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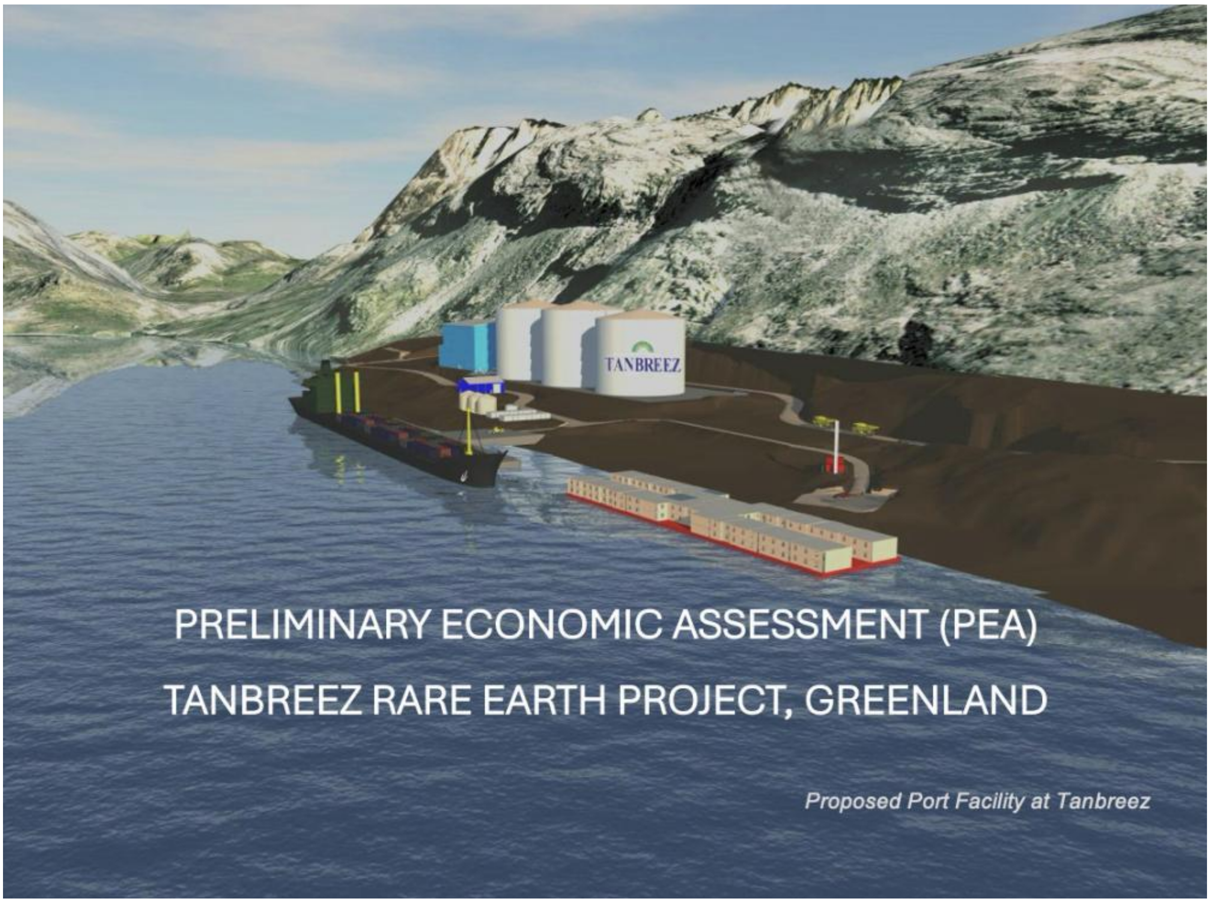

Proposed Port Facility at Tanbreez

Malcolm Castle
Agricola Mining Consultants Pty Ltd
31 March 2025

Malcolm Castle CONSULTING GEOLOGIST	 **Malcolm Castle**

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PRELIMINARY ECONOMIC ASSESSMENT (PEA)

TANBREEZ RARE EARTH PROJECT, GREENLAND

Introduction to the Tanbreez Rare Earth Project Preliminary Economic Assessment[1]

Critical Metals Corp. and European Lithium Ltd (together the "Company") has commissioned Agricola Mining Consultants Pty Ltd ("Agricola") to prepare a Preliminary Economic Assessment or Scoping Study for the Company's Tanbreez Rare Earth Project (the "Project") located in Southern Greenland, with key outcomes highlighting the potential of the Project to support a viable standalone Rare Earth mining and processing operation.

Cautionary Statement

This Preliminary Economic Assessment ("PEA") has been undertaken to evaluate the potential development of the Tanbreez Rare Earth Project located in the Southern Greenland. The Project is held by Critical Metals Corp. The PEA is a preliminary technical and economic study of the potential viability of the Tanbreez Rare Earth Project. It is based on lower-level technical and preliminary economic assessments that are not yet sufficient to support the estimation of ore reserves. Further evaluation work, mine design and appropriate studies are required before an estimate of ore reserves or to provide any assurance of an economic development case.

The initial project is focused on two deposits within the Exploitation Licence (MIN 2020-54), the Fjord Deposit and the Hill Deposit. Approximately 43% of the Life-of-Mine production from the Fjord Deposit is in the Indicated Mineral Resource category and 57% is in the Inferred Mineral Resource category. Approximately 88% of the Life-of-Mine production from the Hill Deposit is in the Indicated Mineral Resource category and 12% is in the Inferred Mineral Resource category.

The Company has concluded it has reasonable grounds for disclosing a Production Target, given that the PEA assumes that in the first eleven years, 64% of the production is from the indicated resource category. There is a low level of geological confidence associated with Inferred Mineral Resources, and there is no certainty that further exploration work will result in the determination of Measured or Indicated Mineral Resources or that the production target itself will be realized. The Company believes that there is a reasonable basis for the forward-looking production target based on partially Inferred Mineral Resources in the later years of this PEA.

[1] Critical Metals Corp. is registered in the USA and this PEA includes spelling of many words in the American idiom. European Lithium Ltd is listed on the Australian Stock Exchange (ASX:EUR).

The Company recently announced its JORC 2012 Maiden Mineral Resource Estimate (MRE) and pursuant to ASX Listing Rule 5.8.1 for the Tanbreez Project of 45MT containing 0.38% TREO including 27% contained HREO plus rare metal oxides (*European Lithium Limited, 2025, Maiden Mineral Resource Estimate 45mtTanbreez Rare Earth Project Greenland, ASX Release, 13 March 2025*).

The current Mineral Resource estimates are classified as Indicated and Inferred Resources under the JORC Code 2012 and have been determined by drill density and number of drillholes and samples utilized in grade estimation. The resource classification accounts for all relevant factors and reflects the views of the deposit prepared by Al Maynard and Associates Pty Ltd. The resource classification appropriately and reasonably reflects the varying levels of confidence of the resource model to predict average grade and tonnages for the resources if it were to be mined.

Confidence in the relative accuracy of the estimate is reflected by the categorization of the mineralisation as Indicated and Inferred Resources.

TANBREEZ PROJECT	Mtonnes	TREO	ZrO_2	Nb_2O_5
Tanbreez Hill and Fjord				
Indicated Resource	25.4	0.37%	1.37%	0.13%
Inferred Resource	19.5	0.39%	1.42%	0.15%
Total	44.9	0.38%	1.39%	0.14%

2016 MRE for Inferred and Indicated Resource Estimate

The Company confirms that it is not aware of any new information or data that materially affects the information included in that previous announcement and that all material assumptions and technical parameters underpinning the estimate continue to apply and have not been changed.

The Company believes that it has a reasonable basis for providing these forward-looking statements and the forecast financial information based on material assumptions outlined in this PEA. One of the key assumptions is that funding for the Project will be available when required. While the Company considers all the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the PEA will be achieved.

To achieve the range of outcomes indicated in the PEA, funding of approximately US$200 M is estimated to be required comprising of approximately US$150 M in pre-production capital expenditure and US$50 M in funding for early-stage operations. There is no certainty that the Company will be able to raise that amount of funding when needed.

Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the PEA.

Tanbreez Rare Earth Project,

The Tanbreez Rare Earth Project, located in southern Greenland near the town of Qaqortoq, represents one of the world's most significant rare earth element deposits. The project is operated by Tanbreez Mining Greenland A/S and is currently under the ownership of Critical Metals Corp., which currently holds a 42% interest with the right to ern 92.5% interest, with European Lithium Ltd holding 7.5% interest. The project is held under Exploitation License MIN 2020-54, issued by the Government of Greenland, granted in 2020 for 30 years. The Licence covers 18 square kilometers within the geologically rich Ilímaussaq intrusive complex.

The deposit is within the geologically rich Ilímaussaq intrusive complex, and the mineralization is hosted in the distinctive kakortokite rock formation, notable for its high concentrations of zirconium (Zr), niobium (Nb), tantalum (Ta), hafnium (Hf), gallium (Ga) and a blend of light and heavy rare earth elements (REE), particularly within the mineral eudialyte. Unlike many global REE deposits, Tanbreez is characterised by very low levels of radioactive elements such as uranium and thorium, which provides a significant environmental and regulatory advantage.

This PEA is designed to evaluate the initial economic viability of mining and processing the Tanbreez deposit. The report adheres to international standards including the JORC Code (2012). the VALMIN Code (2015) in Australia and guidelines of the S-K 1300 Code in the USA and is intended to support disclosures to the ASX and SEC exchanges.

The proposed mining operation will use open-pit methods with minimal overburden, taking advantage of the surface exposure of mineralized kakortokite. Processing will occur on-site via dry magnetic separation, producing three concentrates: eudialyte, feldspar, and arfvedsonite, all destined for export or local sale. No chemical treatment is envisaged in Greenland.

- Further beneficiation will be in the USA or Europe. This chemical processing is not included in this PEA.
- Importantly, the operation avoids chemical processing at the site, enhancing environmental acceptability.

Infrastructure development, including roads, port facilities, and power supply agreements (leveraging nearby hydroelectric infrastructure), are integral to the project. Shipping is planned via ice-free fjords, with initial concentrate exports likely directed to Europe and North America.

In a Preliminary Economic Assessment, cost estimates (which include initial capital expenditures, infrastructure setup, and pre-production costs) have a relatively low level of accuracy, typically in the range of ±30% to ±50%. These estimates are based on conceptual designs, industry benchmarks, and limited site-specific data, making them less reliable compared to later-stage Pre-feasibility studies and Definitive Feasibility Studies

The PEA outlines an estimated before tax Net Present Value (NPV) of approximately US$2.7–$3.4 billion, with an Internal Rate of Return (IRR) of approximately 180%. The after tax NPV is estimated at US$2.1–$2.7 billion. The current plan envisions a staged ramp-up in mining, beginning at 0.25 million tonnes of kakortokite per annum (Mtpa), increasing to 10 Mtpa over 25 years.

Table of Contents

1. EXECUTIVE SUMMARY

Project Overview

- Location: Southern Greenland, near Qaqortoq.
- Operator: Tanbreez Mining Greenland A/S.
- Ownership: Critical Metals Corp. (92.5%), European Lithium Ltd (7.5%).
- License: Exploitation License MIN 2020-54 (valid to 2050).
- Tenement Area: 18 km^2 within the Ilímaussaq intrusive complex.

On 13 August 2020, the Government of Greenland approved an application for an exploitation permit (MIN 2020-54). for an area of 18 km^2 located at Tanbreez in South Greenland to Tanbreez Mining Greenland A/S, valid for a period of 30 years. The exploitation permit gives Tanbreez the right to exploit rare earth elements found in the eudialyte mineral.

The Tanbreez license is in southern Greenland. The regional capital, Qaqortoq, is 20 km to the south and the regional airport of Narsarsuaq is being moved to approximately 12 km south of the license. The major power line which is from hydro power passes 2 km south of the license. The tenement has ample supply of fresh water.

Deposit Highlights

- Host Rock: Kakortokite – a layered igneous rock rich in zirconium, niobium, tantalum, hafnium, gallium and rare earth oxides.
- Key Mineral: Eudialyte – enriched in both Light and Heavy Rare Earth Elements (LREEs and HREEs). HREE ~28%.
- Notable Advantage: Exceptionally low uranium (20 ppm) and thorium (53 ppm) content – minimal radiological handling requirements.

The Company recently announced its JORC 2012 Maiden Mineral Resource Estimate (MRE) and pursuant to ASX Listing Rule 5.8.1 for the Tanbreez Project of 45MT containing 0.38% TREO including 27% contained HREO plus rare metal oxides (see ASX Announcement 13 March 2025).

The current Mineral Resource estimates are classified as Indicated and Inferred Resources under the JORC Code 2012 and have been determined by drill density and number of drillholes and samples utilized in grade estimation. The resource classification accounts for all relevant factors and reflects the views of the deposit prepared by Al Maynard and Associates Pty Ltd. The resource classification appropriately and reasonably reflects the varying levels of confidence of the resource model to predict average grade and tonnages for the resources if it were to be mined.

Confidence in the relative accuracy of the estimate is reflected by the categorization of the mineralisation as Indicated and Inferred Resources, (See Table below).

TANBREEZ PROJECT	Mtonnes	TREO	ZrO_2	Nb_2O_5
Tanbreez Hill and Fjord				
Indicated Resource	25.4	0.37%	1.37%	0.13%
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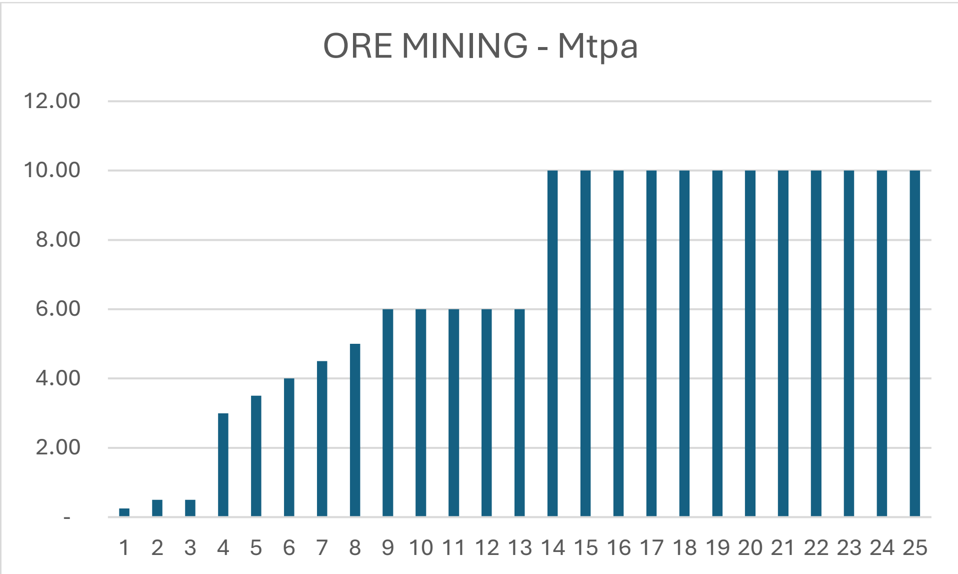
Total	44.9	0.38%	1.39%	0.14%

2016 MRE for Inferred and Indicated Resource Estimate

Mineral resources have been converted to "Notional Mining Reserve" to represent real-life expectations of the Mine Design process. The mass of mineralisation available for extraction have been converted at 90% for Indicated Resource and 75% for Inferred Resource.

TANBREEZ REO PROJECT, GREENLAND				Notional Mining Reserve Estimate			
	MINERAL RESOURCE				ORE RESERVE		
	Mtonne	TREO	ZrO_2	Nb_2O_5	Convert	Mtonne	Percent
Tanbreez Hill and Fjord							
Indicated Resource	25.42	0.37%	1.37%	0.13%	90.00%	22.88	61%
Inferred Resource	19.45	0.39%	1.42%	0.15%	75.00%	14.59	39%
TOTAL	44.87	0.38%	1.39%	0.14%	83.50%	37.47	83%

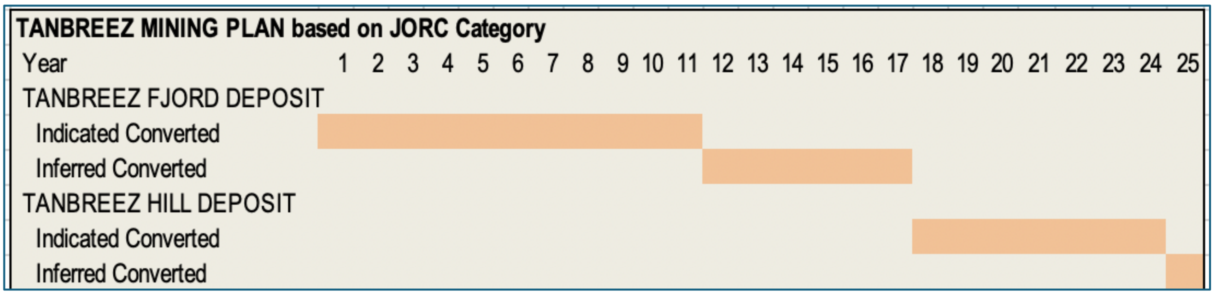


The Life of Mine Mining rate for kakortokite over 25 years

Strategic Value

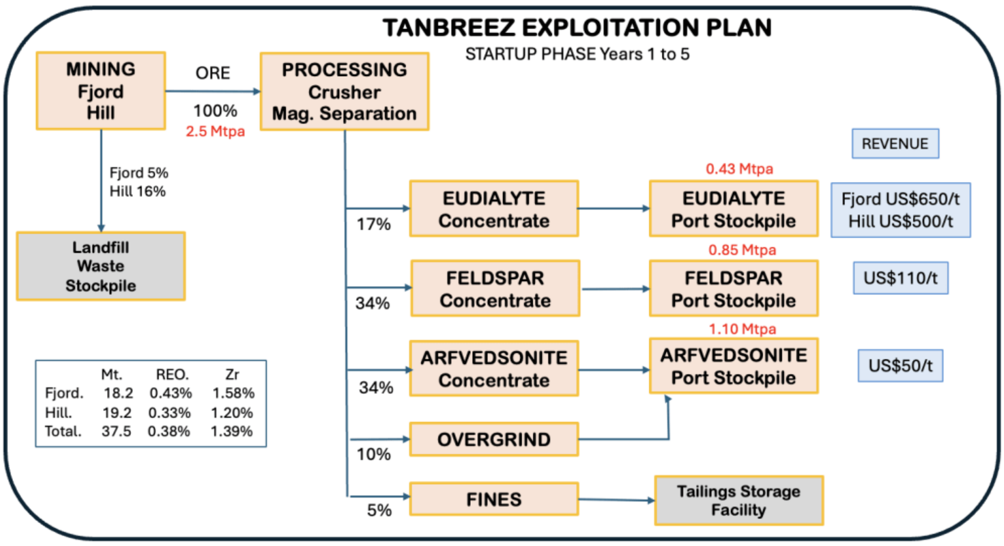
- HREE Supply: Contains critical HREEs such as dysprosium, terbium, and yttrium. 75% of the Rare Earth Oxides are “magnet REOs”.
- Geopolitical Relevance: Offers a secure, non-Chinese source of REEs – strategically important for the US, EU, and allied economies
- Environmental Profile: No radioactive by-products, supporting easier permitting and public acceptance
- Workforce Development: Commitment to employing and training local Greenlandic workers

Mining & Processing Strategy



Sequence of mining at Fjord and Hill Deposits

- Mining Priority: Indicated Resource will be prioritized over Inferred Resource. 64% of the ROM Delivery is from the Indicated Resource.
- Method: Open-pit mining with minimal overburden due to outcropping ore body
- Processing: Crushing and Dry Magnetic Separation on-site (no chemicals required)
- Products: Concentrates of Eudialyte (REOs), Feldspar, and Arfvedsonite
- Shipping: Export via ice-free fjords to Europe/North America, potential for year-round operations



Infrastructure & Logistics

- Access: Via fjords and nearby airport (Narsarsuaq); road development planned.
- Power: Agreement in place with Greenland's hydroelectric utility (Nukissiorfiit).
- Local Benefits: Strong focus on regional economic development.
- Workforce: Emphasis on Greenlandic labor training and employment

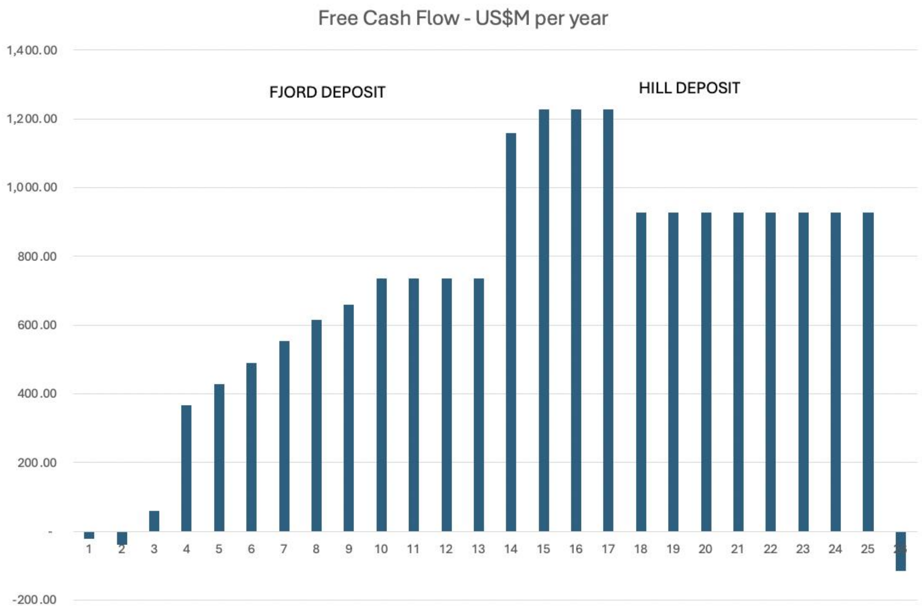
Risks and Challenges

- Remote location: High capital costs for logistics and infrastructure
- Environmental sensitivity: Must comply with Greenland's strict environmental laws
- Market dependency: Prices of REEs are volatile and tied to geopolitical factors
- Funding: Still requires significant investment to move from planning to production

Economic Metrics (Preliminary Economic Assessment)

FINANCIAL SUMMARY	US$M	US$/t ROM
REVENUE	26,800	782.48
OPERATING COST	8,000	233.58
CAPITAL COST	300	8.76
Sustaining Capital (3%)	100	2.92
EBITDA (Pre-Tax)	18,200	531.39
Decommissioning and Closure	115	3.36

- Net Present Value (NPV): approximately US$2.8–3.6 billion at discount rates of 12.5% and 15%, Before Tax
- Internal Rate of Return (IRR): approximately 180%
- Payback Period: less than 3 years
- After Tax Net Present Value (NPV): approximately US$2.1–2.7 billion at discount rates of 12.5% and 15%. Tax rate 25%.
- Royalty Payments: ~ US$920 million paid to the Greenland government over 25 years
- EBITDA: ~US$18.2 billion
- NPAT: ~US$13.7 billion
- Magnet Rare Earth oxides: The eudialyte concentrate includes 75% of the primarily magnet rare earth oxides – neodymium, praseodymium, dysprosium, and terbium – critical for permanent magnets.



Economic Analysis Accuracy in the Tanbreez PEA

A PEA provides a high-level economic evaluation of a mining project, but it has a relatively low accuracy range of ±30% to ±50%.

Study Level	Economic Accuracy	Confidence Level
PEA (Scoping Study)	±30-50%	Conceptual estimates, early-stage assumptions
Pre-Feasibility Study (PFS)	±20-30%	More refined mine plan, better cost definition
Definitive Feasibility Study (DFS)	±10-15%	Detailed engineering, firm vendor quotes

Qualified Person's Conclusions

Tanbreez Project in Greenland is at the Development Stage. Maiden Mineral Resource Estimates in accordance with the JORC Code 2012 have been finalized for the Tanbreez Deposit and released to the Australian Stock Exchange. An Exploitation Licence has been granted by the Government of Greenland and the tenement area has been subjected to extensive exploration over the last four decades. A Definitive Feasibility Study and an Environmental Impact Assessment were compiled in 2014 and will be updated in 2025.

The Project is considered low risk. Based on the review of the available technical information and the results of feasibility studies prepared in 2014. Agricola considers the proposed future development activities including an Initial Assessment (Scoping Study or Preliminary Economic Assessment, PEA) for the Project are reasonable and appropriate for the deposit and the development stage.

Agricola was not involved in the exploration conducted on the Tanbreez Project but has prepared technical and valuation reports over the last 14 years. It has reviewed the exploration completed to date and the supporting documentation provided by the Company. Overall, the Competent Person/Qualified Person (CP/QP) considers the data used to prepare the Preliminary Economic Assessment are reasonable and representative and has been generated based on industry accepted cost estimates, standards and procedures.

Reasonable prospects for economic extraction have been demonstrated for the Project in 2014 during the DFS and has been upgraded to the present day, as described in the Report. Considering the current and forecast product prices, the assessment for reasonable prospects for economic extraction is, in the CP/QP's opinion, still valid.

In undertaking this Report, the technical inputs pertaining to the projects have been reviewed in an impartial, rational, realistic, and logical manner. Agricola believes that the inputs, assumptions, and overall technical assessment is in line with industry standards and meets the Reasonable Grounds Requirement of the JORC Code 2012 and the VALMIN Code 2105.

Agricola considers the PEA is representative of the informing data, and that the data is of sufficient quality to support the conclusions. The analysis revealed a robust and highly profitable outcome, and it is strongly recommended that the Company progress the the next stages of Pre-Feasibility and Definitive Feasibility Studies.

Declarations

The information in this Preliminary Economic Assessment Report is based on information compiled by Mr Malcolm Castle, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy. He is the Principal Consultant for the Agricola Mining Consultants Pty Ltd. He has sufficient experience in the study, development and operation of mineral projects and consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Forward Looking Statements

This announcement may contain certain "forward-looking statements" which may not have been based solely on historical facts but rather may be based on the Company's current expectations about future events and results. Where the Company expresses or implies an expectation of belief as to future events or results, such expectation or belief is expressed in good faith and believed to have a reasonable basis. The detailed reasons for that conclusion are outlined throughout this announcement and all material assumptions are disclosed.

However, forward-looking statements are subject to risks, uncertainties, assumptions and other factors, which could cause actual results to differ materially from future results expressed, projected or implied by such forward-looking statements.

Such risks include, but are not limited to resource risk, metals price volatility, currency fluctuations, increased production costs and variances in ore grade or recovery rates from those assumed in mining plans, as well as governmental regulation and judicial outcomes.

Readers should not place undue reliance on forward-looking information. The Company does not undertake any obligation to release publicly any revisions to any "forward looking statement" to reflect events or circumstances after the date of this announcement, or to reflect the occurrence of unanticipated events, except as may be required under applicable securities laws.

Development Timeline

Phase	Timeline	Key Activities
Exploration & Resource Definition	2000–2016	Geological surveys, drilling, sampling, resource estimation
Permitting & EIA	2014–2020	Definitive Feasibility Studies, Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), stakeholder consultations, and license application
Exploitation License Granted	August 2020	Greenland government issues exploitation license MIN 2020-54
Preliminary Economic Assessment (PEA)	2025	Broad estimate of revenue and costs, Economic Analysis.
Tanbreez Exploitation Plan	2025	Proposed mining and processing plan presented to Greenland government for approval.
Pre-Feasibility Study (PFS)	2025	Mine Design, Pre-Feasibility studies, plant design, logistics planning
Definitive Feasibility Study (DFS)	2025-2026	Update earlier DFS with current engineering and cost quotations.
Design Engineering Study	2026	Detailed Mine and Process planning with mor detailed information
Finance, Marketing and procurement.	2027	Confirm necessary contracts and off take agreements.
Construction Phase	2027–2028 (est.)	Infrastructure build-out (port, access road, processing plant, housing)
Initial Production	2028 (est.)	Commissioning of processing plant, first shipment of REE concentrate
Full-Scale Production	2029+	Steady-state mining and export operations

2. INTRODUCTION

This Scoping Study (Preliminary Economic Assessment) Report, “PEA”) was prepared to assess the economic viability of the the Tanbreez Rare Earth Project (“Tanbreez”) in Southern Greenland held by Tanbreez Mining Greenland A/S (the “Company”) and provide an initial framework for decision-making.

