BLACKSTONE MINERALS

Looking forward. Mining green.

ASX ANNOUNCEMENT | 29 September 2023 | ASX: BSX

Blackstone signs MOU with Arca: Seizing Carbon Capture Opportunity

Blackstone Minerals Limited ("Blackstone" or the "Company") is pleased to announce the Company has entered into a Memorandum of Understanding ("MOU") with Arca Climate Technologies Inc. ("Arca").

Announcement Highlights

- Blackstone and Arca sign MOU to further investigate the carbon capture potential at Ta Khoa Project via carbon mineralisation and explore opportunities to utilise Arca's carbon capture technologies within the Project,
- Studies indicate that passive CO_2 capture is possible at a scale of kilo-tonnes of CO_2 per year from the Project's mine waste. This is significant compared to similar projects,
- In July 2023 the European Union Council declared from 18 February 2025, every industrial or electric vehicle battery on the EU market with a capacity of over 2 kWh will require a battery passport containing information on items including carbon footprint declaration[1],
- Life Cycle Analysis has shown the Project is capable to produce a nickel product with one of the lowest carbon footprints in the industry, with identified pathways to reduce the carbon footprint further with additional studies,
- Carbon mineralisation is one technology being considered to further reduce the Project's carbon footprint.

Overview of the MOU

Arca is developing a portfolio of carbon capture technologies to measure, maximise and monetise the carbon mineralisation potential of mine waste. Using its proprietary intellectual property, Arca helps its partners in the minerals industry to transform mine waste into an industrial-scale carbon sink, advancing the future of carbon-negative mining.

Blackstone continues its pursuit to be one of the greenest nickel producers in the world. Successful implementation of Arca's proprietary intellectual property will enable Blackstone to further reduce the Company's Ta Khoa Project's ("TKP") carbon footprint, allowing Blackstone to realise its Green Nickel™ vision and position the Company to meet the growing global demand for low carbon intensity battery raw materials.

Under the MOU, Arca and Blackstone agree to collaborate on the following:

- Blackstone and Arca will enter non-exclusive strategic relationship to further investigate the carbon capture potential at TKP via carbon mineralisation,
- Arca will expand on previous characterisation work which has indicated the Ta Khoa Project contains minerals such as brucite, known to be highly reactive to CO_2 in air,
- Data collected from this engagement will inform future design considerations to maximise carbon mineralisation, further reducing TKP's carbon footprint and providing a pathway to carbon-negative mining.

[1] https://nickelinstitute.org/en/blog/2023/august/the-eu-battery-regulation-what-does-it-mean-for-nickel-producers/

Level 5, 600 Murray Street, West Perth, Western Australia 6005 | PO Box 1175, West Perth WA 6872
T +61 8 9425 5217 | **F** +61 8 6500 9982 **| E** admin@blackstoneminerals.com.au | **blackstoneminerals.com.au**

Figure 1: Arca scientists demonstrate how carbon dioxide mineralisation rates are measured on mine tailings. Photo: Taku River Tingit First Nation traditional territory, British Columbia, Canada

Significance of the Green Nickel™ strategy

Lower carbon emissions intensity has potential to add value to the Company and differentiate it from competitors in relation to its product offering. There is increasing global pressure on disclosing carbon emissions intensity within battery supply chains and their lifecycle. From 18 February 2025, every industrial or electric vehicle ("EV") battery on the EU market with a capacity of over 2 kWh will require a battery passport (refer to https://www.circulor.com/battery-passport), containing information on items including a carbon footprint declaration as well as human rights and battery supply chain due diligence obligations throughout the battery value chain[2].

As an example, Polestar, the Swedish electric performance car brand, is setting the trend to provide transparency throughout the automotive industry by working with Circulor, a supply chain technology provider. With the partnership, Polestar and Circulor will track a wide range of raw materials. Consumers will be able to follow the journey thanks to Polestar's Product Sustainability Declaration, which discloses carbon footprint and traced risk materials through labelling on the company website and in Polestar Spaces, setting a unique transparency precedent for the industry and an ambitious standard for the carbon tracking scheme within the battery passport[3].

