GREENLAND
MINERALS AND ENERGY LTD

ASX Announcement

1st February 2010

Kvanefjeld Multi-Element Project

Pre-Feasibility Study - Interim Report

Market Summary

Kvanefjeld Rare Earth Element and Uranium Project

Pre-Feasibility Study Interim Report Outcomes

Greenland Minerals and Energy Ltd ("GMEL" or "the Company") is pleased to announce the initial development scenario from the recently completed interim report on the Kvanefjeld pre-feasibility study. Kvanefjeld, located in southern Greenland, has a JORC-compliant resource estimate that contains 4.9 million tonnes of rare earth oxides (REO) and 120,000t of uranium oxide. This resource inventory defines Kvanefjeld as the world's largest REO resource by either JORC or Canadian NI 43-101 standards.

The pre-feasibility study proposes a multi-element mining operation utilising the process flow sheet developed in conjunction with 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 Quarter Activities Report, and associated engineering and mining studies are considered as a base-case for the Kvanefjeld project.

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. Initial estimates indicate that REE output at Kvanefjeld could rival that of Bayan Obo in China; currently the world's largest RE-producing mine. The project would also be a globally significant producer of uranium.

GMEL has now taken the decision to accelerate further studies into mining operations at Kvanefjeld following the strength of the results generated by the studies conducted to date. Significantly, the interim report has highlighted several areas where the project can be further enhanced to improve the efficiencies and economics surrounding a mining proposal of this scale. In 2010, the Company will be conducting work programs to address these areas and optimize the base case mining scenario.

Key Outcomes:

- At a processing rate of **10.8 Mt pa**, nominal forecast annual production is equivalent to **43,729t of rare earth oxide (REO)**, and **3,895t of U_3O_8**. Life of mine (LOM) throughput is 239.3Mt at an average grade of 1.01% TREO (REO's plus yttrium oxide) and 314ppm U_3O_8.

- A pre-tax **internal rate of return of 24%** and a cash payback period of just over 5 years (which includes the pre mining construction period of 2 years), using long term prices of US$13.0/kg for RE carbonates and US$80/lb for U_3O_8, based on independent market analyses.

- **The mid point NPV for the Kvanefjeld project is estimated at US$2.18 billion** (pre–tax and discounted using 10%) and takes into account complete payback of the initial capital costs. This NPV is based upon REO initial recoveries of just 34% and uranium recoveries of 84%.

- **Total capital costs are estimated at US$2.31 billion.** This includes mine infrastructure, processing and refining capacity for both RE carbonate production and uranium oxide at 10.8Mtpa, new port and power generation facilities, roads and an accommodation village. This figure includes a US$382.6m contingency, equivalent to 20% of the total cost. In addition, construction labour rates have been increased by a factor of 30% to allow for the estimated incremental cost of construction in Greenland. The company is confident that this first pass estimation can be reduced as the level of certainty is increased.

- In total the project generates a **cumulative operating surplus of US$8.93 billion,** generating an average operating surplus of US$615M per annum for the first 5 years of production, peaking at approximately US$665M in years 2 and 3. Mine life is >23 years

- The revenues achieved from the sale of **either** RE carbonate **or** uranium oxide is sufficient to cover the total cost of production of both products. In other words, over the LOM, the by-product credit that is earned from the sale of uranium oxide exceeds the cost of producing RE carbonates; effectively making *the cost of producing RE carbonate free (in actual fact negative).*

- **Construction is scheduled to commence in 2013 with first production in 2015.**

- Mining studies propose a conventional open pit mine with a low waste to ore strip ratio (0.8:1.0 respectively for LOM) with the highest grades occurring at surface. Ore widths of greater than 100m are common. The mine would be located 7 km from tidewater, with deep fjords running directly to the North Atlantic shipping lanes.

- Engineering Studies identify a processing route which will allow extraction of uranium prior to the production of a RE carbonate thereby negating the effects of a contaminated RE product. This creates **separate uranium and rare earth processing and recovery streams**. A carbonate pressure leach (CPL) circuit extracts uranium. REEs remain in their host minerals through the CPL process, and can then be concentrated by froth flotation, leached with acid, and then refined to produce a RE carbonate. The CPL process for the recovery of uranium was first developed by the Risø in the 1970s and the Company's recent test work has confirmed the viability of this method. The RE extraction and recovery circuit has been developed in conjunction with ANSTO and AMEC Minproc.

- Importantly, from an environmental perspective the Danish work also clearly demonstrated, during their piloting plant work on the CPL process, the positive environmental aspects, as both fluorine and thorium present in the ore are converted to insoluble compounds, this has very positive implications for tailings storage and management.

- Executive summary component of Pre-feasibility posted on website.

Commenting today Roderick McIllree, Managing Director of GMEL said: *"With substantial progress made on the pre-feasibility study the company now has a much clearer understanding of the economic parameters of the Kvanefjeld rare earth element and uranium project. In less than three years we have defined, through more than 45,000m of diamond core, the world's largest JORC-compliant REO resource and developed an commercially viable process route to extract metal that will see Kvanefjeld emerge as the major global supplier of rare earth oxides outside China, paid for by the by-product of Uranium. Given these results, the Board has decided to accelerate work programs to demonstrate the true potential of this valuable and strategic asset."*

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.GMEL.gl or contact:

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Introduction

Greenland Minerals and Energy Limited is an ASX-listed exploration and mine development company that is primarily focused on exploring for and developing mineral resources in its license area over the northern Ilimaussaq intrusive complex in south Greenland; a unique geological entity with extraordinary potential for specialty metals resources. Within the complex, a JORC-compliant multi-element resource (rare earth elements, uranium, zinc and sodium fluoride) has been defined at Kvanefjeld plateau that has emerged as one of the largest rare earth element (REE) resources in the world and also includes significant uranium and zinc resources. It should be noted that Kvanefjeld represents just a small percentage of the area prospective for multi-element resources within the license area, and there is high potential for more large-scale resources to be defined. The Kvanefjeld resource represents an excellent opportunity for GMEL to supply vital commodities, generate employment opportunities, and by default strengthen Greenland's domestic economy whilst providing a return for its shareholders.

