

MATERIALS
FOR AN
ENERGY
EFFICIENT
FUTURE



**GREENLAND
MINERALS LTD**

May, 2018

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JORC Code (2012) Competent Person Statement – Mineral Resources and Ore Reserves

The information in this report that relates to Mineral Resources is based on information compiled by Mr Robin Simpson, a Competent Person who is a Member of the Australian Institute of Geoscientists. Mr Simpson is employed by SRK Consulting (UK) Ltd ("SRK"), and was engaged by Greenland Minerals and Energy Ltd on the basis of SRK's normal professional daily rates. SRK has no beneficial interest in the outcome of the technical assessment being capable of affecting its independence. Mr Simpson has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Robin Simpson consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in the statement that relates to the Ore Reserves Estimate is based on work completed or accepted by Mr Damien Krebs of Greenland Minerals and Energy Ltd and Mr Scott McEwing of SRK Consulting (Australasia) Pty Ltd.

Damien Krebs is a Member of The Australasian Institute of Mining and Metallurgy and has sufficient experience that is relevant to the type of metallurgy and scale of project under consideration, and to the activity he is undertaking, to qualify as Competent Persons in terms of The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 edition). The Competent Persons consent to the inclusion of such information in this report in the form and context in which it appears.

Scott McEwing is a Fellow and Chartered Professional of The Australasian Institute of Mining and Metallurgy and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration, and to the activity he is undertaking, to qualify as Competent Persons in terms of The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 edition). The Competent Persons consent to the inclusion of such information in this report in the form and context in which it appears.

The mineral resource estimate for the Kvanefjeld Project was updated and released in a Company Announcement on February 12th, 2015. The ore reserves estimate was released in a Company Announcement on June 3rd, 2015. There have been no material changes to the mineral resource estimate, or ore reserves estimate since the release of these announcements.

Executive Summary



Globally Significant

Long term supplier of rare earth elements critical for clean, green technologies

Advanced Stage of Development

10 years of sustained research and development. Permitting process advanced

Shenghe Resources

Largest shareholder providing technical input & fully integrated value chain connecting mine to end users

>1 Billion Tonne JORC Resource

Initial 37 year mine life enabling infrastructure development. Year round shipping access

Rare Earth Prices

Strong demand outlook and constrained supply given China led policy changes

Nd, Pr, Tb and Dy

Largest projected output of key rare earth elements from first major non-refractory orebody

Regulatory Framework

Implemented by Greenland & Danish Governments to manage project

Environmental Outcomes

GMEL provides REO & uranium for clean energy and efficient energy use



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The Clean, Green & Smart Revolution

The clean, green and smart revolution has arrived, facilitated by promising technological innovations on clean energy, energy storage and efficiency.

From off-shore wind turbines, to electric cars and smart phones, our highly smart and climate friendly future is dependant on rare earths.

Driven by government policy and cultural shifts, the road to the low-carbon, high tech future will pave the demand for rare earths.

Through enabling a long-term sustainable supply of these critical elements, Greenland has a very important role to play



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Fast Track – To the Future

“China to establish timeline to phase out combustion engine vehicles”

***The electrification movement is underway.
Rare earth permanent magnets create
electric motors with greater torque,
efficiency and range***

*“UK, France to ban
petrol and diesel
vehicles by 2040...”*



“Volvo to go electric...”

*“Every Jaguar Land Rover model
line will be electrified from 2020”*

*“New electric London
taxi launches...”*

*“Volkswagen plans to leapfrog
Tesla in electric car race...”*

“India aiming for all-electric car fleet by 2030...”



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Fast Track – To the Future

Wind turbines use between 400 and 500kgs of Permanent Magnets per MW

“In 2016, the UK generated more electricity from wind than coal...”

“Europe’s Growth in Offshore Wind Must Triple to Achieve Paris Goals...”

“China to Add GigaWatt-Level Offshore Wind Capacity Annually Starting In 2018...”

“~200kg of Rare Earth Oxide (150kg Nd, 35kg Pr, 15kg Dy) per MW of Installed Capacity...”

International Policy Developments & Rare Earth Demand

- Over **150 countries** have adopted specific policies for renewables-based power
- **By 2025**
 - Between 70 and 75 million EV's and HEV's will be produced annually requiring between 12-13,000 tpa of NdPrDy
 - 135M passenger vehicles will require approximately 10,000tpa REO (Ce) for catalytic converters
 - 'Cracking' 7.1B Bbl of oil will require 50,000 tpa REO (40,000t La, 10,000t Ce)
 - 150,000t of NdPrDy will be needed for wind turbine production in the period to 2025
 - China's wind power capacity will increase by 175% to 2025, this will require ~ 50,000t NdPrDy
 - To meet the goal agreed at the Paris climate change conference Europe will require 230Gw of offshore wind capacity by 2045 – equivalent to 50,000t of NdPrDy

China Policy Developments & Rare Earth Supply

Major Change to Global Supply Networks Fast Approaching

Status	Outlook	Future
China dominates both primary mine supply and downstream processing technology and capacity	The 2016-2020 strategic plan will see enforcement of strict environmental regulations, continued curtailment of illegal supply	New ex-China mines needed for primary supply, but China's role in downstream processing will remain integral
China's policy and management of its RE sector will continue to shape global supply networks	The plan will see Chinese domestic production capped at 140,000tpa by 2020, leading toward a shift to net importer status	The value chain necessitates that new mines need to be integrated with downstream processing to create viable new supply networks
China's 2011-2015 strategic plan saw the consolidation of RE producers and curtailment of illegal supply	Demand for Neodymium (Nd) and Praseodymium (Pr) already exceeds primary mine supply, and Chinese domestic mine supply will not meet projected demand	Integration commences: Internationally focussed Shenghe Resources invests in Greenland and commences strategic co-op, also bids for Molycorp's Mountain Pass

GMEL Development Strategy Considering China Policy

In 2016, Shenghe took a 12.5% interest in GMEL, commenced strategic cooperation

盛和资源控股股份有限公司
Shenghe Resources Holding Co., Ltd.

