

*Exploring the highly-prospective Ilimaussaq Intrusive Complex, favourably located near the southern tip of Greenland*

*457 Mt JORC compliant multi-element resource (REE, U, Zn, NaF) defined at Kvanefjeld plateau, with huge upside potential*

*Pre-Feasibility Study indicates potential for an economically robust, long life mine*

*Greenland Minerals and Energy Ltd is an mineral exploration and development company positioning itself to become the worlds premier supplier of Rare Earth Elements. The company is listed on the Australian Securities Exchange.*

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## March 2010 Quarterly Report

Friday, 31<sup>st</sup> January, 2010

### Highlights

- *New five year exploration license over northern Ilimaussaq Complex issued under Greenland's new Mineral Resources Act, and endorsed by Greenland's parliament*
- *Interim Report on the Kvanefjeld Pre-Feasibility Study indicates that the project could be developed as a long-term, economically robust multi-element mining operation*
  - **Potential to supply >20% of global REE demand at low-costs owing to by-product revenue streams**
- *Meetings underway in Greenland to update stakeholders on project status and upcoming environmental and social impact studies*
- *Applications lodged over areas of highly prospective geology, for Ni, Cu, PGE, Au, Nb, REE & Uranium exploration targets in southeast Greenland.*
- *Overview of upcoming 2010 work programs.*



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## **Introduction**

Greenland Minerals and Energy Ltd (“GMEL” or the “Company”) is a mineral exploration and development company actively exploring in southern Greenland. The Company is primarily focused on exploring its license area 2010/02 over the northern Ilimaussaq Intrusive Complex; a unique geological entity with extraordinary resource potential. A large JORC-compliant multi-element resource (*rare earth elements, zinc, and uranium*) has already been defined at Kvanefjeld plateau, which represents just a small percentage of the broader Ilimaussaq ore field. An Interim Report on the Kvanefjeld pre-feasibility study was released in February 2010 that indicates the potential for the vast multi-element resources to sustain a large-scale, economically-robust mining operation for decades.

The Company’s vision is one of the big picture; to be a significant producer of commodities of fundamental strategic importance and value to tomorrows world. Rare earth elements (REEs) are now recognised as being critical to the global manufacturing base of many emerging consumer items green technologies. However, China has successfully monopolised global REE supply, raising serious concerns to non-Chinese consumers over the long-term stability of REE supply and pricing, at a time when RE-demand is set to soar. Electricity from nuclear power continues to gain acceptance internationally as the clean base-load energy supply of the future; owing to rapidly increasing power demands coupled with concerns over carbon-based energy sources, greenhouse gas emissions and global warming. As the nuclear renaissance continues to gain momentum, the strategic importance of uranium resources will continue to emerge.

The northern Ilimaussaq Complex offers the potential for multi-element resources of unparalleled scale; resources that could restore balance to the global supply of rare earth elements, and contribute to the energy security of Europe for many decades.

## **March Quarter Activities**

During the March quarter GMEL reached a significant milestone with the release of an Interim Report on the Kvanefjeld pre-feasibility study. Owing to the geological uniqueness of the Kvanefjeld ores, it has been a significant step to develop a viable process flow-sheet to produce both a rare earth oxide (REO) and a uranium oxide product. The Company is extremely pleased with the initial outcomes, which indicate the potential for Kvanefjeld to supply >20% of global RE demand at low cost owing to revenues from other products. Also during the March quarter, GMEL received a new exploration license over the northern Ilimaussaq Complex that is valid for a further five years. This provides more than an ample window for the Company to complete the definitive feasibility studies and related impact assessment studies that are required in order to apply for an exploitation license in Greenland.

In early March, GMEL senior management met with government representatives and key stakeholder groups in Greenland to provide updates on the Kvanefjeld project status and discuss

the future outlook. Further meetings are currently being conducted with south Greenland communities and stakeholder groups.

### **Kvanefjeld Pre-Feasibility Study**

In early February GMEL released an interim report on the Kvanefjeld pre-feasibility study. This report represents a significant milestone in advancing the Kvanefjeld project into development, and a summary report is available on the Company's website at [www.ggg.gl](http://www.ggg.gl). The interim report provides a clear indication that Kvanefjeld could be developed as an economically robust, large-scale mining operation to produce a rare earth concentrate and uranium oxide.

The pre-feasibility studies conducted to date evaluate a multi-element mining operation based on the process flow sheet that has been developed by AMEC Minproc and the Australian Nuclear Science and Technology Organisation (ANSTO), and draws on extensive studies conducted by the Danish Atomic Energy Commission (Risø). This flow sheet, announced in the September 2009 Quarter Activities Report, and associated engineering and mining studies are considered as a base-case for the Kvanefjeld project.