The ore-type at Kvanefjeld is considered unique and with examples yet to be mined elsewhere in the world. The Company launched a pre-feasibility study in late 2008 to assess the viability of mining these extensive multi-element resources. This intention of the interim report was to assimilate all current knowledge on the project and the outcomes have confirmed the Company's long held view that Kvanefjeld is poised to become a truly world class mining operation and one of the most significant producers of REEs globally.

Greenland

Greenland is located in the North Atlantic Ocean adjacent to the Canadian Arctic Archipelago. While it is geographically part of North America, historically and economically, Greenland is closely related to Europe. Greenland is part of the kingdom of Denmark but is governed as a democracy by the Greenland Self Rule Government and is recognized as an OECD member. Greenland's population is approximately 57,600 people, most of which live in towns along the fjords in the southwest of Greenland where the climate is relatively mild.

From a minerals industry perspective, Greenland is an emerging mineral province, being politically stable and becoming increasingly independent from Denmark. The future development and success of the Kvanefjeld project will hinge on community support. Although Greenland is open to the introduction of new mining and exploration, the Company respects the land, the environment and the wishes of its people. It is, therefore, working in consideration and consultation with local communities. A major focus is on the development of an Environmental Impact Assessment (EIA). At present, there is a zero-tolerance approach to the exploration and exploitation of uranium in Greenland. Any potential change toward this stance would only happen after an ongoing public consultation and technical review process.

Rare Earth Elements and Uranium: Strategic Commodities for the Future

Rare earth elements and uranium are now widely recognised around the world as strategically important commodities for the future. The market analyses indicate that demand for REEs and uranium is set to rise strongly over the next 20 years.

Rare earth elements are acknowledged by the U.S. Geological Survey as being critical to many high technology and environmental applications. They are essential in emerging technologies such as hybrid cars, wind turbines, and phosphors utilised in flat screen display panels, amongst many other applications. China currently produces over 95% of global REE supply, but as widely reported through global media outlets China is reducing production and export quotas to ensure it has sufficient reserves to meet its growing domestic demands. This represents a radical change in the dynamics of the REE market at a point where demand is forecast to steadily increase. In the wake of the global financial crisis of 2008-2009, demand increase for REEs is forecast to return to the historical levels of 8-11% pa, causing REO prices to rise significantly in the longer term. *As a result of increasing demand and the changes in market dynamics, there is a substantial void emerging in global RE supply.* The Company believes the Kvanefjeld project has the potential to be a new, long term, stable and cost effective supplier of REEs.

In the case of uranium supply the advancing of new production to meet growing demand will be a significant challenge for the industry. Even though uranium is considered to be a by-product, forecast production of uranium would place Kvanefjeld amongst the world's largest uranium-producing mines, which will be important economically to both Greenland and the Company.

The forecast production levels of rare earths at Kvanefjeld are equivalent to that at Bayan Obo in China, which is currently the world's largest producer of REEs by a significant margin (source IMCOA, 2009). *This emphasizes the projects potential to significantly negate some of the strategic imbalance inherent in China's current position of overwhelming dominance in rare earth production.* The Company therefore believes the project has a high strategic importance for all users of REEs outside of China as well as Greenland's emerging minerals industry.

Kvanefjeld Project Evolution – brief history

Uranium enrichment was first identified in the Kvanefjeld region in 1956 during a reconnaissance radiometric survey of the Ilimaussaq intrusive complex. This sparked a series of exploration programs to define uranium resources and metallurgical programs to evaluate mining operations. These programs were carried out under the auspices of the Geological Survey of Greenland and the Danish Atomic Energy Commission (Risø) and culminated in a final evaluation phase from 1978-83 to decide whether or not to extract uranium from the Kvanefjeld deposit.

Tests to evaluate uranium extraction via carbonate pressure leach (CPL) confirmed that an extraction yield of more than 85% could be achieved. These work programs were summarised in a Pre-Feasibility Study report on the "Kvanefjeld Uranium Project" that was completed by Risø in 1983.

Shortly after completion of the 1983 report, uranium prices fell sharply, which heralded a long period of inactivity at Kvanefjeld until GMEL acquired an exploration license over the northern Ilimaussaq complex in mid-2007 through a joint venture agreement. GMEL's team evaluated the geological setting and

characteristics of the deposit and concluded that it was potentially more than a modest uranium occurrence and that it was likely to represent a much larger resource that could contain economic concentrations of numerous other metals, particularly REEs. The Company was also guided by numerous high-quality studies by Danish geologists that were undertaken subsequent to historic work ceasing in 1983. These studies highlighted the potential for the Ilimaussaq complex to host vast resources of specialty metals that could potentially be exploited in a multi-element, or polymetallic mining operation.

Since commencing exploration in 2007 the Company has completed two large-scale exploration and resource definition programs that have redefined Kvanefjeld as the world's largest resource of REEs as defined by either Australian JORC or Canadian NI 43-101 standards, as well as being a uranium resource of global significance. The resource is also enriched in zinc and sodium fluoride. On the basis of the rapid evolution of Kvanefjeld to a large-scale multi-element resource, a pre-feasibility was launched to evaluate a multi-element mining operation at Kvanefjeld. The initial findings are summarised herein.