This Preliminary Economic Assessment (PEA or Scoping Study) has been undertaken to provide the directors of Critical Metals Corp with an overview of the future value of the Tanbreez Project. It is a preliminary technical and economic study of the potential viability of the Tanbreez Project. It is based on low level technical and economic assessments that are not sufficient to support the estimation of ore reserves. Further exploration and evaluation work and appropriate studies are required before Critical Metals Corp. will be able to estimate any ore reserves or to provide any assurance of an economic development case.

The Scoping Study is based on the material assumptions outlined below. These include assumptions about the availability of funding. While Critical Metals Corp. considers all the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Scoping Study will be achieved.

To achieve the range of outcomes indicated in the Scoping Study, funding of in the order of $200 million will likely be required. Investors should note that there is no certainty that Critical Metals Corp. will be able to raise that amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of Critical Metal Corp.'s existing shares.

It is also possible that Critical Metal Corp could pursue other 'value realization' strategies such as a sale, partial sale or joint venture of the project. If it does, this could materially reduce Critical Metals Corp. proportionate ownership of the project.

Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Scoping Study.

Terms of Reference and Purpose of the PEA

Agricola Mining Consultants Pty Ltd (" Agricola") was engaged by Critical Metals Corp. to deliver this report, which will potentially be included in an announcement to the Australian Securities Exchange ("ASX") and the New York Securities Exchange Commission ("SEC").

This Report has been prepared in accordance with the ASX interim guidance: Reporting Scoping Studies, November 2016, ASX Information Sheet 214, Mining and Resources – Forward Looking Statements and the Australasian Code for Public Reporting of Technical Assessments and Valuations of Mineral Assets' (the VALMIN Code 2015). The VALMIN Code incorporates the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code 2012). In addition, the Report has been prepared in accordance with the relevant requirements of the Listing Rules of the ASX and relevant Australian Securities and Investment Commission Regulatory Guidelines.

Where recent exploration results and mineral resource estimates have been referred to in this report, the information was prepared in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("JORC Code" 2012), prepared by the Joint Ore Reserves Committee of the AusIMM, the AIG and the Minerals Council of Australia. Historic results are clearly identified and may not have been originally reported under the current JORC Code.

In undertaking this Scoping Study assessment, the technical inputs pertaining to the projects were reviewed in an impartial, rational, realistic, and logical manner. Agricola believes that the inputs, assumptions, and overall technical assessment are in line with industry standards and meet the reasonable ground requirements of the VALMIN Code 2015.

Company Background:

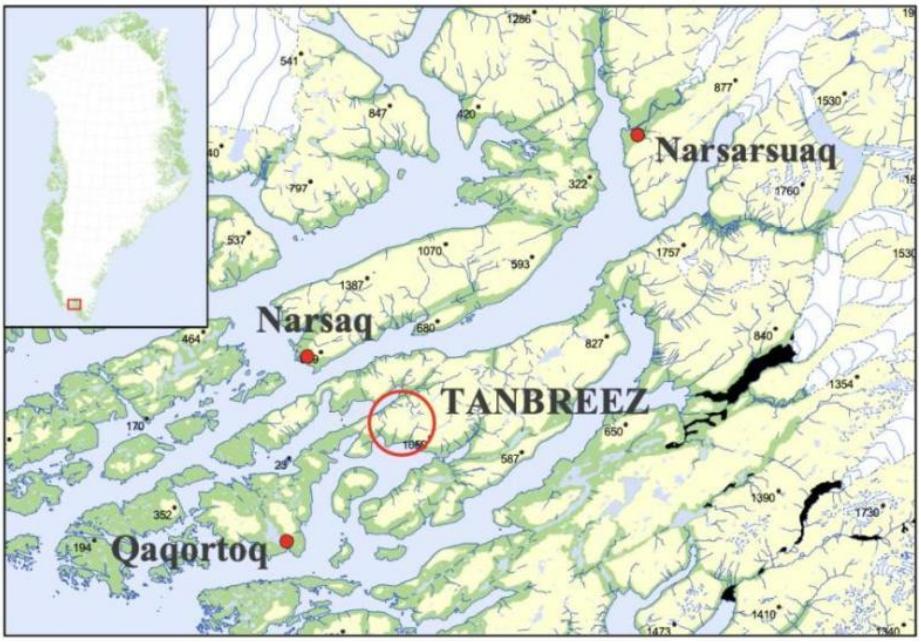
Tanbreez Mining Greenland A/S holds exclusive rights to develop the deposit. The Tanbreez tenure is a Mineral Exploitation Licence, MIN 2020-54, in southern Greenland. The Tanbreez Licence is registered in the name Tanbreez Mining Greenland A/S, a subsidiary of Rimbal Pty Ltd. Critical Metals' current equity interest in the Tanbreez Project is 42%, and European Lithium retains a 7.5% equity interest, for a combined shareholding of 49.5%. CRML has the right to acquire the remaining 50.5% equity interest in the Tanbreez Project.

Location and Ownership Details:

- Located in South Greenland near the town of Qaqortoq
- Exploitation License MIN 2020-54 issued by the Greenland authorities

Property Location

The Tanbreez license, MIN 2020-54 is in southern Greenland. The regional capital, Qaqortoq, is 20 km to the south and the regional airport of Narsarsuaq is being moved to approximately 12 km south of the license. The major power line which is from hydro power passes 2 km south of the license. The tenement has ample supply of fresh water.



Location of the Tanbreez Project

Qaqortoq is the capital of the Kujalleq municipality in southern Greenland, located near Cape Thorvaldsen. it is the most populous town in southern Greenland with a population of approximately3,500, and the fourth or fifth-largest town in Greenland. Qaqortoq Heliport operates year-round, linking Qaqortoq with Narsarsuaq Airport (a distance of 60km) and, indirectly, with the rest of Greenland and Europe. Feasibility assessments were underway regarding building a landing strip for fixed-wing aircraft.

Given the proximity of the Tanbreez rare earth deposit to Qaqortoq, the new airport could significantly enhance logistics and transportation for mining operations, offering more efficient routes for personnel and equipment.

Aerial view of the town of Qaqortoq in southern Greenland

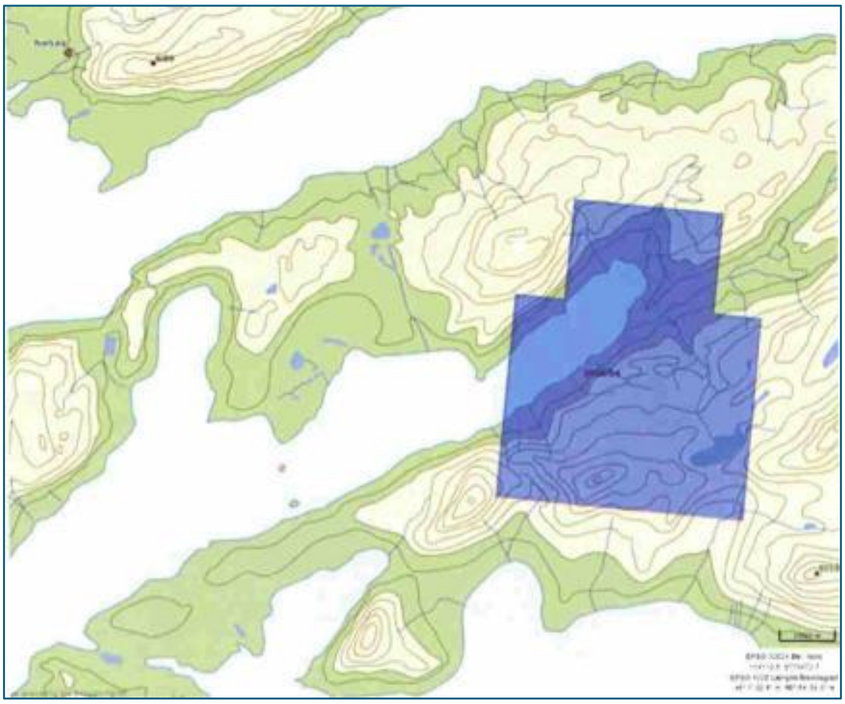
Mineral Rights

The present status of the tenements in Greenland is based on a review of the official grant document signed on 19 August 2020 by the Government of Greenland, Ministry of Mineral Resources. This Report has been prepared on the assumption that the tenements are lawfully accessible for evaluation.

In 2001 the exploration license for the Tanbreez area was taken up by Rimbal Pty. Ltd. Exploration at Tanbreez was initiated in 2007 though the subsidiary Westrip as the TANBREEZ Project. In 2010 the TANBREEZ Mining Greenland A/S, a subsidiary of Rimbal, based in Nuuk was formed.

The Tanbreez Project is situated on the southeast side of the Kangerluarsuk Fjord near the head of the fjord. The fjord is mostly steep sided and surrounded by mountains rising to 700-1,000 m with the Killavaat mountain to the east rising to 1,200 m.

Mineral Licence	
Licence Code	MIN 2020-54
Registered Holder	Tanbreez Mining Greenland A/S
Licence Type	Mining Exploitation Licence (MIN)
Licence Status	Active Licence
Official Area	18 square kilometers
Grant Dat	8-Sep-20
Expiry Date	7-Sep-50



Location of Tanbreez Tenement MIN 2020-54

On 13 August 2020, the Government of Greenland approved an application for an exploitation permit for an area of 18 km^2 located at Tanbreez in South Greenland to TANBREEZ Mining Greenland A/S (MIN 2020-54). Tanbreez has been granted an exploitation permit valid for a period of 30 years. The exploitation permit gives Tanbreez the right to exploit elements found in the eudialyte mineral.

Under an Exploitation Licence there are several conditions.

- Royalties – 5% on rare earths, 2.5% on other minerals
- Training/education - a minimum of 2 Greenlander workers are trained to be used at management level
- Local Employment – average target for Greenlanders working during construction phase is 50% and eventually 90% during the production phase

Accuracy Levels of Mining Studies

The accuracy of scoping and feasibility studies in mining depends on multiple factors, including the quality of data, methodology, and assumptions used. These studies follow a progressive level of confidence as they move from early-stage assessments (scoping) to high-confidence evaluations (definitive feasibility study). Factors affecting accuracy include:

- Geological Data Quality: Limited drilling or poorly understood ore bodies lead to inaccurate resource estimates.
- Metallurgical Testing: Insufficient testing can lead to overestimated recovery rates.

- Mining Method Selection: Inappropriate mining methods can inflate production costs.
- Infrastructure & Logistics: Lack of detailed assessments on power, water, roads, and transport affects cost projections.
- Market & Price Assumptions: Fluctuations in commodity prices impact project feasibility.
- Environmental & Social Considerations: Unexpected permitting or community issues may delay or halt projects.

3. PROPERTY DESCRIPTION & LOCATION

Physiography

The main kakortokite unit outcrops well over an area of 5 x 2.5km which forms as a plateau that dips shallowly to the north. This plateau ends with a north facing cliff up to 400m high. The ore zone extends to a minimum of 40m below sea level.

The company has mapped a proposed road up the hill which means over 90% of the property will be accessible with a wheeled vehicle if required. It will also mean complete access and reduce the need for helicopters.

Vegetation

The minerals sodalite and eudialyte are slightly soluble and will form small amounts of silica gel in water. Such silica gel, when taken up by plants blocks their water pathways, thus killing the plant. These rocks thus act as a natural herbicide, so no vegetation can grow on the deposit and because of erosion, little soil remains, resulting in the deposit consisting mostly of outcropping rocks.

Climate

The company has maintained and independently monitored weather station on site. The data indicated the average winter temperature was -5°c, with a range from 9°c to -21°. While the summer temperature averaged between 4°c to 10°c, with a range from -3°c to 18°c.

Although on the same latitude as Anchorage, Oslo or Helsinki, this site has a far more moderate range of temperature due to the gulf stream, one arm passing just offshore.

Local Resources

Greenland is an independent colony (i.e. self-governing) of Denmark and as such most areas such as health, law & order, defense, social welfare etc. are in line with European standards. Most Greenlanders have completed secondary school (to the age of 17), with many completing further education in Denmark or Greenland at university level.

The company has spent considerable time assessing the local human resources and is convinced that 90% plus is available locally (refer later in this report). In addition to that

Greenlanders have had a long tradition of having to be self-sufficient. For example, if a car, or more so a boat broke down and there was only one ship per year, the machine would have to be fixed locally. Even though today most towns have daily aircrafts, and ships once a week or so, this reliance on self-sufficiency is still strong. Thus, in the industrial area at the nearby regional capital of Qaqortoq there is available a set of competing engineering facilities, and original thinkers far beyond what a normal town with would be expected to provide.

Major Towns

There are 3 major towns in the area:

Town	Population	Main Business
Qaqortoq	3,500	Regional administration center
Narsaq	1,300	Greenland abattoirs
Nanortalik	1,100	mining & fishing

Qaqortoq also has a tertiary business school while Narsaq has Greenland's only advanced catering school.

Labor

The Greenland Tax Act is one where the personal income tax goes to the local community where the person lives. Thus, if a person lives at any of the towns in this community which includes Qaqortoq, Narsaq and Nanortalik, then the resultant personal income tax stays in the town. Company tax, income tax on foreign workers and royalties go to the central government. This means the local community is fully aware of all local people capable of fulfilling set jobs and more so people who have left the community to seek employment elsewhere. The community is also responsible for much of the housing in these towns which is a major problem for workers who wish to move families to town. For this reason, Tanbreez signed a co-operation MoU agreement with the community enabling them to aid in the recruitment of a locally based workforce.

Infrastructure - Electricity

The area is totally powered by hydro power. Tanbreez has signed an agreement with the Greenland government power company (Nukissiorfiit) to supply all the projects power needs. Thus, the company anticipates that in Greenland the company will have a minimal, if not zero, carbon footprint.

Infrastructure – Water

On the Tanbreez license there are 2 creeks, the smaller of which is headed by Fosters Lake which will be the main tailings dam. Drinking water is also available on site from Lakseelv river although the plan does call for the building of a desalination plant.

The Tanbreez Project with Fjord Deposit in the foreground and Hill Deposit in the middle ground plateau. Distinctly layered kakortokite host unit outcrops on the plateau face.

Accessibility

The current international airport is at Narsarsuaq, some 45km to the north, but the airport is currently being shifted to north of Qaqortoq, some 15km south of the mine. At present flight times by helicopter from Qaqortoq to the mine site is roughly 5 minutes less from the new airport.

Access is also possible all year round by a boat via the fjords which offer protection from the weather – it is about a 45 minute from Qaqortoq, or about 10 minutes by boat from the new airport. In this part of Greenland due to the warming effects of the gulf stream the fjords usually do not freeze over, allowing access all year round by sea. There are plans for a road to be constructed to the world heritage site. At some time in the future a road from Tanbreez to this road will give vehicle access to town.

The access fjord gives excellent access to the mine site which is 100m deep and very close to shore allowing an almost land backed berth. Ships to about 60,000 tonnes are capable to get to site. There are 2 possible routes to get to site either of which can have icebergs.

Hvalsey Church Ruins

Eleven kilometers south of the mine is the old Norse Cathedral at Hvalsey. This area is now in a world heritage listed area, around which there is a secondary protection or buffer zone. This zone occurs on the opposite side of the rugged range which has a different river drainage system.

The Hvalsey church ruins is the oldest church structure in the Western Hemisphere. Hvalsey Church ruins are situated approximately 11km south of the proposed mine. The church was the main cathedral, and it was thought that the first church on this site was built in the 11th century by Thorkell Farserk, a relative of Eric the Red. This church was reconstructed early in the early 13th century. The last recorded act in the church was the marriage of Thorstein Olafsson and Sigrid Bjornodottir on the 14th or 16th

September 1408. These were amongst the last people to have shifted back to Iceland and this marriage is the last recorded event to take place by the Vikings (also called Norseman) in Greenland. It appears that by 1450 there were no Vikings left in Greenland. This disappearance corresponds to a cooling of the little ice age, known disputes with Inuit's migrating in from the north and the increase in fishing on the Great Banks and their need for slaves. Another theory claims they all shifted to North America.

The church and its surroundings have been designated a world heritage site. Around this the local community, the central government in cooperation with the company have put up a buffer zone. The buffer zone recommended and accepted by all parties is the top of the rugged range with south flowing creeks in the heritage and buffer zone, and the north flowing creeks in the mining area. They are separated by rugged ranges which reach a height of approximately 1,000m, effectively isolating the 2 areas climatically.

One unexpected side effect of the rugged range which extends over 500m above the ore body and up to a kilometer above the fjord is that it mellows the strongest winds. The foehn wind is an anabatic wind that flows off the ice cap to the east. The rugged range is a direct blocking feature for that wind which can exceed 200 km/hr.

Licence

Tanbreez Mining Greenland A/S was granted an Exploitation Licence (Licence number MIN 2020-54) on 8th September 2020 by Government of Greenland Ministry of Mineral Resources. The granting of the license followed more than a decade of drilling, feasibility works and lobbying the Greenland Government. This replaced exploration license 2006-04 and is a recognition by the Greenland government that all conditions necessary for the granting of an Exploitation Licence have been met. Such things as a feasibility study, environmental concerns, geological resources to a sufficient level plus an extensive social impact study.

The relevant and governing clauses determining the scope and extent to which Tanbreez may undertake mining activities can be paraphrased as follows:

"Under section 29(2) of the Mineral Resources Act, the Licensee must have substantiated and delimited the exploitable deposits of minerals and/or elements which the Licensee intends to exploit in the Licence Area under this Licence. The Licensee has substantiated and delimited exploitable deposits of the following 5 elements which the Licensee intends to exploit in the Licence Area under this Licence: zirconium (Zr), niobium (Nb), cerium (Ce), dysprosium (Dy) and yttrium (Y).

This means that the Licensee has met the said requirement under section 29(2) of the Mineral Resources Act in relation to these 5 elements. The Licensee has substantiated and delimited exploitable deposits of the following elements in the Licence Area under this Licence: hafnium (Hf), tantalum (Ta), lanthanum (La), praseodymium (Pr), neodymium (Nd), samarium (Sm), europium (Eu), gadolinium (Gd), terbium (Tb), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb) and lutetium (Lu). This means that the Licensee has met the said requirement under section 29(2) of the Mineral Resources Act in relation to these 14 elements".

Extract from the Licence Grant Document

Article 5: Minerals and elements comprised by this Licence

5.01:This Licence comprises exploitation of the following elements: zirconium (Zr), hafnium (Hf), tantalum (Ta), niobium (Nb), lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), samarium (Sm), europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), lutetium (Lu) and yttrium (Y). In this Licence and its appendices, the terms "Minerals" and "minerals" also means and includes these elements unless otherwise stated or apparent from the context.

5.02: This Licence does not comprise exploitation of any mineral or element other than the elements stated in section 5.01.

5.03: This Licence does not comprise exploitation of feldspar and arfvedsonite, when this Licence is granted by the Greenland Government to the Licensee. The Licensee may apply for, and the Greenland Government may or may not grant a right to exploit feldspar and/or arfvedsonite sometime after this Licence is granted by the Greenland Government to the Licensee. If the Licensee applies for and the Greenland Government grants a right to exploit feldspar and/or arfvedsonite under this Licence, then terms thereon will be set in an addendum to this Licence granted by the MRA to the Licensee.

5.04: Notwithstanding sections 5.01-5.03 and all other terms of this Licence, this Licence does not comprise exploitation of Uranium, as defined in section 1.01(000).

5.05: Notwithstanding sections 5.01-5.03 and all other terms of this Licence, this Licence does not comprise exploitation of any Mineral as Gemstone, as defined in section 1.01(x).

5.06: The Licensee has substantiated and delimited exploitable deposits of the following five (5) elements under section 29(2) of the Mineral Resources Act: zirconium (Zr), niobium (Nb), cerium (Ce), dysprosium (Dy) and yttrium (Y). The other 14 elements stated in section 5.01 of this Licence are contained in the mineral eudialyte when it is exploited in the Licence Area.

5.07: The Licensee has an exclusive right to exploit Minerals which may be exploited by the Licensee under this Licence under section 5.01 in the Licence Area under Article 3. See also Article 12.

4. PROJECT TECHNICAL DESCRIPTION

Geographical and Environmental Setting:

- Remote Arctic conditions with limited infrastructure
- Requires sustainable and environmentally responsible development

The Tanbreez REE deposit is in South Greenland, within the Ilímaussaq intrusive complex, a geologically significant region known for its rich deposits of rare earth elements, zirconium, niobium, and tantalum. Situated near the Kangerdluarsuk Fjord, the deposit spans a rugged landscape that ranges from sea level to approximately 400 meters above sea level. The area is characterized by a subarctic climate, with long, harsh winters and short, cool summers. Due to its remote location, the site is primarily accessible by boat or helicopter, with the nearest settlement being Narsaq.

The environmental setting of the Tanbreez project is defined by glacial and fjord-dominated landscapes, where careful management of water resources is crucial. The presence of glacial meltwater and fjord ecosystems requires strict waste disposal and water usage controls to minimize environmental impact. While the region has sparse vegetation and limited terrestrial wildlife, the marine ecosystem in the fjords is ecologically significant, making it a key focus for environmental assessments. Additionally, the area may have seasonal permafrost, which could affect infrastructure stability and necessitate specialized construction techniques.

From a regulatory perspective, Greenland's Mineral Resources Act governs all mining activities, requiring comprehensive Environmental Impact Assessments (EIA) and Social Impact Assessments (SIA) before operations can begin. Stakeholder engagement with local Inuit communities and environmental organizations is also a critical part of the approval process. One advantage of the deposit is its low uranium (20 ppm) and thorium (53 ppm) content, reducing concerns about radioactive waste management. However, climate adaptation measures are necessary due to potential glacial melting and extreme weather conditions.

The combination of remote Arctic conditions, ecological sensitivities, and stringent environmental regulations makes responsible mining practices essential for the success of the Tanbreez project. With careful planning and sustainable extraction methods, the deposit has the potential to contribute significantly to Greenland's economy while maintaining environmental integrity.

Access, Infrastructure, and Logistics:

- Port access needed for shipping materials
- Air and sea transport required for personnel and supplies

The Tanbreez REE deposit in South Greenland is situated in a remote and challenging Arctic environment, requiring specialized infrastructure and logistical planning. Due to the absence of road networks, access to the site is primarily by boat and helicopter. The nearest town, Narsaq, is located approximately 30 km northwest of the deposit, and deep-water fjords provide marine access for transporting equipment and materials. Additionally, helicopters are used for personnel transport and emergency services, as there are no direct road connections to the site.

As the deposit is in an undeveloped area, all necessary infrastructure must be built from the ground up. A processing plant will be constructed near the deposit to concentrate the extracted minerals. Port facilities at the fjord will enable the shipment of ore via cargo vessels, while a worker accommodation camp will provide housing, food, and medical services for personnel. Energy supply will rely on diesel generators or potentially hydropower, depending on feasibility. Furthermore, waste management systems, including tailings storage and water treatment facilities, will be essential to comply with environmental regulations.

Logistically, the harsh Arctic climate poses significant challenges. Winter ice conditions may limit shipping operations, and extreme weather can disrupt construction and mining schedules. Ore transportation will likely be conducted via ships, as Greenland lacks local processing facilities, requiring the material to be exported for further refining. All essential supplies, including fuel, machinery, and construction materials, must be imported, primarily from Europe or North America, leading to long lead times for deliveries and necessitating careful inventory and supply chain management.

Despite these challenges, deep fjords and proximity to the coast provide strategic advantages for marine-based transportation, making ship-based logistics the most viable option for both construction and ore export. With proper planning and investment in infrastructure, the Tanbreez project has the potential to become a significant contributor to Greenland’s mining industry while overcoming the logistical hurdles associated with operating in a remote Arctic environment.

Two shipping routes to the Tanbreez site

Summary of Historical Exploration and Development:

- Extensive geological surveys conducted
- Drill results confirm high-grade REE deposits

The Tanbreez REE deposit in South Greenland has a long history of geological study and exploration, dating back to the 19th century. Initial interest in the Ilímaussaq intrusive complex, where the deposit is located, began in the 1880s, when early geological surveys identified the presence of rare minerals in the region. However, systematic exploration of the Tanbreez deposit itself began much later.

During the mid-20th century, geologists conducted mapping and sampling programs, which confirmed the area's enrichment in rare earth elements (REEs), zirconium (Zr), niobium (Nb), and tantalum (Ta). Further studies in the 1970s and 1980s provided detailed stratigraphic descriptions of the kakortokite host rock, helping to define the mineralization.

Modern exploration and development efforts commenced in the early 2000s, when Rimbal Pty Ltd, an Australian company, acquired an exploration license for the deposit in 2001 under its subsidiary Tanbreez Mining Greenland A/S. Over the next two decades, the company conducted extensive drilling, geological mapping, and metallurgical testing to better understand the deposit's size, structure, and economic potential.

The government of Greenland and earlier Denmark have completed several surveys of the region including:

Aerial magnetic survey

Aerial regional radiometric survey

Regional gravity survey

Regional geochemical survey

Tanbreez has also extended this with their own localized aerial magnetic, radiometric and topographic surveys.

Between 2000 and 2025, the Tanbreez Rare Earth Project in southern Greenland progressed from initial exploration to advanced development, focusing on its substantial rare earth element (REE) resources.

Early Exploration (Before 2000):

Initial geological surveys and sampling identified the presence of eudialyte, a mineral rich in zirconium, niobium, tantalum, and REEs, within the Ilímaussaq intrusive complex. These findings prompted further investigative efforts to assess the deposit's potential.

Resource Delineation and Licensing (2007–2020):

Comprehensive drilling programs were conducted to delineate the deposit's scale and composition. These efforts culminated in the Greenland government's issuance of an exploitation license in August 2020, authorizing mining operations and marking a significant milestone in the project's development.

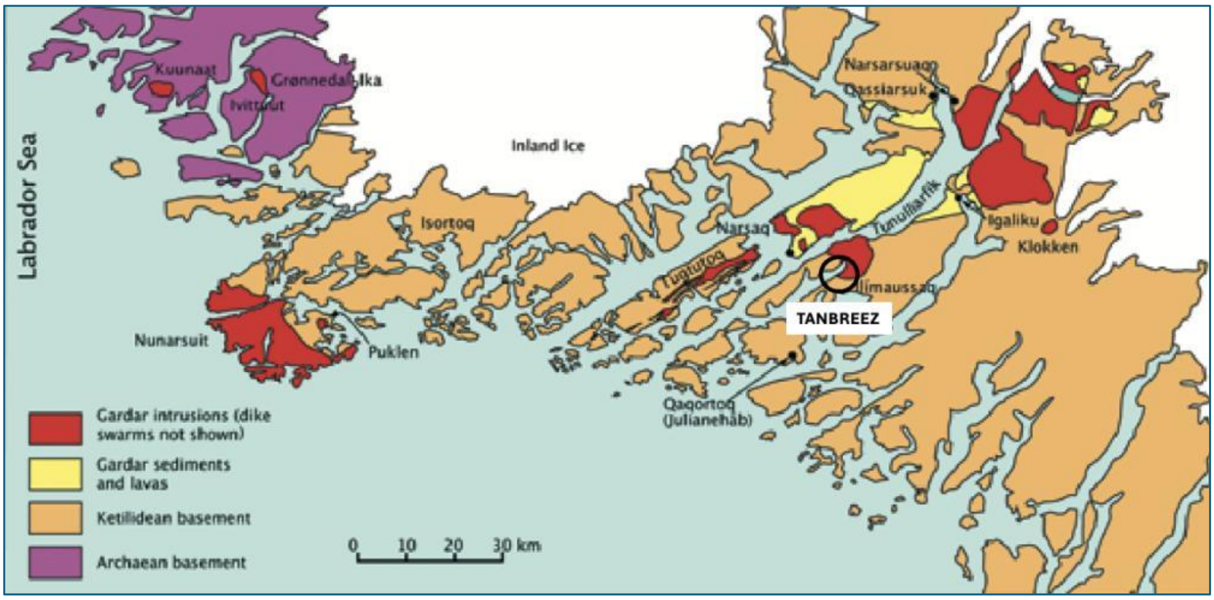
Significant milestones in the project's development include:

- 2007: Exploration drilling confirmed the thickness and extent of the kakortokite sequence, further defining the resource.
- 2010: A stratigraphic borehole (DX-01) was drilled, providing valuable data on the lower boundary of the deposit and the underlying Black Madonna unit.
- 2013-2019: Environmental and social impact assessments were conducted to meet regulatory requirements for mining approval.
- 2020: The Greenland government granted a 30-year mining license to Tanbreez Mining Greenland A/S, marking a key step toward project development.

