



# Fast-Tracking High-Grade Critical Minerals in Greenland through to Development and Production

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# Overview

Objective to be a supplier of critical minerals to fast-growing end markets, benefiting from long-term structural drivers such as the energy transition

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|----|--|--|
| 01 | Portfolio of high-grade projects in mining-supportive Greenland                | <ul style="list-style-type: none"><li>- Amitsoq: super high-grade graphite for EV sector</li><li>- Thule Black Sands (TBS): high-grade in situ ilmenite</li><li>- Melville Bay Iron: Direct Shipping Ore (DSO) potential</li></ul> |
| 02 | Positioned for significant growth at Graphite and Ilmenite projects            | <ul style="list-style-type: none"><li>- Amitsoq: 2022 drill programme targeting increase in JORC Resource</li><li>- TBS: 2022 focus on ESIA work, paving way for ML application</li></ul>  |
| 03 | Market opportunity: Graphite and Titanium are critical minerals for EU and USA | <ul style="list-style-type: none"><li>- Graphite demand set to rise 2,500% by 2040 due to EVs</li><li>- Ilmenite prices at multi-year highs</li></ul>  |
| 04 | Experienced, senior management team with complementary skillset                | <ul style="list-style-type: none"><li>- Deep experience of mining engineering, geology, finance, regulatory, operations and Greenland</li></ul>  |

**AIM: GROC**  
**Share Price: 6.25p**  
**Market Cap: £6.95M**  
**(as at 13 June 2022)**



# Management Team

Track record of value generation and proven expertise in the key disciplines required to fast-track projects through to development and production



**Stefan Bernstein**

Chief Executive Officer  
(from 1 July 2022)

Danish geologist with over 30 years' experience in Greenland's mining sector. Strong understanding of the country's mineral wealth, previously Head of Mineral Resources Dept at GEUS. Involved in several deposit discoveries, including Platinova Reef & Citronen Fjord deposit.



**George Frangeskides**

Non-Executive Chairman

Over 25 years in mining, corporate advisory and legal sectors in UK & Australia. Initiated Alba's move into Greenland with 2015 Amitsoq acquisition and has deep knowledge of Greenland's mining sector. Chairman of Alba Mineral Resources plc.



**Jim Wynn**

Finance Director

Finance professional & chartered accountant, previously CFO/FD of Moxico Resources, Rainbow Rare Earths and Avocet Mining. Currently CFO of Emmerson. Previously worked for Anglo American plc finance, BD & strategy.



**Mark Austin**

Non-Executive Director

Geologist with 40 years of Management and operational experience. Previously worked for Central Rand Gold, Goldplat Plc, Mano River Resources Plc & Placer Dome Exploration. Currently Alba's COO and Senior Geologist.



**Lars Brünner**

Independent Non-Executive Director

Environmental Consultant for 30+ years. Golder Associates A/S Arctic Mining & Environment, Bus. Dev. Leader (2014-20). Led environmental team at TBS in 2018. Deep knowledge of Greenland, having worked there for many years.



**Mark Rachovides**

Independent Non-Executive Director

President of Euromines, the representative of European Metals & Minerals Industry. Formerly Executive Director of European Goldfields and VP-Europe at Dundee Resources and spent 11 years at European Bank for Reconstruction and Development.

# Greenland: a strategic and stable mining destination



European-style democracy with transparent laws and institutions supportive of mining sector

## Geography

- Large, unexploited deposits
- Ideally positioned to access both Europe and North America

## Transparent, mining friendly framework

- Legal framework: Mineral Resources Act 2009
- Regulators: MLSA (mineral licensing) & EAMRA (environment)
- Exploration licences granted for initial 5-year term with extensions thereafter
- Government cancelled all licence expenditure obligations for two years due to COVID-19 and made it easier to qualify for a mining licence
- Mining licence granted subject to defining mineral deposit and EIA/SIA

## Economy & Infrastructure

- Primary industry is fishing, but increasing focus on tourism and minerals industry
- Greenland receives annual block grant of app. €470 m from Danish State
- International flights to Kangerlussuaq and Narsarsuaq
- Changing Arctic sea ice conditions opened up possibility of increased navigation along the Northern sea routes, dramatically reducing the time it takes to ship goods between Asia, Europe and North America



# Amitsoq

*Super High-Grade Graphite*

# Super High-Grade Graphite

AMITSOQ GRAPHITE, GREENLAND

## Some of the world's highest average graphite grades across two deposits

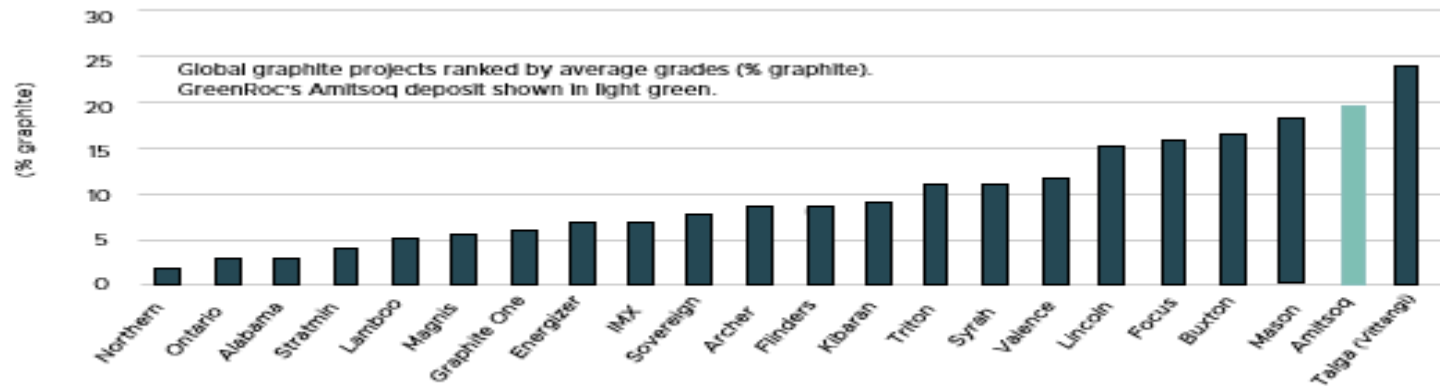
- Located in Nanortalik region of southern Greenland;
- Ice-free year round enabling much longer field seasons