The Kvanefjeld Multi-Element Project, Pre-Feasibility Study

The work commissioned by GMEL to date has been carried out by international consulting firms covering a wide range of disciplines, and in particular:

- Resource definition and mine plans
  Coffey Mining, Hellman and Schofield
- Metallurgy and process development
  AMEC Minproc, ANSTO, SGS Lakefield Oretest, CSIRO, Battery Limits
- Environmental baseline and Environmental Impact Assessment
  Coffey Environments, Orbicon (Denmark)
- Plant engineering design, infrastructure, capital development
  AMEC Minproc, NIRAS (Denmark)
- Marketing
  BCC Research, IMCOA, World Nuclear Association, MGMT Group

The Study also draws on extensive historical work conducted by Danish Atomic Energy Commission (RISØ) and Geological Survey in the 1970's and early 1980's, which culminated in the 1983 Pre-Feasibility Study published by Risø. This phase of work was solely focussed on uranium. The complete *Executive Summary* of the *Pre-Feasibility Study Interim Report* is now available on the Company's website at www.GMEL.gl.

Process Development

The historic work programs that evaluated Kvanefjeld as a uranium project provided GMEL with a knowledge base that permitted its pre-feasibility studies to advance in a relatively short time frame. With technology advances, a thorough review was conducted by GMEL into the historic work programs and the results. Through test work conducted in 2008 and 2009, research confirmed that CPL was a viable method for

uranium extraction, owing to its low reagent consumption, favourable extraction levels, and high selectivity for uranium. GMEL's engineers have recommended pressure autoclaves for the CPL process.

The test work also included beneficiation studies which indicated that the REE-bearing minerals can be concentrated by froth flotation. Aside from extracting uranium, the CPL process has little impact on the REE-bearing minerals. This allows for REE-bearing minerals to be concentrated from the CPL residue using flotation. Hydrochloric acid leach tests were undertaken on the flotation concentrate with a leach solution for downstream RE recovery by precipitation. The tests demonstrate that under atmospheric conditions, leaching at mildly acidic conditions (around pH 2.5) solubilises a significant portion of the REEs, with minimal dissolution of any thorium, gangue minerals or residual uranium, to create a leach solution for downstream RE recovery.

AMEC Minproc developed a process flow sheet for a whole-of-ore CPL circuit, and subsequent flotation (beneficiation) circuit. The Australian Nuclear Science and Technology Organisation (ANSTO) who possess extensive RE processing knowledge developed a flow sheet for production of bulk rare earth carbonates, post the beneficiation circuit. The two components were then integrated to create a process flow sheet that extracts uranium and effectively separates the RE and uranium recovery circuits (Figure 1). The residue from the CPL circuit is then beneficiated to concentrate RE-bearing minerals. The mineral concentrate is leached with HCl, and the leach solution treated to generate a rare earth carbonate. This process flow sheet is now the base-case for the Kvanfjeld project.

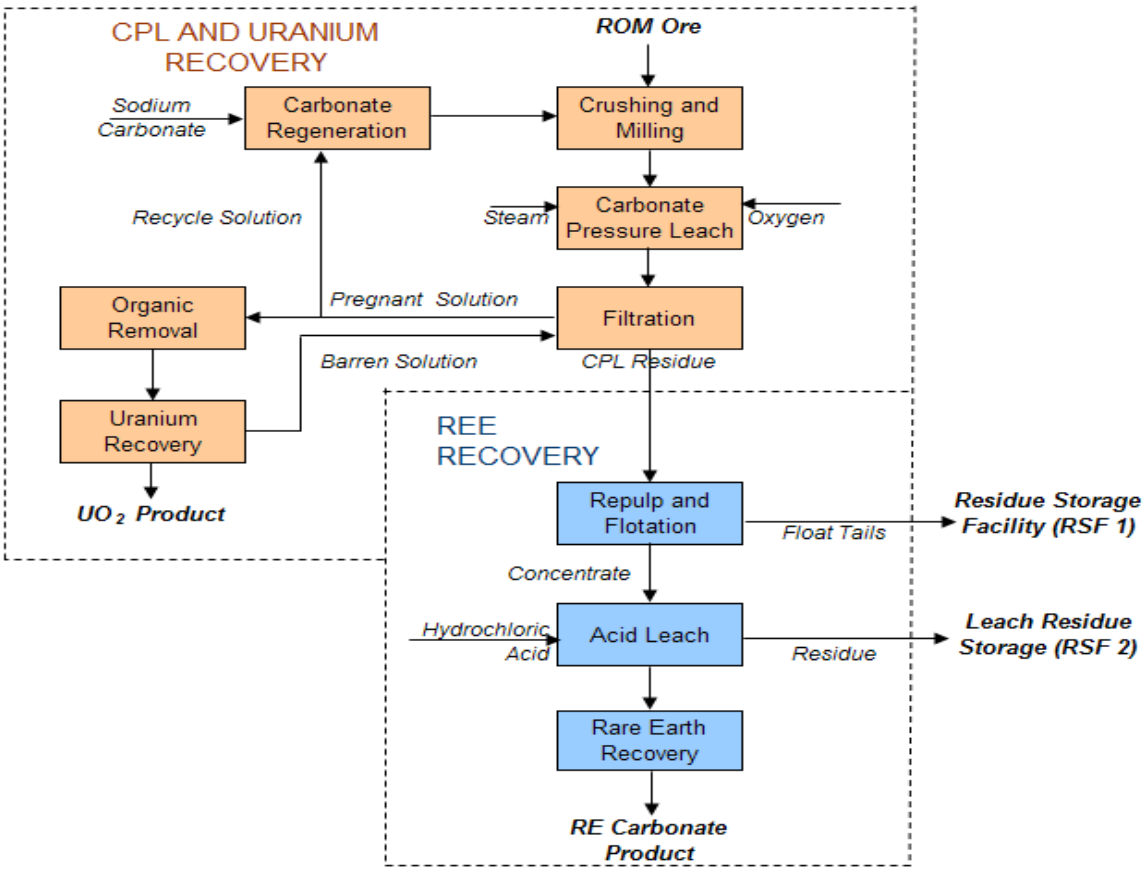


Figure 1. A simplified version of the base-case process flow sheet for the Kvanefjeld project.