It is expected that this legislative environment will support and incentivise battery manufacturers to source raw materials from suppliers with demonstrated lower carbon

[2] https://nickelinstitute.org/en/blog/2023/august/the-eu-battery-regulation-what-does-it-mean-for-nickel-producers/

[3] https://www.circulor.com/battery-passport

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emissions intensity in their supply chains, supporting demand and pricing for Ta Khoa Project's nickel products.

Blackstone will release their Sustainability Report in September 2023 detailing their Green Nickel™ strategy and how the Company will address future market decarbonisation-related expectations.

What is carbon mineralisation?

The mechanism for carbon mineralisation is the absorption of CO_2 contained within the atmosphere by reaction with brucite to form magnesium carbonate minerals. Brucite is contained within the Ta Khoa mine waste. Mineral carbonisation of ultramafic rocks provides an environmentally safe solution to capture CO_2 from the atmosphere and permanently "lock away" future CO_2 release via stable mineral compounds.

The background

In 2022 Blackstone commissioned Dr. Greg Dipple and his team at the University of British Columbia ("UBC") to investigate if the Ta Khoa mine waste could capture CO_2 via carbon mineralisation (refer ASX announcement 24 August 2022).

Since completing this preliminary study for Blackstone, Dr. Greg Dipple co-founded Arca Climate Technologies Inc. (formerly known as Carbon Minerals Inc.) to commercialise a portfolio of technologies that quantify and accelerate carbon mineralisation.

Highlights of the preliminary study

- A total of 56 samples across the mine ore body were collected for analysis. Of the 56 samples, 38 contained brucite,
- Approximately 28% of the samples contained high levels of brucite, being > 4% weight,
- Bench scale testwork was conducted on a composite of samples, achieving a brucite content of over 6% weight,
- Mine waste composite sample captured 12.0g of CO_2 per kg of tailings over 28 days of testwork.

The above testwork was conducted by capturing CO_2 from air. This means capturing CO_2 from the atmosphere without implementing Arca's technologies to activate minerals and maximise carbon capture from mine waste.

Extrapolation of testwork results indicate that passive CO_2 capture is possible at a scale of kilo-tonnes of CO_2 per year. This demonstrates that carbon mineralisation would have a significant impact on reducing the Ta Khoa Project's carbon footprint.

Going forward, this MOU will allow Arca to investigate Ta Khoa Project's on-site carbon mineralisation potential with greater accuracy. Key points to consider when quantifying a site's potential is tailings storage design, mode of deposition, mode of operation, tailings water content, and local climate. All these factors will influence the rate of carbon capture via carbon mineralisation. As Blackstone and Arca progress future studies, Blackstone will consider Arca's full suite of technologies to measure, maximise and monetise the carbon mineralisation potential for Ta Khoa mine's waste.

Level 5, 600 Murray Street, West Perth, Western Australia 6005 | PO Box 1175, West Perth WA 6872
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The opportunity

These studies are significant to supporting Blackstone's Green Nickel™ strategy.

Preliminary laboratory studies have shown a carbon capture capacity of 12.0 kt CO_2 per Mt tailings, demonstrating the Ta Khoa mine waste could capture a potential 72 kt of CO_2 per year. For comparison, Mount Keith Nickel Mine (WA, Australia) passively captures 3.62 kt CO_2 per Mt tailings per year[4]. The Dumont Nickel Project (QC, Canada) and the Baptiste Nickel Project (BC, Canada) are estimated to capture 1.40 and 0.39 kt CO_2 per Mt tailings per year respectively[5,6].

As part of the Company's pathway to producing a low-carbon product, Blackstone engaged Life-Cycle Assessment ("LCA")[7] practitioner Minviro (www.minviro.com) to conduct studies to measure the potential carbon intensity on Ta Khoa Project's products (refer ASX announcement 15 September 2022). Both precursor cathode active material ("pCAM"), in the form of NCM811, and nickel sulphate hexahydrate intermediate products were investigated. Data shown in this announcement will focus on the pCAM product.

