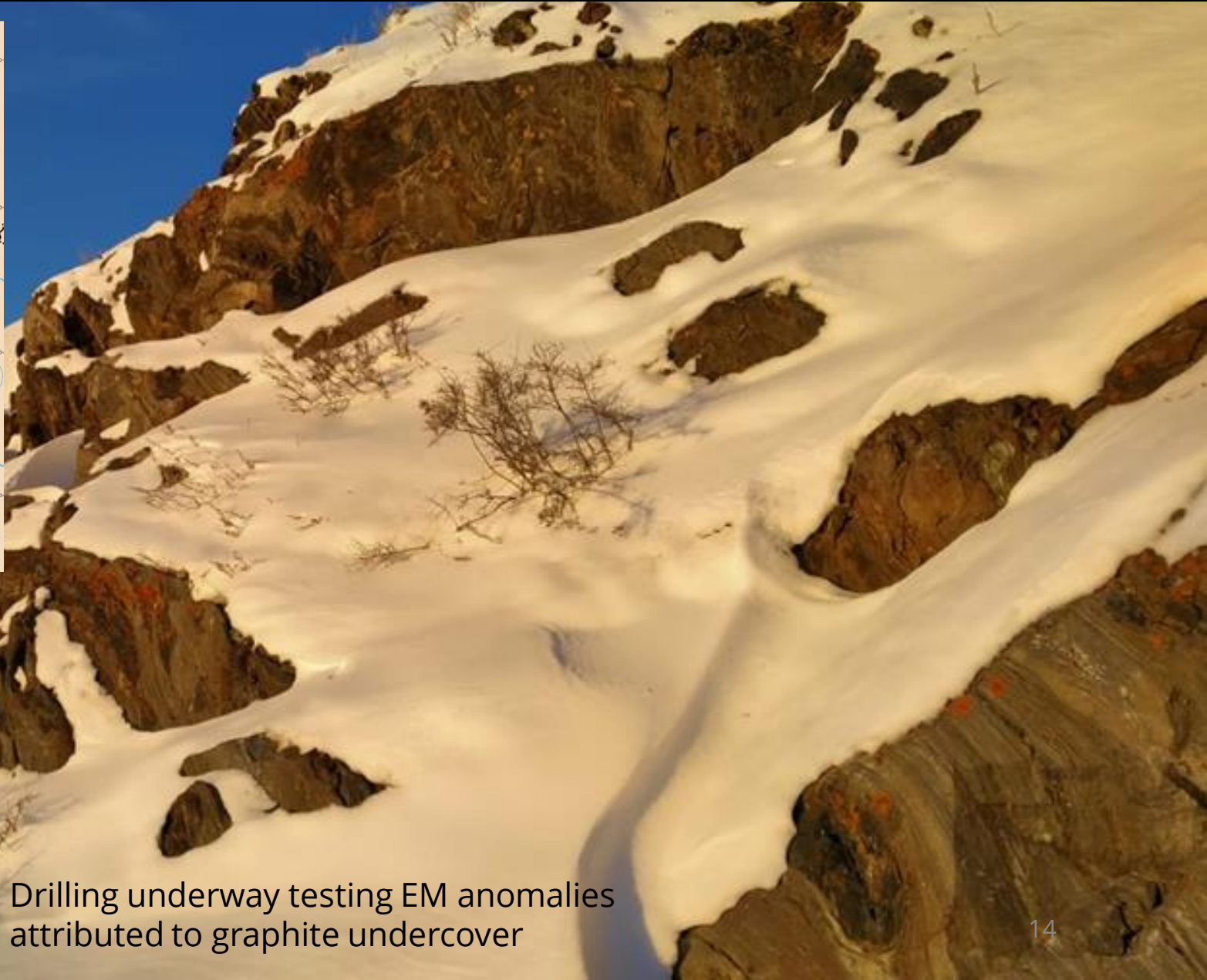


Product	Traditional Uses					Battery Anodes		
	Coarse	Medium	Fine			Uncoated Spherical (USpG)		
Size (µm)	< 180	< 150	< 75	< 75	< 75	20	15	10
TGC (%)	94	94	94	90	80	99.95	99.95	99.95
SGA Grade and Size			✓	✓	✓			✓

Source: 1Prices are FOB China from Benchmark Mineral Intelligence September 2022, supplemented by Fine -75um 80% TGC product from Fastmarkets reported at seekingalpha.com June 2022.

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# Exploration - Kenesar Graphite Project



Drilling underway testing EM anomalies attributed to graphite undercover

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Milestone	2022	Mar 23	Jun 23	Sep 23	Dec 23	2024
Drilling – 3,000m HQ DD	✓					
Mineral Resource upgrade		✓				
Land access agreement for mining			✓			
Geotech and hydro drilling				✓		
Bulk flotation concentrate production						
Spheroidization tests						
Battery performance tests						
Pre-feasibility study						
Mining lease application						
Marketing discussions						
Kazakhstan exploration						

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## Capital Structure

Shares on Issue (Undiluted)	147.7M
Escrowed Shares (until July 2024)	48%
Director Interests	36%
Options (25c, 49.5c, 60c, expiry '24, '26, '28)	45.2M
Performance Shares and Perf. Rights	23.1M
Market Capitalisation – Undiluted at 18.5c	\$27.3M
Cash – 30 June 2023	\$7.8M
Enterprise Value	\$19.5M



**Stephen Penrose** *Non-Executive Chairman, LLB, J.D.,*

Lawyer and Managing Partner of Tottle Partners, specialising in corporate and commercial litigation.



**Sean Gregory** *Managing Director, B.Sc.(Hons), MBA*

Geologist and Mining Executive with more than 20 years' experience in minerals exploration, development and mining in iron ore, lithium, cobalt, nickel, and gold in Western Australia and abroad.



**Dr. Waldemar Mueller** *Technical Director, PhD, M.AusIMM*

Geologist with more than 40 years' experience in exploration and valuation of mineral resources. He has held leadership positions German, Canadian and Australian companies working on projects in Brazil, Kyrgyzstan, Georgia & Kazakhstan.



**Brendan Borg** *Non-Executive Director, B.Sc., MSc, M.AusIMM*

Geologist, Hydrogeologist and Environmental Scientist specialising in the battery materials sector with more than 20 years' experience in exploration development and mining.



**Ian Hobson** *Company Secretary, B.Bus, FCA, Grad. Dip. (Cor. Gov.)*

Fellow Chartered Accountant and Chartered Secretary with more than 30 years' experience in the areas of corporate finance, governance, corporate accounting, company secretarial and restructuring advice.





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**SARYTOGAN**  
GRAPHITE

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The information in this report that relates to JORC estimates of Mineral Resources was first published on the ASX on 27/3/23. The information relating to Exploration Results was first reported in ASX Announcements as cross referenced on the relevant slides. These reports are available at [www.asx.com.au](http://www.asx.com.au). The Company confirms that it is not aware of any new information or data that materially affects the information included in relevant market announcements and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Persons' findings are presented have not been materially modified from the original market announcements.