Mining and Engineering Studies

Coffey Mining and AMEC Minproc undertook mining and engineering studies respectively. Mining studies were based on conventional open pit mining with a feed target of 10.8 Mt and an average waste:ore strip of 0.8:1. This equates to an annual movement of 22 Mt. Current estimates of life of mine production is 239.3 Mt at an average mine grade of 1.01% TREO (REOs plus yttrium oxide) and 314 ppm U_3O_8. At a processing rate of 10.8 Mt pa, nominal forecast annual production is 43,729 tonnes of Rare Earth Oxide (REO), and 3,895 tonnes of U_3O_8 (equivalent), with a mine life of greater than 23 years. Estimated average recoveries over life of mine are approximately 34% for REO and 84% for uranium.

Capital Costs

Costs are estimated in United State dollars as at second quarter 2009 and has accuracy of not less than ±35%, i.e. in line with "order-of-magnitude" estimates. Capital costs relate to the entire project, excluding owner's corporate costs and any contingency for further scope changes and project finance risk. Costs presented are for a 10.8 Mt/a throughput. Capital costs are inclusive of the processing and refining plants required to generate both a RE product and uranium oxide, new port facilities, a power station, an accommodation village, a new 13 km long road connecting the mine and processing plant to the port facilities and accommodation village.

The total capital cost of the project is estimated at US$2.31 Billion.

This comprises:

- Mining US$ 10.3 M*
- CPL Plant US$ 683.1 M
- REE Plant US$ 321.5 M
- Infrastructure US$ 432.1 M
- Miscellaneous US$ 107.4 M
- Indirects US$ 368 7 M
- Contingency US$ 382.6 M

*(Mining fleet lease costs included in opex)

Mining capital costs cover clearing, mine infrastructure, explosives magazines and office setup.

CPL Plant capital costs include crushing and milling, CPL autoclaves, CPL residue filtration, UO_2 recovery, oxygen plant, steam boiler, etc.

REE Plant capital costs include CPL residue flotation, concentrate leach, RE recovery, services, etc.

Infrastructure capital costs include:

- Regional infrastructure: items such as regional roads, port facilities and services
- Area infrastructure: items such as permanent accommodation, area roads, communications, and water supply and transmission
- Plant infrastructure: items such as site preparation, support buildings, power generation, mobile equipment and residue storage facilities.

Miscellaneous includes items such as mobilisation and demobilisation, first fill reagents and consumables, spares and commissioning assistance.

Indirects include items such as Engineering, Procurement, Construction Management (EPCM) charges, and temporary facilities.

The contingency of 20% is considered conservative, and reflects the current preliminary low level of engineering detail.

Rare Earth Element and Uranium Market Analyses

GMEL has conducted RE and uranium market analyses to determine product pricing in order to conduct financial evaluations of the project. The Company had drawn on the RE market analyses by the Industrial Minerals Company of Australia (IMCOA) and BCC Research, and uranium market analyses by the World Nuclear Association (WNA).

IMCOA has forecast an 8-11% pa growth in demand up to 2014. Despite this strong underlying demand growth IMCOA forecasts that short to medium term rare earth carbonate prices in China will remain relatively stable, ranging between US$5/kg and US$7/kg (FOB China).

Prices for rare earth carbonates are determined by reference to the prices for the rare earth elements contained in the concentrate. The mix of rare earth elements contained in the Kvanefjeld orebody should produce a carbonate concentrate that will attract a premium of approximately US$1/kg when compared with the bench mark - Baotou carbonate (IMCOA).

Based on the short to medium term forecast for rare earth carbonate prices in China, IMCOA's view is that, for the purposes of the Study, GMEL should use a price range from US$7.50/kg REO (US$3,250/t carbonate FIS) to US$10/kg REO (US$4500/t carbonate FIS).

IMCOA's price forecast shows only a modest overall price growth (less than 5% CAGR) over the period to 2014. GMEL is of the view that the price forecast by IMCOA is conservative and that future REO prices will be significantly higher.

BCC Research is estimating that prices for all rare earths will increase at between 20% and 30% CAGR over the same period. The BCC Research forecast notes that recent Chinese actions (reduction of mine production and export quotas, and the imposition of an export tax on selected rare earths) will continue to have a strong upward influence on prices against a backdrop of steady demand growth.

GMEL concurs with BCC Research's view that the reduction of supply from the Chinese market, together with demand growth returning to historical levels, will cause REO carbonate prices to return to pre "global crisis" levels in 2010 and to increase steadily thereafter.

GMEL expects that by 2015, prices will fall within the range US$7.50/kg to US$18.50/kg, tending towards the upper end of this range. *The base case evaluation uses US$13/kg, which is the midpoint of this range.*

Sales of U_3O_8 are predominantly undertaken on a long term contract basis. Current data suggests a relatively small surplus over the next 5 years and this is supported by the general consensus on long term contract price forecasts of around US$65 to US$75/lb U_3O_8. The forecasts are reflecting a market in relative equilibrium with little or no upward pressure on prices.