- Shenghe is one of the largest, and fastest growing RE companies globally
- Operates 2nd largest RE mine in China, involved in restart of Mountain Pass (USA)
- Strong international focus
- ~\$5 billion AUD market cap
- Aligns leading RE technology, market presence with leading international project – Kvanefjeld
- *Joint aim: optimise, integrate*



Mr Wang Quangen, and John Mair, October 2017 Shenghe HQ

Pro-Mining Government

New coalition government established – May, 2018

Coalition agreement demonstrates clear support for the mining sector

Key points include:

- *Work to attract foreign investment*
- *Competitively develop and operate mines*
- *Supportive of rare earth production with by-production of uranium*

Sets a positive backdrop to complete permitting of Kvanefjeld Project



Experienced Greenland politician Kim Kielsen enters his second term as Premier



Greenland – gearing up for progress

Kvanefjeld Project Overview



- >1 billion tonne multi-element resource through 3 deposits, largest REO inventory under JORC code
- 108 Mt of the upper portions have been converted to 'ore reserve' status
- 1:1 strip ratio over initial 37 year mine life = simple, low-cost mining
- Ore to be transported across contour to processing plant, tailings stored in Taseq Basin
- Year round direct shipping access via deep water fjords
- Narsaq town (10km) and Narsarsuaq airport (35km) short distance away from project area



Left: Proposed open pit mining operation on the Kvanefjeld plateau



Kvanefjeld Project – 2018 Focus



Project Permitting

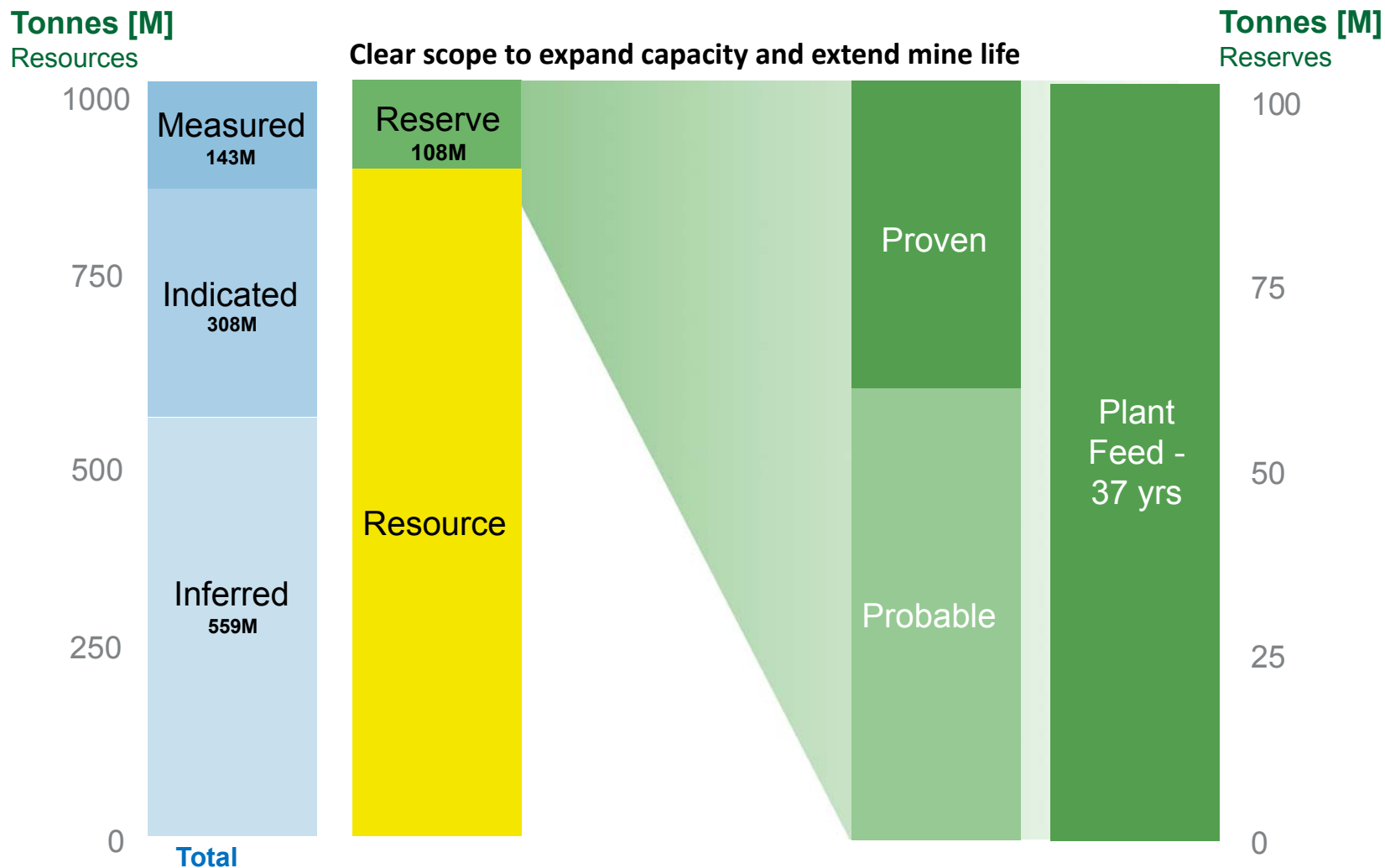
- 2016 – detailed reviews of impact assessments
- 2017 – address recommendations and guidance from government and advisory groups
- 2018 – Finalise updated studies, public consultation, establish clear project timeline

Technical Optimisation

- 2017 – Technical committee established with Shenghe, test work conducted in China and Australia
- Outstanding results achieved to improve both flotation and refinery circuits
- Pilot plant operation of enhanced process planned for Q3, 2018



Vast Mineral Inventory



Mineral Resource Estimates and Ore Reserve Estimates are independently established by SRK Consulting

Advanced Pilot Plant Process

- The advantageous Kvanefjeld process route has been developed by industry experts and successfully tested by a number of pilot plant campaigns
- The pilot plants were conducted in leading laboratories in Australia and Finland
- Largely funded through the EURARE program (a European Union, R&D initiative investigating rare earth supply)
- Both flotation and refinery (leach) circuits operated successfully
- High purity intermediate rare earth product produced



Various photo's from second and third flotation Pilot Plants & EURARE Refinery Pilot Plant - (2011-2015), Finland & Australia



Process Flowsheet



37 Year Mine Reserves at Kvanefjeld Deposit (~10% of resource base)

Classification (JORC 2012)	Inventory (Mt)	REO (ppm)	U ₃ O ₈ (ppm)	Zn (ppm)
Proven	43	14,700	352	2,700
Probable	64	14,000	368	2,500
Total	108	14,300	362	2,600

JORC 2012: 1.01Billion tonnes through 3 deposits contains 11.13 Mt REO, 593 Mlbs U₃O₈, 2.42 Mt zinc

Ore

Residues

Flotation Tailings
(>90% vol)

Refinery Tailings
(<10% vol)