Despite this progress, full-scale mining operations have not yet commenced, as further infrastructure development, financing, and permitting are required. However, with its significant resource base and strategic importance for global REE supply, the Tanbreez deposit remains a promising asset in Greenland's mining sector.

5. GEOLOGY AND MINERAL RESOURCE ESTIMATE

- The deposit is hosted within a peralkaline intrusion
- High concentrations of zirconium, niobium, and rare earth elements



Major intrusions of the Mesoproterozoic Gardar Province of southern West Greenland.

The Ilímaussaq complex (1160 ± 5 Ma) is one of the youngest intrusions of the Gardar Province, South Greenland. This province is the product of a two-stage rifting event (1300–1250 Ma, 1180–1140 Ma) associated with the break-up of a Supercontinent. It constitutes dyke swarms, a volcanic-sedimentary graben fill sequence (the Eriksfjord Formation) and about a dozen volcanic igneous centers. Gardar magmas span a compositional range from alkali basalt to trachyte, alkali granite and strongly peralkaline nepheline syenites with local occurrences of lamprophyre and carbonatite.

The Ilímaussaq Intrusion in Greenland is the most well-known occurrence of kakortokite. Similar peralkaline layered rocks have been identified in other rare metal pegmatitic and plutonic settings. Kakortokite is particularly significant for rare earth element (REE) deposits, and its mineralogical composition makes it an important rock type for critical mineral exploration.

Geology and Geological Interpretation

A layered kakortokite unit is well-exposed along the coast, east of the Kangerluarsuk fjord. It constitutes a modal mineralogy of alkali feldspar, nepheline, arfvedsonite and eudialyte with minor sodalite, aegirine, aenigmatite and fluorite. The unit forms an approximately 250 to 300-metre-thick sequence consisting of 29 layered units. Each unit is on average 8 m thick and consists of a basal black layer dominated by arfvedsonite followed by a thin red layer rich in eudialyte (sometimes poorly developed) and sealed by a thick white top layer rich in feldspar and nepheline.

Both the Tanbreez Fjord and the Tanbreez Hill rare-earth mineral sites are located within a kakortokite unit covering an area of approximately 5km x 2.5km.

The exposed sequence rises from the Fjord up to about 400m above sea level and is comprised of 95% kakortokite and 5% other rocks, mostly syenite dikes and sills.

The layered Ilimaussaq intrusion, host of the Tanbreez

Kakortokite is a rare, layered igneous rock composed primarily of nepheline, alkali feldspar, and aegirine, often with significant amounts of eudialyte, arfvedsonite, and other rare minerals. It is typically found in peralkaline igneous complexes, particularly in nepheline syenites. The host unit dips shallowly to the north at about 10-15^{o}. This layering is composed of black, red and white layers with the colors reflecting enrichment of various minerals:

- The black layers are enriched in arfvedsonite.
- The pink layers are enriched in eudialyte.
- The white layers are enriched in alkali-feldspar and nepheline with local sodalite.

This layering stands out clearly from the distance however it is not always so obvious up close and in drill core. Some layers are faint while others are much more strongly developed. There is a pronounced thickness variation between layers as well as in texture and grain size which helps in identifying marker horizons.

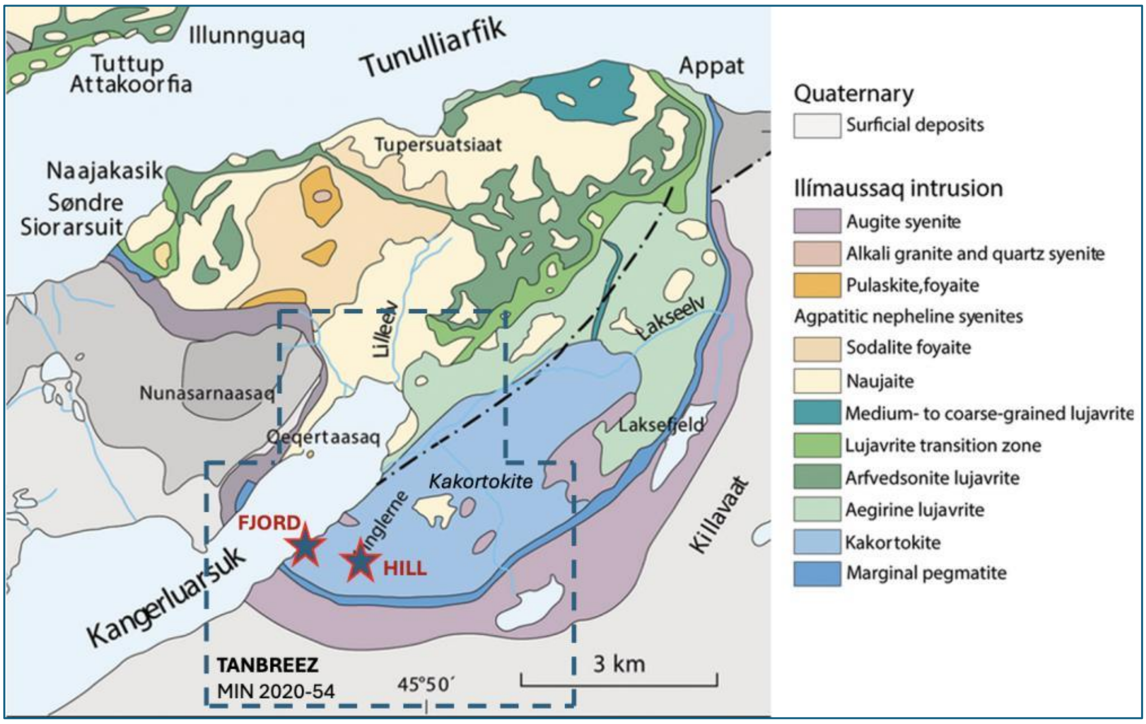
Eudialyte is a rare, complex silicate mineral that contains zirconium, sodium, calcium, iron, manganese, and rare earth elements (REEs). It typically forms in peralkaline igneous rocks, such as nepheline syenites and kakortokites, and is known for its distinctive red to pink coloration.

The eudialyte content of the black and white layers is similar with a little less than 10% by volume, whereas the eudialyte content of the pink layers is around 30 - 40% vol.

Kakortokite Unit

Kakortokite is a layered igneous rock composed primarily of nepheline, alkali feldspar, and arfvedsonite (or other sodic amphiboles and pyroxenes). It is a distinctive rock type found in the Ilímaussaq Complex in Greenland, particularly associated with peralkaline intrusions rich in rare elements.

- Layered Structure: It exhibits rhythmic layering, often alternating between light (feldspar-rich) and dark (mafic mineral-rich) bands.
- Mineralogy: Eudialyte (a rare zirconium-bearing mineral often enriched in rare earth elements). Other components include Feldspar (mainly alkali feldspar), Nepheline (a feldspathoid mineral) and Arfvedsonite or Aegirine (iron-rich amphiboles or pyroxenes)
- Geological Context: Found in peralkaline intrusive complexes, such as Ilímaussaq in Greenland, where it crystallized from highly evolved, silica-undersaturated magmas.
- Economic Importance: Kakortokite often contains rare metals, including zirconium, niobium, tantalum as well as rare earth elements (REEs), making it of interest for mineral exploration.



Kakortokite outcrop dominates the Tanbreez Area east of the Kangerluarsuk Fjord.

Tanbreez

Ilímaussaq has a rather simple structure. A border group adjacent to the Julianehåb granite consists of augite syenite, a normal syenite with no special features. Inside this envelope are the agpaitic rocks. Lowest are the kakortokites, a series of spectacularly layered rocks in which cumulus phases are arfvedsonite (alkali amphibole), eudialyte, nepheline and alkali feldspar. At the base of each layered unit is a black layer rich in arfvedsonite. Next comes a red layer rich in eudialyte and above this a white layer consisting largely of nepheline and feldspar (microcline). These layered units are variable in thickness, although 10 m might be about an average. There are 29 of them. The kakortokites contain inclusions of augite syenite and naujaite.

A marginal pegmatite zone, about 50–200 m wide, separates the kakortokite from the augite syenite. The TLK conformably grades upwards into finer-grained and strongly foliated melanocratic eudialyte-nepheline syenite known as lujavrite. The lujavrite occurs in aegirine and arfvedsonite dominated varieties, of which the latter represents the chemically most evolved rock type of the complex. The lujavrite and the kakortokite represent the fourth and final melt batch but may have been formed by several pulses of melt.

Kakortokite is the dominant host rock for mineralization at Tanbreez. It is composed of rhythmic layers of feldspar, arfvedsonite, aegirine, and eudialyte. The mineral eudialyte is the primary REE-bearing phase. Lujavrite (Secondary Host) is a darker, REE-enriched nepheline syenite that also contains eudialyte, but in a more complex mineralogical setting. The units are enriched in zirconium, niobium, and tantalum.

The primary REE-bearing mineral is Eudialyte, the key carrier of light and heavy REEs, along with zirconium (Zr), niobium (Nb), and tantalum (Ta). Unlike monazite and bastnäsite, eudialyte has low uranium (U) and thorium (Th), making it attractive for mining. Heavy REEs include Dysprosium (Dy), Yttrium (Y), Terbium (Tb). Light REEs include Neodymium (Nd), Praseodymium (Pr), Lanthanum (La). The deposit is especially rich in HREEs, which are critical for high-tech applications.

Additional mineralization includes Zirconium (Zr), and Niobium (Nb) hosted in eudialyte and catapleiite minerals. Zirconium is an important material for nuclear reactors and ceramics. Niobium is used in superalloys and high-strength steels. Iron and Titanium are present as aegirine (iron silicate) and ilmenite (iron-titanium oxide). Unlike many REE deposits worldwide, Tanbreez has low levels of radioactive elements (U, Th), making processing easier and acceptable to government regulations.

The Kakortokite Unit

Surface exposure of the kakortokite unit (no overburden)

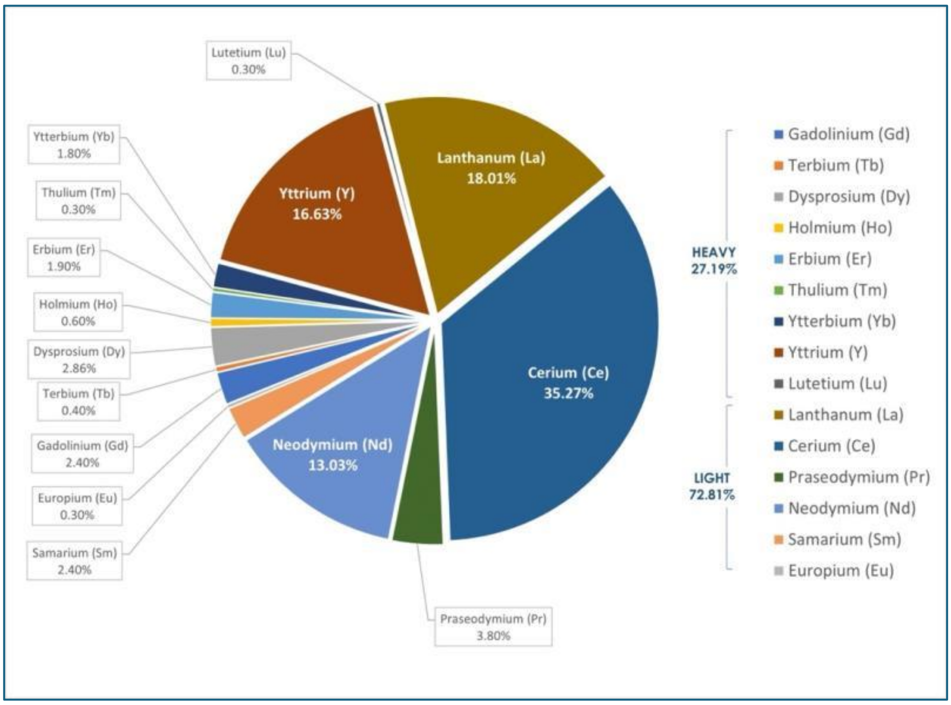
- The Tanbreez rare earth element (REE) deposit in South Greenland is a world-class mineralized unit hosted within the Ilímaussaq intrusive complex. The deposit is primarily composed of kakortokite, a layered rock rich in zirconium (Zr), niobium (Nb), tantalum (Ta), and REEs, particularly in the mineral eudialyte. Covering an area of approximately 5 x 2.5 km with a thickness of 335 meters.
- Geologically, Tanbreez is part of the Meso-Proterozoic Gardar Province, formed around 1.13 billion years ago. The complex is made up of three main phases of rock formations, with the kakortokite sequence positioned in a saucer-shaped structure, dipping at 10-15 degrees. The deposit is bounded by the Black Madonna unit below and lujavrite above.
- Ore grades in the deposit include 1.75% ZrO_2, 0.18% Nb_2O_5, and 0.6% total REO (including yttrium), with heavy REEs making up approximately 30% of total REO content. The deposit is notable for its low uranium (20 ppm) and thorium (53 ppm) content, making it more viable for processing (announced in the the" Schonwandt Paper).
- Tanbreez Mining Greenland A/S, owned by Rimbal Pty Ltd (Australia), holds the exploration license and plans initial mining operations near Kangerluarsuk. The combination of significant volume, well-defined ore zones, and favorable geochemistry, positions Tanbreez as a key potential supplier of critical REEs outside China.
- The kakortokite unity is roughly oval with a long dimension of 5 km and a short dimension of 2.5 km. The estimated area is approximately 10 square kilometers based on the oval shape. The thickness of unit is based on deep drillholes that demonstrated thickness more than 350m. Approximately 45% of the assays from the 2013 drilling program exceeded the lower cutoff, suggesting 40% to 50% of the

unit is mineralized. The density of the unit is approximately 3 tonnes per cubic meter and the tonnage of the kakortokite unit is estimated to be in the range 4.2 to 5.3 billion tonnes with an average of approximately 4.7 billion tonnes of material exposed in outcrop and in creek sections.

Mineralogy & Processing Considerations

- Eudialyte is the dominant REE-bearing mineral in the deposit.
- Bulk rock analysis shows strong linear correlations between Zr and REEs, confirming eudialyte as the primary ore mineral.
- The low uranium (16 ppm) and thorium (42 ppm) content makes ore processing more favorable compared to other REE deposits.
- These grades position Tanbreez as a world-class REE deposit, with a substantial mineral base and strong economic potential.

Assessments of the deposit in earlier studies show a variation in grade of the lower layered kakortokite between within the Eudialyte component that makes up 20% of the kakortokite. The average grade is higher than the average grade at the Tanbreez Hill and Tanbreez Fjord areas based on the 9-hole drilling program in 2013 and reflects widespread sampling throughout the kakortokite unit. The Tanbreez Hill and Tanbreez Fjord areas were selected as the start-up area because of the location close to the planned port area. Higher grade zones will be added to the portfolio in due course.



Proportion of the different REE+Y found in the Tanbreez deposit

The commodities are all contained in eudialyte, a Na-rich zirconosilicate mineral. Eudialyte is by far the most abundant Zr bearing mineral in kakortokite, occurring in the black, white and red layers. The bulk rock data show close linearly correlation between ZrO_2 and Nb, Ta and light and heavy REO which is a clear indication that eudialyte is virtually the only REE-bearing mineral.

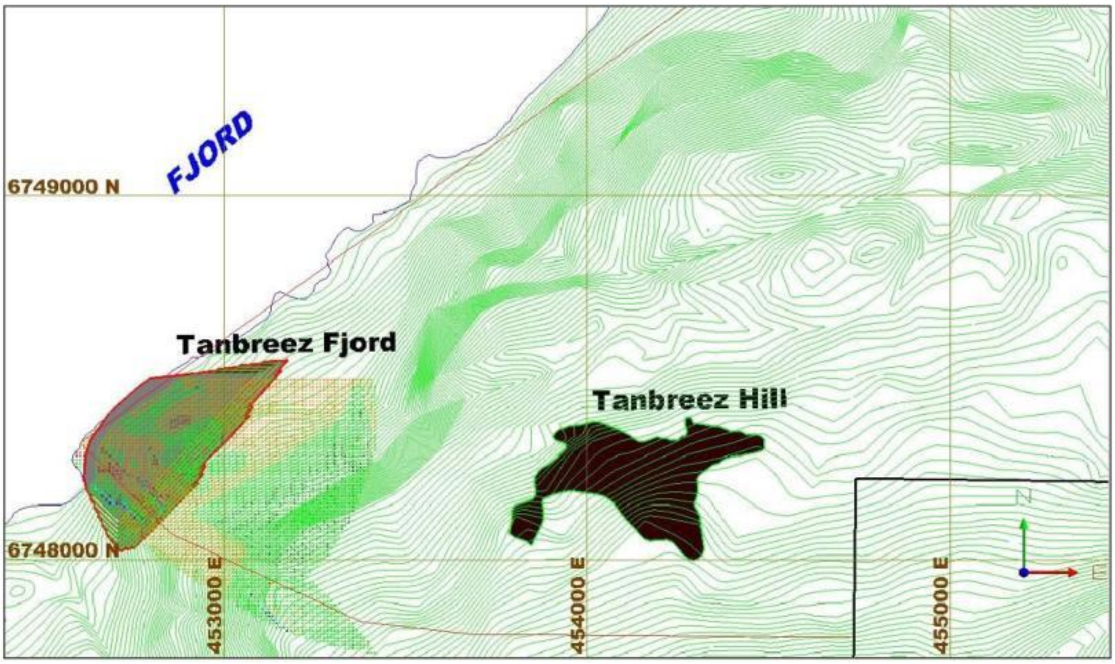
The distribution of the total REO in the kakortokite shows a quantity of 28% heavy REE (including Y) and 72% light REE. Investigations have shown that no or very little cryptic variation occurs in the minerals of kakortokite, consequently, little change in the eudialyte composition is expected in ore and therefore the magnetic properties of eudialyte would remain the same for the benefit of the planed magnetic concentration of eudialyte.

Importantly, drill core assays show elements such as U and Th have background values (20ppm and 53ppm, respectively), which is an advantage in processing the ore.

The potential quantity and grade of the kakortokite unit are 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 in accordance with the JORC Code (2012 Edition). The estimate is based on extensive historic and Tanbreez exploration drilling (414 holes) coupled with the exposures in multiple creek sections. Investors should not place undue reliance on this information.

Resource Classification and Estimates:

- Classified as Inferred Resources and Indicated Resources



Tanbreez Hill and Tanbreez Fjord location map.

Mining, Metallurgical and Environmental Factors

The resources will be bulk mined in open pits, so no mining losses or dilution factors are required. Metallurgical and economic studies conducted by the client indicate that the resources can be economically exploited by mechanical separation bulk testing by Tanbreez backed up these earlier results. All separation work has been done by independent consultants

All products and potential wastes have been fully tested by independent environmental consultants. All waste samples tested have proved to be inert. A full E.I.A completed and accepted by the government.

Mineral Resource Estimate (2016 Independent Report)

Maiden Mineral Resource Estimate (MRE) for Tanbreez REO Project, Greenland

- The Tanbreez Project includes two rare earth mineral sites: Tanbreez Fjord and Tanbreez Hill, hosted in a kakortokite unit estimated at 4.7 billion tonnes (a conceptual estimate of the mineralized unit).
- Heavy Rare Earth Elements (HREEs) - Over 27%, a rare composition compared to other REE projects.
- The JORC 2012-compliant report was commissioned by Rimbal Pty Ltd., a private Australian company, in 2016. The MRE is based on drilling campaigns between 2007 and 2013, 184 holes, 6,431.8m. There are no updated estimates since 2016.
- The MRE was released to the Australian Stock Exchange (ASX) in 2025 following the acquisition of the project by Critical Metals Corp and European Lithium Ltd at the completion of Due Diligence and confirmation drilling.

Mining factors or assumptions - The resources will be bulk mined in open pits, so no mining losses or dilution factors are required. Metallurgical and economic studies conducted by the client indicate that the resources can be economically exploited

Metallurgical factors or assumptions - Mechanical separation proven for over 100 years (since 1889) – bulk testing by Tanbreez backed up these earlier results. All separation work has been done by independent consultants.

Environmental factors or assumptions - All products and potential wastes have been fully tested by independent environmental consultants. All waste samples tested have proved to be inert. Full E.I.A completed and accepted by the government.

The Company recently announced its JORC 2012 Maiden Mineral Resource Estimate (MRE) and pursuant to ASX Listing Rule 5.8.1 for the Tanbreez Project of 45MT containing 0.38% TREO including 27% contained HREO plus rare metal oxides (*European Lithium Limited, 2025, Maiden Mineral Resource Estimate 45mtTanbreez Rare Earth Project Greenland, ASX Release, 13 March 2025*).

The current Mineral Resource estimates are classified as Indicated and Inferred Resources under the JORC Code 2012 and have been determined by drill density and number of drillholes and samples utilized in grade estimation. The resource classification accounts for all relevant factors and reflects the views of the deposit prepared by Al Maynard and

Associates Pty Ltd. The resource classification appropriately and reasonably reflects the varying levels of confidence of the resource model to predict average grade and tonnages for the resources if it were to be mined.

Confidence in the relative accuracy of the estimate is reflected by the categorization of the mineralisation as Indicated and Inferred Resources.

TANBREEZ PROJECT	Mtonnes	TREO	ZrO_2	Nb_2O_5
Tanbreez Hill and Fjord				
Indicated Resource	25.4	0.37%	1.37%	0.13%
Inferred Resource	19.5	0.39%	1.42%	0.15%
Total	44.9	0.38%	1.39%	0.14%

2016 MRE for Inferred and Indicated Resource Estimate

The 2016 Mineral Resource Estimate was compiled by and Independent Consultancy, Al Maynard and Associated, by a Competent Person and Member of AusIMM and was released to the ASX on 13 March 2025.

- *Al Maynard & Associates Pty Ltd, 2016, Resource Estimates at Two Sites within the Tanbreez Project (JORC 2012) for Rimbal Pty Ltd, Revised: 30 August 2016*
- *European Lithium Limited, 2025, Maiden Mineral Resource Estimate 45Mt Tanbreez Rare Earth Project Greenland, ASX Release, 13 March 2025.*

The Mineral Resource Estimate information shown in this PEA has been previously released on the ASX platform by European Lithium Ltd in an ASX Release on 13 March 2025 in accordance with Listing Rule 5.8.

The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcement noted above and that all material assumptions and technical parameters underpinning the Mineral Resource Estimate in the previous 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.

Basis for Establishing the Prospects of Economic Extraction for Mineral Resources

Eudialyte is a rare, complex silicate mineral rich in elements such as sodium, calcium, iron, manganese, zirconium, and rare earth elements (REEs). Its unique composition makes it valuable as a potential source of critical metals. Eudialyte is increasingly recognized for its economic potential due to its content of zirconium, niobium, and REEs, which are essential in various high-tech applications. The global demand for these elements has heightened interest in eudialyte as an alternative resource. Notably, eudialyte deposits are found in regions such as Russia, Greenland, Canada, and Norway. The Ilímaussaq complex in

Greenland, for instance, is one of the world's largest known eudialyte-hosted deposits (Tanbreez), presenting a significant repository of REEs, zirconium, and niobium.

The supply chains for critical metals like REEs and niobium are often dominated by a few countries, leading to potential vulnerabilities. For example, China controls a significant portion of the world's heavy REE supply, while Brazil is a major producer of niobium. This concentration has prompted interest in diversifying sources, with eudialyte deposits offering a potential alternative.

The growing demand for REEs and other critical metals in technologies such as electronics, renewable energy, and defense systems positions eudialyte as a potential resource. However, successful market integration depends on overcoming extraction challenges, ensuring economic viability, and developing environmentally sustainable practices. Ongoing research and technological advancements are crucial to unlocking eudialyte's full market potential.

6. PRE-DEVELOPMENT COSTS

Accuracy of Startup Cost Estimates in a Preliminary Economic Assessment (PEA)

In a Preliminary Economic Assessment (PEA), startup cost estimates (which include initial capital expenditures, infrastructure setup, and pre-production costs) have a relatively low level of accuracy, typically in the range of ±30% to ±50%. These estimates are based on conceptual designs, industry benchmarks, and limited site-specific data, making them less reliable compared to later-stage feasibility studies.

Key Components of Startup Costs

- Mine Development: Costs for excavation, site preparation, and access roads.
- Processing Plant & Equipment: Estimated costs for ore processing facilities, crushers, grinding circuits, and flotation plants (often based on similar projects rather than vendor quotes).
- Infrastructure: Includes roads, power supply, water management, and port facilities (if applicable).
- Permitting & Compliance: Estimated costs for obtaining licenses, environmental impact assessments, and regulatory compliance.
- Construction Labor & Mobilization: Often estimated using industry averages rather than actual contractor bids.
- Contingency Allowances: Typically, 20-30% contingency is added due to high uncertainty at the PEA stage.

Factors Affecting Accuracy of Startup Cost Estimates

- Limited Engineering Design: Mine and plant designs are still conceptual, leading to large cost variability.
- Reliance on Industry Benchmarks; PEAs use cost data from similar projects rather than site-specific vendor quotes.
- Resource Uncertainty: Startup costs can shift significantly as more drilling refines the resource estimate.
- Inflation & Market Volatility; Fluctuating commodity prices (e.g., steel, fuel, labor) can impact real-world startup costs.
- Infrastructure Assumptions: Costs for roads, power, and logistics may be underestimated if detailed studies are lacking.

DEVELOPMENT COSTS - PRE-STARTUP						
Development Activity	Year 1 2025	Year 2 2026	Year 3 2027	Year 4 2028	Total	
Preliminary Economic Assessment (PEA)	Complete					Final 31 March 2025
Tanbreez Exploitation plan, Financial Plan	Admin					Licence requirement to present the Plan and be approved by the end of 2005. Financial capacity required by mid 2025
Administration and Project Management	2.50	2.50	2.50	2.50	10.00	Initial resource estimate, basic engineering, cost models
Infill Drillings and Exploration Drilling	10.00				10.00	Upgrade existing Mineral Resources at Fjord and Hill, delineated other higher-grade areas of interest close to the OPF
Pre-Feasibility Study (PFS)	2.50				2.50	Detailed resource modeling, mining plan, infrastructure layout
Definitive Feasibility Study (DFS)		5.00			5.00	Bankable study, final engineering, cost verification
Permitting & Environmental Studies		5.00			5.00	Greenlandic environmental approvals, community consultation
Detailed Engineering & Procurement			5.00	10.00	15.00	Final plant, port, and transport system design, contract awards
Mine Development (Overburden				15.00	15.00	Initial excavation, haul roads, site preparation

Removal, Infrastructure)						
Processing Plant (Crushing, Magnetic Separation, Utilities)				15.00	15.00	Includes equipment purchase, installation, and commissioning
Power & Water Supply (Diesel, Wind, Hydro, Storage)		1.50	1.50	1.50	4.50	Off-grid energy generation, water treatment
Roads & Transport Infrastructure (Mine-to-Port)	1.00	1.00	1.50	1.50	5.00	Haul roads, trucking or conveyor systems
Port Facilities (Loading, Storage, Ice Management)	1.00	4.00	5.00	5.00	15.00	Export terminal for concentrate, ice protection
Labor, Camp, & Construction Logistics	2.00	4.00	5.00	5.00	16.00	Arctic accommodations, worker transport
Contingency (Unforeseen Costs, 20%)	3.00	3.00	4.00	12.00	22.00	Covers weather, logistics, and regulatory delays
Commissioning and Startup				Late 2028		Startup required date – Exploitation Licence
Total Estimated Cost (PEA to Startup)	22.00	26.00	24.50	67.50	140.00	Varies by infrastructure needs and location

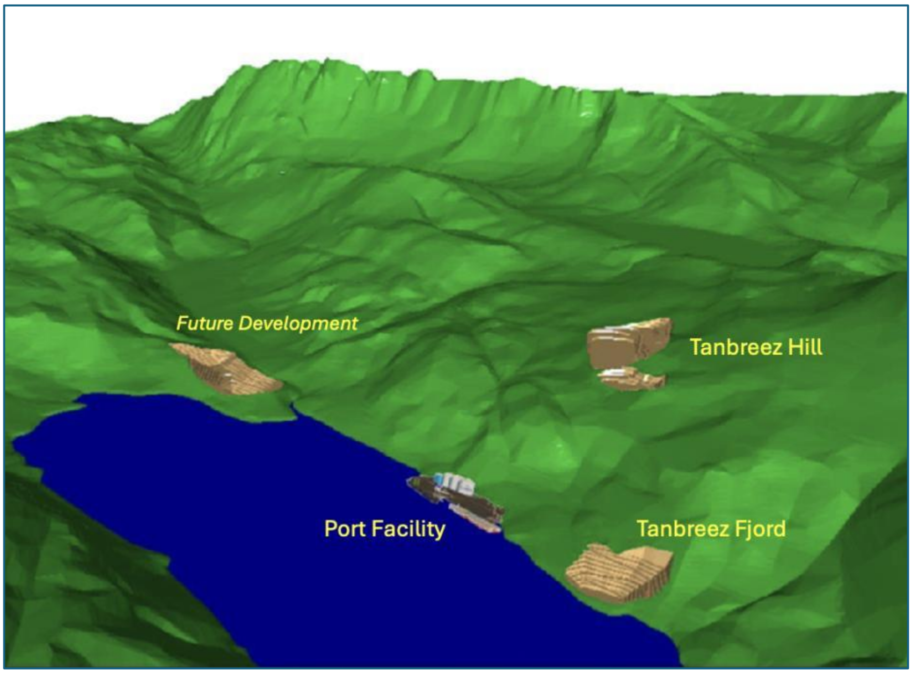
7. PROPOSED MINING PROJECT (FORWARD LOOKING STATEMENTS)

The Company prepared a comprehensive Definitive Feasibility Study (DFS) in 2014 that proposed the Tanbreez project will extract, process and export eudialyte mineral concentrates containing Zirconium, Yttrium, Niobium, Hafnium, Tantalum and Rare Earth elements as well as feldspar and arfvedsonite co-products. The Environmental Impact Assessment (EIA) of the environmental impact of development, operation, and closure of the mining project, according to Greenlandic guidelines has been prepared and published for public scrutiny.