In September 2022 the Company reported on Minviro's results, which calculated project emissions of 9.8 kg CO_2-e for each kilogram of pCAM produced (

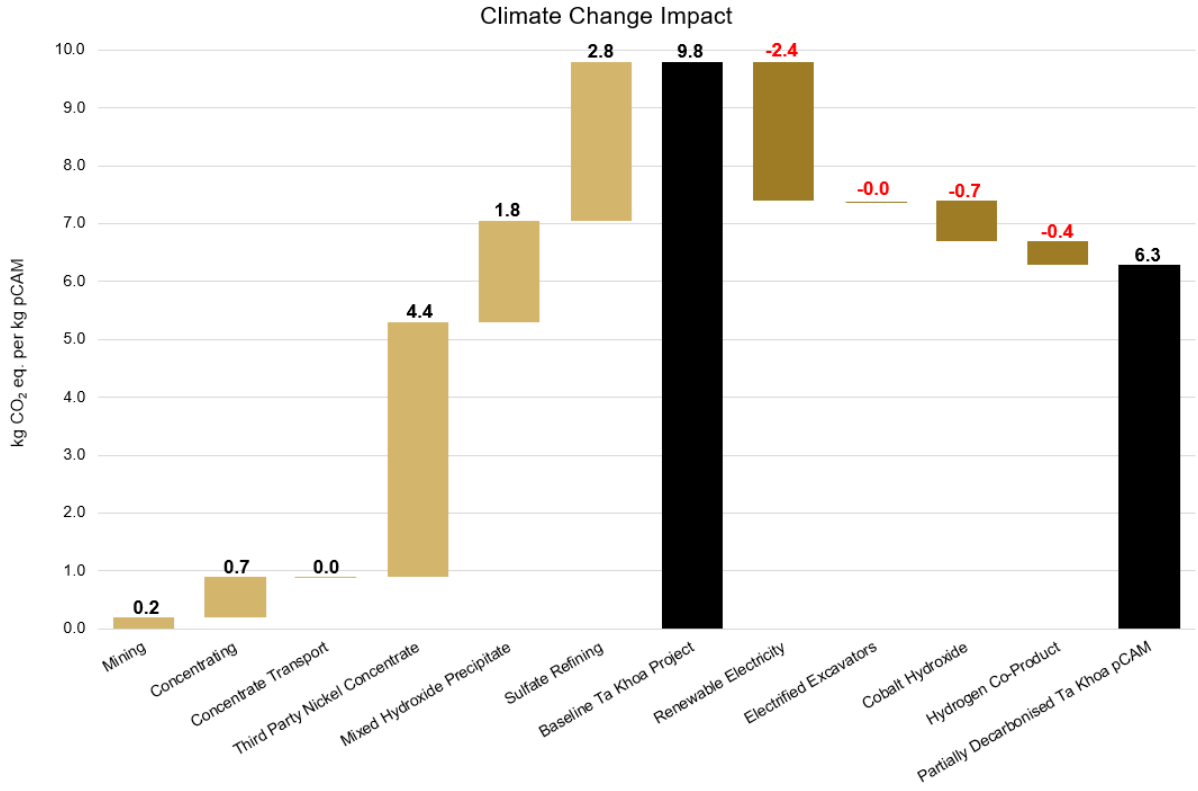

Figure 2). Emissions are inclusive of Scope 1, 2 and 3 emissions.

Based on the assessment data produced by Minviro and certified by the Nickel Institute, the Company expects the Ta Khoa Project's nickel products will have one of the lowest

[4] https://doi.org/10.1016/j.ijggc.2014.04.002
[5] https://doi.org/10.1016/j.chemgeo.2020.119661
[6] https://doi.org/10.1016/j.ijggc.2019.102895
[7] https://www.blackstoneminerals.com.au/sustainability

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carbon footprints in the industry[8] relative to comparable nickel projects (Figure 3). This will also meet increasing customer expectations for lower carbon emissions intensity in the production processes of the raw materials supply.