Mine and
Concentrator

Leach Circuit

Products

Zinc Concentrate 6000 tpa

Fluorspar 16,000 tpa

Uranium Concentrate 1 Mlb's

**Rare Earth Intermediate
concentrate**

Greenland

Ex-Greenland

Rare Earth
Separation

REO Intermediate Product

Nd-	3860 tpa
Pr-	1224 tpa
Eu-	30 tpa
Tb-	40 tpa
Dy-	237 tpa

**Both flotation and refinery
circuits undergoing optimisation
to improve efficiency and simplify**

Feasibility Study

Feasibility Study (Updated, 2016)	
Mine throughput	3Mt/a
Mine reserve	108Mt
Initial Mine Life	37 years
Capital Cost	\$832M USD
Annual Revenue	
(as of RE prices Sept, 2017)	\$573M USD
(forecast prices, Adamas Intelligence)	\$711M USD
Annual Operating Cost	\$254M USD
Separation (downstream) Costs	\$80.2M USD
Margin After Separation Costs	
(as of RE prices Sept, 2017)	\$ 240M USD
(forecast prices, Adamas Intelligence)	\$ 376M USD
Key Rare Earth Outputs	
Praseodymium	1,224 tpa
Neodymium	3,860 tpa
Europium	30 tpa
Terbium	40 tpa
Dysprosium	237 tpa
By Products	
Zinc	6,000 tpa
Fluorspar	16,000 tpa
U ₃ O ₈	1 M lbs pa
La and Ce oxides	19,000 tpa

Joint technical committee established in 2017 for technical optimisation and downstream integration (GMEL/Shenghe)

Aim:

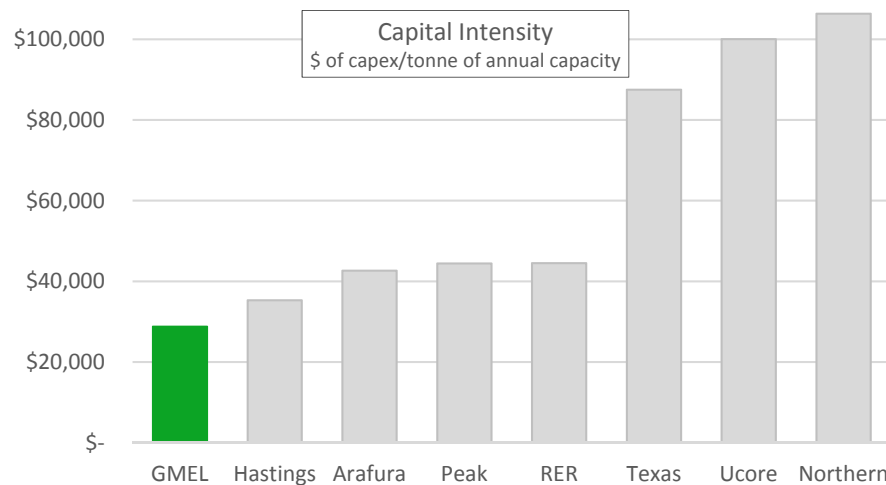
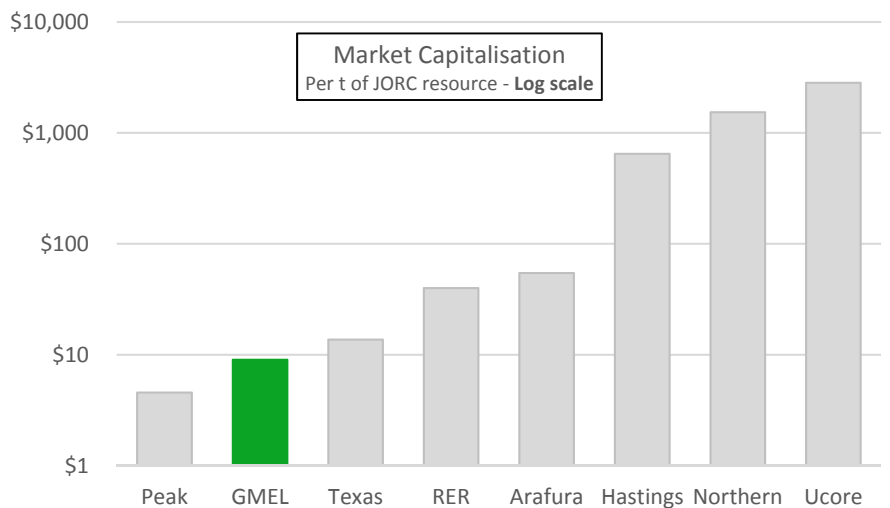
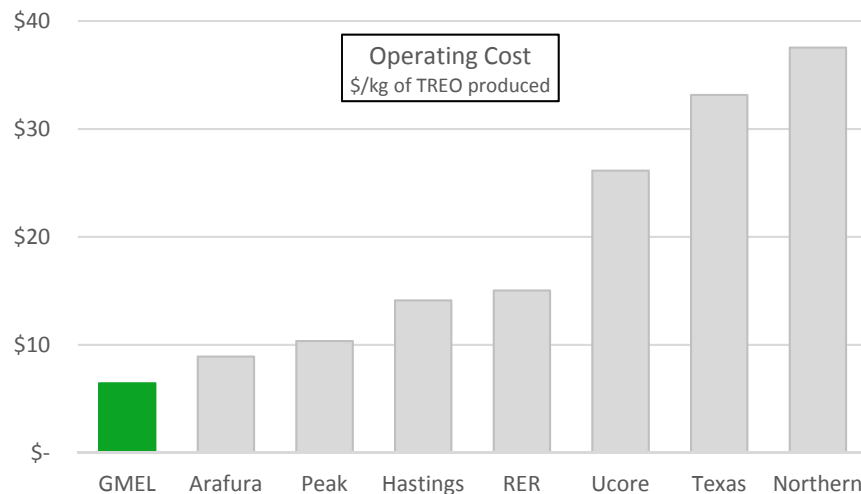
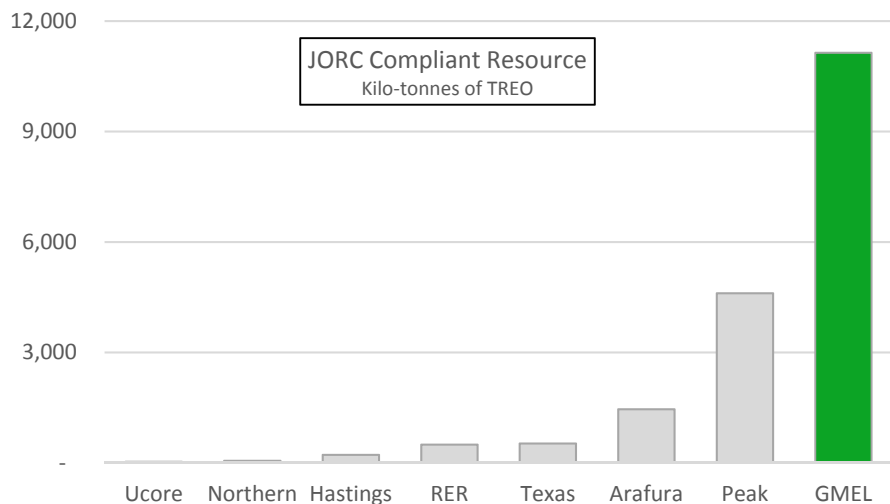
- technically align intermediate product with downstream processing (offshore)
- simplify, reduce infrastructure and associated capital costs,
- jointly establish a complete value chain to deliver high purity products to international market