The Company believes that it has a reasonable basis for providing the forward-looking statements and forecast financial information. The Project is at the DFS Stage and although reasonable care has been taken to ensure that the facts are accurate and that the opinions expressed are fair and reasonable, no reliance can be placed on the information contained or on its completeness. A key conclusion of the DFS is that the Project is considered to have positive economic potential.

Mine Design and Ore Reserve Calculation will be required a part of an updated Definitive feasibility Study to commence in 2025.

Forward-looking statements are subject to known and unknown risks and uncertainties and are based on potentially inaccurate assumptions that could cause actual results to differ materially from those expected or implied by the forward-looking statements. Actual results could differ materially from those anticipated.



Tanbreez Fjord and Hill Pits and Port Facilities

Notional Mining Reserve

TANBREEZ REO PROJECT, GREENLAND			Notional Mining Reserve Estimate				
	MINERAL RESOURCE					ORE RESERVE	
	Mtonnes	TREO	ZrO2	Nb2O5	Convert	Mtonnes	Percent
FJORD DEPOSIT							
Indicated Resource	8.76	0.44%	1.63%	0.17%	90.00%	7.88	43%
Inferred Resource	13.8	0.42%	1.55%	0.16%	75.00%	10.35	57%
TOTAL	22.56	0.43%	1.58%	0.16%	80.82%	18.23	
TANBREEZ HILL							
Indicated Resource	16.66	0.33%	1.22%	0.12%	90.00%	14.99	78%
Inferred Resource	5.65	0.30%	1.11%	0.11%	75.00%	4.24	22%
TOTAL	22.31	0.33%	1.20%	0.11%	86.20%	19.23	
Green Sill (Internal waste)	3.49						
Tanbreez Hill and Fjord							
Indicated Resource	25.42	0.37%	1.37%	0.13%	90.00%	22.88	61%
Inferred Resource	19.45	0.39%	1.42%	0.15%	75.00%	14.59	39%
TOTAL	44.87	0.38%	1.39%	0.14%	83.50%	37.47	
Indicated Resource	57%					61%	
Inferred Resource	43%					39%	

Notional Estimate of the Ore Reserves at Fjord and Hill Deposits used in this PEA

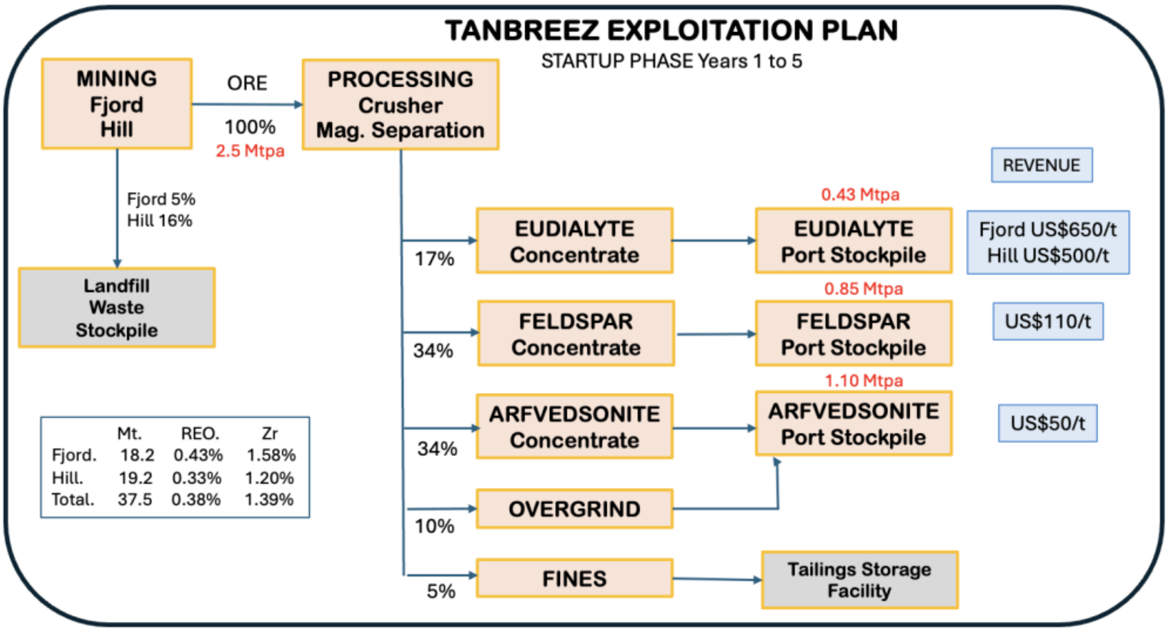
There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realized.

The potential quantity and grade of the Notional Ore Reserve are conceptual in nature. There has been insufficient mine design to estimate a Mining Reserve[2], and it is uncertain if further work will result in the estimation of a Mining Reserve

The Mining Project

The mining project consists of:

- Two open pit mines at Fjord and Hill
- Waste Stockpile and Landfill areas
- Haul Roads and ROM Delivery facilities (conveyors)
- Processing plant with Crusher and Magnetic Separation (OPF)
- Stockpiles and concentrate blending area (Eudialyte, Feldspar & Arfvedsonite
- Port facility with loading infrastructure and wharf space (including a helipad)
- Mine camp, warehouses, offices, and laydown yards
- Tailings storage facility (TSF) at Fostersø Lake
- Internally connecting roads, public road upgrade to airport and towns



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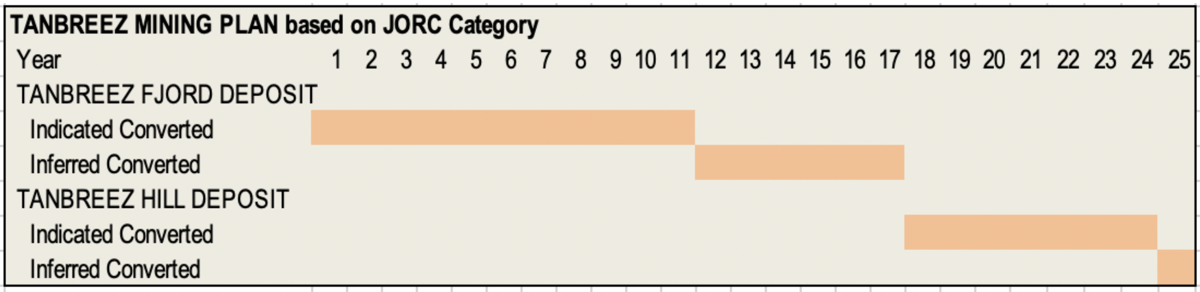
[2] Mining Reserve is the terminology preferred by the S-K1300 Guidelines. Ore Reserve is the preferred JORC 2012 term. *The notional estimate is based on extensive experience in the mining industry and is provided to allow a reasonable mining plan for this Preliminary Estimate Assessment.*

The kakortokite unit is composed of rhythmically layered units within the kakortokite that are dominated by feldspar (40%), arfvedsonite (40%) and eudialyte (20%) The Tanbreez Mining Project will extract Eudialyte from two open pit mines. The planned mine operation has five phases to extract the notional Mining Reserve over a mine life of 25 years.



The proposed mining schedule will prioritize Indicated Resource converted to notional Ore Reserve over Inferred Resource. The project is based on the Indicated Resource and and the primary driver for the schedule and the respective. The Fjord Deposit has 43% Indicated Resource and 57% Inferred Resource. The Hill deposit has 78% Indicated Resource and 22% Inferred Resource. Critical metals Corp is satisfied that the respective proportions of inferred mineral resources and the exploration target are not the determining factors in the project viability.

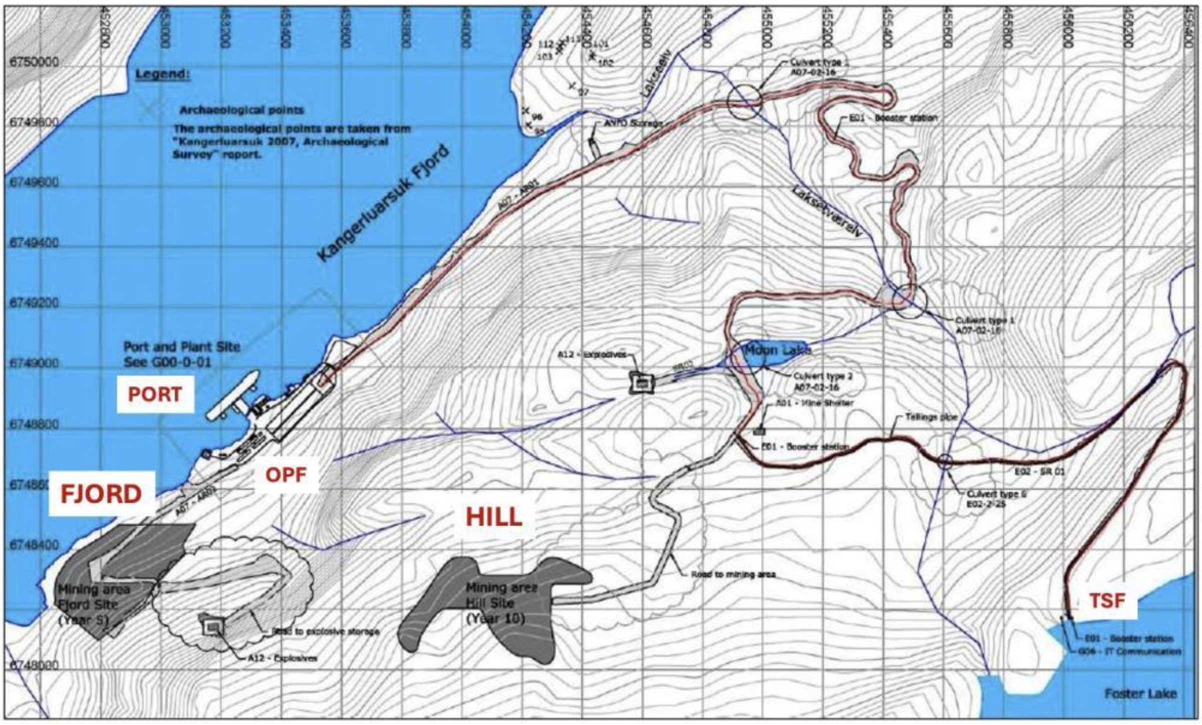
Tanbreez Mine Plan	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Years	1 to 3	4 to 8	9 to 13	14 to 17	18 to 25
Duration	3 years	5 years	5 years	5 years	5 years
Deposit	FJORD	FJORD	FJORD	FJORD	HILL
Mining, Mtpa	0.25 to 0.50	3.0 to 5.0	6.0	10.0	12.5
Eudialyte Ore, Mtpa	0.05 to 0.10	0.6 to 1.0	1.2	2.0	2.5
Feldspar Ore, Mtpa	010. to 0.20	1.2 to 2.0	2.4	4.0	5.0
Arfvedsonite Ore, Mtpa	010. to 0.20	1.2 to 2.0	2.4	4.0	5.0

Mining Plan for kakortokite mining

Eudialyte concentrate, Feldspar and Arfvedsonite will be shipped from a port facility for further processing and sale outside Greenland. The Eudialyte concentrate will be exported for chemical treatment and extraction of Rare Earth Oxides.

The mine will produce a feldspar product to be exported. Feldspar is ground to about 20 mesh for glassmaking and to 200 mesh or finer for most ceramic and filler applications.

An Arfvedsonite product will also be produced which could be sold to the building industry and for special roof tiles and a variety of building product applications.



Overall mine design with two open pit mining sites, possible tailings deposition (in Fostersø Lake) and the crusher, separator and all other facilities located at the fjord.

Mining Methods

- Proposed Mining Method:
    - Open pit mining due to the outcropping nature of the deposit
- Mine Design and Layout:
    - Designed to minimize environmental impact
    - The entire kakortokite unit within the Mining Reserve will be sent to the OPF
    - Internal waste will be sent to landfill or the waste stockpile
- Production Schedule and Expected Mine Life:
    - Estimated mine life of 25 years
    - Initial production rate 2.5 million tonnes per annum (Mtpa) for the first five years at the Fjord Deposit
    - Mining will commence at the Hill deposit in year 6
    - Mining rate will increase in 2.5 Mtpa in five-year intervals

The Tanbreez Project will utilize open-pit mining as the primary extraction method due to the deposit's large tonnage, shallow depth, and favorable ore body geometry. This method is cost-effective for large-scale operations and enables efficient extraction of rare earth elements (REEs), zirconium (Zr), niobium (Nb), and tantalum (Ta) from the kakortokite rock sequence.

Open-Pit Design

- The mine will be developed as a large, multi-bench open pit to extract ore from Tanbreez Fjord and Tanbreez Hill.
- Bench Height: Likely 10–15 meters, optimized for safe and efficient loading.
- Pit Slope Angles: Expected to be 40–50 degrees, depending on geotechnical studies.
- Mine Depth: Expected to reach 30 - 40 meters, based on resource estimates.
- Waste-to-Ore Ratio: There is no overburden and internal waste (syenite sills) is expected to be 5% of total mining at the Fjord deposit and 14% of total mining at the Hill Deposit.

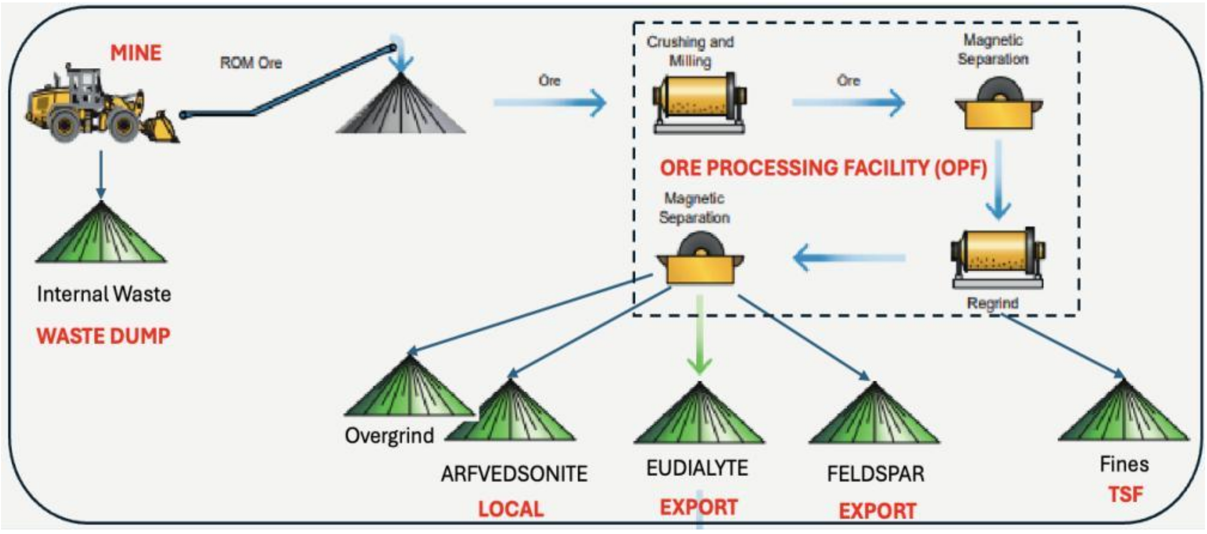
Mining Operations

- Drilling & Blasting: Conducted in pre-determined ore zones to fragment rock for extraction.
- Loading & Hauling: Excavators and front-end loaders will be used to load material.
- Haul trucks (100–200 tonne capacity) will transport ore to the processing plant.
- Extraction from the Fjord deposit will be on the slopes and in pit blending will be planned with blending at the concentrate stockpiles.
- In-Pit blending will be possible at the Hill deposit because of the large aerial extent and relatively shallow depth of the mineralized zones
- Ore Transport & Stockpiling: High-grade ore will be sent directly to the processing facility. Low-grade material may be stockpiled for future processing.

Processing and Metallurgy

- Processing Method Selection:
    - Eudialyte, Feldspar and Arfvedsonite can be separated using crushing and magnetic separation.
    - Separate concentrate stockpiles will be developed for separate shipping.
- Metallurgical Testing Results:
    - Small reduction in grade between the Eudialyte ore and the Eudialyte concentrate is anticipated to be 7% based on experience at Norra Karr in Sweden.

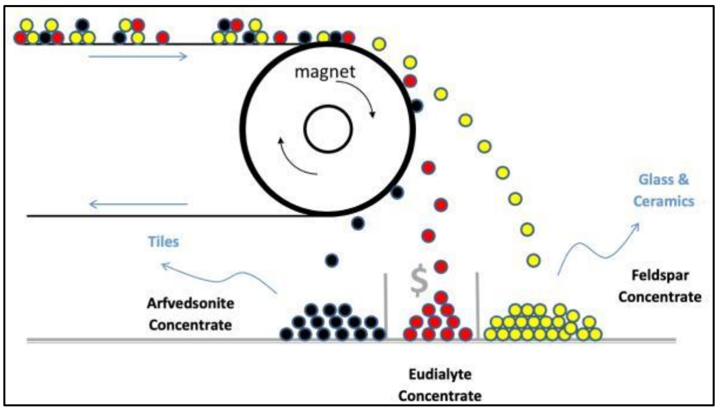
  - The "lost grade" will report to the fines and overgrind components.
- Plant Design and Expected Recovery Rates:
  - Processing plant and concentrate stockpiles will be located near the port facilities



Schematic diagram of the Tanbreez Project in Greenland

Tanbreez is to use a dry magnetic separation which has considerable advantages over other techniques including wet magnetic separation as no water is required (which has the big disadvantage that on a cold day water will freeze requiring all water to be heated).

The landscape at Killavaat Alannguat is characterized by relatively high and steep mountains and the long, narrow Kangerluarsuk Fjord. The port and most infrastructures will be located near the head of the fjord close to the outlet of Lakseelv, the largest river in the area. Outflow from the proposed tailings pond (Fostersø) will flow through Laksetværelv to Lakseelv.



Dry Magnetic Separation carried out in Greenland

The processing of the ore is simple where no chemicals are used and consists of a crushing plant followed by a dry magnetic separator. The outcome of the separation is made up of three fractions: a black highly magnetic fraction (arfvedsonite), a red concentrate (eudialyte), and a white non-magnetic concentrate (feldspar). The concentrates will be stored before shipping.

An Ore Processing Facility (OPF) near the Port will crush and magnetically separate the Run of Mine into mineral concentrates of eudialyte, feldspar and arfvedsonite.

The processing of the ore is simple where no chemicals are used and consists of a crushing plant followed by a dry magnetic separator. The outcome of the separation is made up of three fractions: a black highly magnetic fraction (arfvedsonite), a red concentrate (eudialyte), and a white non-magnetic concentrate (feldspar). The concentrates will be stored separately before shipping.

Tailings (fine material left from processing the ore) will be deposited as slurry in a natural tailings pond (Fostersø, a small lake on Killavaat Alannguat at 470 m altitude). The tailings will be transported from the processing plant to Fostersø in a pipeline as slurry. Small amounts of waste rock (barren and low-grade rock from the mining operation that cannot be used for processing) will also be deposited in Fostersø.

The project also includes a diesel power plant, storage shed, worker accommodations and other facilities situated. All these facilities will be situated on the shore of the fjord. A 0.8 km haul road will lead from the Fjord pit site to the process plant. A 6 km haul road will lead from the mine site on the Hill pit site.

Comminution

At the Tanbreez site, comminution will take place to achieve physical separation only. All chemical processing will be completed off site.

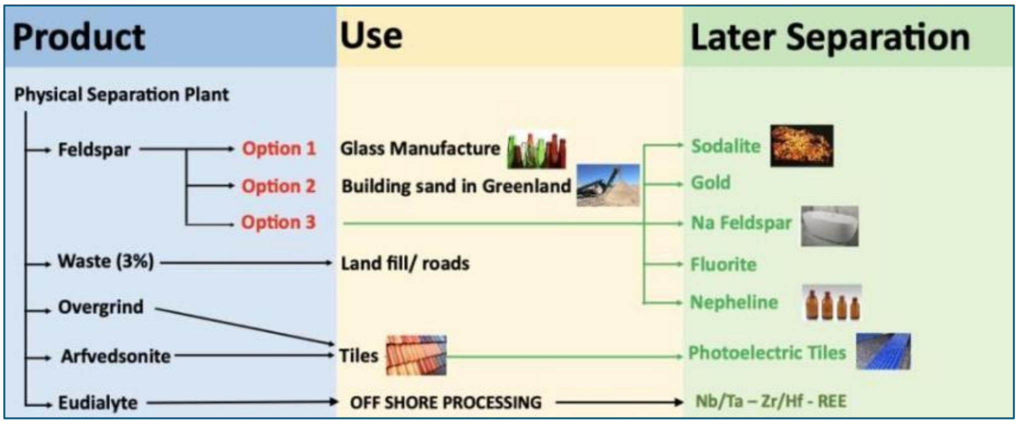
An apron feeder will reclaim Run of Mine (ROM) material from the ROM bin onto a vibrating grizzly screen. Oversize material reports to a jaw crusher where the material is comminuted before recombining with the grizzly screen undersize and fed to the secondary crushing screen. Similarly, oversize from the secondary crushing screen will report to the secondary cone crusher where the material will be comminuted before reporting to the tertiary crushing screen. Screen undersize from the secondary and tertiary screens will then be transferred to the fine mineralized rock bin.

Oversize material from the tertiary crushing screen will report to a tertiary crusher where it will be reduced in size before being recycled to the tertiary crushing screen for classification. All material transfers between process units will be by conveyors.

Discharge from the fine mineralized rock bin will be delivered for primary grinding, via a conveyor, to an open circuit rod mill. Rod mill discharge will be screened with the oversize reporting to a tower mill for secondary grinding. Tower mill discharge is combined with rod mill discharge and classified over the same screen in a closed circuit.

Undersize from the mill screen will be fed to a low intensity magnetic separator to remove any residual grinding media, before reporting to a wet high gradient magnetic separator. The process proposed would require crushing and milling to a p80 ~ 145 µm. In the first step a mixed eudialyte-aegirine concentrate would be produced at high gauss separation. This concentrate would then pass through a second re-grind to a p80 ~ 75 µm followed by second magnetic separation. This would produce a cleaner concentration of eudialyte. Each concentrate will report to their respective stockpiles

Components and Use of the Concentrates



Processing and Products in Greenland

Eudialyte

The mineral eudialyte comes from the Greek word meaning 'easily dissolved', which means zirconium, tantalum, hafnium etc. can be brought into solution very easily and far cheaper, compared to the normal situation where minerals such as zircon and tantalite are almost impossible to break up, needing expensive acids. Eudialyte could not be refined further in Greenland due to the high cost of importing chemists and chemicals etc.

Rare Earths

Middle-Magnetic REO - These would go to be separated into a full separation plant using the technology from Canada to produce the individual magnetic rare earths and then for further manufacture using a proper magnet maker in Florida. This plant would produce enough magnetic rare earths to keep much of the US in its required heavy REO needs.

Heavy REO (Er, Tm, Yb, Lu) - Normally these are thrown out or just left in the rare earth metal. It is proposed to research on a split of these four as there is enough literature around to show that these four together can act as a substitute for scandium.

La-Ce (+/- Pr + Nd) - There is a well-tested proposal to produce a Lanthanum and cerium (with small amounts of Pr and Nb) in an impure split aimed at reducing the amount of SX units to achieve the same result (instead of making all pure and then combining them back together) this would save over 200 separate SX plants in an old SX type plant.

Tanbreez is a majority stakeholder in this proven technology. Essentially for cars, trucks etc.

this is added to the spark plug cylinders to act as a catalyst to burn all the carbon and hydrogen in that cylinder, the improvement in efficiency is about 30% for about 100,000km.

To covert a car takes approximately 2 hours, most of which is improving the air flow into the spark plug cylinder. Not proven on a large scale is the same idea when applied to a coal fired power station where there is a 20-40% improvement (depending on the coal).

Cerium and Lanthanum both sell at about $4 per kg, although they have been as low as 80c and as high as $145 per kg over the last decade. Because carbonatites contain light REO (Ce to Eu) and everyone is seeking Pr and Nd, it is expected this market will reach gross over saturation, quickly. In the case of Tanbreez owning the use, we are confident of $70 per kg in a market that we control (we also expect to sell 5-10 times as much product as we can produce).

Yttrium - Made up and on sold.

Zirconium

Zirconium maintains its strength at high temperatures and in fact there are some Ti/ Zr alloys which have great potential in the aerospace industry (this offers the chance of that to be fully developed where today the high cost of zirconium prevents it). Tanbreez took over the company called Viking Zirconium, which for 35 years produced the highest-grade zirconium with 10% of the silica impurities of any other product. Although there is much hype about Tanbreez and its REE, it is its zirconium potential which will underwrite the whole mine, reducing the cost of the REE for example to below zero.

Niobium

Niobium is dominated by Brazil which produces mostly FeNb for the steel market. The Tanbreez product would be largely targeted at the non-high tech steel making end of the market and not the lower value Fe/Nb products. This makes up approximately 30% of the market (i.e. the expensive side).

Tantalum

The worlds next largest tantalum deposit has 100m tonnes at 212 ppm, of which they recover about half due to small grain size. Tanbreez has 4700m tonnes at 300 ppm. Initially tantalum would be sold as the pentoxide and later developed into a full metal plant. At present much of the world's tantalum comes from Congo, as the mineral coltan, often using child slave labor to produce and this project over comes the need for this type of mine.

Hafnium

Hafnium has remarkably similar properties to zirconium in that it retains its strength at high temperatures. It does however differ in one aspect which results in its main use. Hafnium is perhaps the best absorber of neutrons in a nuclear reactor, while zirconium is the worst. Thus, hafnium is essential in nuclear reactors. This deposit contains over half the world's know reserves.

Feldspar

Feldspar produced from Tanbreez will contain between 0.5% and 1.0% Fe which makes in unsuitable for use in ceramics; however, this feldspar will find applications in the glass industry for use in the production of coloured glass. The feldspar comes out of the plant as a fine white sand. This can be used locally as a building sand as currently all sand used is imported from Denmark. It also could be used in the glass industry.