### Amitsoq Island

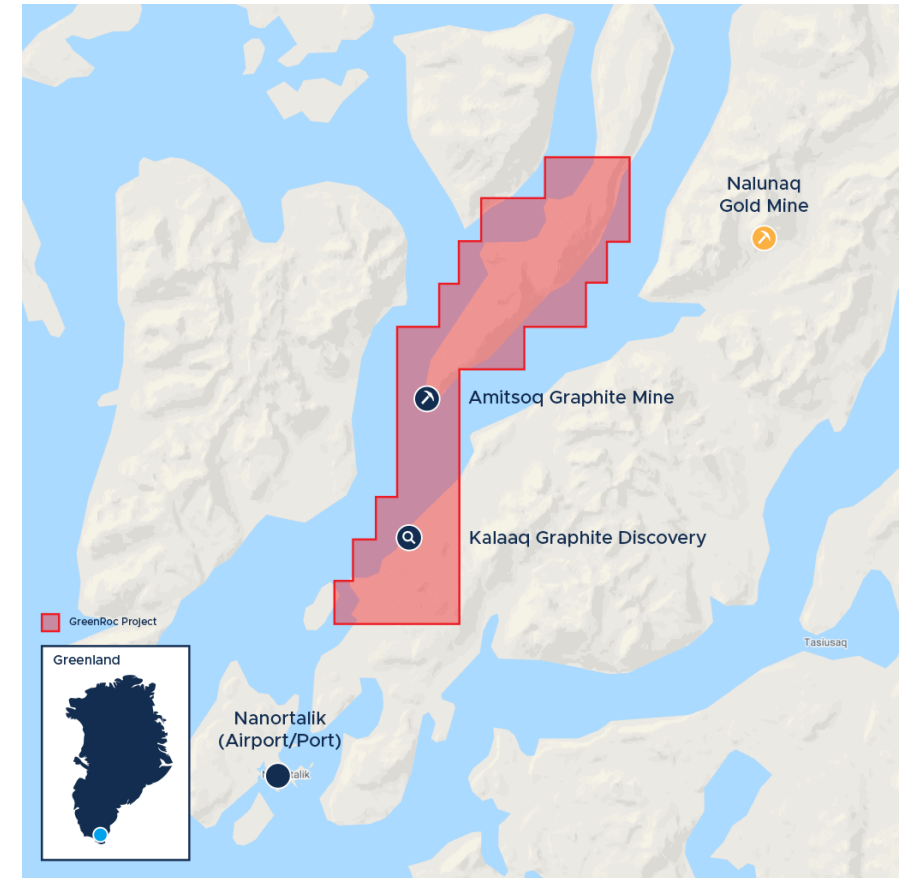
- Previously operating mine
- Graphite beds over ~1 km;
- JORC Resource 8.28 Mt @ 19.75%
- ET: 5-15Mt @ 18-22%

### Kalaaq:

- Discovered in 2017
- Channel /grab grades from 17.4 to 33.1 % C(g)
- ET: 6-10Mt @ 17-33%



(Source: Industrial Minerals, August 2015, modified by GreenRoc)



Extensive field work includes drilling, airborne geophysics, channel sampling, trenching and structural mapping over several seasons

Exploration Licence (“MEL”) 2013/06 valid until 31/12/24 (right to apply for renewal thereafter)



# Graphite & EVs

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“ Our lithium ion batteries should be called nickel-graphite batteries, because primarily the cathode is nickel and the anode side is graphite with silicon oxide.” - Elon Musk

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By weight, there is 10 times more graphite in a lithium ion battery than there is lithium...

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It is predicted that there will be 125 million EVs in the world by 2030 and a 2,500% increase in the demand for graphite by 2040

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# Graphite Explainer

Chart: Demand by application for natural graphite 2019 (Edison, Dec 2020)

Graphite demand set to increase by 2,500% by 2040, fuelled by rapid growth of EVs

## Graphite:

Non-toxic, chemically inert material with high electric and thermic conductivity, excellent lubricity and exceptional thermal shock resistance

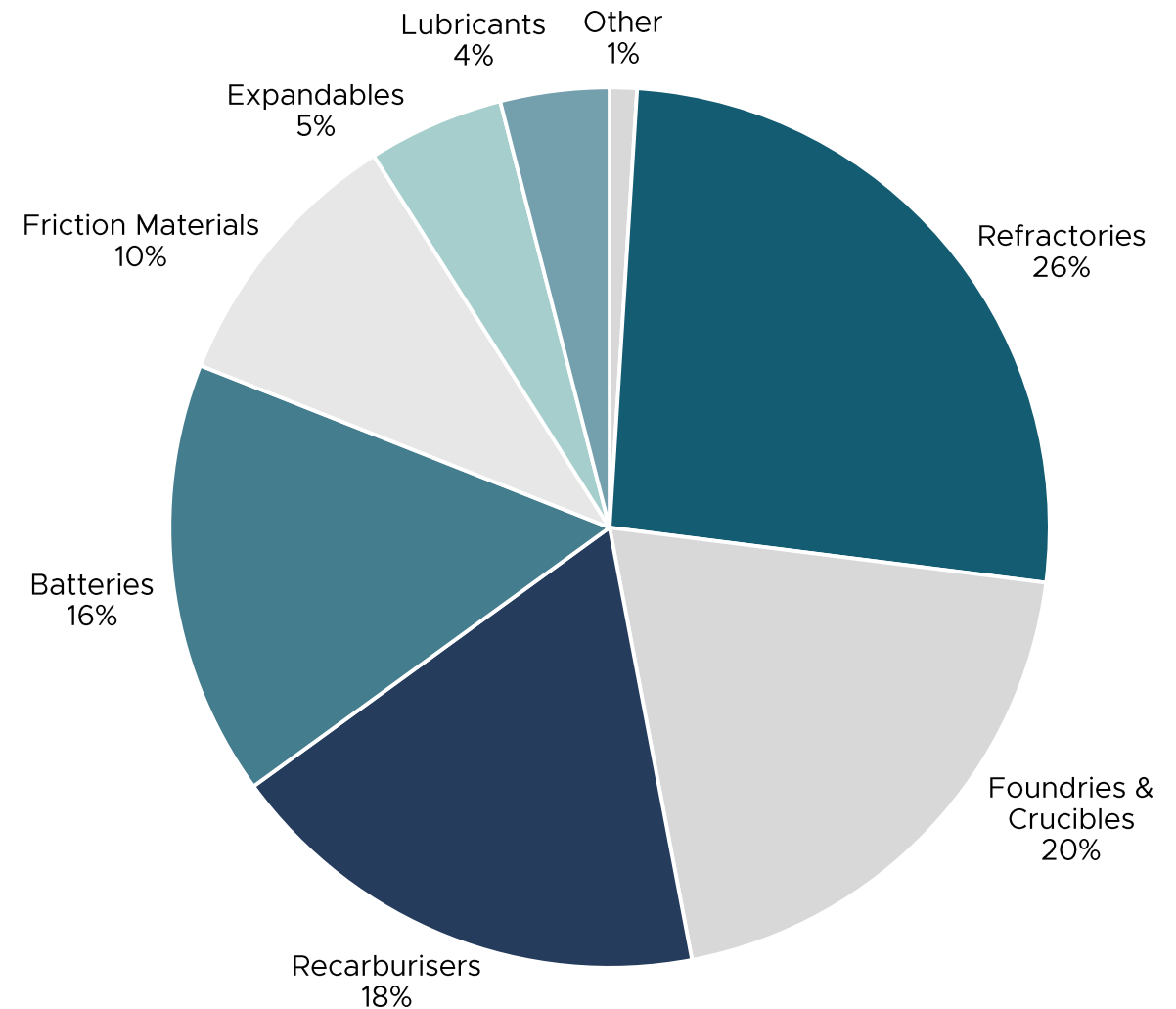
- Widely used in a variety of industrial applications: steel manufacture, refractory bricks, brake linings, fire retardants
- Essential component in certain critical technological advances at the forefront of the drive to reduce global CO2 emissions