Status Q2 2018:

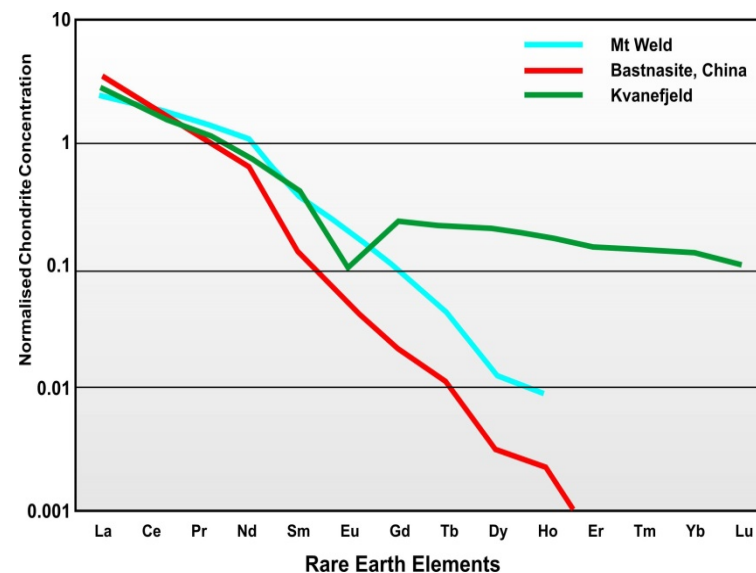
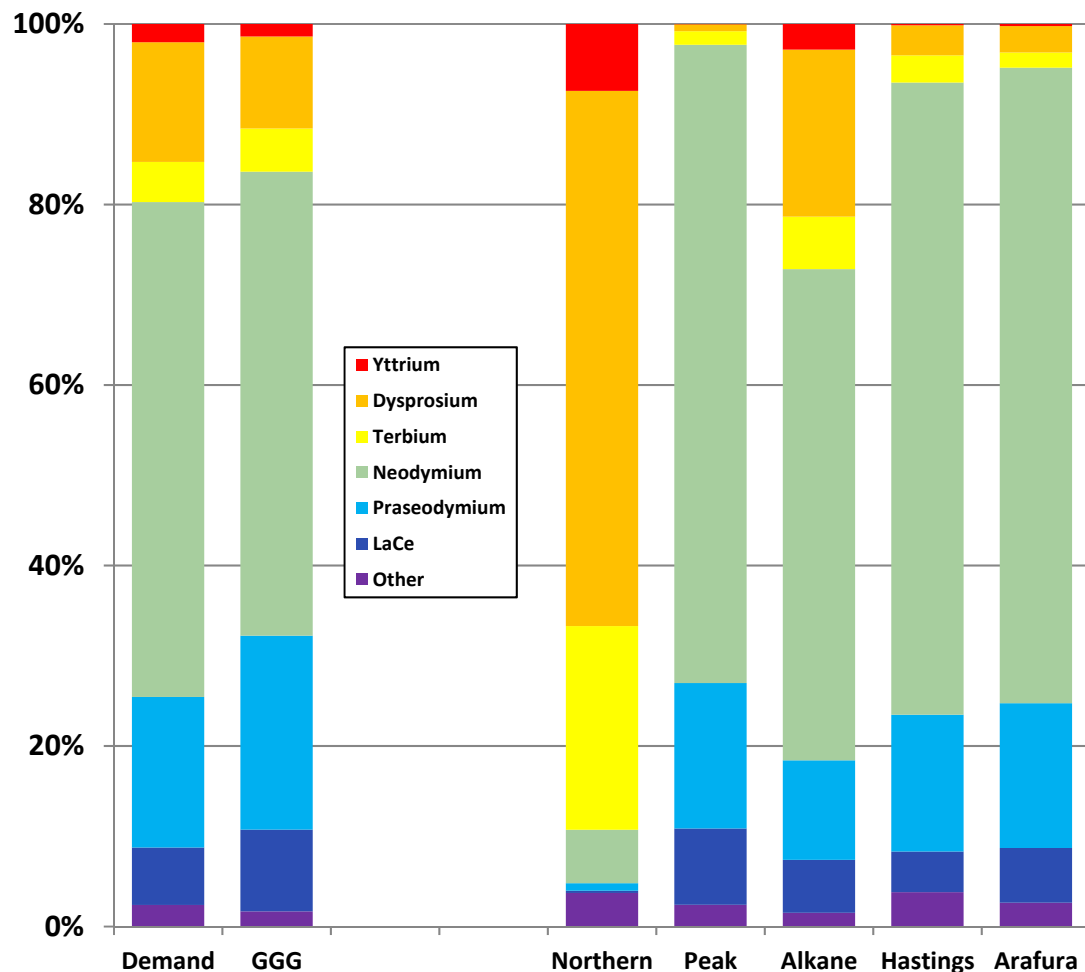
- Major improvements achieved for concentrator and refinery circuits (see December 2017 Quarterly Report)
- Work programs underway to further develop enhanced processing
- ***Significant reductions anticipated for both capital and operating costs***



Peer Comparison (prior to Kvanefjeld optimisation)



Projected Output Strongly Aligned with Market



Rare earth plot highlighting the enrichment across the rare earth spectrum. Kvanefjeld is compared to Mt Weld, and typical bastnasite (source: ANSTO).