In GMEL's view the apparent relative equilibrium in the market over the next few years masks pressures that are likely to build in the medium to long term and the long term. GMEL considers that the price for uranium will range between US$70 to US$90/lb. *The Base Case financial evaluation assumes a mid-point of $80/lb.* The price assumption of US$80/lb by 2015 assumes an annual growth of only 5%. Over the previous five years U_3O_8 long term contract prices have escalated at over 21% pa.

Financial Evaluation

The GMEL Financial Model is a discounted unleveraged cash flow model (DCF) of the Kvanefjeld project which has been built in Excel™. The model describes a base case and has the capability to evaluate the impact of variations in key inputs on financial metrics for the Kvanefjeld project. The model uses net present value (NPV), internal rate of return (IRR) and payback period as its evaluation metrics.

The following assumptions about the project form the basis of the model:

- the capacity of the project is 10.8 Mtpa;
- the capital cost of the project has been estimated at US$2.31 billion;
- construction is scheduled to commence in 2013;
- production is scheduled to commence in 2015;
- the project has a mine life of 23 years; and
- ungeared with no debt funding

Base Case Summary

The financial outcomes of the model for the Base Case indicate a robust project that will generate over US$8.9billion in free cash flow over its operating life. The outcomes are presented in Table 1.

Table 1.
Base Case Financial Outcomes

Parameter	Pre-tax	Post tax
NPV	US$2181M	US$1282M
IRR	24%	19%
Capital Payback Period	5-6 years	6-7 years

Over the life of the project, the cumulative undiscounted revenue streams from the rare earth carbonates and the uranium oxide concentrates are of a similar magnitude and total US$8.93 billion. The project generates an average annual cashflow of US$615M over the first five years of production, peaking at approximately US$665M in years 2 and 3.

Operating Costs

Mine operating costs have been estimated by Coffey Mining, and operating costs relating to the process plant and infrastructure have been estimated by AMEC Minproc.

Mining Costs

A breakdown of the life of mine operating costs for the 23 year mine life as developed by Coffey is presented in Table 2.

Table 2.

Cost Summary by Activity

Cost Item	***Total ($'000)***	***$/tonne moved***	***% Split***
Drilling	*168 314*	*0.40*	*10%*
Blasting	*111 208*	*0.26*	*7%*
Load	*94 873*	*0.22*	*6%*
Haul	*548 769*	*1.30*	*34%*
Monthly Maintenance Fee – Mob, Misc Capital Cost	*124 296*	*0.29*	*8%*
Major Ancillary	*324 983*	*0.77*	*20%*
Minor Ancillary	*49 045*	*0.12*	*3%*
Indirect Costs	*199 120*	*0.47*	*12%*
TOTAL	***1 620 607***	***3.83***	***100%***

The mean operating cost over the 23 year mine life is calculated to be $81.03 Million/a or $7.50/t of ore treated.

Process Plant and Infrastructure Costs

Operating costs are presented separately for the CPL and REE circuits. All infrastructure costs are allocated to CPL processing and uranium production as presented in Table 3, while REE costs shown in Table 4 are incremental production costs for recovery of REEs.

Table 3.
10.8 Mt/a Ore Throughput Operating Cost Summary – CPL Circuit

	Proportion of Cost (%)	Annual Cost ($'000/a)	Unit Cost	
			$/t Ore	$/Ib U_3O_8
Labour	8.6	21 838	2.02	2.54
Energy – Power and Thermal	37.6	95 417	8.83	11.11
Reagents	24.2	61 536	5.70	7.16
Consumables	9.8	24 953	2.31	2.91
Maintenance Materials	14.7	37 318	3.46	4.34
General and Administration	5.1	13 016	1.21	1.52
Cost of Sales (Shipping)	0.1	264	0.02	0.03
Total	**100**	**254 343**	**23.55**	**29.61**

Note: The unit cost in $/lb U_3O_8 will vary with head grade, and that presented in Table 3 is based on process plant design feed grade of 365ppm uranium.

Table 4. based on a 10.8 Mt/a Ore Throughput Operating Cost Summary – REE Circuit

	Proportion of Cost (%)	Annual Cost ($'000/a)	Unit Cost	
			$/t Ore	$/kg REO
Labour	6.0	8 856	0.82	0.20
Energy – Power and Thermal	19.4	28 577	2.64	0.65
Reagents	51.1	75 154	6.96	1.72
Consumables	2.0	2 971	0.28	0.07
Maintenance Materials	12.1	17 781	1.65	0.41
General and Administration	1.6	2 395	0.22	0.05
Cost of Sales (Shipping)	7.7	11 353	1.05	0.26
Total	**100**	**147 087**	**13.62**	**3.36**

Note: The unit cost in $/kg REO will vary with head grade, and that presented in Table 4 is based on process design feed grade of 1.19% REO equivalent.

In terms of modelling the net cost of producing either U_3O_8 concentrates or REO carbonates the philosophy for allocating costs in the model, recognising that U_3O_8 extraction precedes rare earths extraction in the processing plant flow sheet, results in all costs to the point at which the U_3O_8 and REE streams can be separated being allocated to the Carbonate Pressure Leach (CPL) circuit costs. This upwardly skews the apparent cost of producing U_3O_8.

The revenues achieved from the sale of **either** RE carbonate **or** uranium oxide is sufficient to cover the total cost of production of both products. In other words, over the life of mine, the by-product credit that is earned from the sale of uranium oxide exceeds the cost of producing RE carbonates; effectively making *the cost of producing RE carbonate free*.