## High-purity spherical graphite ('HPSG') (>99.95%C):

Used in lithium-ion batteries ('LIBs') for EVs

- Graphite is the anode material in LIBs used to power EVs and domestic electricity storage system

EV sector graphite demand forecast to rise to ~3 mtpa in a 4 mtpa graphite market by 2030



# Graphite: key market fundamentals

## US\$26.8B market value by 2025

Expected worth of the global graphite market - up from US\$16.4B in 2017, registering a CAGR of 8.5%

“Unlike some of the other critical mineral markets, there is still time for both the natural and synthetic graphite market deficits to be redressed — so long as adequate funding is provided for junior miners in the near term.”

Source: Benchmark Mineral Intelligence

## Graphite is expected to go into a supply deficit this year

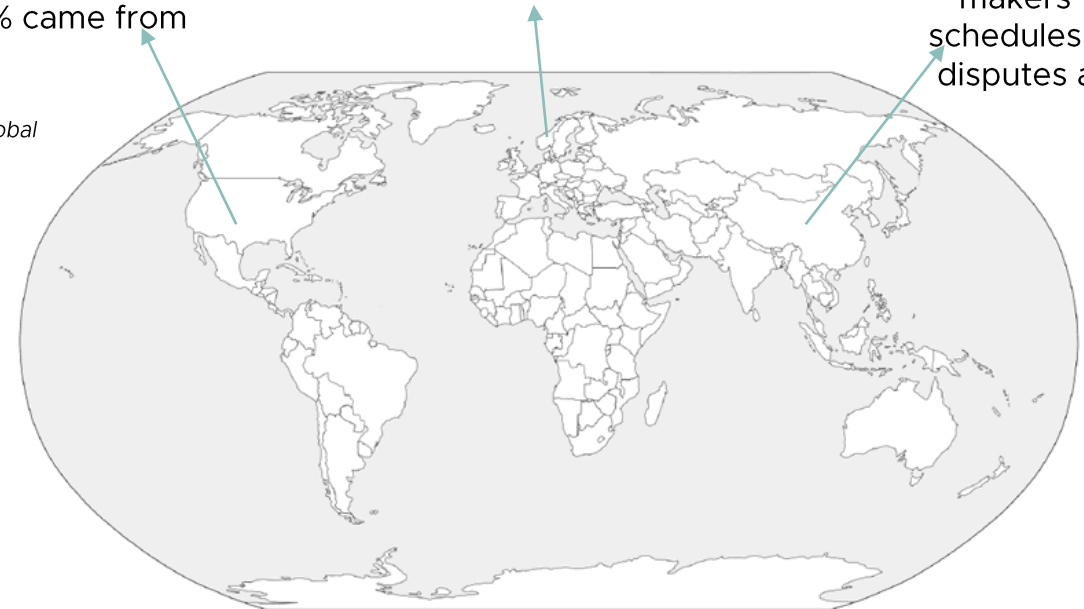
A shortage of up to 80,000t is expected in 2022 as demand from the EV sector rapidly scales up, according to Benchmark Mineral Intelligence

The U.S. imported 64,396 tonnes of refined graphite between January and November in 2021, of which 73.3% came from China

Source: S&P Global

Europe's only producer of flake graphite is Norway (~16,000t)

S&P Global suggested the world's reliance on China for graphite has emerged as a major obstacle to EV makers' production schedules amid trade disputes and soaring demand