Kvanefjeld's enrichment across the RE spectrum creates a strong alignment with RE market, through exposure to Nd, Pr, Dy and Tb: a complete RE project

Demand approximates the current rare earth market by value (volume x current price).
Projected output value distribution of select ASX-listed companies

Kvanefjeld Project Evolution Defines Advanced Status

[illegible]



Regulatory Framework & Permitting Process

IAEA Director General
visits Kvanefjeld – May 2017



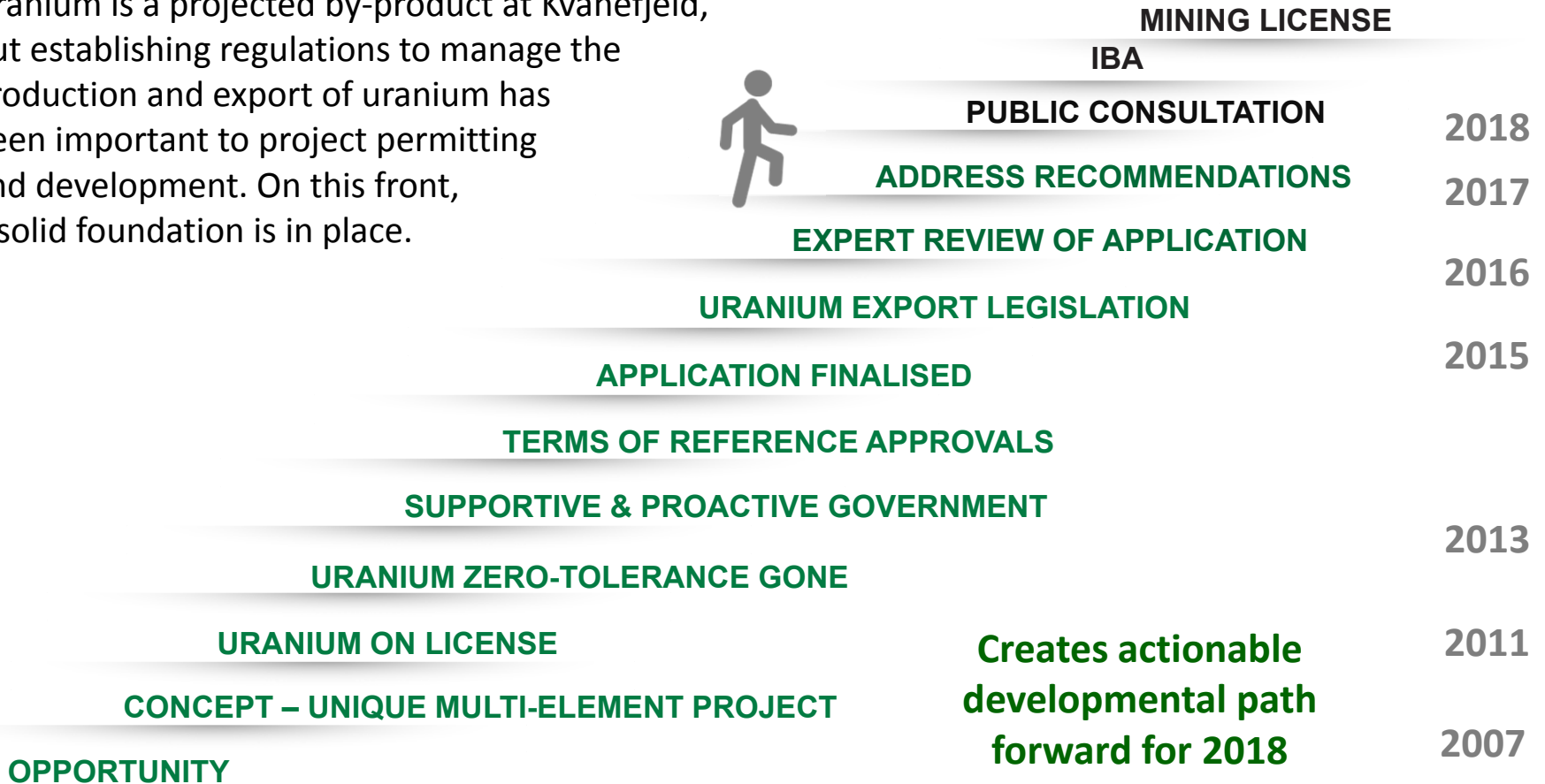
Jakob Rohmann Hard (Chief of Protocol, Foreign Department, Greenland), Liselotte Plesner (Danish Ambassador, Vienna), Nuka Møller (Greenland Business), Jørn Skov Nielsen (Deputy Minister, Industry Trade and Labour, Greenland), Kim Kielsen (Greenland Premier), John Mair (MD, GMEL), Yukiya Amano (Director General, IAEA)

- The Governments of Greenland and Denmark have worked to establish a regulatory framework to manage the production and export of uranium from Greenland
 - Enabling legislation passed by both respective parliaments to implement safeguards and export controls in accordance with IAEA and EURATOM
 - In September 2016, Greenland formalised status as signatory to IAEA conventions
 - Mining licence application submitted end of 2015
- Key components include Environmental, Social and Maritime Safety Study
- Maritime Study – APPROVED (11/10/2017)
 - EIA – 80% Complete
 - SIA – 90% Complete



Long Term Stakeholder Engagement

Uranium is a projected by-product at Kvanefjeld, but establishing regulations to manage the production and export of uranium has been important to project permitting and development. On this front, a solid foundation is in place.





Corporate Snapshot

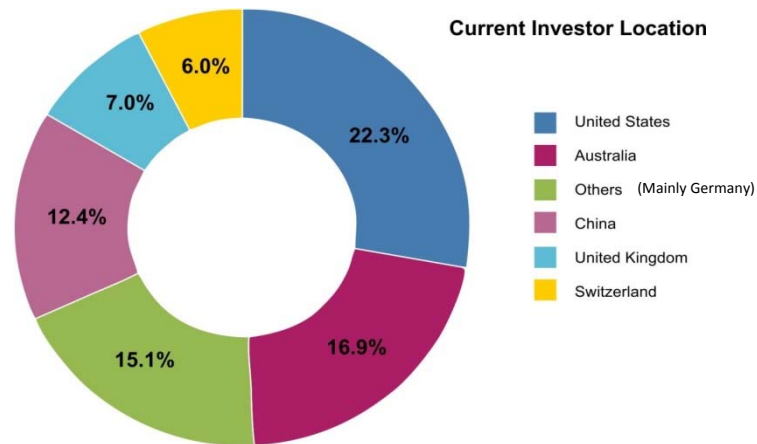


Board

Non-Executive Chairman	Tony Ho
Managing Director	Dr John Mair
Non-Executive Director	Simon Cato
Non-Executive Director	Xiaolei Guo

Top Shareholders

Shenghe Resources Holdings	125M shares
Global X Uranium ETF	88M shares
Tracor Limited	53M shares