Feldspar is ground to about 20 mesh for glassmaking and to 200 mesh or finer for most ceramic and filler applications. In pottery and glass, feldspar and nepheline syenite function as a flux. The estimated end-use distribution of feldspar and nepheline syenite was glass, about 65%, and ceramic tile, pottery, and other uses, 35%.

Arfvedsonite

Arfvedsonite is a black amphibole magnetic waste from the dry magnetic plant. It was found that it fired to make bricks or tiles (in particular) at 180°C less than any competing material. This formed a tile that was 5 times stronger than a normal tile. Thus, a tile could be made 1/3 the thickness saving not only on raw product, but weight for the roof supports. This has caused quite a sensation in German and Danish industries for its potential. This tile would also be ideal for the base of a photoelectric roof tile (i.e., like Tesla have been pushing), it would be ideal to install on the tile as the tile would still be lighter, thinner than Tesla's current model or even a normal tile and take much less energy to produce.

Arfvedsonite concentrate has a value as building material of around US$20 per tonne. (e.g., as a filler, roads, buildings etc.). Therefore, sales could be made into the building or construction industries. It might gain more value if it was used in soundproofing or specialty products. Recent studies on the arfvedsonite material from the Tanbreez mining operation indicate that is can be used to produce light weight, strong roof riles that are one third the thickness of normal tiles. This has the advantage of use where solar panels may be installed.

Infrastructure and Logistics

- Power Supply and Distribution:
  - Diesel generators or potential renewable energy sources including hydroelectricity generation
- Water Supply and Management:
  - Water sourced from nearby natural reservoirs and creeks
- Transportation and Access:
  - Port facility required for export
  - Ice-free fjord allows year-round shipping

- Waste Management and Tailings Storage:
    - Tailings management plan to minimize environmental impact

Port Facilities

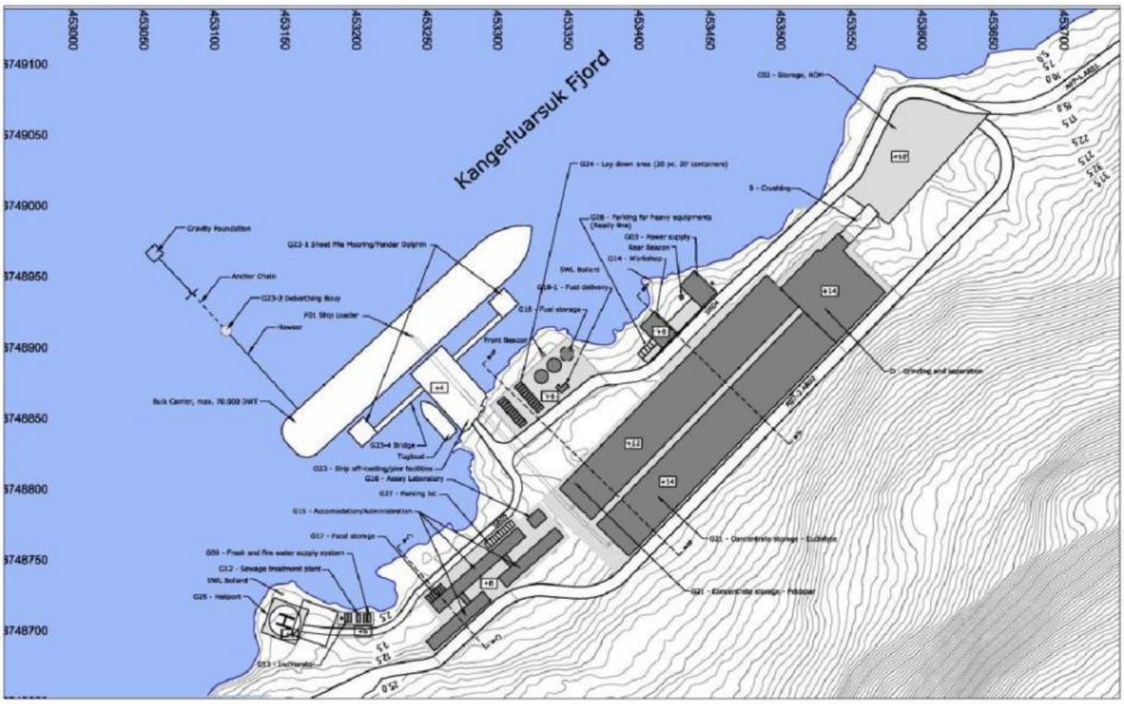
The Tanbreez project in Greenland requires a dedicated port facility to support the export of mined materials and the import of essential supplies. Given its remote Arctic location, the port must be designed to handle bulk shipments efficiently while withstanding harsh weather conditions.

Port Requirements

The port must be located near the mine site to minimize transportation costs. It should accommodate vessels ranging from Handysize (10,000-40,000 DWT) to Panamax ships, as the mining operation scales up. The facility should include bulk storage areas for eudialyte concentrate, feldspar, and zirconium-rich materials, along with loading and unloading systems, such as conveyors or ship loaders, to facilitate efficient material transfer.

Port Design Considerations

The dock structure must be suited for deep-water access with a depth of at least 10-15 meters, allowing bulk carriers to operate without significant dredging. Depending on budget and operational needs, the port could feature a floating pier or a fixed wharf, designed to be ice-resistant and withstand freeze-thaw cycles. Material handling infrastructure should include conveyor systems or barge transshipment to ensure smooth loading operations, with secure storage facilities for mined products and necessary chemical reagents.



Port facilities at the Kangerluarsuk Fjord

Environmental and Logistical Challenges

Operating in an Arctic environment presents challenges such as ice management, limited daylight during winter, and potential reliance on icebreakers during colder months. However, Greenland's deep natural fjords may reduce the need for dredging, lowering initial construction costs.

Waste Management and Tailings Storage for Tanbreez

The Tanbreez rare earth project in Greenland requires a robust waste management and tailings storage system to handle both mining waste and processing waste while minimizing environmental impact. Given Greenland's regulatory framework and the need for sustainability, dry stacking or subaqueous tailings disposal are the most viable storage options.

Waste Classification

- Waste Rock Management - The waste rock is primarily non-acid generating (NAG), consisting of peralkaline rock with low sulphide content. Over the 25+ year mine life, waste rock generation is expected to be in the millions of tons. Waste rock will be segregated based on geochemical characteristics and used for road construction and infrastructure where possible. Progressive rehabilitation will be implemented by covering waste rock dumps with native vegetation to minimize long-term environmental impact.
- Tailings Management - The tailings consist mainly of residual eudialyte-rich silicate material left after rare earth extraction. Production is expected to start at 0.5 Mt per year, increasing over time. Since acid mine drainage (AMD) risks are low, the primary environmental concern will be the potential presence of trace radioactive elements, requiring continuous monitoring.

Tailings Storage Options

- Dry Stacking (Preferred Method) - Tailings are dewatered, filtered, and stacked in a lined storage facility. Advantages: Reduces environmental risk compared to conventional tailings dams. Minimizes water usage, which is critical in Arctic conditions. Allows progressive reclamation over time. Challenges: Higher initial capital costs due to filtration requirements. Requires specialized technology that can withstand cold temperatures.
- Subaqueous Tailings Disposal (Alternative Option) - Tailings are deposited in a natural water body or designated containment area under water. Advantages: Prevents wind erosion and dust dispersion in Arctic conditions. Reduces exposure of potential contaminants to oxygen. Challenges: Requires extensive environmental

impact assessments (EIA). May face regulatory restrictions due to potential ecological concerns.

Closure and Rehabilitation Plan

Waste rock dumps will be contoured and revegetated to restore the natural landscape. Dry stack tailings will be compacted and covered to prevent dust generation and wind erosion. Post-closure monitoring of groundwater and environmental stability will continue for several years.

8. ENVIRONMENTAL AND SOCIAL CONSIDERATIONS

- Environmental Baseline Studies:
  - Ongoing environmental impact assessments
- Potential Environmental Impacts and Mitigation Strategies:
  - Mitigation plans to minimize ecological disruption
- Social and Community Impact Assessment:
  - Consultation with local Greenlandic communities
- Permitting and Regulatory Requirements:
  - Compliance with Greenlandic and Danish mining laws

Environment, Permitting and Social Impact

It is a requirement of the Greenland Self Government that Environmental and Social Impact Assessments are prepared to evaluate the potential impacts on the environment and the community, of proposed developments, such as an open pit mine.

An Environmental Impact Assessment (EIA) report was prepared in compliance with the official guideline of the BMP, "BMP guidelines – for preparing an Environmental Impact Assessment (EIA) Report for Mineral Exploitation in Greenland" 2nd Edition, January 2011 (Bureau of Minerals and Petroleum 2011).

The EIA has been prepared by the independent consultant Orbicon A/S (Denmark) supported by Orbicon Greenland A/S. Orbicon has been contracted by TANBREEZ Mining PLC. The report is supported by environmental baseline studies carried out by Orbicon in 2007 – 2011. The EIA is dated December 2014.

Environmental issues: The deposition of tailings and waste rock in Fostersø can potentially have an impact on the lake itself, Laksetværelv which drains Fostersø and Lakseelv downstream the point where it meets with Laksetværelv (and ultimately the fjord).

Most of the large Arctic char in Lakseelv occur in the lower part of the river downstream the point where it meets with Laksetværelv. This is also the part of the river where most (if not all) of the Arctic char spend the winter. during summer large numbers of adult Arctic char migrate into the fjord.

A major concern regarding deposition of tailings and waste rock in Fostersø is the potential release of metals and other elements to the lake water. Such releases of contaminants, such as heavy metals, into the water of Fostersø can potentially have effects on the Arctic char population in Lakseelv and key prey organisms for these fish.

Required permits & status of permitting: Prior to the commencement of exploitation and development activities, a plan for the activities, including the organization of production and production installations, must be approved by the Greenland government. In this connection, an EIA report must be prepared, and a public consultation process be carried out. The purpose of an EIA is to identify, predict and communicate the potential environmental impacts of a proposed mining project in all its phases from before the commencement of mining to after closure, and to propose measures to address and mitigate these impacts.

The draft EIA is published on the government's public consultation portal for a minimum of eight weeks. During this period, public consultation meetings are held in relevant towns and settlements. At the end of the consultation period, the licensee must address all comments in the three languages in a white paper and revise the EIA. Following consultation with authorities, a final EIA is submitted to the Mineral Resources Authority.

There are no rules guaranteeing a maximum processing time, and specific circumstances, complexity and individual negotiations may lead to a longer processing time. The EIA has been lodged and accepted by the Ministry for Mineral Resources.

Climate Change: Greenland is often considered "ground zero" for the climate crisis because even small shifts in temperature can have outsize impacts across the entire Arctic region Scientists have estimated that if the Greenland ice sheet were to melt completely, it could raise global sea levels by more than seven meters. This will be a matter for infrastructure planning in the future as it is proposed to position the plant at the edge of the Fjord.

The conclusion of the EIA is that if the mitigating measures proposed in the EIA report are implemented and the mining activities are carried out in accordance with good environmental practice then the significance of the impacts on the environment will be low. No significant contamination by toxic materials or other pollutants is expected to take place. Dust dispersal will be small and local and will not contain toxic material. No key animals (such as White-tailed eagle and Arctic char) or rare plants are believed to decline or be displaced because of the mine project.

Social Impact Assessment (SIA)

The Greenland Act has an important section on the Social Impact Assessment (SIA) which must be completed before an Exploitation Licence can be granted. Much of the original work was completed in 2010-11 with the original submission occurring in March 2012.

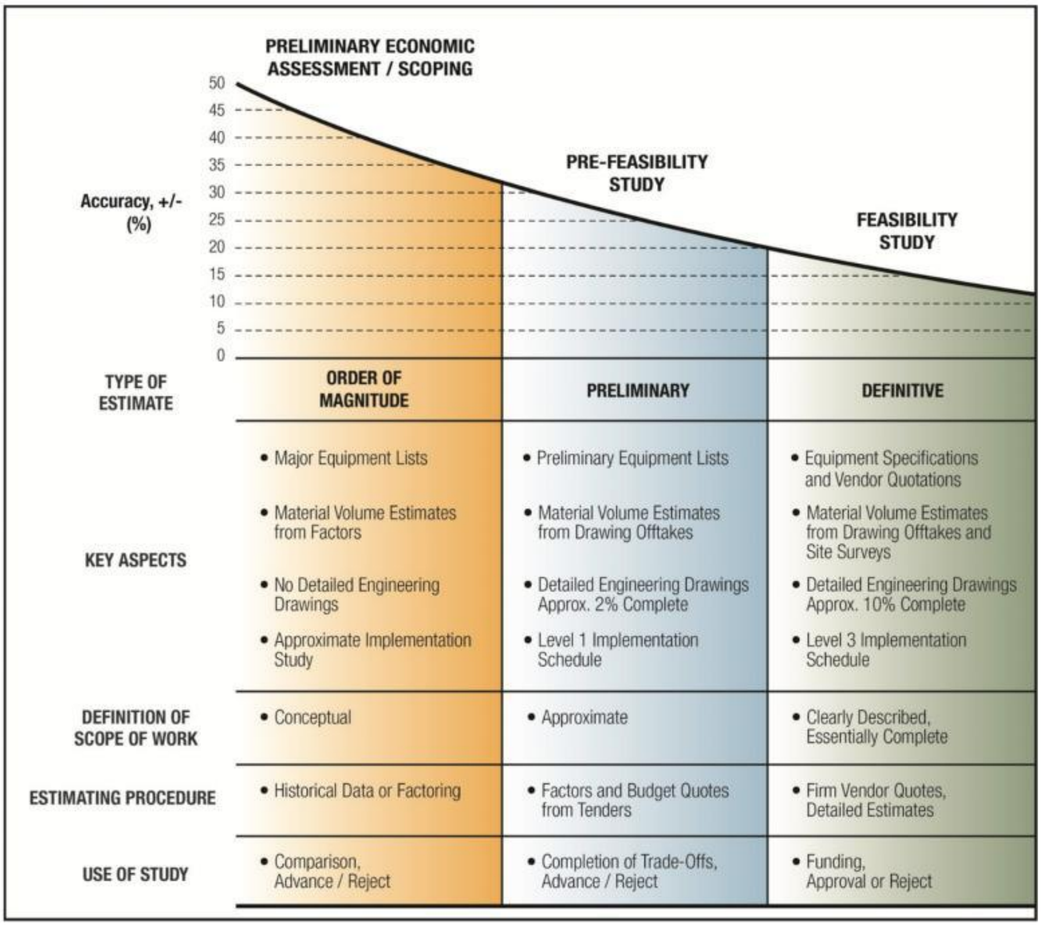
This assessment was first updated in August/ September 2013, and most recently in July and December 2019 and July 2020, with the Exploitation Licence being approved in September 2020. As such there is a large amount of data from both the company and from the consultants during this extensive period of examination.

The overall objective of the SIA is to identify and analyze the potential aspects of the proposed mining activity and to recommend initiatives to realize sustainable development opportunities as well as to mitigate the negative impacts. The SIA is based on a high degree of engagement with all stakeholders.

At the conclusion of the SIA program the company, the government and the local community signed an Impact Benefit Agreement (IBA). All agreed that the SIA had been able to cover all the aspects and more required under the Act. The conclusion noted the urgent need for local employment with about a third of the population having had to move out of the area due to lack of work over about the last decade.

All agreed that maximizing the local workforce participation would do much to overcome any mitigating problems caused by importing workers. Following on from this and before this the community and Tanbreez have spent considerable time discussing each other’s needs and advise what sort of recruitment or training will be required to not create local shortages. It has been much appreciated by Tanbreez that this initiative to some extent has been led by the local mayor, his staff and in fact the whole business community in Qaqortoq.

9. PEA ASSUMPTIONS



Accuracy levels of Scoping and feasibility studies

Factors Influencing Accuracy of Mining and Processing Estimates in a PEA:

- Resource Definition: The accuracy of mining and processing estimates heavily depends on the confidence level of the mineral resource. The recent Maiden Mineral Resource Estimate (MRE) for Tanbreez reports 45 million metric tons at 0.4% total rare earth oxides (TREO), with approximately 27% comprising heavy rare earth elements.
- Metallurgical Testing: Limited metallurgical data can lead to uncertainties in processing methods and recovery rates. The extent of metallurgical test work conducted on Tanbreez has not been detailed in the available information.
- Infrastructure and Logistics: Assumptions regarding infrastructure, such as power supply, water availability, and transportation, can significantly impact cost estimates. Specific details about infrastructure planning for Tanbreez are not provided in the current reports.

Mine Production Plan

Tanbreez Fjord - Lower Pit

This area is closer to the proposed plant, 300m west. This pit contained previous drill holes and has been the center of repeated bulk sampling tests by numerous groups. It has good access on the coast and would supply ample ore for the winter season when snow and ice on the road may make the upper pit a more difficult challenge. The ore zone here consists of the western edge of the kakortokite and those portions of the MTX which are above 1% ZrO_2.

Mining will be by simple open cut with about equal amounts of kakortokite and MTX. The kakortokite gradually fades into the MTX which consists of the same minerals as the kakortokite i.e. arfvedsonite, eudialyte and feldspar with minor sodalite and nepheline.

This edge of the intrusion has become a passageway for several smaller intrusions which appear have used the fracturing produced near the contact to escape from below and in doing so have watered down the grade. These include:

- Feldspar- arfvedsonite veins and pegmatites with little or no eudialyte, they are the main intrusive material
- Feldspar-fluorite veins
- Narrow green lujavrite veins to 10cm
- Sodalite veins
- K feldspar and quartz
- High grade country rock
- High grade eudialyte pegmatite which can have extreme grades (6%+) which tend to be in the inner most zone and are included in the ore zone.

Geotechnical drilling has shown it is a very stable rock. A consultant engineer has designed several pits for this deposit based on modelling of the drill holes.

Tanbreez Hill - Upper Pit

This location was chosen as it had in the past been heavily drilled, bulk sampled and had several feasibility studies completed on it by other operators. It also will be slightly higher grade than other locations. This pit centered on Unit 16 Red is also adjoining a proposed road which will run from the plant to the tailings dam. At this location the dip of the unit is about 18° to the north, while the top of the ore body, although somewhat erratic has an overall similar slope to the dip.

Unit +16 Red is also distinguishable from the white contact pegmatite of about 0.5m below and even more so from the green-black barren microsyenite which will form the base of the pit. In fact, the base of the pit will be almost level with the hill slope.

Accuracy of Mining and Processing Estimates in a Preliminary Economic Assessment (PEA)

In a Preliminary Economic Assessment (PEA), mining and processing estimates are conceptual and have a ±30% to ±50% accuracy range. These estimates rely on early-stage geological models, limited metallurgical test work, and industry benchmarks, making them less precise compared to Pre-Feasibility (PFS) and Definitive Feasibility Studies (DFS).

Accuracy Range by Study Stage

Factors Affecting Accuracy of Mining Estimates in a PEA

- Orebody Definition & Resource Classification: PEAs often rely on inferred resources, which have high uncertainty in grade, tonnage, and mineability.
- Mining Method Assumptions: Open pit vs. underground assumptions impact cost, recovery, and dilution rates. Mining equipment selection is often generalized based on similar projects.
- Production Schedule & Strip Ratio: Assumptions about stripping requirements can significantly impact costs. PEAs lack detailed scheduling, which later studies refine.
- Dilution & Ore Loss Estimates: Assumed based on generic data rather than detailed geotechnical studies.

Factors Affecting Accuracy of Processing Estimates in a PEA

- Limited Metallurgical Testing: PEAs may rely on laboratory-scale test work rather than full pilot plant trials. Recovery rates and reagent consumption estimates are approximate.
- Assumed Processing Flowsheet: Typically based on industry norms rather than project-specific data. May not fully optimize energy and reagent use.
- Power & Water Consumption Assumptions: Estimated rather than measured from actual test results.
- Operating Cost Assumptions

Estimated Capital Costs – Commissioning

Accuracy of Capital Costs in a Preliminary Economic Assessment (PEA)

Capital cost estimates in a Preliminary Economic Assessment (PEA) are relatively uncertain, with an accuracy range of ±30% to ±50%. These estimates are based on conceptual designs, preliminary engineering, and industry benchmarks rather than detailed site-specific studies.

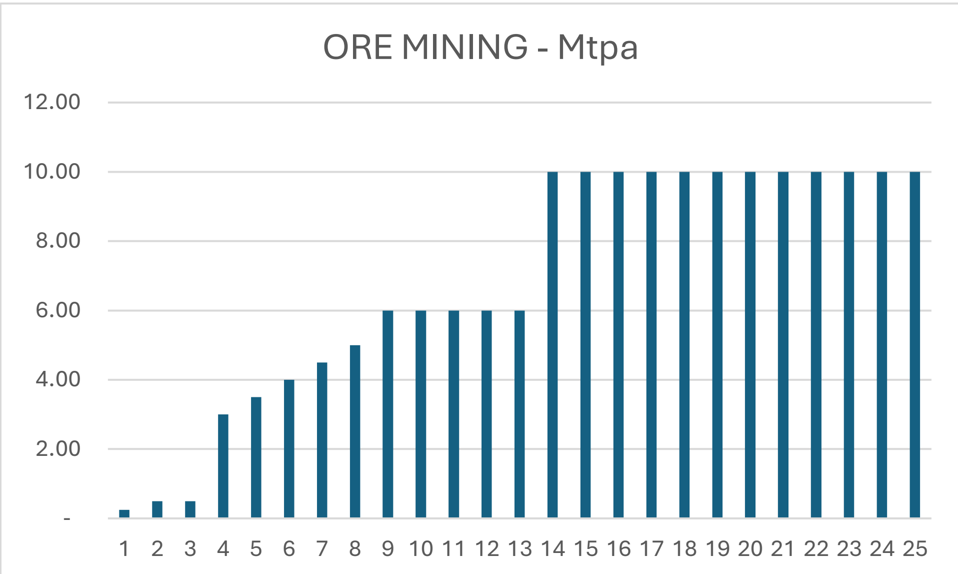
Expected Accuracy Range

Factors Affecting Capital Cost Accuracy in a PEA

- Engineering & Design Uncertainty: PEAs are based on high-level mine plans and conceptual processing designs, making cost assumptions approximate.
- Resource Estimate Confidence: PEAs rely on inferred and indicated resources, which may change significantly in later studies, affecting infrastructure needs.
- Lack of Firm Vendor Quotes: Most costs are estimated using industry benchmarks rather than confirmed supplier pricing.
- Infrastructure & Logistics Assumptions: Assumptions about power supply, roads, ports, and processing facilities may not be well-defined.
- Market Price Fluctuations: Costs for equipment, construction materials, and labor can vary significantly due to inflation or global supply chain issues.
- Contingency Allowances: PEAs typically include a 20-30% contingency to account for uncertainties in estimates.

Mine Schedule

Tanbreez Mine Plan	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Years	1 to 3	4 to 8	9 to 13	14 to 17	18 to 25
Duration	3 years	5 years	5 years	5 years	5 years
Deposit	FJORD	FJORD	FJORD	FJORD	HILL
Mining, Mtpa	0.25 to 0.50	3.0 to 5.0	6.0	10.0	12.5
Eudialyte Ore, Mtpa	0.05 to 0.10	0.6 to 1.0	1.2	2.0	2.5
Feldspar Ore, Mtpa	010. to 0.20	1.2 to 2.0	2.4	4.0	5.0
Arfvedsonite Ore, Mtpa	010. to 0.20	1.2 to 2.0	2.4	4.0	5.0



Commodity Price Assumptions

COMMODITY PRICES - PEA Projected to 2030 (Start of Production)			
Oxides included in the Mineral Resource Estimate, 2016			
Metal Oxidea			
Element	**Oxide Name**	**Chemical Formula**	**US$/kg**
Zirconium (Zr)	Zirconium oxide	ZrO2	28.00
Niobium (Mb)	Niobium oxide	Nb2O3	54.76
Light Rare Earth Oxides			
Element	**Oxide Name**	**Chemical Formula**	**US$/kg**
Lanthanum (La)	Lanthanum oxide	La_2O_3	1.00
Cerium (Ce)	Cerium oxide	CeO_2 or Ce_2O_3	1.60
Praseodymium (Pr)	Praseodymium oxide	Pr_6O_{11} or Pr_2O_3	72.00
Neodymium (Nd)	Neodymium oxide	Nd_2O_3	76.00
Samarium (Sm)	Samarium oxide	Sm_2O_3	1.50
Heavy Rare earth Oxides			
Element	**Oxide Name**	**Chemical Formula**	**US$/kg**
Europium (Eu)	Europium oxide	Eu_2O_3 or EuO	25.00
Gadolinium (Gd)	Gadolinium oxide	Gd_2O_3	60.00
Terbium (Tb)	Terbium oxide	Tb_4O_7 or Tb_2O_3	1,500.00
Dysprosium (Dy)	Dysprosium oxide	Dy_2O_3	800.00
Holmium (Ho)	Holmium oxide	Ho_2O_3	60.00
Erbium (Er)	Erbium oxide	Er_2O_3	35.00
Thulium (Tm)	Thulium oxide	Tm_2O_3	1,000.00
Ytterbium (Yb)	Ytterbium oxide	Yb_2O_3	750.00
Lutetium (Lu)	Lutetium oxide	Lu_2O_3	750.00
Other Rare Earth Oxides			
Element	**Oxide Name**	**Chemical Formula**	**US$/kg**
Yttrium (Y)	Yttrium oxide	Y_2O_3	30.00
Otrher Products			
Feldspar	Feldspar Concentrate		110
Arfvedsonite	Arfvedsonite Concentrate		50

Estimate of Concentrate Value

REO Composition			FJORD DEPOSIT				
Projected Price 2030		**Projected**	**In Situ Value**				**Concentrate**
Metal Oxide		**2030**	**Grade**	**Kg/t**	**US$/t**	**Recovery**	**US$/t**
ZrO2		28.00	1.58%	15.80	442.45	86%	380.50
Nb2O3		54.76	0.16%	1.64	89.86	93%	83.57
Total				17.44	**$ 532.31**		**$ 464.08**
TREO	**% TREO**	**USD/kg**	**Grade**	**Kg/t**	**US$/t**		
La2O3	18.01%	1.00	0.077%	0.774	0.77	93%	0.72
CeO2	35.27%	1.60	0.152%	1.516	2.43	93%	2.26
Pr2O3	3.80%	72.00	0.016%	0.163	11.76	93%	10.93
Nd2O3	13.03%	76.00	0.056%	0.560	42.56	93%	39.58
Sm2O3	2.40%	1.50	0.010%	0.103	0.15	93%	0.14
Eu2O3	0.30%	25.00	0.001%	0.013	0.32	93%	0.30
LREO	**72.81%**		**0.313%**	**3.129**	**57.99**	93%	**53.93**
Gd2O3	2.40%	60.00	0.010%	0.103	6.19	93%	5.76
Tb4O7	0.40%	1,500.00	0.002%	0.017	25.78	93%	23.98
Dy2O3	2.86%	800.00	0.012%	0.123	98.32	93%	91.44
Ho203	0.60%	60.00	0.003%	0.026	1.55	93%	1.44
Er203	1.90%	35.00	0.008%	0.082	2.86	93%	2.66
Tm203	0.30%	1,000.00	0.001%	0.013	12.89	93%	11.99
Yb203	1.80%	21.00	0.008%	0.077	1.62	93%	1.51
Lu203	0.30%	750.00	0.001%	0.013	9.67	93%	8.99
Y2O3	16.63%	30.00	0.071%	0.715	21.44	93%	19.94
HREO	**27.19%**		**0.117%**	**1.17**	**180.33**		**167.70**
REO					**238.32**		**221.64**
TOTAL	**100.00%**		**0.43%**	**4.297**	**770.63**		**685.71**
Feldspar Price							110.00
Arfvedsonite price							50.00
Total ROM and Concentrate Value							**845.71**
** Recovries based on Norra Karr PES (another Eudialyte Deposit*							
https://www.metal.com/Rare-Earth-Oxides							

REO Composition			HILL DEPOSIT				
REO Composition		**Projected**	**In Situ Value**				**Concentrate**
Metal Oxide		**2030**	**Grade**	**Kg/t**	**US$/t**	**Recovery***	**US$/t**
ZrO2		28.00	1.20%	11.95	334.66	86%	287.81
Nb2O3		54.76	0.11%	1.15	62.97	93%	58.56
Total				13.10	**$ 397.63**		**$ 346.37**
TREO	**% TREO**	**USD/kg**	**Grade**	**Kg/t**	**US$/t**		
La2O3	18.01%	1.00	0.059%	0.585	0.59	93%	0.54
CeO2	35.27%	1.60	0.115%	1.146	1.83	93%	1.71
Pr2O3	3.80%	72.00	0.012%	0.124	8.89	93%	8.27
Nd2O3	13.03%	76.00	0.042%	0.424	32.19	93%	29.94
Sm2O3	2.40%	1.50	0.008%	0.078	0.12	93%	0.11
Eu2O3	0.30%	25.00	0.001%	0.010	0.24	93%	0.23
Total							
LREO	**72.81%**	-	**0.237%**	**2.367**	**43.86**	93%	**40.79**
Gd2O3	2.40%	60.00	0.008%	0.078	4.68	93%	4.35
Tb4O7	0.40%	1,500.00	0.001%	0.013	19.50	93%	18.14
Dy2O3	2.86%	800.00	0.009%	0.093	74.37	93%	69.17
Ho203	0.60%	60.00	0.002%	0.020	1.17	93%	1.09
Er203	1.90%	35.00	0.006%	0.062	2.16	93%	2.01
Tm203	0.30%	1,000.00	0.001%	0.010	9.75	93%	9.07
Yb203	1.80%	21.00	0.006%	0.059	1.23	93%	1.14
Lu203	0.30%	750.00	0.001%	0.010	7.31	93%	6.80
Y2O3	16.63%	30.00	0.054%	0.541	16.22	93%	15.08
HREO	**27.19%**		**0.088%**	**0.88**	**136.40**		**126.85**
					180.26		**167.64**
TOTAL	**100.00%**		**0.33%**	**3.251**	**577.89**		**514.01**
Feldspar Price							110.00
Arfvedsonite price							50.00
Total ROM and Concentrate Value							**674.01**
** Recovries based on Norra Karr PES (another Eudialyte Deposit*							
https://www.metal.com/Rare-Earth-Oxides							

Summary of Price Forecast Accuracy by Element (to 2030)

Oxide	Forecast Confidence	Estimated Accuracy	Comment
Neodymium/Praseodymium	Moderate	±40–50%	Demand well-modeled; supply risk exists
Dysprosium/Terbium	Low–Moderate	±50–70%	High price upside, low predictability
Lanthanum/Cerium	Moderate–High	±30–40%	Abundant, stable supply
Zirconium Oxide	Moderate	±40–50%	Demand steady, but mining costs variable
Hafnium Oxide	Low	±60–80%	Niche market, opaque pricing

Agricola has considered the projected commodity priced in 2030 and has chosen to use a more conservative approach with a reduction to reflect the risks of future price estimates.