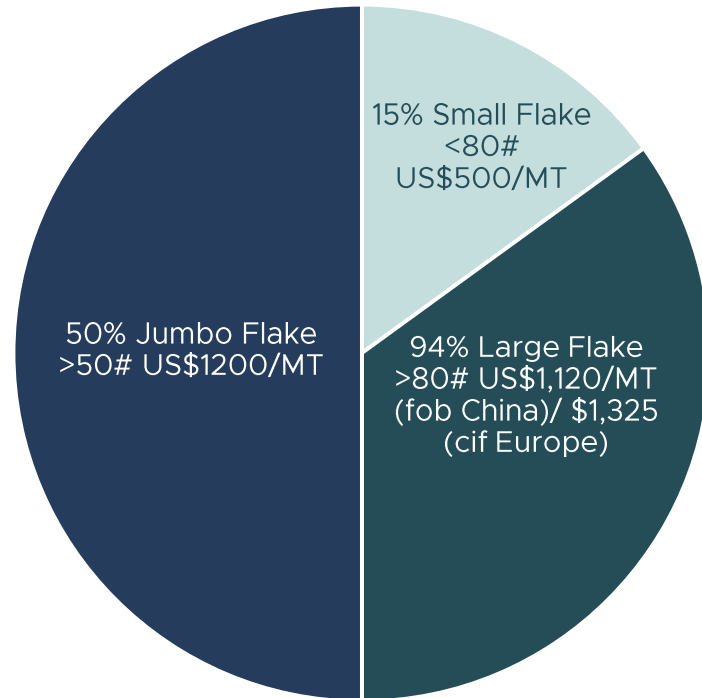


# HPSG Commands Higher Price

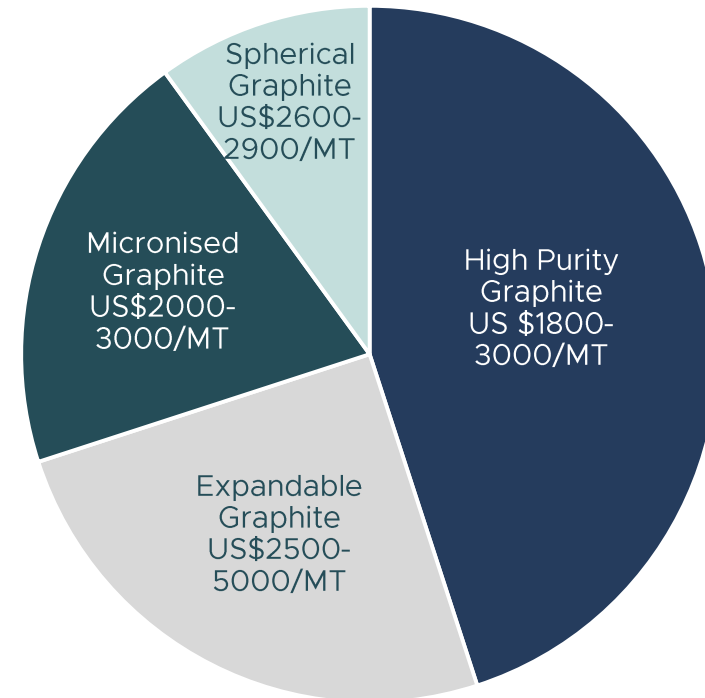
AMITSOQ GRAPHITE, GREENLAND

Spherical graphite (HPSG) commands 3-4 times higher price than flake graphite concentrate

## Natural Flake Graphite



## Specialty Grade



Source: Fastmarkets/ Edison, Spotlight IPO Report, Tirupati Graphite, Dec 2020

# Amitsoq: Battery-Grade, High-Purity Graphite

AMITSOQ GRAPHITE, GREENLAND

Metallurgical testwork demonstrates that Amitsoq graphite can deliver

High-grade, 97% carbon (C) concentrate, with 98% C likely achievable by flotation for some fractions

Battery-grade high purity graphite (99.97% C) (“HPSG”) for LIBs – the fastest growing market for flake graphite

Alkaline purification achieves 99.97% LOI (avoids higher environmental impact of acid (HF) purification)

## Sale route for Amitsoq graphite:

- Sell +150 micron flakes separately
- Sell remaining 85% of concentrate as feed material for LIBs

# Resource Drilling (Amitsoq Island)

AMITSOQ GRAPHITE, GREENLAND

Drilling has confirmed two significant, laterally continuous high-grade graphite zones

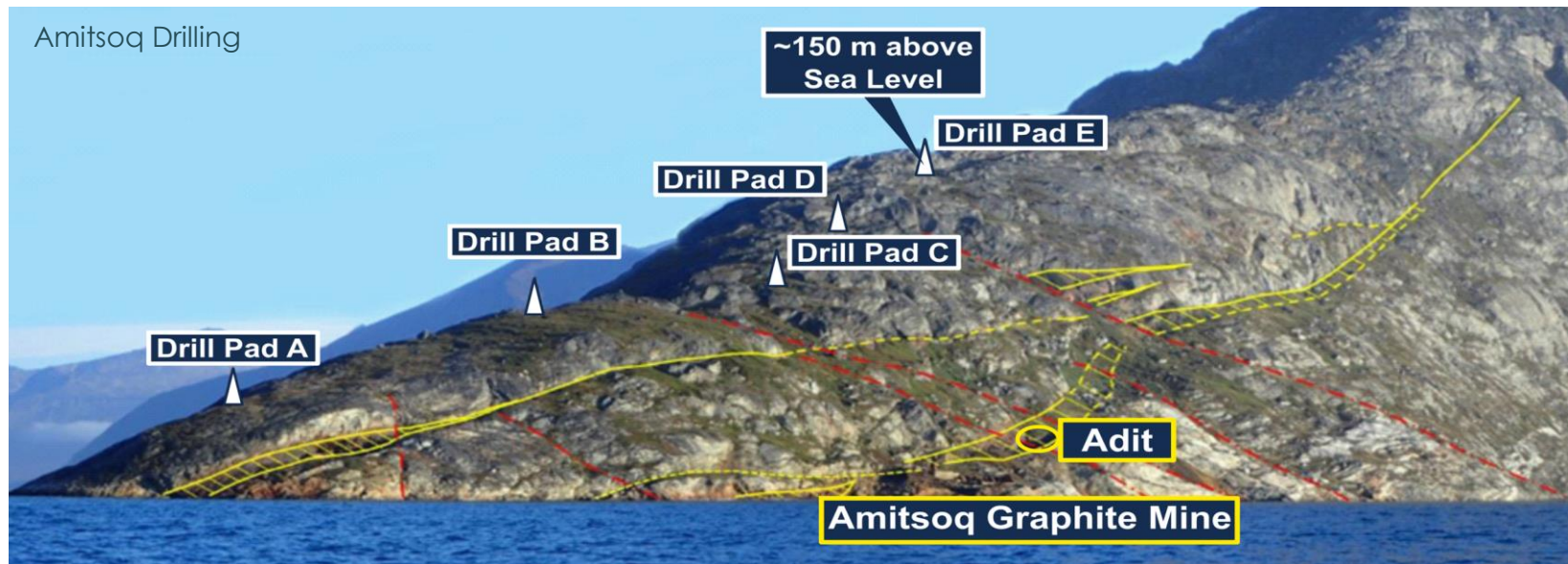
2021 Drilling:  
935m completed

Upper Graphite Layer (UGL):  
- Up to 8.19m thick  
- Up to 19.83% C(g) (drill core)  
- Up to 27.40% C(g) (channel)