While the Ta Khoa Project's nickel products have a low carbon footprint compared to other nickel producers, there are opportunities to reduce this further. As outlined in

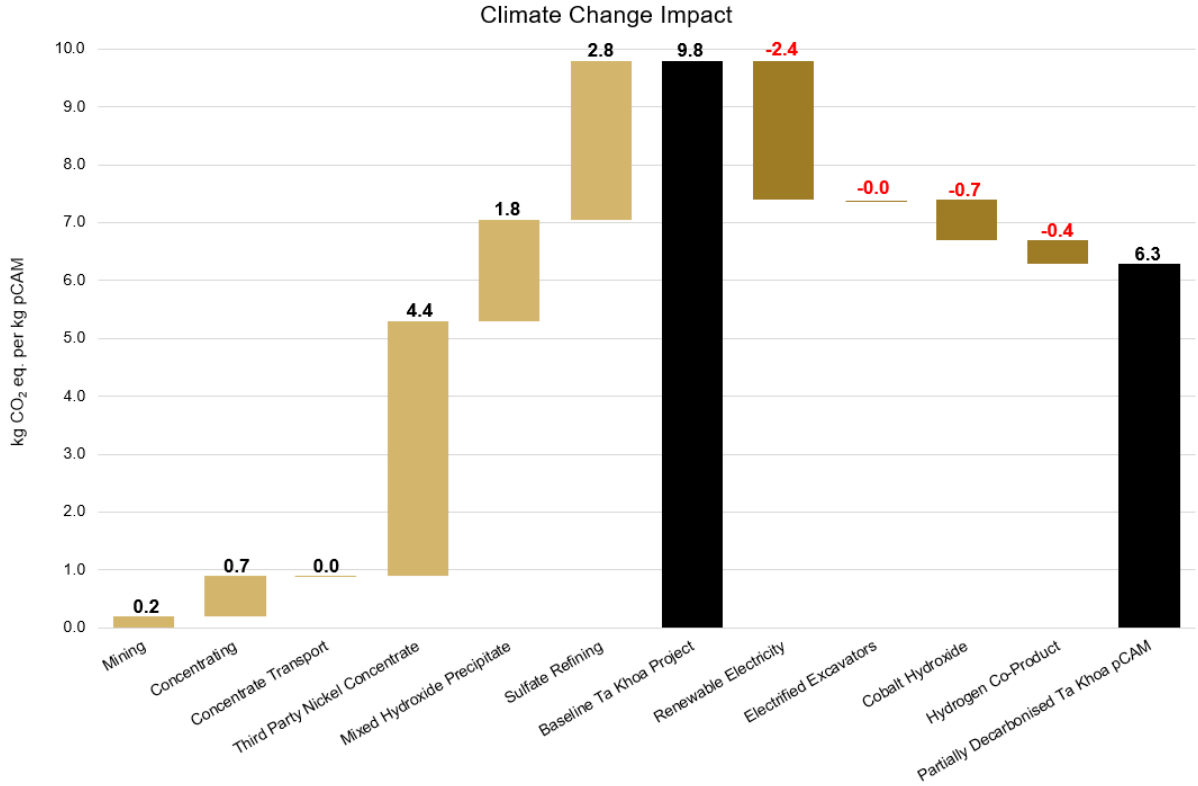

Figure 2, the Company has the potential to reduce the climate impact of pCAM product from 9.8 to 6.3 kg CO_2-e per kg of pCAM through:

- sourcing 100% renewable electricity (refer ASX announcement 20 July 2023),
- electrifying excavators,
- sourcing cobalt hydroxide, and
- producing hydrogen co-product credits.

Ongoing collaboration with Arca will allow Blackstone to capture carbon mineralisation within future LCA studies. Using conservative assumptions as listed above, the project's climate impact for pCAM product could reduce below 5.9 kg CO_2-e per kg of pCAM[9]. These potential results will allow Blackstone to realise its Green Nickel™ vision and position the Company to meet the growing global demand for low carbon intensity battery raw materials.