International Shareholder Base

Capital Structure

Shares outstanding	1105M
Options outstanding	187M ex \$0.08, Sept 20 2018

Undiluted market capitalization	A\$100M (@9 cents)
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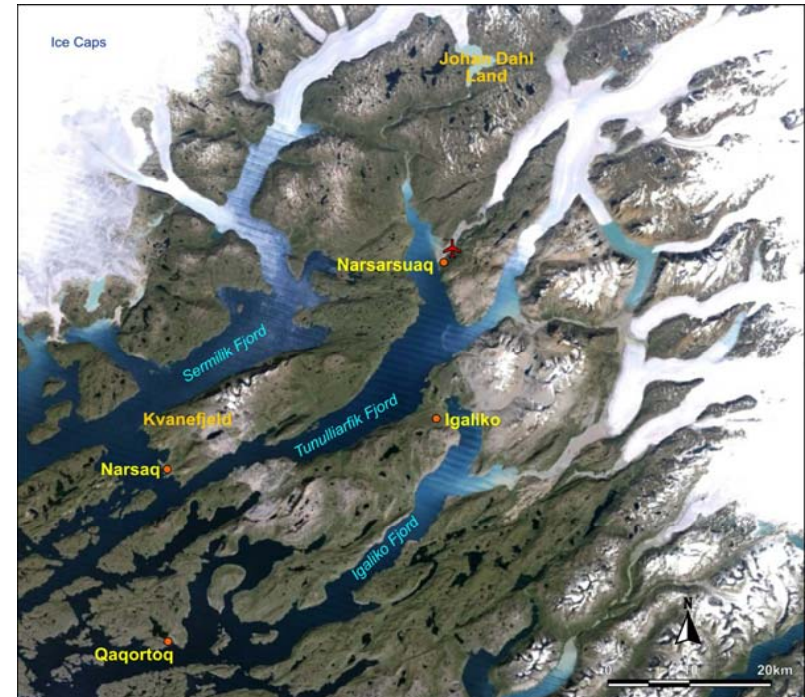
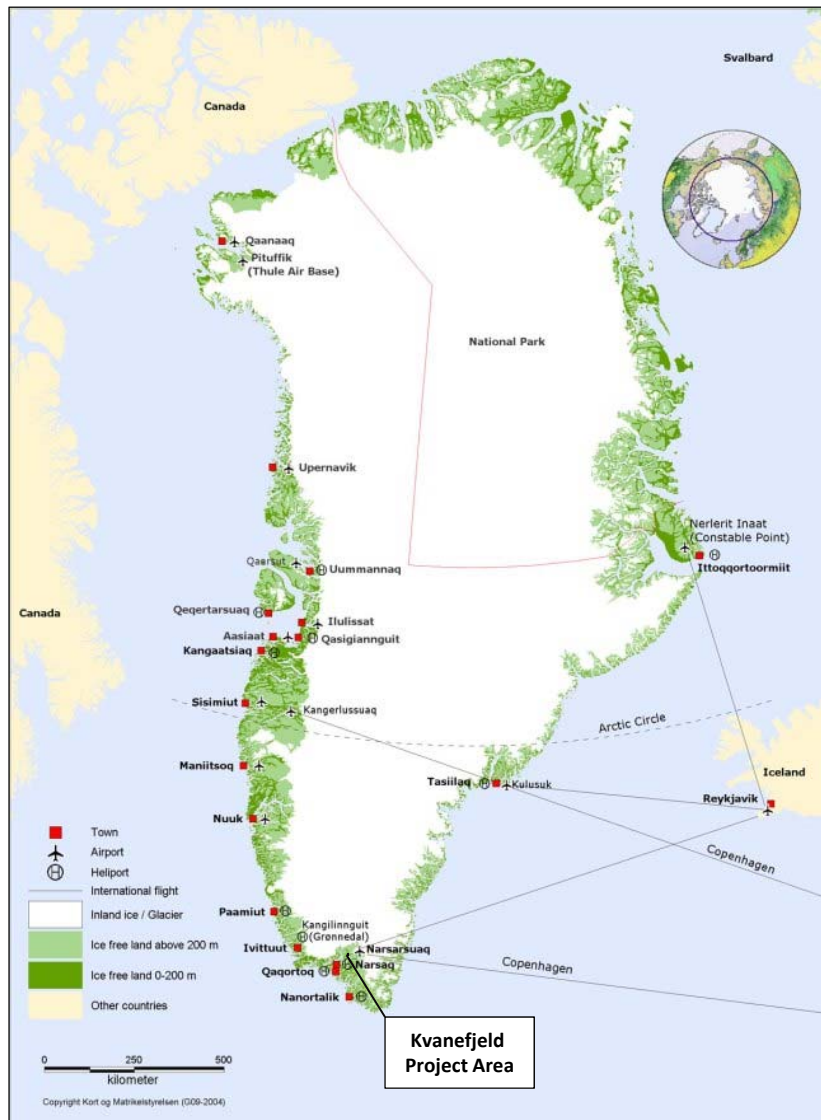
Kvanefjeld Project Ownership - 100%