Lower Graphite Layer (LGL):  
- Up to 15.54m thick  
- Up to 23.01% C(g) (drill core)  
- Up to 30.35% C(g) (channel)

Strike length of LGL  
intersected from Pad  
B to E totals 154 m

Maiden combined Indicated and  
Inferred JORC Resource:  
8.28 million tonnes @ 19.75%  
(1.63 Mt contained graphite)

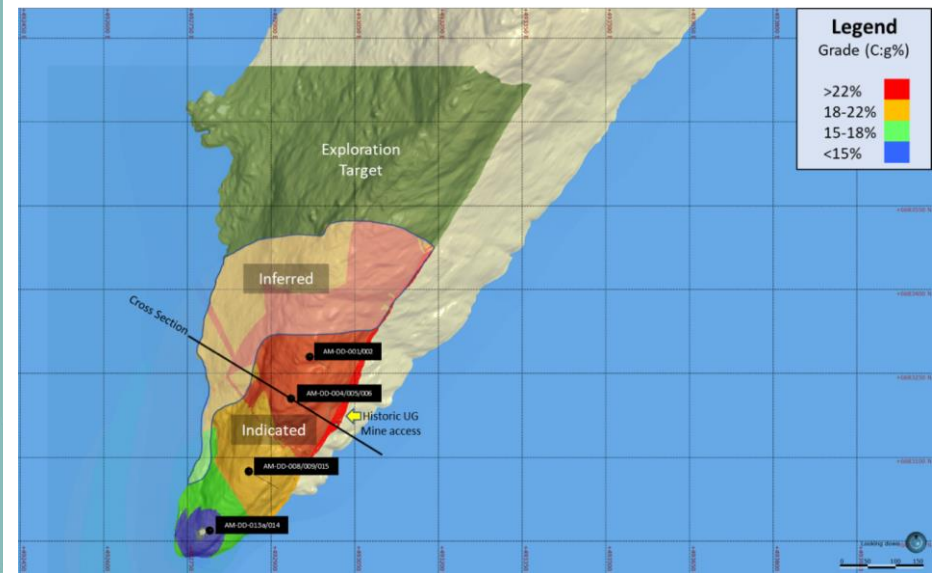
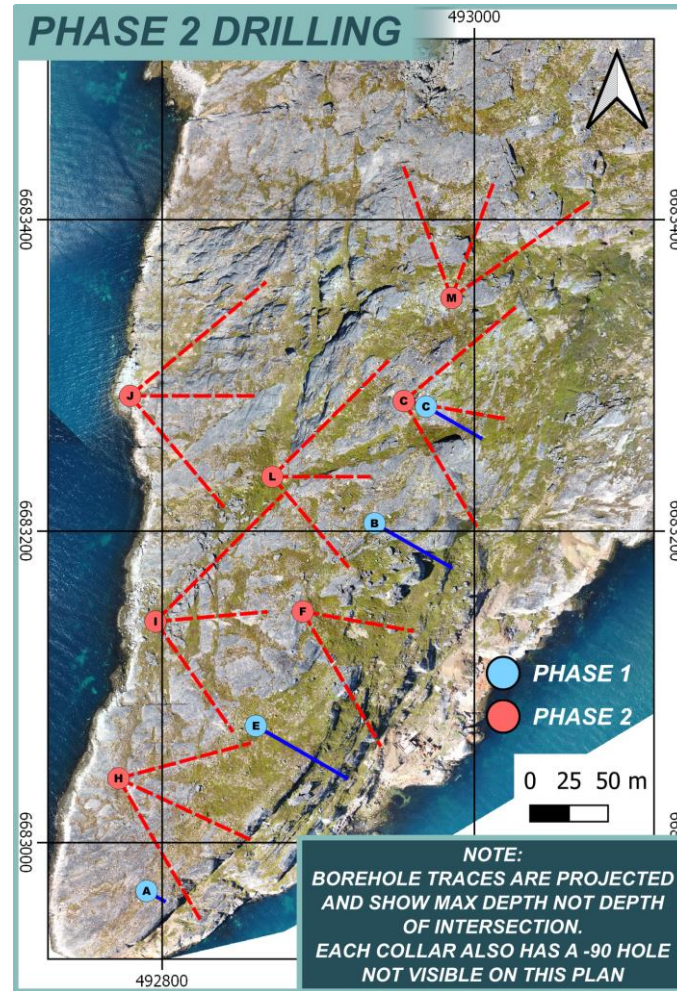