[8] This comparison is based on available Life-Cycle Assessment data at the time of the study

[9] Quoted potential emission estimates will need to be certified by technical developments and updated with reviewed life cycle assessment (LCA) studies

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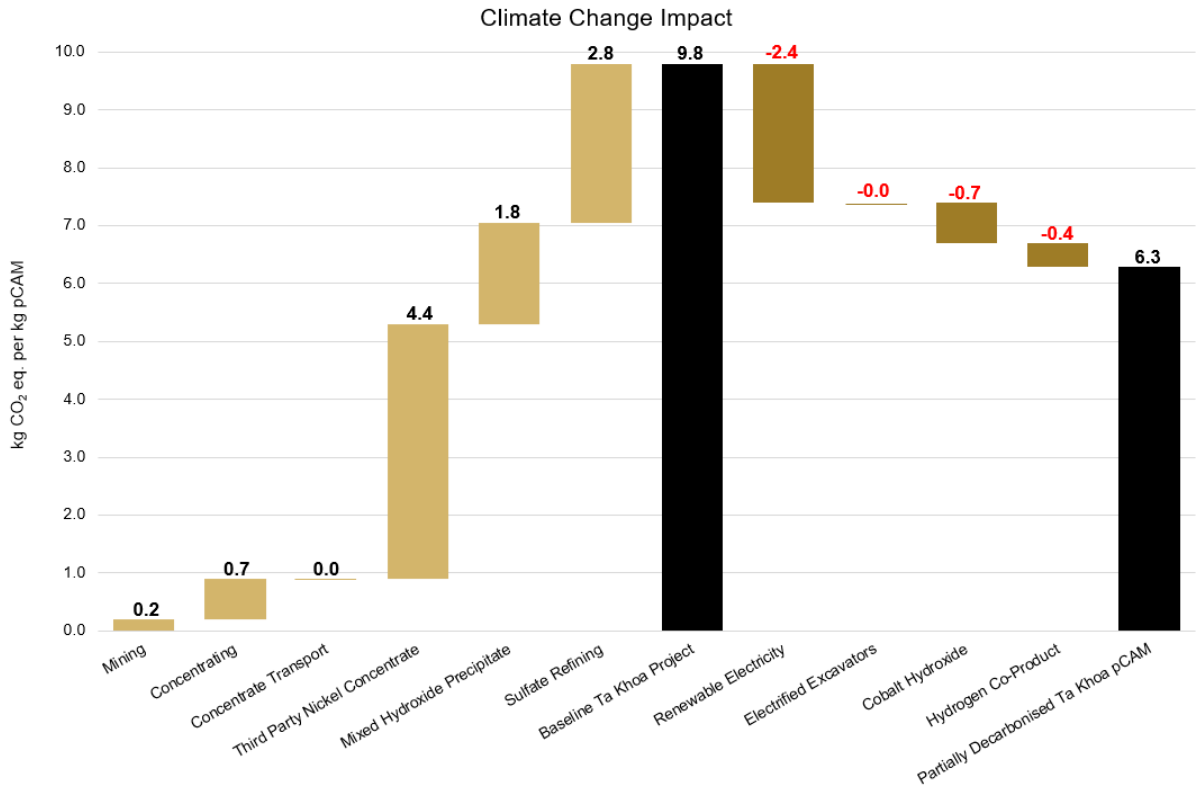

Figure 2: Ta Khoa Project Life-Cycle Assessment developed by Minviro for Scope 1, 2 and 3 emissions