COMMODITY PRICES			
	Estimate		Rounded
TANBREEZ FJORD DEPOSIT			
Zirconium Oxide	$380.50	55%	
Niobium Oxide	$83.57	12%	
Total Rare Earth Oxides	$221.64	32%	
Eudialyte Concentrate Basket	$685.71	100%	**$690.00**
(Magnet Rare Earths)	$165.93		
TANBREEZ HILL DEPOSIT			
Zirconium Oxide	$287.81	56%	
Niobium Oxide	$58.56	11%	
Total Rare Earth Oxides	$167.64	33%	
Eudialyte Concentrate Basket	$514.01	100%	**$510.00**
(Magnet Rare Earths)	$125.51		
Other Commodities			
Feldspar	$110.00		**$110.00**
Arfvedsonite	$50.00		**$50.00**
Royalties			
Eudialyte Clean Ore, US$/M	5.0%		
Feldspar US$/M	2.5%		

Estimated Capital and Operating Costs

Accuracy of capital and Operating Costs in a Preliminary Economic Assessment (PEA)

In mining, a Preliminary Economic Assessment (PEA) provides an early-stage economic evaluation of a project. However, the accuracy of cost estimates in a PEA is relatively low compared to more advanced studies like Pre-Feasibility (PFS) and Definitive Feasibility Studies (DFS).

Expected Accuracy Range

- Cost Accuracy in a PEA: ±30% to ±50%
- Typical Cost Basis: May rely on broad industry benchmarks, conceptual mine designs, and high-level processing assumptions rather than detailed engineering studies.

Factors Affecting Cost Accuracy in a PEA

- Limited Engineering Design: Mining methods and processing flowsheets are conceptual.
- Benchmark Costing: Often uses generic cost data from similar projects instead of site-specific vendor quotes.
- Inferred Resource Dependence: PEAs are often based on inferred resources, which have high uncertainty.
- Currency & Inflation Risks: Cost assumptions may not factor in price volatility for fuel, reagents, or labor.
- Infrastructure and Logistics Assumptions: Costs related to power, roads, and transport may be estimated without on-site studies.
- Recovery & Dilution Estimates: Metallurgical testing is often limited, leading to uncertainty in processing efficiency.

Summary of Capital Cost and Operation Cost

CAPITAL COST, US$M	2030
MINING	20.00
PROCESSING	30.00
WATER SUPPLY	1.00
WASTE MANAGEMENT	4.00
INFRASTRUCTURE & UTILITIES	20.00
TRANSPORT/HANDLING	10.00
Sub Total Direct	85.00
INDIRECT	-
Owners/General	9.00
EPCM	10.00
Indirect	12.00
Contingency (20%)	6.20
Sub Total Indirect	35.00
TOTAL MINE+PROCESS CAPEX	120.00
PORT FACILITIES	-
Marine Infrastructure	15.00
Landside Infrastructure	10.00
Admin & Contingency	5.00
Total Port Capital	30.00
MINE + PROCESS + PORT, US$M	150.00

OPERATING COST US$/t	2030
MINE AND PROCESS	
Mining (Excavation & Hauling)	8.00
Crushing & Magnetic Separation	14.00
General and Administration	
Energy (Diesel, Wind, Hydro)	3.00
Labor & Camp Costs	3.00
Road & Port Transport, FJORD	1.00
Road & Port Transport, HILL	2.00
Maintenance & Consumables	2.00
Regulatory & Environmental Compliance	1.00
Sub Total	12.00
PORT	
Loading & Handling	2.00
Energy Costs (Diesel, Renewables)	2.00
Labor Costs	1.00
Ice Management & Seasonal Ops	1.00
Port Maintenance & Repairs	1.00
Security & Environmental Compliance	1.00
Sub Total	8.00
Contingency	8.00
TOTAL OPERATING COST, US$/t	50.00

Summary

CAPITAL COST	US$M
MINING	20.00
PROCESSING	30.00
INFRASTRUCTURE	35.00
INDIRECT	35.00
PORT FACILITIES	30.00
MINE + PROCESS + PORT	150.00

Summary

Mining (Excavation & Hauling)	8.00
Crushing & Magnetic Separation	14.00
General and Administration	12.00
PORT	8.00
Contingency	8.00
TOTAL	50.00

Summary of Life of Mine Capital Cost

Capital Cost, US$ million	Startup	Phase 3	Phase 4
Installation	Year 0	Year 9	Year 9
Total Ore Mining , Mtpa			
MINING	20.00	10.00	9.00
PROCESSING	30.00	15.00	14.00
INFRASTRUCTURE	35.00	18.00	16.00
INDIRECT	35.00	18.00	16.00
PORT FACILITIES	30.00	15.00	14.00
MINE + PROCESS + PORT	150.00	76.00	69.00

10. DISCOUNTED CASH FLOW COMPILATION

ANNUAL METRICS	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total
	Mtpa	Mtpa	Mtpa	Mtpa	Mtpa	Mtpa
ROM Delivery						
Total Eudialyte Mining, Mt	0.05	0.80	1.20	2.00	2.00	6.05
Total Feldspar Mining, Mt	0.10	1.60	2.40	4.00	4.00	12.10
Total Arfvedsonite Mining, Mt	0.10	1.60	2.40	4.00	4.00	12.10
Concentrate Export	-	-	-	-	-	-
Total Eudialyte Concentrate	0.04	0.68	1.02	1.70	1.70	5.14
Total Feldspar Concentrate	0.09	1.36	2.04	3.40	3.40	10.29
Total Arfvedsonite Concentrate	0.11	1.76	2.64	4.40	4.40	13.31

Estimate of Annual Mining and Processing

Production Scenario

PRODUCTION SCENARIO	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total
	Mtpa	Mtpa	Mtpa	Mtpa	Mtpa	Mtpa
TANBREEZ FJORD DEPOSIT						
Indicated Converted	1.25	20.00	18.00	-	-	39.25
Inferred Converted	-	-	12.00	40.00	-	52.00
Ore Mining	1.25	20.00	30.00	40.00	-	91.25
Eudialyte	0.25	4.00	6.00	8.00	-	18.25
Feldspar	0.50	8.00	12.00	16.00	-	36.50
Arfvedsonite	0.50	8.00	12.00	16.00	-	36.50
External and Internal Waste	-	-	-	-	-	
TANBREEZ HILL DEPOSIT	0.06	1.00	1.50	2.00	-	4.56
	-	-	-	-	-	
Indicated Converted	-	-	-	-	160.00	
Inferred Converted	-	-	-	-	-	
Ore Mining	-	-	-	-	70.00	70.00
Eudialyte	-	-	-	-	10.00	10.00
Feldspar	-	-	-	-	80.00	80.00
Arfvedsonite	-	-	-	-	16.00	16.00
External and Internal Waste	-	-	-	-	32.00	32.00
TOTAL ORE MINING	-	-	-	-	32.00	32.00
Total Eudialyte Mining, Mt	-	-	-	-	12.80	12.80
Total Feldspar Mining, Mt	-	-	-	-	-	-
Total Arfvedsonite Mining, Mt	1.25	20.00	30.00	40.00	80.00	171.25
TOTAL WASTE MINING	0.25	4.00	6.00	8.00	16.00	34.25
TOTAL MINING	0.50	8.00	12.00	16.00	32.00	68.50

Processing

PROCESSING	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total
	Mt	Mt	Mt	Mt	Mt	Mt
TANBREEZ FJORD DEPOSIT	1.25	20.00	30.00	40.00	-	91.25
Eudialyte	0.21	3.40	5.10	6.80	-	15.51
Feldspar	0.43	6.80	10.20	13.60	-	31.03
Arfvedsonite	0.43	6.80	10.20	13.60	-	31.03
Overgrind	0.13	2.00	3.00	4.00	-	9.13
Total Arfvedsonite	0.55	8.80	13.20	17.60	-	40.15
Fines to Tailings	0.06	1.00	1.50	2.00	-	4.56
TANBREEZ HILL DEPOSIT	-	-	-	-	80.00	80.00
Eudialyte	-	-	-	-	13.60	13.60
Feldspar	-	-	-	-	27.20	27.20
Arfvedsonite	-	-	-	-	27.20	27.20
Overgrind	-	-	-	-	8.00	8.00
Total Arfvedsonite	-	-	-	-	35.20	35.20
Fines to Tailings	-	-	-	-	4.00	4.00
	-	-	-	-	-	
TOTAL EUDIALYTE	0.21	3.40	5.10	6.80	13.60	29.11
TOTAL FELDSPAR	0.43	6.80	10.20	13.60	27.20	58.23
TOTAL ARFVEDSONITE	0.55	8.80	13.20	17.60	35.20	75.35
PORT LOADING (Eudialyte and Feldspar Concentrates)	0.64	10.20	15.30	20.40	40.80	87.34

Port Loading includes Eudialyte and Feldspar concentrates. Arfvedsonite is sold locally

Revenue

REVENUE	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total
TANBREEZ FJORD DEPOSIT	US$M	US$M	US$M	US$M	US$M	US$M
Eudialyte	147	2,346	3,519	4,692	-	10,704
Feldspar	47	748	1,122	1,496	-	3,413
Arfvedsonite	28	440	660	880	-	2,008
TANBREEZ HILL DEPOSIT	-	-	-	-	-	
Eudialyte	-	-	-	-	6,936	6,936
Feldspar	-	-	-	-	2,992	2,992
Arfvedsonite	-	-	-	-	1,760	1,760
Revenue Summary	-	-	-	-	-	
Eudialyte	147	2,346	3,519	4,692	6,936	17,640
Feldspar	47	748	1,122	1,496	2,992	6,405
Arfvedsonite	28	440	660	880	1,760	3,768
Gross Revenue, US$M	221	3,534	5,301	7,068	11,688	27,812
Royalties	-	-	-	-	-	
Eudialyte Clean Ore, US$/M	7	117	176	235	347	882
Feldspar US$/M	1	19	28	37	75	160
Net Revenue	212	3,398	5,097	6,796	11,266	26,770

Capital Cost

CAPITAL COST	Year 1	Year 9	Year 14	Phase 4	Phase 5	Total
	US$M	US$M	US$M	US$M	US$M	US$M
MINING	20	10	9	-	-	39
PROCESSING	30	15	14	-	-	59
INFRASTRUCTURE	35	18	16	-	-	69
INDIRECT	35	18	16	-	-	69
PORT FACILITIES	30	15	14	-	-	59
TOTAL CAPITAL COST	150	76	69	-	-	295
Sustaining Capital (3%)	12	17	28	36	44	137

Operation Cost

OPERATING COST	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total
	US$M	US$M	US$M	US$M	US$M	US$M
Mining (Excavation & Hauling)	11	168	252	336	742	1,509
Crushing & Magnetic Separation	18	280	420	560	1,120	2,398
General and Administration	15	240	360	480	960	2,055
PORT	5	82	122	163	326	699
Contingency	10	160	240	320	640	1,370
Total Operating Cost	58	930	1,394	1,859	3,789	8,030

11. ECONOMIC ANALYSIS

- Estimate of Present Value at Commissioning and Startup Capital
  - Estimate of Net Present Value at a range of discount rates
  - Estimate of Internal Rate of Return
- Sensitivity Analysis (Impact of Changes in Key Parameters):
  - Scenarios for varying REE prices, CAPEX, and OPEX
- Payback Period Estimate:
  - Preliminary estimates based on revenue projections

Financial Summary

FINANCIAL SUMMARY	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total
	US$M	US$M	US$M	US$M	US$M	US$M
REVENUE	212	3,398	5,097	6,796	11,266	26,770
OPERATING COST	58	930	1,394	1,859	3,789	8,030
CAPITAL COST	-	-	76	69	-	145
Sustaining Capital (3%)	9	15	26	29	58	137
EBITDA (Pre-Tax)	146	2,454	3,601	4,839	7,419	18,458
Decommissioning and Closure					115	115

Net Present Value

Calculated at Commissioning (2030) plus Startup Capital (2029)					
Before Tax	Discount	PV	Capital	NPV	NPV
NPV - Net Present Value		US$M	US$M	US$M	US$B
Low	15.0%	2,760	-	2,760	2.8
High	12.5%	3,570	-	3,570	3.6
IRR		180%			
Payback, years	3.00				
After Tax estimate at 25% Tax Rate					
Low				2,070	2.1
High				2,680	2.7
IRR				160%	

Capital Cost included in Present Value

The Net Present Value is estimated over a 25 year mine life, extracting 37.5 million tonnes of Eudialyte Ore. The is scope to continue mining beyond 25 years and develop higher grade areas of interest within the kakortokite unit.

Before Tax Estimate (EBITDA)

- Net Present Value (NPV): approximately US$2.8–3.6 billion
- Internal Rate of Return (IRR): ~180%
- Payback Period: approximately 3 years

After Tax Estimate (Tax: 5% of EBITDA)

- Net Present Value (NPV): approximately US$2.1–2.7 billion
- Internal Rate of Return (IRR): ~160%

The Scoping Study referred to in this report is based on low-level technical and economic assessments and is insufficient to support estimation of Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Scoping Study will be realized.

This Preliminary Economic Assessment (PEA or Scoping Study) has been undertaken to provide the directors of Critical Metals Corp with an overview of the future value of the Tanbreez Project. It is a preliminary technical and economic study of the potential viability of the Tanbreez Project. It is based on low level technical and economic assessments that are not sufficient to support the estimation of ore reserves. Further [exploration and] evaluation work and appropriate studies are required before Critical Metals Corp. will be able to estimate any ore reserves or to provide any assurance of an economic development case.

The Scoping Study is based on the material assumptions outlined below. These include assumptions about the availability of funding. While Critical Metals Corp. considers all the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Scoping Study will be achieved.

To achieve the range of outcomes indicated in the Scoping Study, funding of in the order of $200 million will likely be required. Investors should note that there is no certainty that Critical Metals Corp. will be able to raise that amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of Critical Metal Corp.'s existing shares.

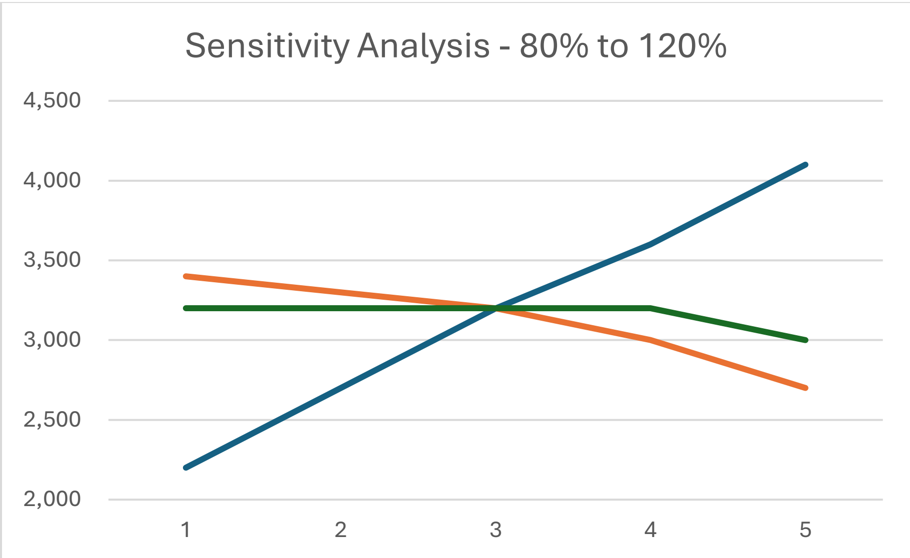
It is also possible that [Critical Metal Corp could pursue other 'value realization' strategies such as a sale, partial sale or joint venture of the project. If it does, this could materially reduce Critical Metals Corp. proportionate ownership of the project.

Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Scoping Study.

Sensitivity Analysis

The table and figures show the project NPV (pre-tax) at a 9% discount rate for single parameter sensitivities and NPV at varying discount rates.

SENSITIVITY ANALYSIS	80%	90%	Base	110%	120%
	Average PV minus CAPEX, US$M				
REVENUE	2,200	2,700	3,200	3,600	4,100
OPERATING COST	3,400	3,300	3,200	3,000	2,700
CAPITAL COST	3,200	3,200	3,200	3,200	3,000
NPV	8%	10%	12%	14%	16%
Most Likely, US$M	6,000	4,700	3,800	3,000	2,500



Economic Analysis Accuracy in the Tanbreez PEA

A PEA provides a high-level economic evaluation of a mining project, but it has a relatively low accuracy range of ±30% to ±50%.

Key Factors Affecting Economic Analysis Accuracy in the Tanbreez PEA

- Resource Classification & Confidence: The Maiden Mineral Resource Estimate for Tanbreez reports 45 million metric tons at 0.4% total rare earth oxides (TREO). Since the PEA may rely on inferred resources, economic projections can change significantly in later studies.
- Revenue Assumptions & REE Pricing: Market fluctuations in rare earth prices impact the Net Present Value (NPV) and Internal Rate of Return (IRR). Heavy rare

earth elements (HREEs), which form a significant portion of Tanbreez's deposit (~27% of TREO), generally have higher market value but volatile pricing.

- Capital & Operating Cost Estimates: PEAs use industry benchmarks rather than detailed quotes, making CAPEX and OPEX estimates uncertain. Infrastructure costs (power, logistics, ports) may be underestimated if site-specific studies are lacking.
- Processing & Recovery Assumptions: Limited metallurgical test work means recovery rates are estimated rather than fully validated. If recoveries are lower than expected, economic metrics (NPV, IRR, payback period) will be impacted.
- Discount Rate & Sensitivity Analysis: The choice of discount rate (typically 8-10% for mining projects) significantly affects NPV calculations. Sensitivity analysis in a PEA is crucial to show how variations in CAPEX, OPEX, and commodity prices impact project

12 DECOMMISSIONING & CLOSURE PLANS

Although the Tanbreez project has potential life for many centuries, the Act is specific in that a full Closure Plan (called 19/43) must be submitted. Submitted initially in March 2012 and updated regularly, it was not possible to get this fully assessed until November 2022. This delay is not unusual as the government prefers to assess this closer to the mine opening.

Once the end of mine life has been reached, it is TANBREEZ mining's goal to restore the land to an environmental acceptable state and manage the environment through a program of post-closure care and maintenance (if needed).

The closure process that Tanbreez Mining Greenland proposes to adopt is a phased approach.

At this stage a preliminary plan is provided (Table 12-1). This plan will subsequently be developed. Near the end of mine life a final Decommissioning and Closure Plan (DCP) will be developed. Therefore, the closure planning at Tanbreez will be an active and continuous process that will be constantly evolving.

The overall objectives of the decommissioning and closure plan are the following:

- Physically safe so that the site is left safe for any users (people and wildlife).
- Physically stable ensuring that the site can be considered safe from excessive slumping and erosion.
- Chemically stable ensuring any deposits remaining on the surface will not release substances at a concentration that would significantly harm the environment.

13. PROJECT FINANCING

Project financing has been initiated, to be finalized post-DFS. Given the strong PEA economics, the Company is confident in securing the required funding for Tanbreez. The envisaged financing strategy is a combination of debt, equity, and potential government grants or loans (in line with Western governments' critical minerals strategies). European Lithium Ltd and Critical Metals Corp have already demonstrated support via corporate transactions, and recent capital raises (e.g. Critical Metals announced a US$22.5 million private placement in Feb 2025 to advance Tanbreez provide funding for the DFS and pre-construction activities.

Formal project financing discussions with banks and export credit agencies will commence with the DFS results. Early engagement with finance providers indicates Tanbreez could achieve a debt funding of ~60–65% of initial capex, given the robust cashflows and strategic nature. The remainder would likely come from equity at the project or corporate level, potentially involving strategic investors (offtake partners or government investment vehicles). Both Critical Metals and European Lithium are committed to ensuring any funding solution also maximizes value for their shareholders.

14. NEW AREAS FOR FUTURE DEVELOPMENT

Critical Metals Corp Discovers 147 PPM of Gallium at Its Tanbreez Project

November 26, 2024

Initial results from drilling program demonstrate significant upside potential for foundational rare earth asset in Southern Greenland

NEW YORK, Nov. 26, 2024 (GLOBE NEWSWIRE) -- Critical Metals Corp (Nasdaq: CRML) ("Critical Metals Corp" or "the Company"), a leading mining development company focused on critical metals and minerals and producing strategic products essential to electrification and next generation technologies for Europe and its western world partners, today provided a project update for the Tanbreez Greenland Rare Earth Mine (the "Tanbreez Project"), one of the world's largest rare earth assets located in Southern Greenland. In connection to the drilling, the Company has discovered one of the world's highest concentrations of Gallium, an essential rare earth element to produce computer chips and defense applications.

Based on initial results obtained from Critical Metals Corp's recent drilling program, four high-grade zones have now been identified on the site. These zones are expected to play a significant role in the Company's strategy for optimizing its mining operations and increasing throughput (the Tanbreez Project is currently licensed for 500,000 metric tons per year). The identification of these zones is a key milestone in the ongoing development of the project.

High Grade Zones:

Unit Zero – This unit is up to 5 meters thick and is located approximately 50 meters behind the proposed plant location. This unit represents a potential target for future exploration.

Base of the Kakortokite – At this zone there is a metasomatic replacement by eudialyte of the underlying unit. The unit possesses a high-grade of rare earth element material, which is located approximately 40 meters below the surface.

EALS – This horizon is entirely separate from the Kakortokite and occurs within the overlying naujaite. In some areas, the unit is high-grade and can be traced for approximately 3 kilometers, with a thickness of up to 80 meters. This year, the company conducted surface diamond drilling and extensive sampling across the unit. The EALS horizon contains many pegmatites and returned significant assay results, including grades exceeding 5% ZrO_2 and more than 2% REO. Notably, the percentage of heavy rare earths within the rare earth fraction ranged up to 40.8%.

Area G – This area, identified this year, spans over 1 km^2 and contains extensive late-stage pegmatites and pegmatite scree. The area also holds high-grade ore in a zone that will adjoin the proposed road to the tailings area. There was a high concentration of Gallium discovered in this zone, with values reaching up to 147 ppm Ga_2O_3.

Discovery of Gallium

The discovery of a significant amount of Gallium at Area G, further demonstrates the Tanbreez Project's immense value. Gallium is a critical metal that is primarily produced as a by-product of bauxite mining, with additional sources from zinc smelters. Currently, approximately 98% of the world's gallium production is sourced from China, where it is primarily a by-product of bauxite mining. Certain South American bauxite deposits contain up to 80 ppm of Ga_2O_3.

The growing gallium market, currently worth billions of dollars per year and expanding at an annual rate of approximately 20%, presents a valuable opportunity for the Company. Critical Metals Corp plans to investigate the mineralogy of the gallium in this zone and assess its potential as a viable by-product.

15. DECLARATIONS

Qualifications and Relevant Experience of the Competent Person ("CP").

Malcolm Castle, the author of this report, is the principal consultant for Agricola Mining Consultants Pty Ltd, an independent geological consultancy.

Education:

He is an appropriately qualified geologist and has the necessary technical and securities qualifications, expertise, competence, and experience appropriate to the subject matter of the report.

He studied Applied Geology with the University of New South Wales in 1965 and was awarded a B.Sc. (Hons) degree and then studied at the Securities Institute of Australia with a Graduate Certificate in Applied Finance and Investment in 2004.

Years of Experience:

Malcolm Castle has over 50 years' experience in exploration geology and property evaluation as an exploration geologist. He established a consulting company over 40 years ago and specializes in exploration management, technical audit, due diligence and property valuation at all stages of development.

He has been working in exploration geology and property evaluation for major companies for 20 years and as an independent consultant for 40 years. He has worked with gold, base metals, iron ore, lithium and rare earths and been part of the team for project discovery through to feasibility study for FMG in Australia and the Rawas Project in Indonesia as well as technical audits in many countries.

He is the Principal Consultant for Agricola Mining Consultants Pty Ltd, an independent geological consultancy established 40 years ago and has completed numerous Independent Technical Assessment Reports and Mineral Asset

Valuations over the last decade as part of his consulting business based in South Perth, Western Australia.

Relevant Experience:

Malcolm Castle has worked as an exploration geologist in many countries and states of Australia and has prepared technical assessment reports for various companies with mineral assets in those areas over the last 30 years. He is familiar with the progress of exploration and mine development to the present day.

He is a founding member of the Fortescue Metals Group (FMG) and assisted in the preparation of the Definitive Feasibility Studies and the expansion planning from 2003 to 2010. This covered the startup of the company to the early years of production, working in the mining division.

He has compiled Independent Valuation Reports incorporating desktop scoping studies on the Tanbreez Project on several occasions since 2011, including a due diligence report for Critical Metals Corp. (CRML) in 2024 and the S-K 1300 (ITAR) Report in March 2025.

Professional Registration:

He is a current Member of the Australasian Institute of Mining and Metallurgy since 1964. (MAusIMM). He is a Competent Person under the JORC Code 2012 guidelines.

A 'Competent Person' is a minerals industry professional who is a Member of The Australasian Institute of Mining and Metallurgy, or of the Australian Institute of Geoscientists. These organizations have enforceable disciplinary processes including the powers to suspend or expel a member. A Competent Person must have a minimum of five years relevant experience in the style of mineralisation or type of deposit under consideration and in the activity which that person is undertaking. If the Competent Person is preparing documentation on Exploration Results, the relevant experience must be in exploration.