# Mineral Resource and Phase 2 Drilling

AMITSOQ GRAPHITE, GREENLAND

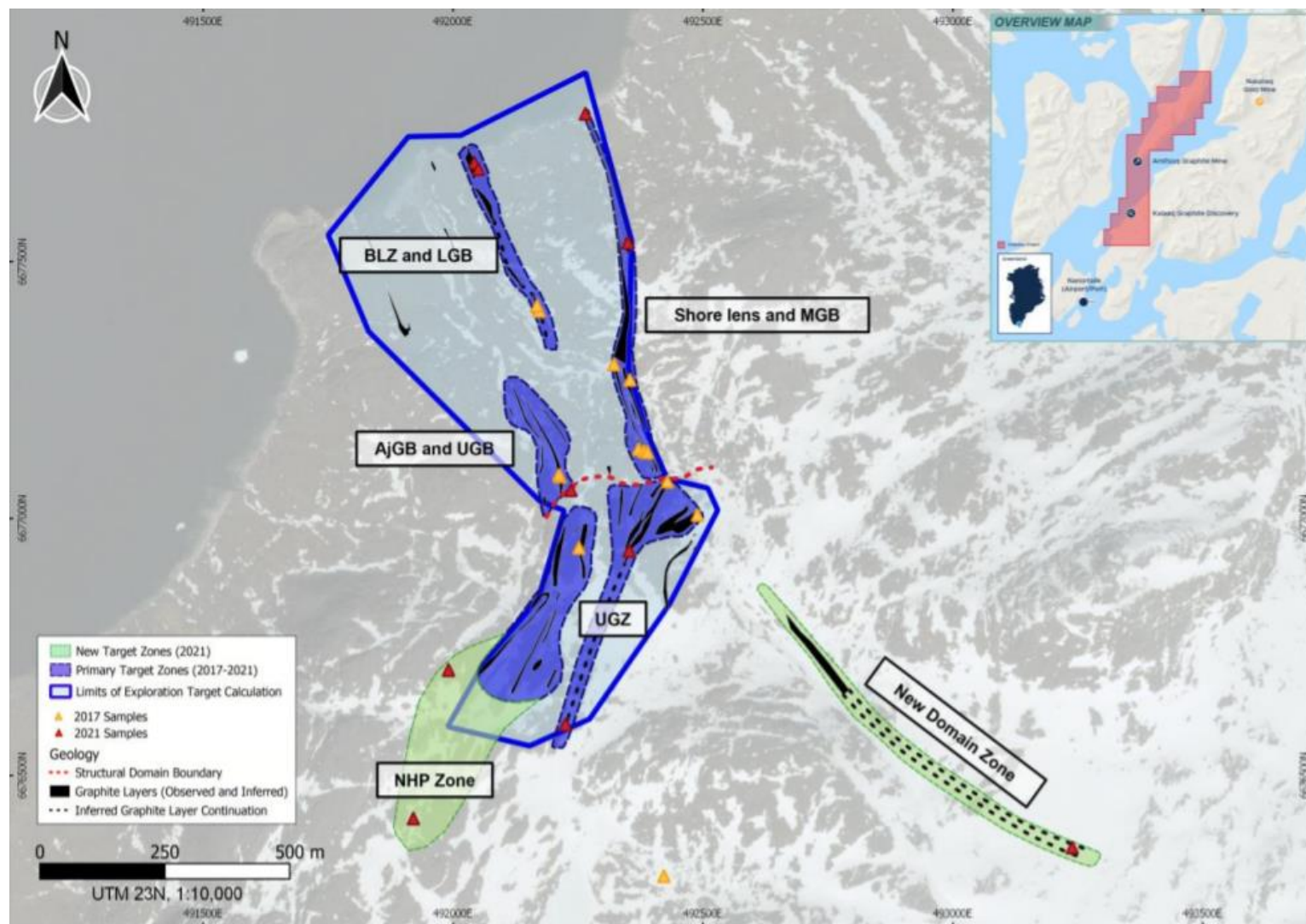
Maiden Resource confirms Amitsoq's position as one of highest-grade graphite deposits globally

- Maiden combined Indicated and Inferred JORC Resource of 8.28 Mt @ 19.75%, giving total graphite content of 1.63 Mt
- Exploration Target of 5-15Mt @ 18-22%
- The deposit is open along strike (predominantly to the north) and down dip to the west, which will be tested in 2022 Phase 2 drilling
- Objective of 2022 drilling is to establish a larger tonnage, higher-category Resource to provide basis for feasibility studies



# Kalaaq Mainland Deposit Provides Further Resource Upside

AMITSOQ GRAPHITE, GREENLAND



- Extension of substantial zones of mineralisation at Kalaaq Deposit through sampling, trenching and geophysics
- Projection of Upper Graphite Zone (UGZ) extended 360m to the south and open along strike
- Lower Graphite Bed (LGB) extended 300m along strike to the north, grading up to 33.1 C(g)%
- Newly discovered Niels Hede Pedersen (NHP) Zone has extended graphite mineralisation of Boat Landing Zone (BLZ) by 1.3km
- Trenching has revealed graphite beds up to 10m thick
- Exploration Target of 6-10Mt @ 17-33%



# Peer Review

AMITSOQ GRAPHITE

Company	Market Cap*	Projects	Resource (Mt)	Resource (Grade)	Contained Ore (Mt)	Stage
Talga Group Ltd	£222m	Vittangi (Sweden)	30.1	24.1%	7.2	Feasibility
			2.26 (res)	24.0%	0.54	
NextSource Materials Inc.	£149m	Molo (Madagascar)	141.28	6.13%	8.66	Feasibility
Tirupati Graphite Plc	£50m	Vatomina (Madagascar)	3.2	4.30%	0.14	Mining
			15.2	4.70%	0.71	
		Sahamany (Madagascar)	1.4	4.10%	0.06	Production
			5.7	4.20%	0.24	
GreenRoc Mining Plc	£6.78m	Amitsoq (Greenland)	8.28Mt	19.75%	1.63	Resource
			5.0 – 15.0 (ET)**	18% - 22%	2.00***	ET/Future Drilling
		Kalaaq (Greenland)	6.0 – 10.0 (ET)**	17% - 33%	2.00***	ET/Future Drilling

\* Market caps in GBP as at 10.06.2022

\*\* The potential quantity and grade of the Exploration Target is conceptual in nature, there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in estimation of a Mineral Resource.

\*\*\* Figure given is based on the median of the tonnage and grade ranges.





# Thule Black Sands

*High-Grade Ilmenite*

# High Grade Ilmenite

THULE BLACK SANDS

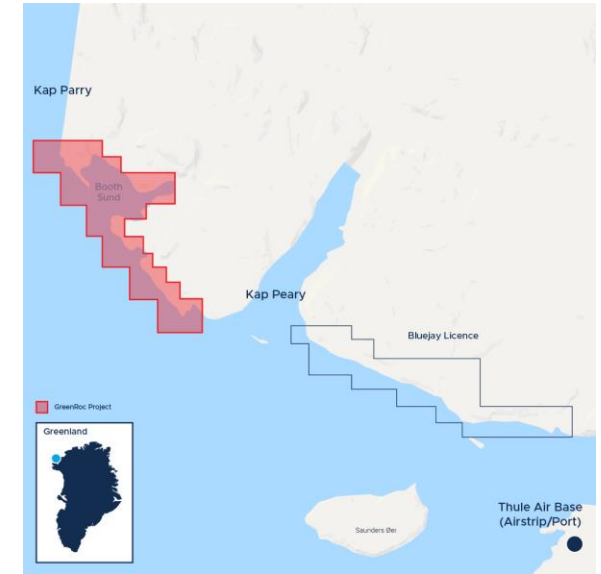
Extensively drilled and set to move into the development phase