Sensitivities

Sensitivity analyses were completed on assumptions in the model relating to:

- Product prices
- Operating cost
- Capital costs.

Figure 2 Input Sensitivities

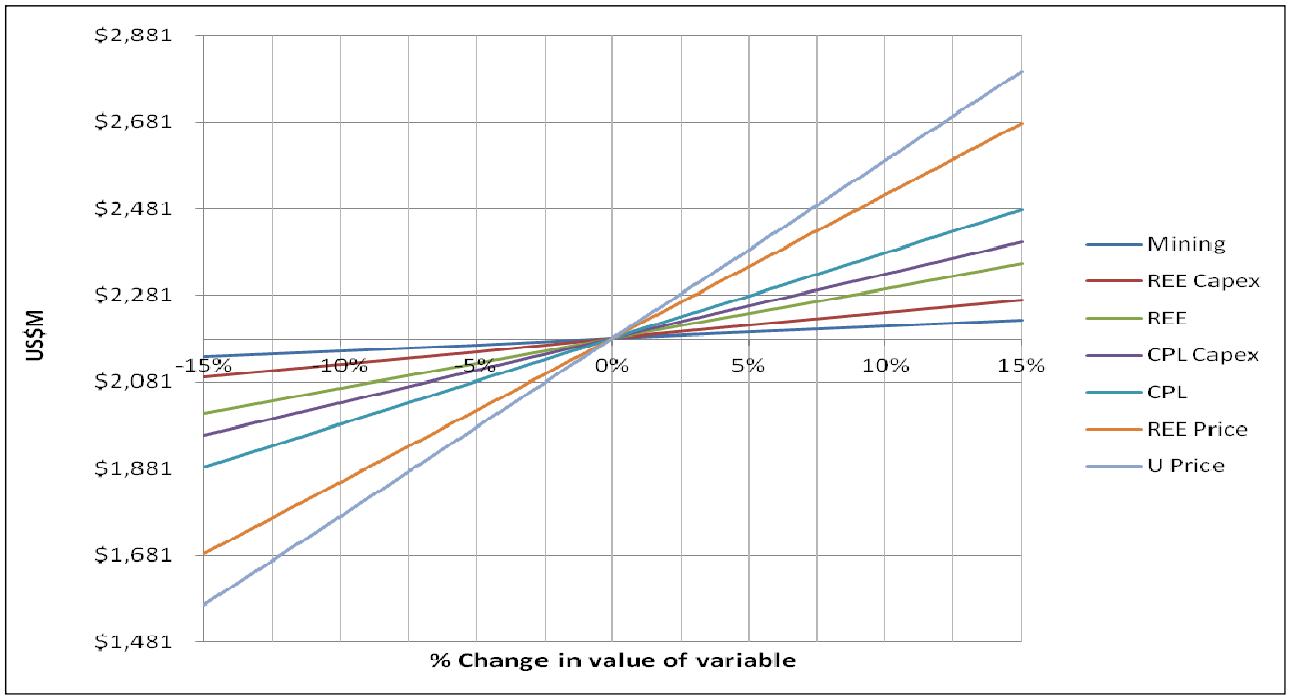


Figure 2 shows the sensitivity of the project's NPV to changes in product prices and changes in capital and operating costs. The steeper the slope of the line, the more sensitive the project NPV is to changes in the input variable.

From the above graph it can be seen that the two key sensitivities for the project are the price for U_3O_8 and the price for RE carbonate concentrate. After prices, the project is then most sensitive to the costs [capital and

operating] of the CPL circuit and after them the costs (capital and operating) of the RE concentrate circuit. The project is least sensitive to mining operating costs.

Figure 2 also shows that, even if there is a 15% adverse movement in the variable to which the economics of the project are most sensitive, the price of U_3O_8, the base case model for the Kvanefjeld project still has an NPV of well over US$1.5 Billion.

As previously stated, the two key sensitivities for the project are the price for U_3O_8 and the price for RE carbonate. For the purpose of running a price sensitivity analysis, the following price ranges were chosen.

Table 5
Price Assumptions

	Downside	**Base Case**	**Upside**
Uranium Oxide ($/lb)	70	80	90
Rare Earths ($/kg)	7.50	13	18.50