Competent Persons Statement – JORC Code:

The information in this Report that relates to Mineral Resource Estimates and Ore Reserves underpinning this PEA is based on, and fairly represents, information and supporting documentation reviewed by Malcolm Castle, who is a Member of the Australasian Institute of Mining and Metallurgy. Mr. Castle has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration and to the activity, which he is undertaking to qualify as a Competent Person as defined under the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr. Castle is not an employee of the Company and is the independent principal consultant for Agricola. Mr. Castle consents to the inclusion in this report of the matters based on the information and supporting documentation in the form and context in which they appear.

Principal Sources of Information and Reliance on Other Experts

Our review of the project was based on information the company gave us, as well as technical reports made by consultants, government agencies, as well as other relevant published and unpublished data. This Report is based upon information available up to and including the date of the report.

By asking all the reasonable questions, Agricola has tried to make sure that the technical data used to create this Report is real, correct, and complete We provided the company with a final draft of this Report, requesting them to identify any material errors or omissions before lodging it.

Sources of Information

In respect of the information contained in this report, Agricola has relied on:

- Information and reports prepared by the company.
- Various ASX releases from current and previous owners.
- Publicly available information from the Greenland government.
- Academic and technical papers in publicly available journals and other sources.

In line with ASIC Regulatory Guide 55 and ASIC Corporations (Consents to Statements) Instrument 2016/72, permission to use statements from these sources is given. Where appropriate, we have received separate consents for internal, unpublished reports.

Site Visits

The preparation of this report did not involve any site visits. Agricola has reviewed reports for all previous exploration and considers that a site visit would not reveal any additional information that would change the recommendations or make a material difference to the contents and of this report. All the projects are early-stage exploration projects with minimal recent exploration activities.

Figures in the Report

The figures included in this report are selected from published reports, available in the public domain, and listed in the references. The competent person for Agricola has reviewed all figures and is responsible for their accuracy. The competent person for Agricola, Malcolm Castle, has reviewed all figures in the Report, confirmed that they are relevant, appropriate and meaningful and is responsible for their accuracy. Figurers are dated 28 March 2025.

Tenement status

Agricola is not qualified to provide extensive commentary on the legal aspects of the tenure of the mineral properties or their compliance with the legislative environment and permits in the various jurisdictions. In relation to the tenement standing, Agricola has relied on the information publicly available on this basis, Agricola has confirmed the tenement comprising the Tanbreez Project is in government records and understands that the tenements are granted and in good standing and has confirmed this with the Company. Agricola understands that there are no legal, regulatory, statutory or contractual impediments to the Company entering the tenements and carrying out exploration and development activities

Exploration results

- The exploration results are based on information and supporting documents that were put together by the company and reviewed by Agricola. They are a fair reflection of the available data. We don't present exploration results in a way that unreasonably implies the discovery of potentially economic mineralization.
- When exploration results show mineralization but aren't labelled as an exploration target or a mineral resource, mineralization estimates of tonnes and average grade have not been given. The presentation of exploration results does not indicate the presence of coherent mineralization that could serve as an exploration target.
- The report quotes the downhole widths from historic drill holes but does not report the true widths of mineralization. The report includes an appropriate qualification. Mineralized widths shown are downhole distances. The estimated true width is unclear due to the early nature of the drilling and geological complexity. The weighted average of the aggregate intercepts is found by adding up the lengths of all the samples and dividing that number by the total length. First, multiply all values in the intercept by their corresponding length to calculate the weighted average. Then, add up the resulting products and divide by the sum of the lengths.
- Some types of information, like isolated assays, isolated drill holes, assays of panned concentrates, supergene-enriched soils, or surface samples, have not been shared without being put in context. When exploration results based on rock chip or grab sampling are reported, the location, total number, and assay results for the sampling have been included where possible to ensure samples are not selectively reported. If the visual results are quoted in the absence of assays, they do not include any reference to the grade or economic potential of the possible mineralization. We take character samples, which are isolated samples, to identify the minerals present and assess the sample's quality. They do not represent the average grade of a volume of material.

Mineral Resource Estimates and Exploration Targets

- If exploration targets are reported, the potential quantity and grade are only conceptual. There has been insufficient exploration to estimate a mineral resource under the JORC Code 2012, and it is uncertain if further exploration will result in the estimation of a mineral resource.

- In line with the JORC Code 2012, Mineral Resource Estimates are shown with Competent Persons Statements from the person who estimated the resources and JORC Table 1 for each deposit.
- Mineral Resource Estimates are based on and fairly represent information and supporting documentation prepared by a named competent person

Cautionary Note Regarding Forward Looking Statements

Forward-looking statements regarding the 'Startup Mine Concept' are subject to known and unknown risks and uncertainties and are based on potentially inaccurate assumptions that could cause actual results to differ materially from those expected or implied by the forward-looking statements. Actual results could differ materially from those anticipated in forward-looking statements for many reasons. These forward-looking statements are based on information available as of the date of this Report, and expectations, forecasts and assumptions as of that date, involve a number of judgments, risks and uncertainties.

Independence and Consent

Malcolm Castle, the report's author, and Agricola have no material interest in the company or its mineral properties. Agricola's relationship with the company is solely one of professional association between client and independent consultant. Agricola and its employees have no conflict of interest with the company. Fees are being charged to the company for the preparation of this IReport based on agreed-upon commercial rates, the payment of which is not contingent upon the conclusions of the report.

Agricola regards the ASIC guidelines of RG112.31 as being complied with, whereby there are no business or professional relationships or interests that would affect the expert's ability to present an unbiased and independent opinion within this Report.

Agricola consents to the inclusion of this Preliminary Economic Assessment Report in the form and context set out in the agreement with the company. Agricola provides its consent with the understanding that the assessment expressed in the individual sections of this report will be considered with, and not independently of, the information set out in full.

Agricola Mining Consultants Pty Ltd has not withdrawn this consent prior to the lodgment of the prospectus containing this Report.

16. REFERENCES

Agricola Mining Consultants Pty Ltd, 2011, Independent Valuation Report on The Tanbreez Project in Greenland, M. Castle, 23 December 2011.

Agricola Mining Consultants Pty Ltd, 2015, Independent Valuation Report on The Tanbreez Project in Greenland, M. Castle, 5 June 2015.

Agricola Mining Consultants Pty Ltd, 2021, Independent Valuation Report on The Tanbreez Project in Greenland, M. Castle, 12 July 2021.

Agricola Mining Consultants Pty Ltd, 2022, Independent Valuation Report on The Tanbreez Project in Greenland, M. Castle, 7 February 2022.

Agricola Mining Consultants Pty Ltd, 2023, Independent Valuation Report on The Tanbreez Project in Greenland, M. Castle, 27 March 2023.

Agricola Mining Consultants Pty Ltd, 2024, Independent Technical Assessment and Due Diligence Report on the Tanbreez Tenement MIN 2020-54 in Southern Greenland held by Rimbal Pty Ltd, 28 August 2024

Agricola Mining Consultants Pty Ltd, 2025, Independent Technical Assessment Report (ITAR), and S-K 1300 Technical Report Summary (TRS) on the Tanbreez Rare Earth Project in Greenland, 12 March 2025

Al Maynard & Associates Pty Ltd, 2016, Resource Estimates at Two Sites within the Tanbreez Project (JORC 2012) for Rimbal Pty Ltd, Revised: 30 August 2016

Critical Minerals Corp, 2024, Transaction Announcement, Proposed Acquisition of Tanbreez Greenland Rare Earth Mine, June 2024

Critical Minerals Corp, 2024: Critical Metals Corp Discovers 147 PPM of Gallium at Its Tanbreez Project, News Release, November 26, 2024

Critical Minerals Corp, 2024: Critical Metals Corp Confirms High-Grade Rare Earth Material at Its Tanbreez Project, News Release, December 9, 2024

Critical Minerals Corp, 2024: Critical Metals Corp Evolves Development Strategy for the Tanbreez Project, News Release, October 29, 2024

European Lithium Limited, 2025, Greenland Tanbreez Project Maiden Drill Results, ASX Announcement 20 January 2025.

European Lithium Limited, 2025, "Critical Metals Corp. Outlines Strategic Growth Initiatives Following ", ASX Announcement, 12 February 25

European Lithium Limited, 2025, Maiden Mineral Resource Estimate 45mtTanbreez Rare Earth Project Greenland, ASX Release, 13 March 2025

Exclusive-Exploitation-Licence-Tanbreez-Mining-Greenland-2020-54. Ministry of Mineral Resources, Government of Greenland, August 2020.

International Energy Agency, 2024, Global Critical Minerals Outlook 2024

Rimbal Pty Ltd, 2016, Tanbreez Report Exploration Licence 2006/04 - Drilling & Sampling Surface & Channel Sampling Volume 6

Orbicon A/S, 2014, Tanbreez Mining Greenland A/S, Tanbreez Project, Environmental Impact Assessment, Main Report, December 2014.

SRK Consulting, 2021, Preliminary Economic Assessment of Norra Kärr Rare Earth Deposit and Potential By-Products, Sweden, August 2021

Schønwandt. H.K., 2016, A Description of the World-Class Rare Earth Element Deposit Tanbreez, South Greenland— Rare earth Industry, 2016, Chapter 5, page 73-85, Hans K. Schønwandt, Gregory B. Barnes, and Thomas Ulrich.,

Tanbreez, 2023, MIN 2020/54, ANNUAL REPORT 2023, (2023 reporting year), Prepared by: GB Barnes and Associates 47 Labouchere Rd, South Perth Western Australia, 6151

Tanbreez, 2023, Summary Economic & Geological Assessment (S-K 1300) Of the Tanbreez Rare Earth, Tantalum, Niobium, Zirconium & other potential by- products in Greenland, Prepared by Tanbreez Mining Greenland A/S & internal consultants

The Ministry of Mineral Resources February 2020, Greenland's Mineral Strategy 2020-2024

USGS, 2025, Mineral Commodity Summaries 2025 U.S. Department of the Interior, U.S. Geological Survey January 31, 2025

17. REASONABLE BASIS FOR FORWARD LOOKING ASSUMPTIONS

No Ore Reserve has been declared. This document has been prepared in compliance with the JORC Code (2012) and the ASX Listing Rules. All material assumptions on which the Preliminary Economic Assessment (PEA or Scoping Study) production target and projected financial information are based have been included in this release and disclosed in the table below.

Consideration of Modifying Factors in the format specified by JORC Code (2012) Section 4

Criteria	JORC Code explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	• Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve. • Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.	• The Mineral Resource estimate on which the PEA (Scoping Study) is based was reported in an Announcement to the ASX on the 13 March 2025 by European Lithium Ltd. • No Ore Reserves have been estimated for the project
Site visits	• Comment on any site visits undertaken by the Competent Person and the outcome of those visits. • If no site visits have been undertaken indicate why this is the case.	• No site visits have been undertaken to the Tanbreez Project in Greenland. • The information available on the Project is extensive and the Competent Person believes that a site visit would not add to the understanding of the Project at its current stage.
Study status	• The type and level of study undertaken to enable Mineral Resources to be converted to Ore	• A detailed and extensive Definitive Feasibility Study has been completed

Criteria	JORC Code explanation	Commentary
	Reserves. • The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.	in 2014 and progressively updated in following years up to the granting of the Exploitation Licence in 2020. These studies included early-stage mine design that have informed the current conversion of resource to "notional" reserve. • Modifying factors were considered in the DFS though it is considered that cost date needs to be updated to allow mine designs to be carried out in 2025
Cut-off parameters	• The basis of the cut-off grade(s) or quality parameters applied.	• The Mineral Resource estimate was compiled at zero cutoff grade on the basis that the entire kakortokite unit that hosts the eudialyte will be mined and sent to the ROM pad.
Mining factors or assumptions	• The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design). • The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc. • The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc), grade control and pre-production drilling. • The major assumptions made, and Mineral Resource model used for pit and stope optimisation (if appropriate). • The mining dilution factors used. • The mining recovery factors used. • Any minimum mining widths used. • The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion. • The infrastructure requirements of the selected mining methods.	• The resources will be bulk mined in open pits, so no mining losses or dilution factors are required. • Mining factors were assumed to be industry standard for open pit mining in similar geological setting. • A detailed and extensive Definitive Feasibility Study has been completed in 2014 and progressively updated in following years up to the granting of the Exploitation Licence in 2020. • The PEA is an early stage estimate of the potential viability and the recommendations include the next step of compiling a Pre-Feasibility Study.

Criteria	JORC Code explanation	Commentary
Metallurgical factors or assumptions	• The metallurgical process proposed and the appropriateness of that process to the style of mineralisation. • Whether the metallurgical process is well-tested technology or novel in nature. • The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied. • Any assumptions or allowances made for deleterious elements. • The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole. • For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?	• Metallurgical and economic studies conducted by the client indicate that the resources can be economically exploited. • A detailed and extensive Definitive Feasibility Study has been completed in 2014 and progressively updated in following years up to the granting of the Exploitation Licence in 2020. • The PEA is an early stage estimate of the potential viability and the recommendations include the next step of compiling a Pre-Feasibility Study.
Environmental	• The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.	• A detailed Environmental Assessment (EIA) has been completed at accepted by the government of Greenland as a requirement for the grant of an Exploitation Licence.
Infrastructure	• The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided or accessed.	• A detailed and extensive Definitive Feasibility Study has been completed in 2014 and progressively updated in following years up to the granting of the Exploitation Licence in 2020.
Costs	• The derivation of, or assumptions made, regarding projected capital costs in the study. • The methodology used to estimate operating costs. • Allowances made for the content of deleterious elements. • The source of exchange rates used in	• A detailed and extensive Definitive Feasibility Study has been completed in 2014 and progressively updated in following years up to the granting of the Exploitation Licence in 2020.

Criteria	JORC Code explanation	Commentary
	the study. • Derivation of transportation charges. • The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc. • The allowances made for royalties payable, both Government and private.	• Operation and Capital costs were estimated from the DFS and updated to the proposed commencement of mining in 2030
Revenue factors	• The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc. • The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.	• As estimate of commodity Prices was compiled from publicly available current prices and forecasts and with discussion with the Company to arrive at a reasonable set of rare earth US$/kg values. • It is recognised that commodity prices for REO are volatile, and the accuracy range is noted in the report.
Market assessment	• The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future. • A customer and competitor analysis along with the identification of likely market windows for the product. • Price and volume forecasts and the basis for these forecasts. • For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.	• Demand and Supply issues were considered based on publicly available commentary for critical minerals and the desire for a non-Chinese source .
Economic	• The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc. • NPV ranges and sensitivity to variations in the significant assumptions and inputs.	• Present Value was estimated from the annual EBITDA over the life if the mine at the time of commissioning. • A range od discount values at 12.5% and 15% were selected to reflect the early stage of the analysis and the risk involved in mining projects at PEA level • The Pre-Startup capital cost was deducted from the PV to arrive at the NPV

Criteria	JORC Code explanation	Commentary
		• The NPV is presented as a range of values.
Social	• The status of agreements with key stakeholders and matters leading to social licence to operate.	• The Social Impact Assessment (SIA was completed as part of the requirements for the grant of the Exploitation Licence. • This included extensive community discussion and agreement.
Other	• To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves: • Any identified material naturally occurring risks. • The status of material legal agreements and marketing arrangements. • The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.	• The Exploitation Licence has been extended by the government to allow an Exploitation Plan to be compiled and approved by the end of 2025. • Mining should commence by the end of 2029 under the extension. • The Exploitation Plan will include an application to mine Feldspar and Arfvedsonite
Classification	• The basis for the classification of the Ore Reserves into varying confidence categories. • Whether the result appropriately reflects the Competent Person's view of the deposit. • The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).	• A "notional" Ore Reserve has been estimated from Indicated and Inferred Resources without considering the categories of Reserve. • It is recognised that Inferred resource will be upgraded with infill drilling prior to a mine design phase.
Audits or reviews	• The results of any audits or reviews of Ore Reserve estimates.	• No audits or reviews have been undertaken.

Criteria	JORC Code explanation	Commentary
Discussion of relative accuracy/ confidence	• Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate. • The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used. • Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage. • It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	• A PEA provides a high-level economic evaluation of a mining project, but it has a relatively low accuracy range of ±30% to ±50%. Factors Affecting Accuracy • Geological Data Quality: Limited drilling or poorly understood ore bodies lead to inaccurate resource estimates. • Metallurgical Testing: Insufficient testing can lead to overestimated recovery rates. • Mining Method Selection: Inappropriate mining methods can inflate production costs. • Infrastructure & Logistics: Lack of detailed assessments on power, water, roads, and transport affects cost projections. • Market & Price Assumptions: Fluctuations in commodity prices impact project feasibility. • Environmental & Social Considerations: Unexpected permitting or community issues may delay or halt projects.

18. PRELIMINARY ECONOMIC ASSESSMENTS OF RECENT RARE EARTH PROJECTS (2020–2025)

Introduction

Rare earth element (REE) projects have gained strategic importance in the Western world as nations seek to secure critical mineral supply chains outside of China. In the last five years (2020–2025), numerous mining companies in North America, Europe, and Australia have published Preliminary Economic Assessment (PEA) reports for rare earth projects. These PEAs provide a first look at the potential production volumes, economics, and development plans for each project. This report reviews several notable REE project PEAs in the Western world, focusing on their projected outputs, key players, capital and operating cost trends, economic metrics (NPV, IRR), processing technologies, and any strategic partnerships or government support mentioned. The projects covered include new mining developments in Canada and Sweden, as well as an innovative tailings reclamation in South Africa, offering a representative view of Western REE project trends.

Major Rare Earth PEA Projects (2020–2025)

Wicheeda Rare Earth Project (Canada) – Defense Metals Corp.

The Wicheeda REE deposit in British Columbia is being developed by Defense Metals Corp. A PEA released in late 2021 outlines an open pit mine and concentrator with a phased development approach. The plan involves an initial production of a high-grade bastnaesite flotation concentrate, followed by the addition of an on-site hydrometallurgical plant in year 5 to refine concentrate into a mixed rare earth carbonate (. The mine would process ~1.8 million tonnes per year, yielding an average of 25,423 tonnes of REO (rare earth oxide) product annually over a 16-year operating life. Early years would see concentrate sold directly, providing revenue to partially fund the hydromet plant construction.

Economically, Wicheeda's PEA showed a post-tax NPV (8%) of C$512 million and IRR of 16% (pre-tax 20% IRR) (. Initial capital expenditure is estimated at C$461 million (including 20–25% contingency) for the mine and concentrator, with an additional ~$474 million for the hydromet plant in the expansion phase). Operating costs would average ~C$137 million per year, and at base-case REO prices the project would generate ~C$397 million in annual revenue once the hydromet stage is online. The resulting operating margin is over 65%, with a five-year payback period from start of production. Defense Metals highlights Wicheeda's favorable geology (coarse-grained bastnaesite ore) and existing infrastructure in central BC as positive factors. While the PEA did not announce specific partnerships, the project has drawn interest as a potentially significant North American source of neodymium-praseodymium (NdPr) and other light REEs. The company has engaged Canadian government agencies on community and permitting matters and touts a "friendly jurisdiction" for development.

https://www.newswire.ca/news-releases/defense-metals-announces-positive-preliminary-economic-assessment-for-the-wicheeda-rare-earth-element-project-873341312.html#:~:text=Strong%20Financial%20Metrics

Deep Fox & Foxtrot Project (Canada) – Search Minerals Inc.

In mid-2022, Search Minerals published a PEA for its Deep Fox and Foxtrot REE deposits in Labrador, which are envisioned as a combined operation feeding a central processing plant. The project targets primarily magnet rare earth oxides – neodymium, praseodymium, dysprosium, and terbium – critical for permanent magnets. According to the PEA, the mine would operate at 2,000 tonnes per day (720,000 t/year), with a life of mine of 26 years. Annual production is projected at 1,437 tonnes of mixed magnet REO (approximately 1,291 t Nd+Pr, 125 t Dy, 21 t Tb per year)). Notably, the PEA assumes a proprietary "Direct Extraction" hydrometallurgical process in Newfoundland that would produce a mixed rare earth carbonate concentrate for final separation The cost model even factors in third-party separation charges, indicating Search may send mixed concentrate to an external refinery for individual oxide separation.

Despite the modest volume, the high value of magnet REEs yields robust economics. Using mid-2022 rare earth oxide prices (Nd oxide ~$212/kg, Tb ~$2,493/kg, etc.), the PEA reported an after-tax NPV_8 of C$1.31 billion and IRR of 41.5% (pre-tax NPV_8 C$2.23 billion, IRR 55%). The initial capital cost is relatively low at C$422 million (including C$61M contingency), reflecting the project's focus on high-grade mineralization and a streamlined processing plan. Operating costs were estimated at ~C$345/tonne of ore (including downstream separation fees), which translates to roughly $170–$180 per kg of magnet REO product – yielding healthy margins given a net revenue value of ~$756/tonne ore. The study forecasts a remarkably quick payback of ~1.8 years after-tax.

Key players in this project include Search Minerals (the developer) and its technology partner, SLR Consulting, which prepared the PEA. The project has also attracted strategic partnerships and government support. Search has collaborated with Canada's government agencies and received funding from programs like the Atlantic Canada Opportunities Agency and Newfoundland's Junior Exploration Program. The company completed pilot plant trials producing mixed REE carbonate, de-risking the processing approach. Additionally, Search entered into offtake agreements – notably with USA Rare Earth, which invested in the company and agreed to purchase a portion of future NdPr output. These partnerships underscore the project's strategic role in a North American REE supply chain.

https://www.globenewswire.com/news-release/2022/06/07/2457347/0/en/Search-Minerals-Announces-Positive-Preliminary-Economic-Assessment-for-the-Deep-Fox-and-Foxtrot-Rare-Earth-Element-Project-With-2-23-Billion-NPV-8.html#:~:text=,USD%24587%2Fkg%20and%20Terbium%20oxide%20USD%242%2C493%2Fkg

Crater Lake Scandium-REE Project (Canada) – Imperial Mining Group

Quebec's Crater Lake project, led by Imperial Mining Group, is somewhat unique among rare earth PEAs due to its primary focus on scandium with REE by-products. The June 2022 PEA for Crater Lake's "TG Zone" deposit envisions a 25-year operation producing high-purity scandium oxide and a scandium-aluminum master alloy alongside a mixed REE concentrate). The deposit's mineralization contains scandium (used in high-strength aluminum alloys) as well as magnet rare earths, making it a critical minerals project. Over the mine life, total production is expected to be 110 tonnes of Sc_2O_3, 57,298 tonnes of Sc-Al alloy, and 23,578 tonnes of rare earth hydroxide concentrate (. These figures correspond to roughly 4.4 t of Sc_2O_3 and ~0.94 kt of REE concentrate per year on average. Imperial's plan is to recover scandium from the ore and convert a portion into scandium-aluminum alloy (for the aerospace industry), while the bulk rare earth content is collected as an intermediate REE hydroxide concentrate. The REE concentrate (23.6 kt total) would likely contain mainly magnet elements (Nd, Pr, Dy, Tb) and could be sold or further refined in the future.

The economic highlights from the PEA show strong profitability driven by scandium's high value. At assumed product prices (based on market studies by Ernst & Young and Roskill), the project would generate C$15.2 billion in gross revenue over 25 years, and C$6.25 billion in after-tax cumulative cash flow. The after-tax NPV_{10} is C$1.72 billion, with an IRR of 32.8% (pre-tax NPV_{10} C$2.97 B, IRR 42.9%). Impressively, the payback period is only ~3.0 years after tax. These robust metrics reflect scandium's pricing (the PEA assumed ~US$1,500/kg Sc_2O_3) and the significant co-product revenue from REEs and alloy sales. Initial CAPEX is estimated at C$871 million (including C$603M direct + C$109M indirect + C$159M contingency). This higher-than-average upfront cost is due to building both mining/milling facilities and onsite processing capabilities (for Sc extraction and alloy production). Operating costs equate to about C$381/tonne mill feed, with total LOM operating expenditures around C$3.73 B). Annual net revenue is projected to average C$608 million, indicating an EBITDA margin around 75%.

Imperial Mining is the 100% owner and driving force behind Crater Lake, with WSP Canada as the independent consultant for the PEA. Given scandium and REEs are designated critical minerals, the project has noted the supportive environment in Quebec and Canada. While the PEA itself did not list specific government grants, Imperial has highlighted that Quebec's Plan Nord and critical minerals strategy could aid infrastructure development. The company is investigating further process optimizations (with SGS Canada) that could reduce CAPEX and OPEX before proceeding to feasibility. The project's technological approach – producing a market-ready Sc-Al alloy on site – is a notable differentiator. If realized, Crater Lake would establish a North American source of scandium and a new stream of magnet REE concentrate (which could feed downstream separation facilities). These aspects have attracted attention from end-users; for example, aluminum alloy manufacturers are logical strategic partners for offtake of the Sc-Al master alloy. Imperial's PEA success has laid the groundwork to seek such partnerships and possibly government support (e.g. through Canada's Critical Minerals programs) as it advances to the next study phase.

https://www.juniorminingnetwork.com/junior-miner-news/press-releases/2496-tsx-venture/scd/123023-imperial-mining-receives-positive-results-for-the-preliminary-economic-assessment-pea-for-crater-lake.html#:~:text=,REE%29%20hydroxide%20concentrate

Norra Kärr Heavy REE Project (Sweden) – Leading Edge Materials

Norra Kärr, in southern Sweden, is one of Europe's most significant rare earth deposits. Leading Edge Materials Corp. owns this heavy REE-enriched project, which had a PEA completed in August 2021. The Norra Kärr PEA details a 26-year quarrying operation producing both rare earth concentrate and industrial mineral by-products. The design responds to prior environmental concerns by decoupling the mining and chemical processing: mining and physical upgrading would occur at site, while chemical refining of the concentrate would be done at an off-site industrial park (Luleå is a preferred location). This approach dramatically shrinks the environmental footprint at the mine, reducing the operational area by 65% and utilizing ~60% of mined material as saleable product (vs only ~1% in a 2015 design).

According to the PEA, Norra Kärr would operate at ~1.15 Mtpa of ore mined (with a low strip ratio of 0.32). The ore is unusual – hosted in nepheline syenite and eudialyte minerals – and yields both REEs and by-products like nepheline syenite (usable in ceramics/glass) and zirconium. Annual output is projected at ~5,341 tonnes of TREO in a mixed rare-earth product). Notably, the mix is rich in heavies: about 1,005 t/year of magnet REOs (Nd, Pr, Dy, Tb) are contained in the REE output. In addition, the quarry would co-produce a large volume of industrial materials each year: approximately 732,885 tonnes of nepheline syenite, 10,200 tonnes of ZrO_2 (zirconia), and 525 tonnes of Nb_2O_5 (niobium oxide). These by-products significantly enhance the project's economics by adding revenue streams. The REE concentrate (termed a "separated mixed REO product" in the PEA) would likely be further processed via toll separation in Europe – the plan assumes paying toll fees, which are included in the operating costs.

Economically, Norra Kärr's PEA (prepared by SRK UK) returned a post-tax NPV_{10} of US$762 million and IRR of 26.3% (pre-tax NPV_{10} US$1.026 billion; IRR 30.8%. The initial CAPEX is estimated at US$487 million, reflecting a relatively low-cost quarry (no expensive stripping or tailings dams needed) plus a concentrate plant, but not including a full separation plant on site. Thanks to the credit from by-products, the operating cost is projected at only ~$33 per kg of REO produced (including downstream separation charges.

The blended basket price of the REO product was assumed at ~$53/kg, so the margin before by-products is ~$20/kg. However, by-product sales add ~$19/kg in revenue for each kg of REO, effectively doubling the margin. This leads to a high average EBITDA of ~$206 million per year, and a payback period of ~5.1 years pre-tax. The PEA results indicate a robust project even under conservative pricing, largely due to the heavy rare earth content (Dy/Tb command high prices) and the industrial minerals that offset costs.