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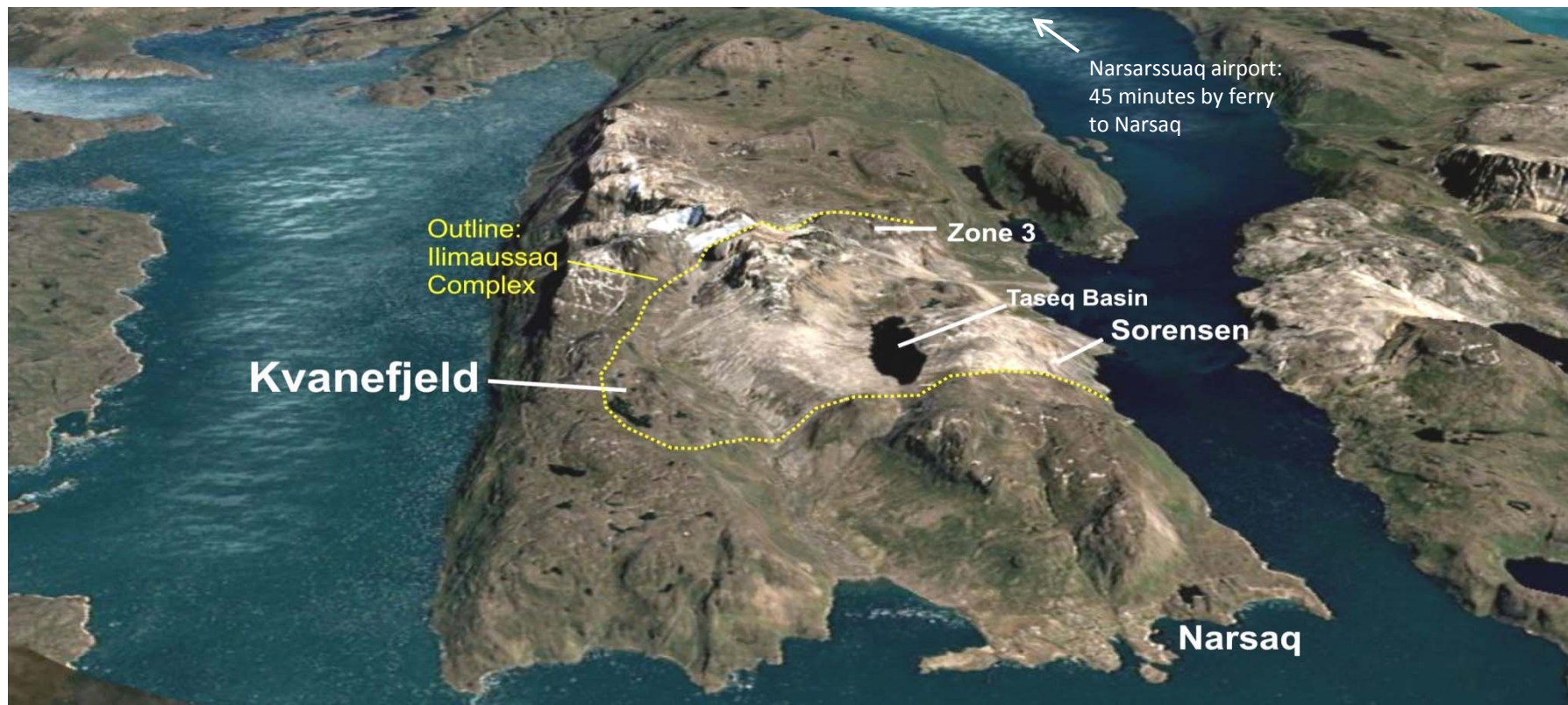
Appendix

Kvanefjeld Project – Location and Access



- The Kvanefjeld Project area is favourably located in southern Greenland
- Narsarsuaq international airport is located 35km away, 4h 50m flight from Copenhagen
- Project area features year-round direct shipping access, via deep water fjords that lead directly to the North Atlantic Ocean
- Climatically – mildest part of Greenland with average temperature ranging from -2 to +10°C
- Narsaq town, located approximately 8-10km from project area

Narsaq Peninsula – Southern Greenland

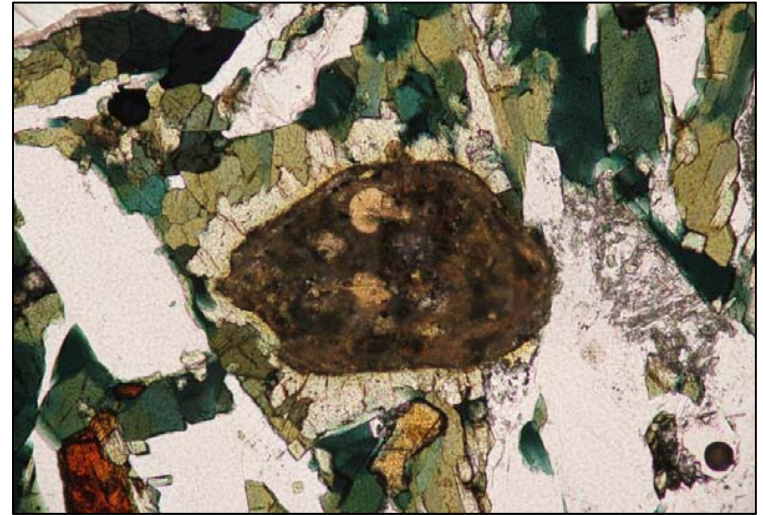


- The footprint of proposed operations is largely restricted to the Kvanefjeld plateau, Narsaq valley, and Taseq basin.
- Rocks of the Ilimaussaq Complex are strongly enriched in rare elements and have been actively dispersed into the surrounding environment by erosional processes, thereby strongly influencing the natural (baseline) chemistry.
- Taseq Basin is underlain by impermeable crystalline rocks (naujaite), and owing to the influence of the unusual rock chemistry, contained water is naturally enriched in a range of elements, is non-potable, and is devoid of life.



Process Advantage – the Seismic Shift

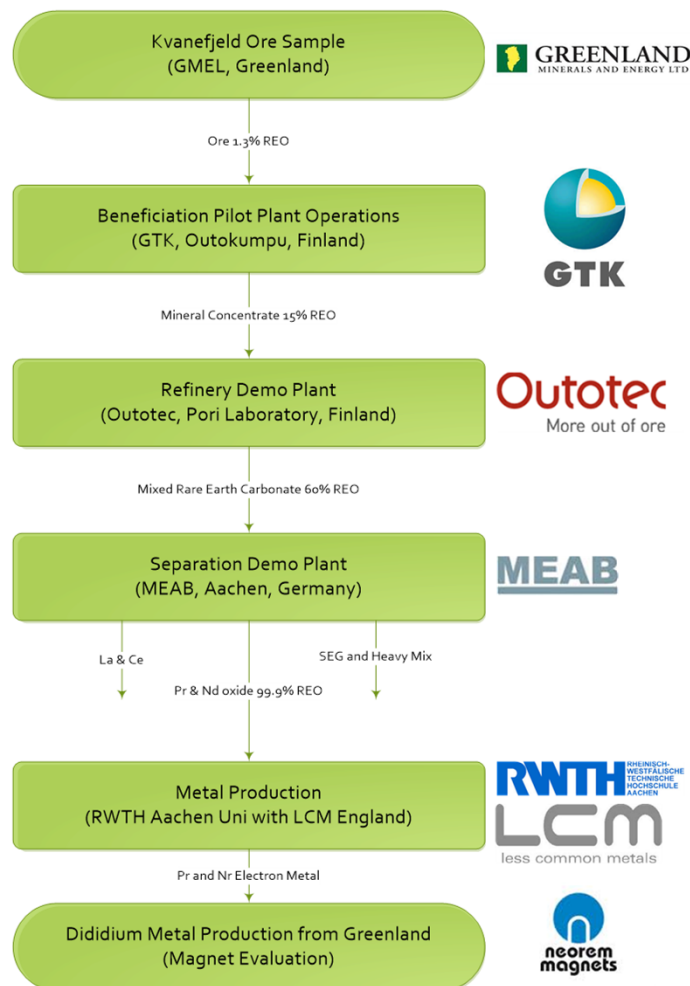
- Viability of a rare earth project is more dependant on metallurgical performance than grade
- REE's occur locked within minerals
- The RE minerals in most deposits are *highly refractory* (vault like), and difficult to crack
- In contrast, the unique minerals at Kvanefjeld are *non-refractory*
- This allows simpler processing, leading to lower production costs
- Steenstrupine is the main RE mineral at Kvanefjeld, and contains ~25% REO
- It is enriched across all key rare earths including Nd, Pr, Dy, Tb
- Can be effectively concentrated with conventional froth flotation (multiple successful pilot plant operations)
- Both REE's and U can be readily leached in acidic solutions under atmospheric conditions (pilot plant proven)
- Detailed mineralogical studies conducted through MDRU, University of British Columbia