High-grade ilmenite mineral sands located on shoreline of Steensby Land peninsular, N-W Greenland

Extensively drilled, with 10km of mineralised strike length

JORC Resource: 19MT@ 43.6% THM, in-situ ilmenite grade 8.9% with 1.7 MT of contained Ilmenite

Resource upgrade will provide basis for Scoping Study, EIA/SIA & application for Mining Licence



MEL 2017/29 valid till 31/12/23 with right to apply for renewals thereafter

# Ilmenite & Titanium Explainer

Ilmenite



Ilmenite: black iron-titanium oxide ( $\text{FeTiO}_3$ ) largely recovered by dredging mineral sands

Ilmenite is the Primary ore of titanium

Titanium



Titanium: metal with the highest strength to weight ratio of all metals

Used to make high-performance alloys (aerospace & military), medical equipment & implants

Titanium Dioxide ( $\text{TiO}_2$ )



Titanium Dioxide,  $\text{TiO}_2$ : most ilmenite is used to manufacture  $\text{TiO}_2$

Non toxic and inert,  $\text{TiO}_2$  prized for opacity, brightness & whiteness and ability to absorb & reflect ultraviolet radiation

Used as whitening pigment in paints, inks, paper, plastics, fabrics, sunscreen, food & cosmetics and as polishing abrasive

# 2021 Drilling Positions TBS for Expansion

THULE BLACK SANDS

Phase 2 Drilling completed 2021

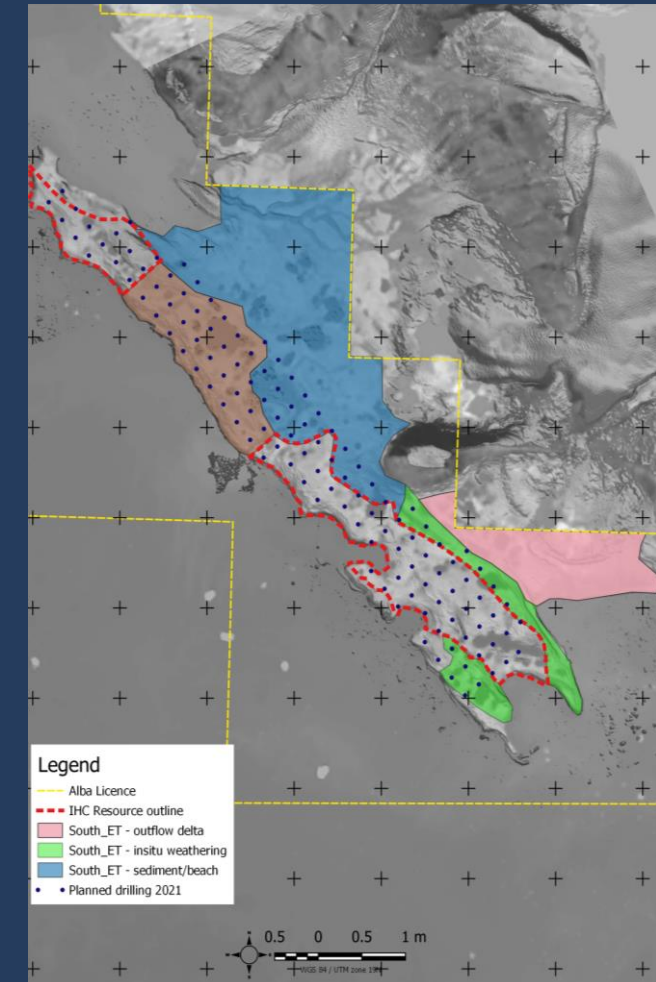
249 holes completed to a maximum of 6 m depth for a total of 550 m

Drilling focused on high-grade southern zone

Maiden Resource limited to top 1m (depth of permafrost), whereas Phase 2 drilling has averaged 2.2m in depth

Exploration Target (“ET”)\* declared of 70-300 Mt at in-situ ilmenite grade of 6-11%

JORC Resource upgrade awaited - targeting moving Inferred Resources to Indicated Resources & defining more Resources generally



\* The potential quantity and grade of the ET is conceptual in nature, there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource

# Titanium Market Dynamics

Global ilmenite market forecast to register CAGR of 4.2% in the period 2019-27 - prices at \$367/t for TiO2 46% min (at 10/06/2022)

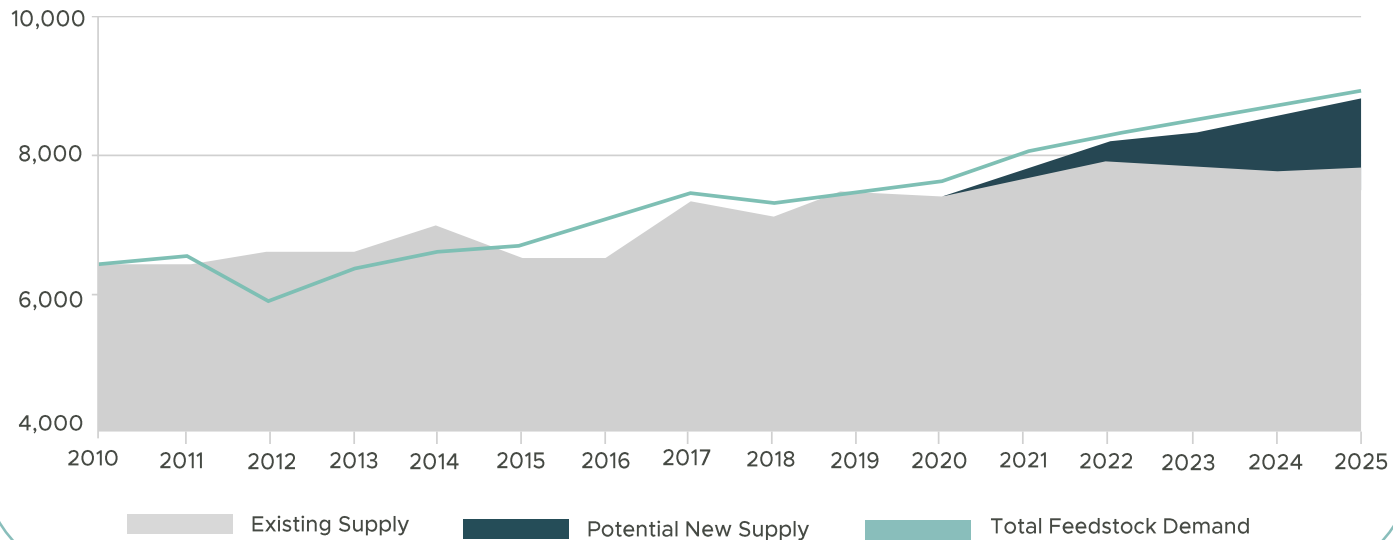
Titanium pigment accounts for 90% of demand

