Terms of Reference for the Social Impact Assessment

Kvanefjeld Multi-Element Project

Approved October 2015
TABLE OF CONTENTS

1 INTRODUCTION 1
   1.1 The SIA Process 1
   1.2 The Project 2
   1.3 Scoping Workshops 2
   1.4 The Terms of Reference (“ToR”) 3
2 SCOPING AND SOCIAL IMPACT STUDY PLAN 4
   2.1 The Draft for the Terms of Reference July 2011 4
   2.2 Developments since July 2011 4
   2.3 Status July 2014 7
3 REGULATORY FRAMEWORK 9
   3.1 The Political Situation in Greenland 9
   3.2 Legal Framework 10
4 BRIEF DESCRIPTION OF THE PROJECT 14
   4.1 The Draft for the Terms of Reference from July 2011 14
   4.2 Current Project Brief (Scenario 2) 15
      4.2.1 The Mine 17
      4.2.2 The Processing Plant 17
      4.2.3 The Tailings Storage Facility 18
      4.2.4 The Port 18
      4.2.5 The Accommodation 18
      4.2.6 Other Infrastructures 18
      4.2.7 Expected Workforce 19
   4.3 Alternative Case (Scenario 1) 19
5 THE SOCIAL IMPACT ASSESSMENT 21
   5.1 The Social Impact Assessment - the process 21
   5.2 What are Social Impacts? 22
   5.3 Scoping Phase 23
   5.4 Study Area and Temporal Boundaries 25
6 KEY SOCIAL ISSUES TO BE ADDRESSED 26
7 SIA METHODOLOGIES 28
   7.1 Baseline Studies 28
   7.2 Data Collection and Research from Primary Sources 28
      7.2.1 Qualitative 28
      7.2.2 Quantitative 29
      7.2.3 Traditional Living Conditions in South Greenland 29
      7.2.4 Infrastructure Requirements 29
      7.2.5 Detailed Local Use Study of the Impact Area 30
      7.2.6 A Health Study 30
      7.2.7 Strategic Impact Analysis 31
   7.3 Impact Analysis Methodologies 31
8 REPORTING FORMAT OF THE SIA REPORT 32
9 STAKEHOLDERS IDENTIFIED FOR THE KVANEFJELD MULTI-ELEMENT PROJECT 33
10 STAKEHOLDER ENGAGEMENT PLAN FOR THE KVANEFJELD MULTI-ELEMENT PROJECT 36
LIST OF FIGURES

Figure 2.1   An overview of the Narsaq Peninsula 5
Figure 2.2   An overview of southern Greenland 7
Figure 4.1   Scenario East 14
Figure 4.2   Scenario West 15
Figure 4.3   Layout for Scenario 2 16
Figure 4.4   Flow Diagram Scenario 2 17
Figure 4.6   Flow Diagram Scenario 1 21

LIST OF TABLES

Table 9.1   List of stakeholders for the Kvanefjeld Multi-Element Project 33
Table 9.2   List of invitees and list of participants for the 2013 workshops 35
INTRODUCTION

1.1 The SIA Process

By the end of 2010 Greenland Minerals and Energy (“GME”) Ltd began to conduct feasibility studies into the Kvanefjeld Multi-Element Project (“Kvanefjeld”, “the Project”). The feasibility studies and a Social Impact Assessment (“SIA”) for Kvanefjeld, are among others a pre-requisite for obtaining an Exploitation Permit.


In February 2015 a new authority structure related to the mineral resource area was announced. The following three authorities are responsible for the administration of the mineral resource area:

1) The Ministry of Mineral Resources (MRR)
2) The Ministry of Industry, Labour and Trade (MILT)
3) The Environment Agency for the Mineral Resources Activities (EAMRA)

The Ministry of Mineral Resources and the underlying Mineral Licence and Safety Authority (MLSA - former BMP) are responsible for the licence administration, technical and geological matters.

The Ministry of Industry, Labour and Trade (MILT) is authority for issues concerning Industry and Labour policy including social impact assessment (SIA) and Impact Benefit Agreements (IBA) for mineral resources and similar related socio economic issues. Furthermore, the MILT is the administrative body under the Government of Greenland, which cooperates with the Ministry of Foreign Affairs of Denmark, the Ministry of Business and Growth (Denmark) and International bodies such as the International Atomic Energy Agency (IAEA), when it comes to preventing the spread of nuclear weapons and promoting cooperation in the peaceful uses of nuclear energy. The cooperation between the MILT and the two aforementioned Danish ministries are done in accordance with how the fields of the responsibility are transferred pursuant to the Act on Greenland Self-Government.