Upside Price Cases

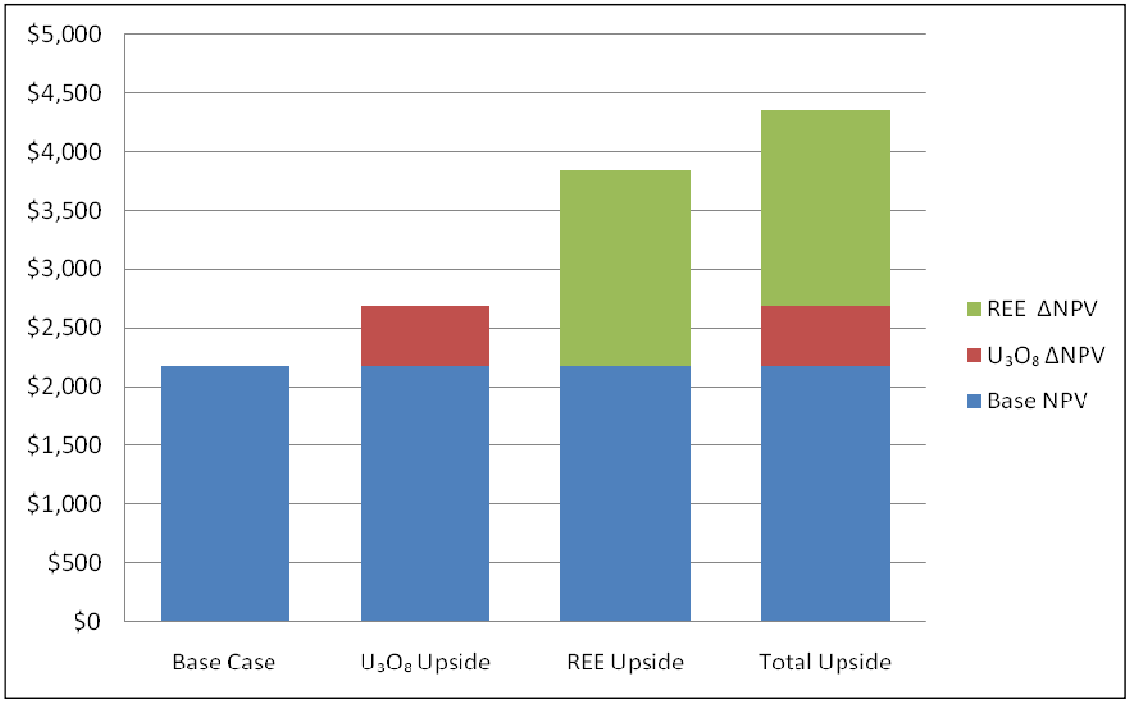
The upside case for the U_3O_8 price is US$90/lb and the un-geared project return if a price of US$90/lb is modelled is **US$2,694 Million**.

The upside case for the RE carbonate price is $18.50/kg and the un-geared project return if a price of US$18.50/kg is modelled is **US$3,837 Million.**

Figure 3 compares the base case NPV with the upside price cases for both U_3O_8 and RE carbonate. It also includes a case for the combined impact of both upside cases.

The NPV of the combined upside case is US$4,349 Million.

Figure 3 Project NPV – Price Upside Cases



Downside Price Cases

The financial model provides for downside price cases of US$70/lb of U_3O_8 and US$7.50/kg of RE carbonate.

The NPV of the project using the downside price case of US$70/lb of U_3O_8 and US$7.50/kg of RE carbonate is **US$13 M.** Therefore, even with the discount rate at 10%, the project still retains a positive NPV at the lower price assumptions.

Break-even Prices

The following figures show the impact of changing the price of U_3O_8 and RE carbonate concentrate on the Kvanefjeld project's NPV.

Figure 4.1

U_3O_8 Break even, US$/lb

8% and 10% Discount Rate

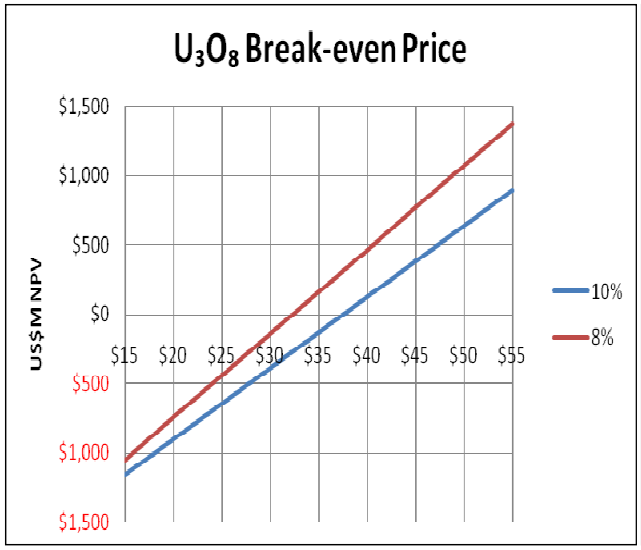
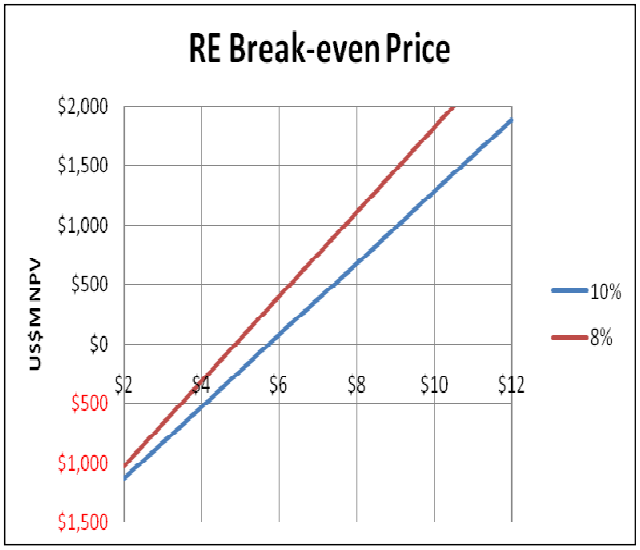


Figure 4.2

REE Break even, US$/kg

8% and 10% Discount Rate



The figures also show the "break-even" prices for each of U_3O_8 and RE carbonate concentrate.

In this case, the break-even price is the price at which the figure crosses the y-axis and it represents the price (U_3O_8 or RE carbonate concentrate) at which the NPV of the project is equal to zero assuming that all other variables in the base case are held constant.

The rate by which future cash flows are discounted to present value for the NPV calculation makes provision for, amongst other things, risk – production risk, political risk, revenue risk.

As the modelling shown in the figures is analysing the impact of significant reductions in product prices, it can be argued that to provide for risk in the discount rate and then to model low end product prices is making allowance for the risk in lower prices on two occasions.