Mineral sands end products widely used in everyday life and demand tightly tied to growth in global GDP

China largest single producer of TiO2 feedstock

Current strong demand growth & feedstock shortage. Market expected to rebalance in 2-3 years

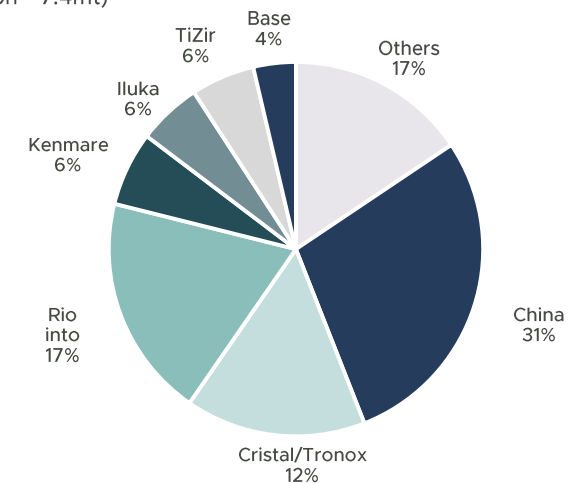
Forecast supply/demand market balance



Source: Kenmare Resources, May 2021

Global Titanium Feedstock by Major Producers

(2018 Total Production – 7.4mt)

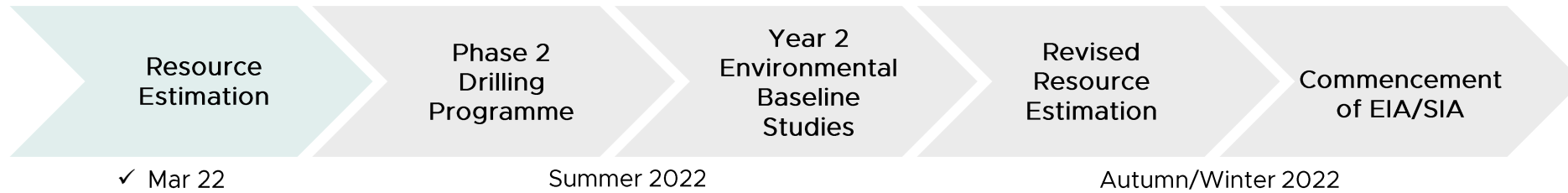


Source: Iluka Resources, October 2019, Statista

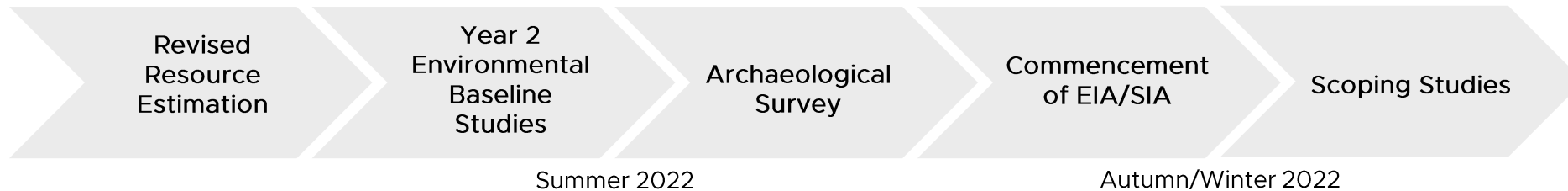
# Active development strategy for Amitsoq and TBS

Mineral Resource upgrades will pave the way for a Scoping Study, EIA/SIA and application for Mining Licence

## 2022 Amitsoq development plan



## 2022 TBS development plan



# Wider GreenRoc Portfolio

## Melville Bay Iron Ore Project N-W Greenland



JORC Inferred Resource of 63 Million Tonnes @ 31.4% Fe

Significant potential to increase Resource at Melville Bay through drilling -  
Exploration Target of 200-400 Mt at 25-37% Fe

High-grade magnetite concentrate can be produced, grading 70% Fe with low impurities

Several surface samples grading >60% Fe and high-grade drill intercepts (e.g. 0.5m at +60% Fe at Haematite Nunatak target, left)

Part of Committee Belt Geological Formation - also hosts 865Mt (65% Fe) DSO-producing Mary River Iron Mine & 660Mt (26% Fe) Roche Bay Iron Project in Canada

Plans to focus future work at Melville Bay on high-grade DSO potential

## Inglefield Multi-Element Project N-W Greenland



Extensive historic exploration confirms cobalt, copper, gold, vanadium and nickel

2019 geophysics review confirms Four Finger target (part of 70km long North Inglefield Land Gold) prospective for IOCG-style deposit



# GreenRoc Retained Advisers & Consultants

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## Geology/Resources



## Professional Services



## Environmental/Social Impact



## In Country Services/Logistics



## Mining/Engineering/Metallurgy



# Contact Details

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GreenRoc Mining Plc  
6<sup>th</sup> Floor, 60 Gracechurch St  
London EC3V 0HR  
United Kingdom

Tel: +44 (0)20 3950 0724  
Email: [info@greenrocmining.com](mailto:info@greenrocmining.com)  
Website: [www.greenrocmining.com](http://www.greenrocmining.com)  
Twitter: @GreenRocMining  
LinkedIn: GreenRoc Mining plc

St Brides Partners Ltd (PR Advisers)  
Warnford Court  
29 Throgmorton Street  
London, EC2N 2AT

Tel: +44 (0) 20 7236 1177  
Email: [info@stbridespartners.co.uk](mailto:info@stbridespartners.co.uk)  
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