#### ***Key outcomes of the study include:***

- At a processing rate of **10.8 Mt pa**, nominal forecast annual production is equivalent to **43,729 tonnes of Rare Earth Oxide (REO)**, and **3,895 tonnes of U<sub>3</sub>O<sub>8</sub>**, with a **mine life of >23 years**. At this level of production Kvanefjeld could potentially supply ≥20% of global rare earth demand as of 2015/2016.
- Unit cost estimates are **\$29.61 USD/lb U<sub>3</sub>O<sub>8</sub>** and **\$3.36 USD/kg REO** (as a mixed rare earth carbonate).
- Financial evaluations outlined in the summary report indicate that:
  - 1) the project could repay the capital costs of a mining operation in just over 5 years including 2 years of construction, and;
  - 2) over the life-of-mine the revenues from the sale of uranium oxide would cover the entire production scenario such that *the cost of producing a mixed rare earth carbonate is negative*.

Through 2010, GMEL is investigating areas that could see significant enhancements to the base-case flow sheet. These work programs are discussed in more detail below, and are aimed at ensuring that the best possible flow sheet is established for the project before the commencement of a definitive feasibility study.

## **New Exploration License Issued Over Northern Ilimaussaq Complex**

In March GMEL received a new exploration license over the northern Ilimaussaq complex that includes the Kvanefjeld project. The new license has been issued under Greenland's new Mineral Resources Act that was implemented at the start of 2010, and was endorsed by Greenland's parliament. The license is valid for five years providing more than a sufficient time window in which definitive feasibility studies and associated environmental and social impact studies can be completed. Upon completion of these studies, GMEL can then apply for an exploitation (mining) license. The new license carries the same conditions and covers the same area as the previous license held by GMEL.

## **Stakeholder Meetings in Greenland**

Members of GMEL's senior management attended a series of meetings with members of Greenland's government in early March (see announcement 24<sup>th</sup> March). The meetings represented an opportunity to update the government on the status of the Kvanefjeld project following the release of the pre-feasibility interim report, as well as discussing upcoming work programs and the overall project outlook. Meetings were also held with key stakeholder groups such as the Labour Union of Greenland (SIK). The meetings represented a great opportunity to continue to build the dialogue between GMEL and Greenlandic stakeholders, and in particular, discuss upcoming environmental and social impact studies and the definitive feasibility process. Since this time the BMP and the SIK have issued press releases which indicate they are in favour of review of the zero tolerance to Uranium Mining.

## **New Highly-Prospective Grassroots Exploration Project**

GMEL has recently lodged two applications for exploration licenses covering new grassroots targets located on the southeast coast of Greenland. The licenses cover a broad transect across the north Atlantic craton of southern Greenland and its margins with adjacent mobile belts. The Greenland Geological Survey is recently completed the "*Mineral Resource Assessment Project*" in Southeast Greenland, which included geological mapping and sampling (including substantial sediment and surface water geochemical assaying). This database (recently released to the public) provides an excellent tool to help delineate the most prospective areas and was a major reason in GMEL acquiring the large ground holding.

Geological descriptions taken from field notes of GEUS geologists (Danish Geological Survey) describing geology that covered by the applications include "*Potential for Ni, Cu, PGE and Au*

*exists. Ultramafic rocks, often hosted within mafic rock sequences”. In the Northern most licence “are sulphide-mineralised and are generally elevated in Ni, Cu and Cr. More importantly several rusty horizons, up to tens of meters wide and continuous along strike for tens of kilometres, have been seen within the mafic rock sequences”.*

*“Potential for PGE and Au mineralisation exists within these rock sequences. **Massive sulphide (pyrite-chalcopyrite), 2–5 m wide and continuous along strike for several kilometres, have been encountered within the Skjoldungen Alkaline province (SAP)**”.*

*“Hydrothermal quartz vein, with potential for **Gold mineralisation within hydrothermal alteration zones (pyrrhotite-chalcopyrite-quartz-biotite-garnet), 10–20 m wide and traceable for several kilometres also occur in the SAP and Southern Zones areas**”.*

*“Alkaline and carbonatite intrusions with related mineralisation of Nb, REE, Uranium & Diamonds”. This is a new mineral field in terms of carbonatite complexes and complements the company’s strategic vision of identification & assessment of projects in Greenland. GUES first pass grab samples taken from the carbonatites in the area have yielded ÓREE results up to 2500ppm. “Surrounding rocks are in general elevated in REE and a potential for a hydrothermal halo with probable REE mineralisation in faults”.*