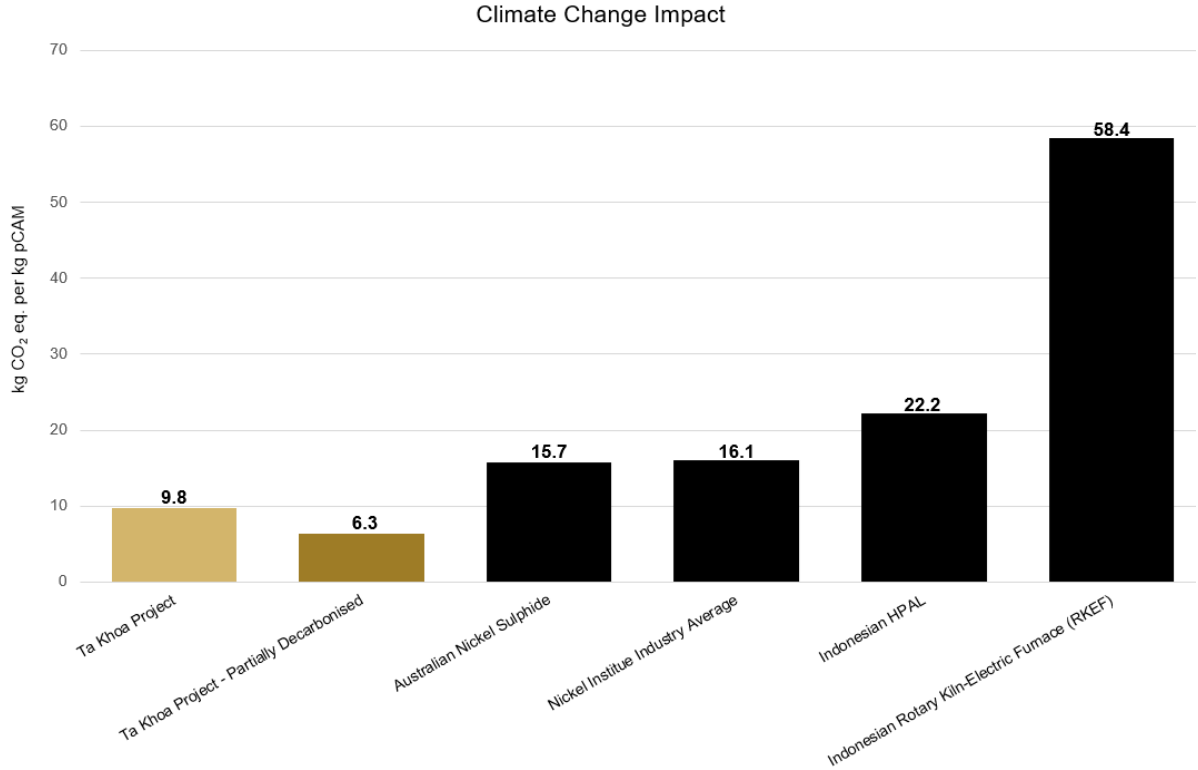

Figure 3: Ta Khoa Project Climate Change Impact Comparison for pCAM from Alternative Nickel Sources for Scope 1, 2 and 3 emissions

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Blackstone Minerals' Managing Director, Scott Williamson, commented:

"The positive results from the initial carbon mineralisation tests demonstrates the unique potential for the Ta Khoa Project to become the world's first large-scale, carbon-neutral nickel operation from mine to pCAM product. The competitive advantage for Blackstone over other nickel producers is the elevated content of highly carbon-reactive mineral brucite, which is present in higher concentrations at the Ta Khoa mine than at typical nickel deposits. The elevated brucite content therefore presents us with a unique opportunity to drive toward carbon neutrality at the Ta Khoa Project, and thus realising our Green Nickel™ strategy."

Authorised by the Managing Director on behalf of the Board.

For more information, please contact,

Scott Williamson
Managing Director
+61 8 9425 5217
scott@blackstoneminerals.com.au

Graham Rigo
Executive
+61 8 9425 5217
graham@blackstoneminerals.com.au

About Blackstone

Blackstone Minerals Ltd (ASX: BSX / OTCQX: BLSTF / FRA: B9S) is focused on building an integrated battery metals processing business in Vietnam that produces Nickel:Cobalt:Manganese precursor products for Asia's growing lithium-ion battery industry.

Blackstone will produce the lowest emission precursor as verified by Minviro and the Nickel Institute (refer ASX announcement 15 September 2022).

The existing business has a modern nickel mine built to Australian standards, which successfully operated as a mechanised underground nickel mine from 2013 to 2016. This will be complemented by a larger concentrator, refinery and precursor facility to support integrated production in-country.

To unlock the flowsheet, the Company is focused on a partnership model and is collaborating with groups who are committed to sustainable mining, minimising the carbon footprint and implementing a vertically integrated supply chain.

The Company's development strategy is underpinned by the ability to secure nickel concentrate and Ta Khoa is emerging as a nickel sulphide district with several exploration targets yet to be tested.