The analysis has, therefore, been completed for project NPV's calculated with both a 10% and an 8% discount rate, which approximates the cost of debt finance.

Table 6 Break-even Prices

	Discount Rate	
	10%	**8%**
Break-even price – U_3O_8	US$37.47/lb	US$32.30/lb
Break-even price – RE carbonate	US$5.75/kg	US$4.89/kg

CPL Costs

The cost of the CPL processing plant is the next area of greatest sensitivity on the NPV of the project.

Table 7 CPL Cost Sensitivities, Impact of CPL Cost Changes on NPV	
	1% Change
Operating Cost	US$20 M
Capital Cost	US$15 M

A 10% reduction in the CPL operating costs would improve project NPV by **US$199 M** and a 10% reduction in the capital required to produce U_3O_8 would improve project NPV by **US$149 M.**

For a project of this size and complexity these are very encouraging preliminary results as there is considerable scope to add substantial value to the project and optimise its potential. As can be seen in figure 5 Kvanefjeld is significant on a global scale.

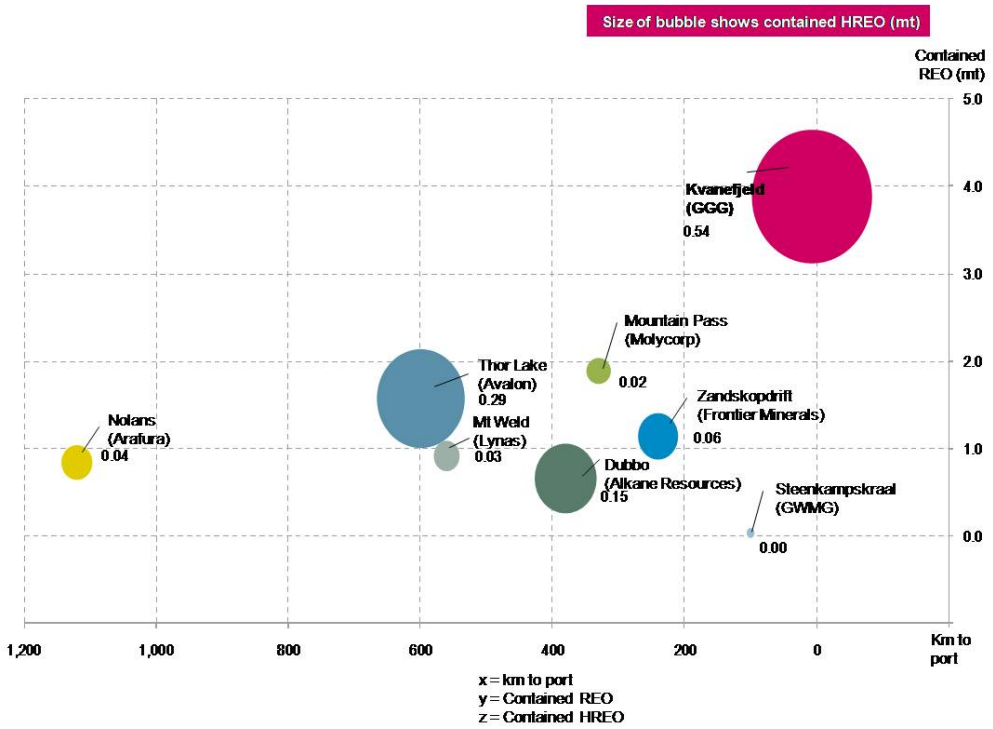


Figure 5 Kvanefjeld dwarfs all but Thor Lake in terms of heavy rare earth resources and is located adjacent to an existing port facility.

Source; Renaissance Capital

2010 Work Programs

The interim pre-feasibility report will focus upcoming 2010 work programs to best add value to the Kvanefjeld project. The outcomes could see significant enhancements to the projects economics. The work programs are in line with the Company's aims to develop Kvanefjeld as a best and low cost, long term, large scale producer of RE concentrates and uranium.

Work programs will include:

Commence Social and Environmental Impact Studies: The success of any large-scale mining operation is contingent on the project meeting all social and environmental impact requirements. GMEL aims to be working closely with the Greenlandic authorities to plan the scope of these studies.

Beneficiation Studies: As the Company has developed a more in-depth understanding of the geology of the Kvanefjeld resource, new opportunities have been identified that could remove waste minerals prior to the CPL circuit thereby concentrating ore minerals which would increase both RE and uranium head grades.

Improve Rare Earth Recoveries: While the current nominal production estimates would see Kvanefjeld rival Bayan Obo as the largest RE producing mine in the world, there is scope to increase RE recoveries through the removal of acid consuming gangue minerals, as well as optimising the leachability of RE-bearing minerals.

Investigate Zinc Recovery: There is potential to generate a sphalerite (ZnS) concentrate with flotation that not only would see another product generated, but also has potential downstream benefits to both the CPL and RE circuits.

Improve Mine Schedule: Further detailed mine studies may result in less dilution in the mine schedule that could see an increase in the average RE and uranium head grades over the life-of-mine.

Convert *Inferred* to *Indicated* Resources: At present, the mine schedule is based on indicated resources. Conversion of inferred resources to indicated through increasing the drill hole density, will extend the mine life.

Define New Multi-Element Resources: There is genuine scope to define new multi-element resources within the Company's license area that are of the same ore-type to that at Kvanefjeld.

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^2 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.

Please visit the company's website at www.GMEL.gl where recent news articles, commentary, and company reports can be viewed. Also the company has launched its new documentary style presentation on its website under the netTV spinning logo link.

On Behalf of the Board of Directors

Roderick McIllree
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.GMEL.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.

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.