*“Ultramafic dykes, as conjugate sets, up to 2 m wide and traceable for several hundred metres along strike, have been located in the southern part of the SZ. These may host a potential for diamonds”.*

The project area is underlain by Archaean gneisses with remnant greenstone belts. The northern extent is also intruded by the SAP that includes the Singertat carbonatite complex. GMEL believes that the area contains a series of different mineral belts including:

- *greenstone belts that are prospective for nickel sulphide and lode-gold deposits;*
- *craton margin environments prospective for iron-oxide-copper-gold (IOCG) deposits and;*
- *specialty metal deposits (REEs, Ta, Nb) associated with intrusions of the SAP.*

GMEL will be compiling all available datasets in order to conduct a regional target generation exercise. This will aim to indentify the districts of interest and focus future exploration programs.

The company enjoys first mover advantage in these newly discovered mineral fields due to its strategic position in the region. These new license applications are of such prospectively that the company formed the view that under these circumstances it was necessary to make the applications even though the primary focus of the company is Kvanefjeld. Early indications suggest that this is very prospective geology that has never been previously explored for any type of metal mineralisation.

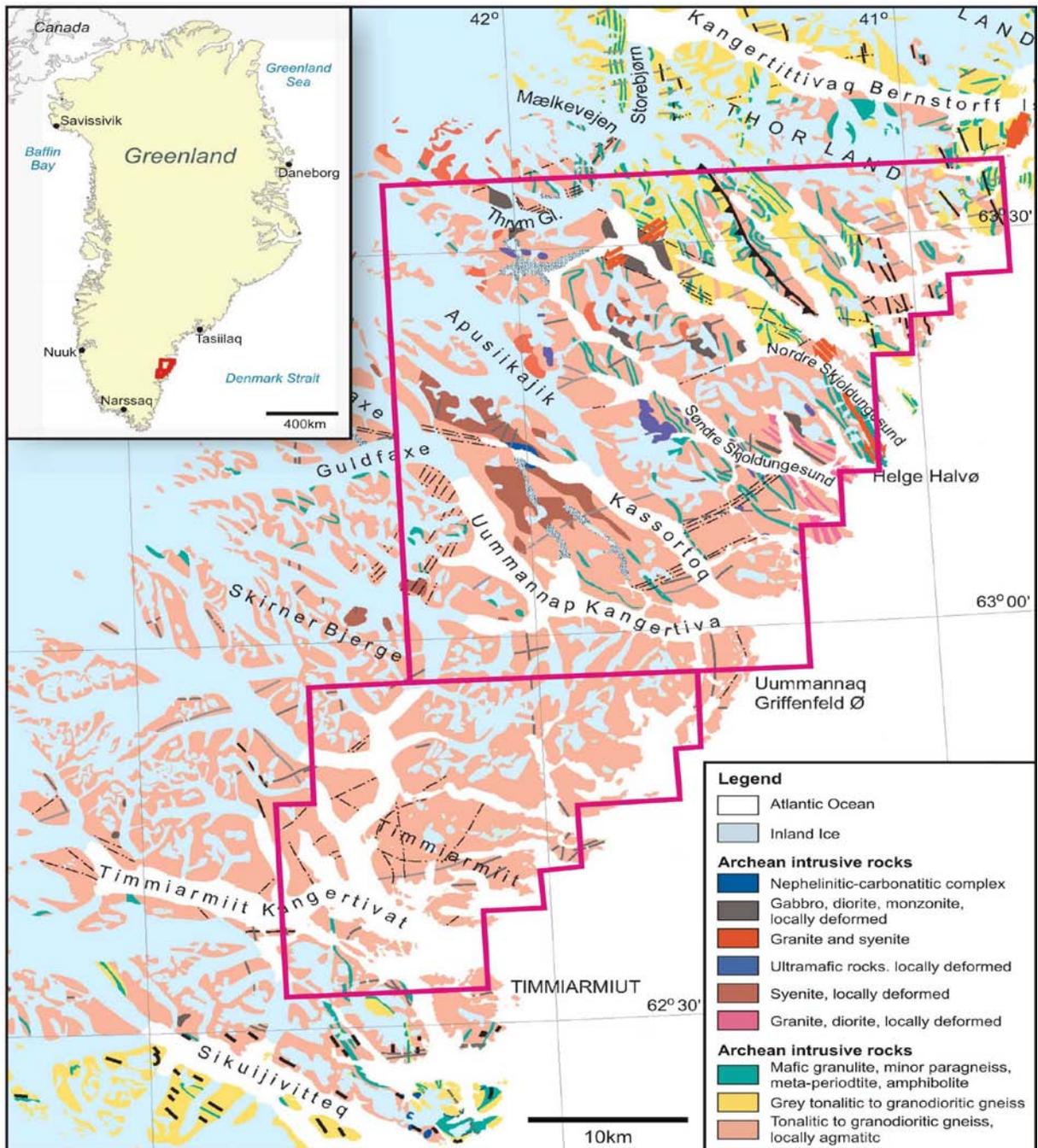


Figure 1 : New exploration licenses located in SE Greenland

## **2010 Work Programs**

In 2010 GMEL's main focus is on advancing the Kvanefjeld project. The company will be conducting further metallurgical studies that could see enhancements to the process flow sheet, and is also aiming to initiate social and environmental impact assessment studies. A two month field program has been planned that will include a 10,000m diamond drill program and environmental baseline studies. The Company will continue to participate in community consultation meetings through the northern summer.

### **Metallurgical Studies**

Further metallurgical test work is underway with a focus on beneficiation. A flotation circuit that concentrates RE minerals is included in the current flow sheet but comes subsequent to the carbonate pressure leach (CPL) circuit that extracts uranium. Economic evaluations of the current flow sheet indicate that any upgrade of the ore prior to the CPL circuit would significantly enhance the project. Initial flotation tests to concentrate sphalerite (ZnS) have also been successful suggesting that a zinc product can be generated. The removal of sulphides (i.e. ZnS) would likely be beneficial to downstream CPL and REE extraction circuits. Further mineralogical studies that form an important part of the resource development program will be planned and initiated in the June quarter.