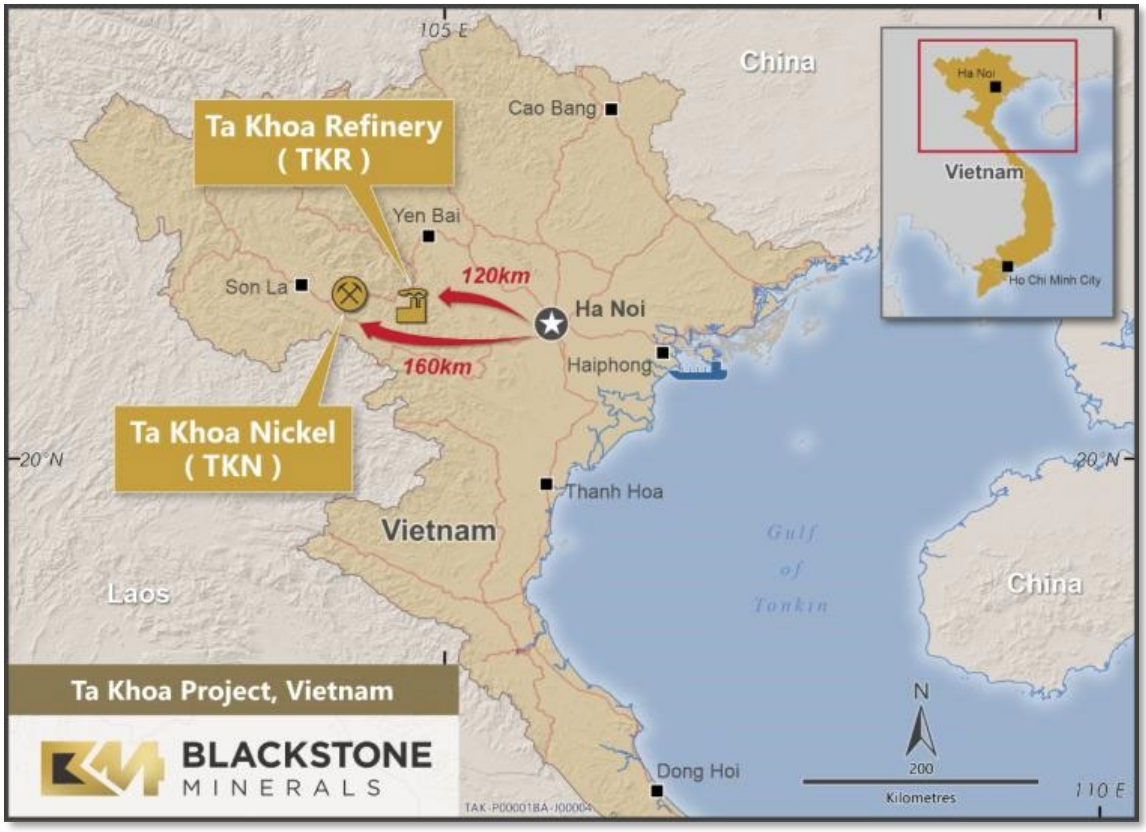

Figure 1. Ta Khoa Project Location

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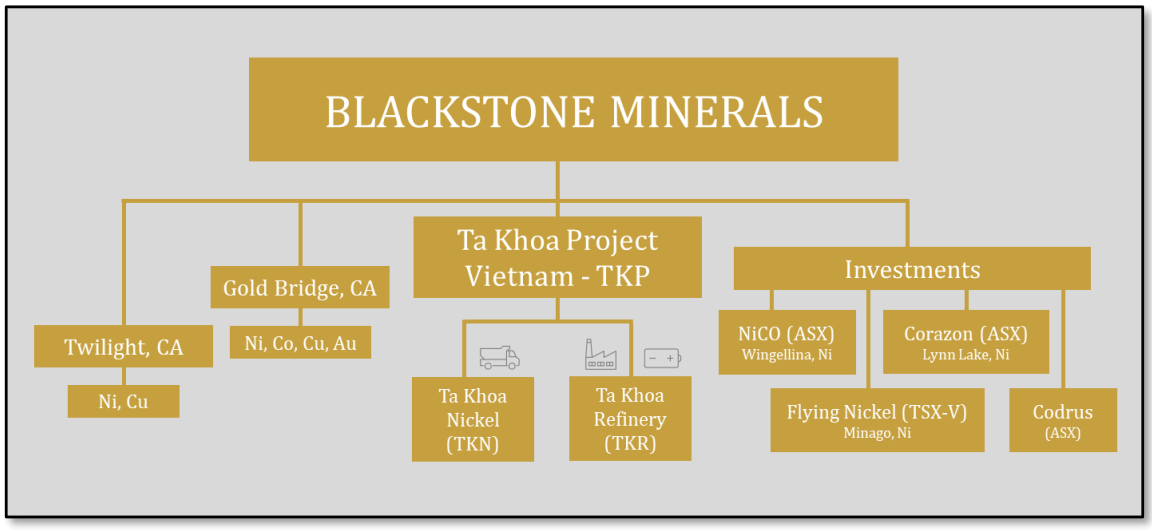

Figure 2: Blackstone Minerals Business Structure Schematic

About Arca

Arca is a carbon mineralisation company. The company is working to stop and reverse climate change by capturing carbon dioxide from the air and transforming it into rock. Co-founded by Professor Greg Dipple and other geoscientists from the University of British Columbia, Arca has developed technologies that accelerate a natural geochemical process called carbon mineralisation. Arca works with producers of critical metals to decarbonise their mining operations and scale production of carbon-negative metals and minerals for the clean energy transition. Arca is backed by Lowercarbon Capital and the Grantham Foundation, the leading climate investors in the rapidly emerging carbon dioxide removals industry.

"According to the International Energy Agency, by 2040 the mining industry will need to produce 10-20 times more critical metals like nickel, for batteries and other green energy infrastructure. Yet mining itself can be very carbon intensive," said Professor Greg Dipple, co-founder and Head of Science at Arca. "Arca helps to resolve that paradox by helping minerals producers convert their tailings into industrial-scale direct air capture and storage facilities, transforming mine waste into a valuable new resource and climate solution."

Arca has been recognised with a US $1M XPRIZE Milestone Award for Carbon Removal, a Foresight50 Award as one of Canada's most investable cleantech ventures, and an SDTC Seed Fund grant.

Arca produces and sells carbon dioxide removal services to Shopify, Stripe and Frontier (a collection of companies including JP Morgan, Meta, Alphabet, McKinsey & Company, H&M and others). The company is also supported by Canada's National Research Council.

Arca's current mining and minerals client base includes Vale, IGO, EV Nickel, Giga Metals, Inomin Mines, Talon Metals, Stillwater Critical Minerals, Poseidon Nickel and Nickel Search.

For further information, please visit: www.arcaclimate.com.

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Cautionary Statement:

The test results described within this announcement are preliminary in nature and may not be representative of conditions or results in an operating environment, particularly as it pertains to the representativeness of mineralisation, moisture content, changes in weather conditions, process water chemistry and tailings emplacement configuration, including the rate at which tailings are covered with fresh material, among other parameters. There is no certainty that the results reported herein will be realised in an operating environment. Further studies are recommended to expand the scale of testing to better understand the potential for carbon sequestration to be realised in an operating environment.

Forward-Looking Statement:

This report contains certain forward-looking statements. The words "expect", "forecast", "should", "projected", "could", "may", "predict", "plan", "will" and other similar expressions are intended to identify forward looking statements. Indications of, and guidance on, future earnings, cash flow costs and financial position and performance are also forward-looking statements. Forward looking statements, opinions and estimates included in this announcement are based on assumptions and contingencies which are subject to change without notice, as are statements about market and industry trends, which are based on interpretations of current market conditions. Forward looking statements are provided as a general guide only and should not be relied on as a guarantee of future performance.
Forward looking statements may be affected by a range of variables that could cause actual results or trends to differ materially. These variations, if materially adverse, may affect the timing or the feasibility of the development of the Ta Khoa Project.

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