Photomicrograph – steenstrupine grain surrounded by amphibole and feldspar in lujavrite ore

Significant Pilot Plant Work With Tier 1 Technical Consultants

Material Flow During EURARE Demonstration Work Package for Kvanefjeld Ore



Key EIA, SIA Consultants



Statement of Identified Mineral Resources – (JORC-Code 2012 Compliant)

Cut-off (U ₃ O ₈ ppm) ¹	Multi-Element Resources Classification, Tonnage and Grade									Contained Metal				
	Classification	M tonnes Mt	TREO ² ppm	U ₃ O ₈ ppm	LREO ppm	HREO ppm	REO ppm	Y ₂ O ₃ ppm	Zn ppm	TREO Mt	HREO Mt	Y ₂ O ₃ Mt	U ₃ O ₈ M lbs	Zn Mt
<i>Kvanefjeld - February 2015</i>														
150	Measured	143	12,100	303	10,700	432	11,100	978	2,370	1.72	0.06	0.14	95	0.34
150	Indicated	308	11,100	253	9,800	411	10,200	899	2,290	3.42	0.13	0.28	172	0.71
150	Inferred	222	10,000	205	8,800	365	9,200	793	2,180	2.22	0.08	0.18	100	0.48
150	Grand Total	673	10,900	248	9,600	400	10,000	881	2,270	7.34	0.27	0.59	368	1.53
200	Measured	111	12,900	341	11,400	454	11,800	1,048	2,460	1.43	0.05	0.12	83	0.27
200	Indicated	172	12,300	318	10,900	416	11,300	970	2,510	2.11	0.07	0.17	120	0.43
200	Inferred	86	10,900	256	9,700	339	10,000	804	2,500	0.94	0.03	0.07	49	0.22
200	Grand Total	368	12,100	310	10,700	409	11,200	955	2,490	4.46	0.15	0.35	252	0.92
250	Measured	93	13,300	363	11,800	474	12,200	1,105	2,480	1.24	0.04	0.10	75	0.23
250	Indicated	134	12,800	345	11,300	437	11,700	1,027	2,520	1.72	0.06	0.14	102	0.34
250	Inferred	34	12,000	306	10,800	356	11,100	869	2,650	0.41	0.01	0.03	23	0.09
250	Grand Total	261	12,900	346	11,400	440	11,800	1,034	2,520	3.37	0.11	0.27	199	0.66
300	Measured	78	13,700	379	12,000	493	12,500	1,153	2,500	1.07	0.04	0.09	65	0.20
300	Indicated	100	13,300	368	11,700	465	12,200	1,095	2,540	1.34	0.05	0.11	82	0.26
300	Inferred	15	13,200	353	11,800	391	12,200	955	2,620	0.20	0.01	0.01	12	0.04
300	Grand Total	194	13,400	371	11,900	471	12,300	1,107	2,530	2.60	0.09	0.21	159	0.49
350	Measured	54	14,100	403	12,400	518	12,900	1,219	2,550	0.76	0.03	0.07	48	0.14
350	Indicated	63	13,900	394	12,200	505	12,700	1,191	2,580	0.87	0.03	0.07	54	0.16
350	Inferred	6	13,900	392	12,500	424	12,900	1,037	2,650	0.09	0.00	0.01	6	0.02
350	Grand Total	122	14,000	398	12,300	506	12,800	1,195	2,570	1.71	0.06	0.15	107	0.31

Statement of Identified Mineral Resources – (JORC-Code 2012 Compliant)

Cut-off (U ₃ O ₈ ppm) ¹	Multi-Element Resources Classification, Tonnage and Grade									Contained Metal				
	Classification	M tonnes Mt	TREO ² ppm	U ₃ O ₈ ppm	LREO ppm	HREO ppm	REO ppm	Y ₂ O ₃ ppm	Zn ppm	TREO Mt	HREO Mt	Y ₂ O ₃ Mt	U ₃ O ₈ M lbs	Zn Mt
Sørensen - March 2012														
150	Inferred	242	11,000	304	9,700	398	10,100	895	2,602	2.67	0.10	0.22	162	0.63
200	Inferred	186	11,600	344	10,200	399	10,600	932	2,802	2.15	0.07	0.17	141	0.52
250	Inferred	148	11,800	375	10,500	407	10,900	961	2,932	1.75	0.06	0.14	123	0.43
300	Inferred	119	12,100	400	10,700	414	11,100	983	3,023	1.44	0.05	0.12	105	0.36
350	Inferred	92	12,400	422	11,000	422	11,400	1,004	3,080	1.14	0.04	0.09	85	0.28
Zone 3 - May 2012														
150	Inferred	95	11,600	300	10,200	396	10,600	971	2,768	1.11	0.04	0.09	63	0.26
200	Inferred	89	11,700	310	10,300	400	10,700	989	2,806	1.03	0.04	0.09	60	0.25
250	Inferred	71	11,900	330	10,500	410	10,900	1,026	2,902	0.84	0.03	0.07	51	0.20
300	Inferred	47	12,400	358	10,900	433	11,300	1,087	3,008	0.58	0.02	0.05	37	0.14
350	Inferred	24	13,000	392	11,400	471	11,900	1,184	3,043	0.31	0.01	0.03	21	0.07
Project Total														
150	Measured	143	12,100	303	10,700	432	11,100	978	2,370	1.72	0.06	0.14	95	0.34
150	Indicated	308	11,100	253	9,800	411	10,200	899	2,290	3.42	0.13	0.28	172	0.71
150	Inferred	559	10,700	264	9,400	384	9,800	867	2,463	6.00	0.22	0.49	326	1.38
150	Grand Total	1010	11,000	266	9,700	399	10,100	893	2,397	11.14	0.40	0.90	593	2.42

¹There is greater coverage of assays for uranium than other elements owing to historic spectral assays. U₃O₈ has therefore been used to define the cutoff grades to maximise the confidence in the resource calculations.

²Total Rare Earth Oxide (TREO) refers to the rare earth elements in the lanthanide series plus yttrium.

Note: Figures quoted may not sum due to rounding.