### **Environmental and Social Impact Studies**

GMEL is looking to plan and commence environmental and social impact studies through the second half of 2010. These programs represent a critically important part of the Kvanefjeld project evaluation. The Company is presently focussed on developing a framework of reference for each study in consultation with Greenland's Bureau of Mines and Petroleum (BMP). Environmental studies are being conducted by Coffey Mining and Orbicon (Denmark), and social impact studies by Grontmij / Carl Bro. Environmental baseline studies have been conducted for three years, and will continue during the 2010 summer.

### **2010 Field Program**

Plans have recently been finalised for a 10,000m diamond drill program during the Greenland summer. Approximately half of the metres will be drilled into the *inferred* resources at Kvanefjeld where near-surface high grade material can be easily reclassified as *indicated* resources and incorporated into the mine plans. The other half of the program is to further evaluate a regional target where initial investigations indicate the potential for another multi-element resource of similar scale to that at Kvanefjeld.

GMEL will be actively participating in community consultation meetings during the summer months with the aim of providing regular opportunities to provide updates on activities and to discuss any queries and concerns raised by community members.

## **Tenure, Permitting and Project Location**

### ***Tenure***

Greenland Minerals and Energy Ltd (ABN 85 118 463 004) is a company listed on the Australian Securities Exchange. The Company is conducting exploration of EL2005/28 in accordance with a joint venture agreement. The Company currently controls 61% of the license (with options to move to 100%). The Company, through its subsidiary, is also the operator of the project.

The tenement is classified as being for the exploration of minerals. The project hosts significant multi-element mineralisation within the Ilimaussaq Intrusive Complex.

Historically the Kvanefjeld deposit, which comprises just a small portion of the Ilimaussaq Complex, was investigated by the Danish Authorities. The project has received significant past exploration in the form of drilling, geophysics, geochemistry, an exploratory adit and numerous and varying metallurgical test work and technical papers.

### ***Permitting***

Currently there is a zero-tolerance toward uranium mining of any kind in Greenland. However Greenland Minerals and Energy have been fully permitted in all their exploration activities at Kvanefjeld to date by the Bureau of Minerals and Petroleum. The Company is exploring for, and evaluating, specialty metal resources in the northern Ilimaussaq Intrusive Complex. Mineral resources that have been identified by the Company to date are multi-element, or polymetallic, in nature and are inclusive of uranium-bearing minerals.

The Company conducts its work programs with the understanding that under the current regulations multi-element deposits such as those defined at Kvanefjeld to date cannot be exploited. The Company is working closely with the relevant authorities to define acceptable development scenarios.

### ***Location***

The exploration lease covers an area of 80km<sup>2</sup> in Nakkaalaaq North on the southwest coast of Greenland. The project is located around 46° 00' W and 60 55' N.