As Europe's only NI 43-101 compliant REE resource of this scale, Norra Kärr has drawn significant strategic interest. The Swedish government designated it a mineral deposit of national interest, and in 2024 Leading Edge applied for it to be a European Union "Strategic Project" under the proposed Critical Raw Materials Act. This status could streamline permitting (mandating a 27-month timeline) and facilitate financing support at the EU level. The EU's Raw Materials Alliance has identified Norra Kärr as one of the key projects needed to meet Europe's goal of a six-fold increase in rare earth supply by 2030. So far, the company has been engaging with stakeholders and adjusting the project to meet strict environmental standards. There are no major industry partners announced yet, but the context suggests potential collaboration with European industrial firms: for example, an offtake for nepheline syenite in the ceramics industry, or partnerships with European REE separators or magnet manufacturers in the future. The PEA's emphasis on sustainability (moving chemical processing off-site and exploring additional by-product aegirine) highlights Norra Kärr's role as a model "sustainable" rare earth project in the West (. Its advancement is closely tied to government support – both Sweden's and the EU's – given the critical need for heavy REEs like dysprosium and terbium for defense and clean energy technologies in Europe.

https://www.juniorminingnetwork.com/junior-miner-news/press-releases/1996-tsx-venture/lem/171844-mining-lease-application-submitted-for-norra-kaerr.html#:~:text=,separated%20mixed%20REO%20product%20%2419

https://leadingedgematerials.com/leading-edge-materials-announces-positive-preliminary-economic-assessment-results-for-its-norra-karr-ree-project-with-us1026m-pre-tax-npv10-and-30-8-pre-tax-irr/

Phalaborwa Rare Earths Project (South Africa) – Rainbow Rare Earths Ltd.

A different approach to rare earth production is exemplified by Rainbow Rare Earths' Phalaborwa Project, which is not a mine at all, but a tailings reprocessing venture. Located at a former phosphate operation in South Africa, Phalaborwa involves extracting REEs from 35 million tonnes of historic phosphogypsum (mine waste). Rainbow Rare Earths (a UK-based company) owns 70% of the project in a JV with South African partners, positioning it as a Western-led project albeit outside the typical geography. The PEA published in October 2022 demonstrated the strong economics of this secondary-source project. Over a 14.2-

year project life, a plant processing 2.2 Mt of phosphogypsum per year would produce a total of 26,208 tonnes of separated magnet rare earth oxides (Nd, Pr, Dy, Tb) – averaging ~1,846 t of REOs annually – with first production targeted in 2026. Remarkably, Rainbow plans to produce fully separated oxides (not just a concentrate), leveraging a proprietary process and existing gypsum feedstock that requires no mining or crushing. The projected operating cost is only US$33.86 per kg of REO, which Rainbow notes would be among the lowest globally for separated rare earths. This is due to the elimination of typical mining costs and the high-grade nature of the REEs in the acid-leached gypsum. At a basket price of US$137.9/kg for the mix of magnet oxides, the project achieves an exceptional 75% EBITDA margin.

The PEA's financial metrics underscore Phalaborwa's attractiveness as a near-term, low-capex project. The initial CAPEX is only US$295.5 million, and the payback period is a quick 2 years. The base-case post-tax NPV_{10} is US$627 million, with an IRR of 40%. Moreover, sensitivity analysis showed that using higher 2022 rare earth prices would boost the NPV_{10} to ~$934 M and IRR to 51%. Even in downside scenarios the project remains strongly profitable due to its low operating costs and lack of mining risk. Rainbow's CEO highlighted that Phalaborwa's economics are "low capital intensity, high margin" and relatively insensitive to cost inflation, given the unique nature of reprocessing tailings. Another important aspect is the technology and IP: Rainbow has developed a process (with K-Technologies and others) to recover rare earths from phosphogypsum and directly produce separated oxides in carbonate form, which could potentially be applied to other phosphate wastes globally. This differentiates Rainbow from traditional miners and reduces the project's environmental footprint (cleaning up radioactive gypsum waste while extracting value).

From a strategic standpoint, Phalaborwa is viewed as a quick pathway to add significant rare earth supply for Western markets. Even though the project is in South Africa, Rainbow emphasizes it will contribute to an independent "Western rare earth supply chain". The company frequently notes government initiatives on critical minerals: "At a time when governments around the world are designating rare earths as critical...and anticipating a fivefold increase in demand by 2030, [our] strategy aims to facilitate near-term access to these elements". In practical terms, Rainbow has secured a strategic partnership in the form of a $15 million royalty financing from global investor Ecora (which acquired a 2% royalty on Phalaborwa) to help fund development. There is also strong interest from end-users; for example, the project could supply separated NdPr oxide to magnet manufacturers in the EU or USA under offtake agreements once in production. Additionally, Rainbow's model received validation through UK government support for downstream facilities – the company is developing a rare earth separation plant in the UK (with some funding from the UK government's Automotive Transformation Fund) that could process Phalaborwa's output. Overall, the Phalaborwa PEA showcases a trend of innovative, lower-cost production routes (recycling and tailings reprocessing) that complement primary mining projects. Its success could encourage more such secondary-source projects, supported by governments keen on fast-tracking secure rare earth supplies.

https://www.investegate.co.uk/announcement/rns/rainbow-rare-earths-limited-npv--rbw/pea-confirms-robust-economics-for-phalaborwa/7197483#:~:text=over%20a%2014.2,on%20near%20term%20forecasts%20well

Comparative Analysis and Trends

Production Forecasts: The REE output volumes in these PEAs vary widely, reflecting different deposit types and product focuses. Projects targeting light rare earths (like La-Ce-Nd-Pr) in large carbonatite deposits tend to have high throughput and bulk output – e.g. Wicheeda plans ~25,000 t/yr of REO in concentrate, mainly comprised of cerium, lanthanum, and NdPr. In contrast, projects focused on high-value magnet and heavy REEs yield smaller tonnages of product: Search Minerals' Deep Fox/Foxtrot would produce ~1,437 t/yr of mixed NdPr-Dy-Tb oxides, and Norra Kärr about 5,300 t/yr of mixed REO (of which ~1,000 t are NdPrDyTb). The Phalaborwa tailings project falls in between – ~1,800 t/yr of separated NdPrDyTb oxides– but stands out by delivering finished separated products rather than a mixed concentrate. Notably, magnet REE output (NdPr, Dy, Tb) is a key metric for critical mineral supply: many Western PEAs explicitly highlight the annual NdPr production as a selling point (since those drive revenue). For example, Search's 1,291 t Nd+Pr per year would represent a meaningful percentage of current global supply. Another trend is the inclusion of by-product commodities in production forecasts. Norra Kärr's plan to sell >700 kt/yr of nepheline syenite and other by-products and Imperial's scandium project generating Sc-Al alloy in addition to REEs illustrate how developers are diversifying products to enhance feasibility. This multi-product approach can both reduce waste and provide additional revenue streams.

Key Players and Developers: All the projects reviewed are led by junior mining companies specialized in critical minerals. Defense Metals, Search Minerals, Imperial Mining, Leading Edge Materials, and Rainbow Rare Earths are relatively small-cap companies focused on advancing a single flagship project (or a few projects) to attract larger partners or investors. These juniors often bring in experienced engineering firms (e.g. SRK, WSP, SLR Consulting) to prepare the PEAs and validate the project concepts. We also observe increasing collaboration between juniors and established industry or financial partners as projects progress. For instance, Rainbow Rare Earths secured a royalty investment from Ecora and is working with a specialty process technology provider. Search Minerals brought in USA Rare Earth as a strategic investor/offtake partner to help finance development In Australia, some advanced rare earth developers have forged partnerships with larger companies – a notable example is Northern Minerals (not covered by a new PEA, but in 2022 it partnered with Iluka Resources). Iluka, a mineral sands major, took a ~20% stake in Northern Minerals and agreed to purchase all of its xenotime concentrate to feed Iluka's upcoming rare earth refinery. This trend of juniors teaming up with downstream players (refineries, magnet manufacturers, or end-users) and diversified miners suggests that as PEAs de-risk these projects, bigger strategic players are willing to invest in securing supply.

Capital and Operating Cost Trends: The PEAs from 2020–2025 show a wide range of capital cost requirements, influenced by project scope and whether processing is included. On the lower end, brownfield or tailings projects have much smaller capex: Rainbow's Phalaborwa requires only ~$296M to get started since there is no mine development and existing infrastructure can be leveraged. Traditional hard-rock mines generally show initial capex in the half-billion-dollar range for a moderate-scale operation. Wicheeda's staged development was ~C$461M initial Norra Kärr's quarry and concentrate plan, US$487M. Search's high-grade project was estimated at C$422M. Notably, these figures are significantly below the cost of fully integrated large, rare earth projects a decade ago, suggesting that scopes have been optimized (or scaled to junior-company sizes). An outlier on capex is Imperial's Crater Lake at ~C$871M due to the added complexity of scandium processing and alloy production – essentially building two processing value streams in one project. Overall, we see capex trade-offs being made: some projects have opted to produce an intermediate product and forego building a separation plant (thus lowering capex but leaving some value on the table). For example, Wicheeda plans to delay the expensive hydromet plant to phase 2, reducing upfront capital needs. Norra Kärr plans to toll-treat the REE concentrate elsewhere, avoiding the cost of a full refinery in the mine site. These strategies indicate a focus on manageable initial investments and modular growth.

On operating costs, a key trend is the relatively low unit costs achieved by projects that either have significant by-products or that eliminate mining. Phalaborwa's ~$34/kg cost for separated oxides is exceptionally low rivaling Chinese producers, thanks to free feedstock and cheap power/acid in South Africa. Norra Kärr similarly achieves about $33/kg cost (after credits) for its mixed REO product – in effect, the by-product revenues cover over half the operating expenses. In contrast, projects that would produce mineral concentrate (and then pay a third party for refining) might measure OPEX differently (e.g., Search gave $345/tonne ore including separation fees), which corresponds to perhaps $170–$180/kg of final REO). It's worth noting that many Western REE projects assume some reliance on existing separation infrastructure (in China or Estonia or other locations) in the near term, which adds toll costs but is still often cheaper than building a new separation plant at PEA stage. Another notable cost factor is scale and mining method: large-scale open pits with favorable strip ratios (like Wicheeda at 1.75:1 overall Norra Kärr at 0.32:1) benefit from economies of scale and low mining costs, whereas smaller underground or complex mining would raise unit costs. All the reviewed PEAs are open-pit or surface operations (even Crater Lake is an open pit for its scandium-bearing laterite). This reflects a preference for more “diggable” deposits in the current crop of Western projects, again aiming to keep costs manageable.

Economic Indicators (NPV, IRR): The projected NPVs and IRRs in these PEAs are generally very favorable, though they differ based on the assumed pricing and product mix. Internal rate of return (IRR) is a quick gauge of project attractiveness: magnet-heavy projects tend to have higher IRRs. Search Minerals reported a 41.5% after-tax IRR, and Imperial’s scandium-rich project about 33%. Rainbow’s Phalaborwa stands at ~40% IRR, thanks to low capex and high margin. Meanwhile, Wicheeda’s IRR was more modest at 16% after-tax reflecting its production of lower-value light REEs (La-Ce make up a good portion of its concentrate) and the heavier capital requirements to eventually achieve downstream processing. Norra Kärr’s IRR ~26% falls in between – respectable given it includes conservative pricing and significant infrastructure for by-products. Net present values (NPV) in absolute terms often scale with project size and longevity. Multi-decade projects with downstream integration show NPVs in the order of $0.5–1.5 billion. For instance, Norra Kärr’s post-tax NPV_{10} is ~$762M; Wicheeda’s NPV_8 ~$512M (both in nominal dollars of their study year). Search’s NPV_8 was very high at C$1.31B, reflecting bullish rare earth price assumptions in 2022 and the value of Dy/Tb. It’s worth noting that some PEA NPVs are calculated pre-tax for headline impact – e.g., several press releases cite pre-tax NPVs above $1 B (Defense Metals’ pre-tax NPV was C$765M, Leading Edge’s pre-tax was >$1 B, Search pre-tax C$2.23B). In any case, all these studies indicate positive economics, meaning the projects are theoretically viable and attractive to further develop. High IRRs (30–40%+) suggest a project could potentially attract financing or partners, whereas lower IRR (~15–20%) projects might need either price improvements or investor patience/strategic rationale (e.g., Wicheeda’s value might be in securing supply more than high financial returns). It’s also notable that many of these PEAs ran at an 8% or 10% discount rate, which is standard for mining – the fact that NPV remains robust at such rates indicates resilience. Payback periods were generally under 5 years for all projects, with some extremely quick (~2 years for Phalaborwa <2 years for Search. This quick payback is a big positive in the critical minerals space, as it means investors could recoup capital before the most uncertain later years.

Technologies and Processing Approaches: A clear theme in recent REE PEAs is innovation in processing to meet environmental and supply chain goals. Unlike older rare earth projects that often planned simply to ship a concentrate to China, these Western projects are employing creative methods:

- Phased development & optionality: Defense Metals’ Wicheeda PEA uses a phased approach (sell concentrate first, then add refining later) to ease financing and allow flexibility). This staged strategy can mitigate risk and adapt to market conditions – if prices or funding are unfavorable, a company can operate as a concentrate producer for longer.

- Direct extraction and on-site refining: Search Minerals' approach of direct leaching ("Direct Extraction") means bypassing a traditional concentrate stage and instead producing a mixed rare earth carbonate at the mine site. This can improve recovery of certain elements and reduce shipping of semi-processed material. Similarly, Rainbow's process on phosphogypsum effectively performs acid leaching and solvent extraction to generate separated oxides in one flow (. Producing separated REOs (Nd, Pr, Dy, Tb oxides) as the final output is unusual for a junior-level project – it indicates Rainbow's confidence in its proprietary IP. If successful, it yields a higher value product and independence from external refineries.
- Use of by-products to reduce waste: Leading Edge's Norra Kärr flowsheet exemplifies turning what was once waste into sellable product. By producing nepheline syenite (for ceramics, glass) and potentially aegirine (an iron-rich mineral) as co-products, the project dramatically reduces tailings and creates new revenue This not only boosts economics but helps in permitting (smaller environmental footprint). Imperial's Crater Lake similarly plans to produce a market-ready alloy on site, which is effectively a value-added by-product in addition to the mixed REE concentrate). These strategies align with broader industry trends of maximizing resource utilization and minimizing waste.
- Toll processing and supply chain integration: Several projects plan to utilize existing or planned downstream processing capacity rather than build everything in-house. Norra Kärr intends to perform chemical separation at an established industrial location (potentially sharing infrastructure with other industries) (Search Minerals included third-party separation costs, implying the final oxide separation might occur at a centralized facility (perhaps in Saskatchewan or elsewhere). This reflects a move toward regional hubs for rare earth separation – for example, the Saskatchewan Research Council's rare earth plant in Canada could take feed from multiple projects in the future, and Europe may develop a shared separation facility for projects like Norra Kärr. The Iluka-Northern Minerals partnership in Australia is a real-world example: Northern will mine and concentrate heavy REEs but send the concentrate to Iluka's Eneabba refinery (backed by the Australian government) for final processing. This hub-and-spoke model can be more capital-efficient and allows juniors to focus on mining while leveraging specialists for processing.

Overall, the technology choices in these PEAs aim to balance economic returns with environmental and supply chain objectives. Western projects are keenly aware of the need to meet higher environmental standards and to offer a product that can plug into non-Chinese supply chains (whether that be a mixed carbonate for Neo Performance Materials in Europe, or a heavy REE concentrate for a new US/UK separation plant). The PEAs also mention ongoing metallurgical testing and pilot programs, indicating that processing technology is a critical success factor being actively refined. For example, Imperial is continuing hydrometallurgical tests to improve scandium recovery, and Rainbow has done continuous pilot work on their gypsum leaching. This focus on metallurgical proof-of-concept early (at PEA stage) is driven by lessons learned from past REE projects that failed due to processing issues.

Strategic Partnerships and Government Support: Since rare earths are deemed strategic, virtually every project reviewed has some level of government or institutional support – or is seeking it. A few notable points:

- Government Grants and Funding: Search Minerals has benefitted from Canadian federal and provincial grants (e.g. funding for pilot plants and exploration from agencies) Northern Minerals in Australia received around A$5.9M in Australian government critical minerals grants in 2023 to advance its project. The Australian government is also financing downstream capacity (Iluka's refinery received a A$1.25 billion loan from Australia's Export Finance Australia). Such support de-risks projects by covering some costs and signaling political backing. In Europe, Leading Edge is tapping into EU programs – the Critical Raw Materials Act, once in force, could provide fast-tracked permits and access to investment for Norra Kärr. The company's application for EU Strategic Project status is aimed exactly at unlocking that support. Similarly, the EU (via the European Raw Materials Alliance) has listed Norra Kärr as a critical project for Europe's 2030 goals which can help in rallying financial and political support.
- Offtake Agreements and Joint Ventures: To ensure a market (and sometimes to secure project financing), juniors often sign offtake MOUs with end-users. While final offtakes are typically done at feasibility stage, some PEA-stage projects have already lined up indicative agreements. For example, Search's partnership with USA Rare Earth not only brought investment but also an understanding that a portion of NdPr output (500 t/yr as per one report) could be sold into USA Rare Earth's supply chain Rainbow Rare Earths, through its JV structure, essentially has its feedstock secured (via the agreement with the phosphoric acid producer that owned the gypsum stacks) – this is a form of partnership that provided the raw material access. We also see larger mining companies eyeing these projects: the Iluka-Northern deal mentioned gives Iluka a nearly 20% stake in the heavy REE project and a long-term supply contract. In the future, one could envision an OEM or magnet manufacturer taking a stake or offtake in a project like Search's or Defense Metals to guarantee supply of magnet metals.
- National Security and Policy Drivers: Many of these PEAs explicitly frame the project in the context of national or regional security of supply. For instance, Defense Metals emphasizes the "friendly jurisdiction" of Canada and proximity to infrastructure, subtly appealing to North American supply chain interests Leading Edge's disclosures reference EU policy statements about reducing dependence on China Rainbow's CEO in the PEA release ties the project to global decarbonization and

governments designating rare earths as critical. This alignment with government policy can translate into tangible support: e.g., Rare Earth Element projects in the USA (though not covered above) have received Department of Defense funding – Mountain Pass (California) got ~$30M for a processing upgrade, and Rare Element Resources (Wyoming) received a ~US$21.9M DOE grant to build a demonstration plant Such support, while not directly in the PEA documents we reviewed, forms part of the backdrop encouraging these projects. Investors know that a project viewed favorably by governments may access low-interest loans, grants, or fast-tracked approvals.

In summary, the PEAs of 2020–2025 illustrate a shift toward collaboration and supported development in the rare earth sector. Junior developers are not operating in isolation; they are increasingly part of a broader network of stakeholders – governments providing funding and regulatory incentives, and strategic partners providing technical, financial, or commercial backing. This ecosystem approach is likely necessary to actually bring these PEA-stage projects to production, given the historically high barriers to entry in rare earths (capital, technology, market). It's a positive trend that improves the likelihood that at least a few of these Western rare earth projects will successfully reach production, diversifying the supply chain.

The table below provides a comparative summary of the major projects discussed and some others, highlighting their key metrics and characteristics side-by-side.

Project	Location	Annual REE Production (t)	Initial Capex (US$M)	After-Tax NPV (US$M)	After-Tax IRR (%)
Tanbreez	Greenland	75,000*	290*	2,500	42
Mountain Pass	USA	43,000	200	1,400	60
Wicheeda	Canada	25,400	350	370	16
Norra Karr	Sweden	5,341	487	762	26
Nolans	Australia	4,410	768	1,245	19
Yangibana	Australia	3,500	450	590	26
Phalaborwa	South Africa	1,846	296	627	40
Deep Fox-Foxtrot	Canada	1,437	310	1,010	42
Crater Lake	Canada	944	660	1,300	33
Browns Range	Australia	610	329	487	22

*Tanbreez produces a concentrate for export, ~90% recovery assumed, Initial Capex includes predevelopment costs.

Comparison of Rare Earth Projects

19. COMPARISON OF DEPOSITS

Comparison of the Mountain Pass, Tanbreez, and Norra Kärr rare earth deposits, focusing on location, geology, resources, strategic value, and economics.

Mountain Pass Rare Earth Deposit – Overview and Economic Analysis

Mountain Pass is a Tier 1 rare earth deposit with world-class grades, low production costs, and strategic significance. Continued investment in processing and refining capacity enhances its economic viability and national security value in the global REE market.

Location: Mountain Pass, California, USA – situated in the Mojave Desert near the Nevada border.

Geology & Resources: Mountain Pass is one of the richest rare earth elements (REE) deposits in the world, primarily hosted in carbonatite rocks. The dominant rare earth-bearing mineral is bastnäsite, which contains high concentrations of light rare earth elements (LREEs) such as cerium, lanthanum, neodymium, and praseodymium. As of recent estimates, the deposit contains proven and probable reserves of ~18 million tonnes at an average grade of ~7% REO (Rare Earth Oxide), with significant upside potential through further exploration.

Mining & Processing: Mountain Pass is an open-pit mining operation operated by MP Materials. The mine restarted production in 2017 after a period of inactivity and now produces over 15% of the world's rare earth content, with ambitions to vertically integrate downstream processing in the U.S. Currently, rare earth concentrates are produced on-site, but final separation is still primarily done in China. However, MP Materials is investing heavily in a domestic separation facility, targeting self-sufficiency by 2025.

Economic Analysis

- Capital Costs: Recent investments exceed $700 million for processing infrastructure and capacity expansion. Capital intensity is relatively low compared to other rare earth projects due to existing infrastructure.
- Operating Costs: Cash costs are estimated at $15–$20/kg REO, placing Mountain Pass among the lowest-cost producers globally.
- Revenue & Products: Key revenue drivers: NdPr oxides, used in permanent magnets for EVs, wind turbines, and electronics. Current NdPr oxide prices (as of early 2025): ~$75–$85/kg. Estimated annual revenue: $500–$600 million, depending on commodity pricing and production levels (~40,000 tonnes REO/year).

- Market Position: Strategic asset for U.S. rare earth independence. Strong geopolitical value as it reduces reliance on Chinese REE supply (~90% of global refining capacity).
- Outlook & Risks: Demand for NdPr expected to grow 8–10% annually. Risks include price volatility, technical challenges in refining, and environmental regulation.

Tanbreez Rare Earth Deposit – Overview and Economic Analysis

Tanbreez is a world-class heavy rare earth and industrial mineral project with immense scale and long-term production potential. While still in pre-development, its resource size, strategic HREE focus, and multi-commodity outputs position it as a critical future supplier

Location: Tanbreez located in southern Greenland near the fjord of Kangerluarsuk, approximately 35 km from the coast. It benefits from deep-water access and year-round shipping potential due to low sea ice levels in the region.

Geology & Resources: The Tanbreez deposit is a massive, rare earth and industrial minerals project, hosted in a large peralkaline syenite intrusion known as the Ilímaussaq Complex. The primary REE-bearing mineral is eudialyte, which is rich in heavy rare earth elements (HREEs) like yttrium, dysprosium, and terbium, alongside light rare earths.

The project contains an estimated 4.3 billion tonnes of mineralized rock, with roughly 28 million tonnes of recoverable rare earth oxides (REO). It is one of the largest, rare-earth deposits in the world by tonnage.

Economic Analysis

- Development Stage: Tanbreez is at the advanced exploration/pre-development stage. The project received a 30-year exploitation license from the Greenland government in 2020, but detailed feasibility studies are ongoing. A Preliminary Economic Assessment (PEA) is expected to provide more clarity on capital and operating costs.
- Potential Capital Costs: Early estimates suggest capital costs could range from $700 million to $1 billion, factoring in processing, shipping, and remote logistics infrastructure.
- Operating Costs: The deposit is expected to benefit from large-scale, low-strip open-pit mining. Operating costs are not yet publicly defined but may be competitive due to bulk tonnage and by-product credits (e.g., feldspar, zirconium, iron oxides).
- Revenue & Products: Target products: separated REE concentrates (especially HREEs), feldspar, zirconium silicate, and other industrial minerals. Revenue diversification reduces dependence on volatile REE markets. High-value HREEs like

dysprosium and terbium support strong revenue potential in magnet and defense applications.

- Infrastructure & Logistics: Deep-water port potential allows direct ocean shipping to Europe, North America, and Asia. Remote location adds complexity, but Greenland's stable jurisdiction and proximity to Western markets provide strategic advantages.

Norra Kärr Rare Earth Deposit – Overview and Economic Analysis

Norra Kärr is a strategically important HREE deposit with high-value critical minerals, robust infrastructure access, and long-term economic potential. While regulatory and environmental challenges remain, the project's location within the EU and focus on HREEs make it a key candidate for future European supply security in clean energy and technology sectors.

Location: The Norra Kärr deposit is located in southern Sweden, near Lake Vättern and approximately 300 km southwest of Stockholm. It benefits from excellent infrastructure access, including roads, power, and proximity to ports and industrial hubs.

Geology & Resources: Norra Kärr is a peralkaline intrusion-hosted rare earth deposit, with mineralization dominated by eudialyte—a complex silicate mineral rich in heavy rare earth elements (HREEs). The deposit is also notable for significant zirconium and hafnium content. Key rare earth elements present include yttrium, dysprosium, terbium, neodymium, and praseodymium—critical for high-performance magnets used in electric vehicles, wind turbines, and defense applications. The most recent resource estimate outlines indicated resources of 59 million tonnes at 1.7% total rare earth oxides (TREO), with HREEs making up a high proportion of the total.

Economic Analysis

- Development Stage: Norra Kärr is at the pre-development stage, with a feasibility study and environmental impact assessment required for final permitting. Project advancement has been delayed due to legal and environmental challenges, particularly around land use and proximity to water bodies.
- Capital Costs: Preliminary assessments suggest capital costs in the $500–700 million range, including processing and separation facilities. Scandinavian infrastructure and regulatory standards may increase permitting and compliance costs.
- Operating Costs: Projected to be competitive due to on-site processing potential and the high value of HREEs. Eudialyte's solubility allows for low-acid leaching, which could lower costs and environmental footprint compared to other hard-rock REE projects.

- Revenue & Products: Primary revenue drivers: HREE oxides, particularly dysprosium and terbium, which command premium prices due to their role in permanent magnets. By-products: zirconium and potentially hafnium, which add economic robustness.
- Strategic Positioning: Norra Kärr is one of Europe’s only significant HREE deposits, giving it high geopolitical and economic value in light of EU efforts to secure critical raw materials domestically. Could support development of a European rare earth value chain, reducing dependence on China.

Summary Insights

- Mountain Pass is the most advanced and economically productive, but heavily LREE-focused.
- Tanbreez holds the largest scale and HREE potential, ideal for long-term global supply diversification.
- Norra Kärr is small by tonnage but rich in high-value HREEs and strategically located in Europe.

Rare Earth Deposits Comparison Table

Feature	Mountain Pass (USA)	Tanbreez (Greenland)	Norra Kärr (Sweden)
Location	California, USA – Mojave Desert	Southern Greenland – near fjord coast, deep-water access	Southern Sweden – near Lake Vättern
Deposit Type	Carbonatite	Peralkaline syenite, kakortokite (Ilímaussaq complex)	Peralkaline intrusion
Host Mineral	Bastnäsite (LREE)	Eudialyte (HREE + LREE)	Eudialyte (HREE-dominant)
Stage of Development	Operating (since 2017)	Pre-development (licensed, PEA completed)	Pre-development (legal & environmental review ongoing)
Main REE Focus	Light REEs: Nd, Pr, La, Ce	Heavy REEs: Dy, Tb, Y + LREEs	Heavy REEs: Dy, Tb, Y + significant Zr, Hf
Resource Size	~18 Mt reserves @ ~7% REO	45 Mt @ 0.4% TREO (Indicated and inferred)	59 Mt @ 1.7% TREO (Indicated)
Annual Output	~40,000 tonnes REO	~75,000 tonnes REO	TBD (awaiting feasibility & permitting)
Key By-products	None major	Feldspar, zirconium, tantalum, niobium, hafnium, gallium	Zirconium, hafnium
Processing	Concentrate produced on-site, refining underway (USA)	On-site concentrate + port shipping	Potential for on-site separation with low-acid leaching
Capital Cost (est.)	$700M+ (expansions included)	$150M (development and Startup) - $300M	$500M–$700M (preliminary)
Operating Cost	$15–$20/kg REO (very low)	$50/t ROM (expected to benefit from scale and by-products)	TBD (likely moderate; eudialyte easier to process)
Strategic Relevance	Key US asset for rare earth independence	Massive HREE resource for global diversification	Critical to EU raw material strategy
Challenges	Downstream refining still scaling up	Remote location, logistical and climate challenges	Environmental & permitting issues