The town of Narsaq is located approximately 7 kilometres to the south west of the license area. Narsaq is connected to Narsarsuaq International Airport by commercial helicopter flights operated by Air Greenland. Local transport between settlements is either by boat or by helicopter.

The Company has office facilities in Narsaq where storage, maintenance, core processing, and exploration activities are managed. This office supports the operational camp located on the Kvanefjeld Plateau above the town where the operational staff are housed.

Access to the Kvanefjeld plateau (at approximately 600m asl) where exploration activities are focussed is generally gained by helicopter assistance from the operations base located on the edge of the town of Narsaq. It is possible to access the base of the plateau by vehicle and then up to the plateau by a track.

### Statement of identified mineral resources, Kvanefjeld multi-element project, Greenland.

At U <sub>3</sub> O <sub>8</sub> % cutoff grades <sup>1</sup>	Tonnes (million)	U <sub>3</sub> O <sub>8</sub> % <sup>2</sup>	U <sub>3</sub> O <sub>8</sub> lb/t	TREO% <sup>3</sup>	Zn%	Resource category
<b>0.015</b>	365	0.028	0.62	1.06	0.22	Indicated
	92	0.027	0.59	1.12	0.22	Inferred
	<b>457</b>	<b>0.028</b>	<b>0.62</b>	<b>1.07</b>	<b>0.22</b>	<b>TOTAL</b>
<b>0.020</b>	276	0.032	0.70	1.13	0.23	Indicated
	63	0.031	0.69	1.21	0.24	Inferred
	<b>339</b>	<b>0.032</b>	<b>0.70</b>	<b>1.14</b>	<b>0.23</b>	<b>TOTAL</b>
<b>0.025</b>	207	0.035	0.77	1.20	0.23	Indicated
	43	0.036	0.78	1.31	0.25	Inferred
	<b>250</b>	<b>0.035</b>	<b>0.77</b>	<b>1.22</b>	<b>0.24</b>	<b>TOTAL</b>

1- There is greater coverage of assays for uranium than other elements owing to historic spectral assays. U<sub>3</sub>O<sub>8</sub> has therefore been used to define the cutoff grades to maximise the confidence in the resource calculations.

2- Additional decimal places do not imply an added level of precision.

3- Total 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.

## Capital Structure

**Total Ordinary shares: 231,188,566**

Quoted options exercisable 20c: 139,540,036

Unquoted options exercisable 10c: 750,000

Unquoted unvested directors options exercisable 20c: 19,800,000

Unquoted options exercisable 20c: 1,000,000

Unquoted options exercisable 50c: 5,750,000

Unquoted options exercisable 1.00: 6,250,000

Unquoted options exercisable 1.50: 2,388,840

Please visit the company's website at [www.ggg.gl](http://www.ggg.gl) where recent news articles, commentary, and company reports can be viewed.

Yours faithfully,



Roderick McIlree

Managing Director  
Greenland Minerals and Energy Ltd

#### **ABOUT GREENLAND MINERALS AND ENERGY LTD.**

Greenland Minerals and Energy (ASX – GGG) is an exploration and development company focused on unlocking the mineral riches of southern Greenland. The Company's flagship project is the Kvanefjeld multi-element deposit (Rare Earth Elements, Zinc, Uranium), that is rapidly emerging as the world's premier specialty metals project. Kvanefjeld has now entered the pre-feasibility phase that will ultimately map out a path to development and timeline to production. For further information on Greenland Minerals and Energy visit <http://www.ggg.gl> or contact:

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*Greenland Minerals and Energy Ltd is aware of and respects the Greenlandic government stance on uranium exploration and development in Greenland – which is currently a zero tolerance approach to the exploration and exploitation of uranium. Any potential change toward the current stance of zero tolerance is not expected until after the public consultation and review process is concluded in the coming months.*

*The company is currently advancing the Kvanefjeld Project, recognised as the world's largest undeveloped JORC compliant resource of rare earth oxides (REO), in a multi-element deposit that is inclusive of uranium and zinc.*

*Greenland Minerals will continue to advance this world class project in a manner that is in accord with both Greenlandic Government and local community expectations, and looks forward to being part of the community discussion on the social and economic benefits associated with the development of the Kvanefjeld Project.*

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*The information in this report that relates to Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by Jeremy Whybrow, who is a Member or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Overseas Professional Organisation' ('ROPO') included in a list promulgated by the ASX from time to time.*

*Jeremy Whybrow is a director of the company.*

*Jeremy Whybrow 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 in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Jeremy Whybrow consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*