The Environment Agency for the Mineral Resources Activities (EAMRA) is the administrative authority for environmental matters relating to mineral resources activities, including protection of the environment and nature, environmental liability and environmental impact assessments.

A SIA is required to identify and analyse the potential social impacts of any proposed mining activities. The SIA to be prepared for the Kvanefjeld project will:

- Identify and analyse social impacts;
- Recommend initiatives to build on opportunities;
- Help to mitigate adverse social impacts;
- Help to preserve cultural values and traditions; and
- Help to realize sustainable development opportunities.

According to the Guidelines (2009), the requirements of an SIA are to:

- Engage all relevant stakeholders in consultations and public hearings;
• Provide a detailed description and analysis of the social pre-project baseline situation as a basis for development, mitigation and future monitoring;
• Provide an assessment based on collected baseline data to identify both positive and negative social impacts at both local and national level;
• Optimize positive impacts and mitigate negative impacts from the mining activities throughout the project lifetime; and
• Develop a Benefit and Impact Plan (BIP) for implementation of the Impact Benefit Agreement (IBA).

The purpose of this document, which has been prepared by Grontmij on behalf of GME, is to describe the proposed contents of the Kvanefjeld SIA and to provide the MILT with information about the planned approach for undertaking the SIA process.

A number of other studies and assessments, for example an Environmental Impact Assessment ("EIA") and a Bankable Feasibility Study, will be carried out during 2015 in order to finalise the design and prepare for application for the permits and licences that will be required to develop the Project.

1.2 The Project

In 2007, Greenland Minerals and Energy (GME) A/S acquired the licence to explore the Kvanefjeld project area. GME A/S is a subsidiary of Greenland Minerals and Energy Ltd, an Australian company listed on the Australian Securities Exchange. Greenland Minerals and Energy Ltd owns 100% of the shares in GME A/S.

The Project area is located in South Greenland approximately 10 km from Narsaq and approximately 35 Km from Narsarsuaq. The main commodities of interest in the Kvanefjeld ore-body are rare earths elements (REEs). There are also sufficient levels of uranium and zinc in the ore body to produce commercially viable by-products.

The Project includes the development of an open pit mine, a processing plant, a port, mine accommodation, tailings facility and roads connecting the parts of the project.

1.3 Scoping Workshops

The first step in the preparation of an SIA is referred to as the scoping phase.

As the public should be involved throughout the SIA process and informed continuously as the Project moves through the development phase and into production, stakeholders were consulted as part of the scoping phase.

a. Initial Scoping Phase: (up to July 2011)

As a part of the initial scoping phase four stakeholder workshops were held in Greenland:

• On 30 March in Qaqortoq;
• On 31 March in Narsaq; and
• On 4 and 5 April in Nuuk.

The objectives of these workshops were to present the Project to participants and to receive input from the stakeholders on issues to be covered in the SIA, and EIA, processes.

The key findings from the workshops were presented to the BMP in Nuuk on 7 April in 2011.
b. **Developments since July 2011**

In 2013 GME commenced an additional round of key stakeholder consultation in order to assess an alternative option for the project, namely only constructing a mine and mineral concentrator in Greenland and relocating the hydrometallurgical refinery for separating the uranium and REO mixed carbonate off-shore.

In August 2013 two workshops were held with Government Institutions to present an alternative project design, present the status of the EIA/SIA processes and to receive input to the EIA/ SIA processes based on the alternative project design.

Since August 2013, GME has conducted a number of constructive and informative workshops with representatives of the Mining Licence and Safety Authority (MLSA), the Ministry of Industry & Mineral Resources (Now the Ministry of Industry, Labour and Trade), the Environmental Agency for the Mineral Resources Area (EAMRA) and the Kommune Kujalleq, to discuss the various development options available. This is discussed in detail in Section 2: Scoping and Social Impact Study Plan.

1.4 **The Terms of Reference (“ToR”)**

In July 2011, after extensive consultation GME drafted the first version of the Terms of Reference for the Environmental Impact Assessment (EIA) and for the Social Impact Assessment (SIA).

In the three years since, as further information became available on the design, location and size of the Kvanefjeld Project (See section 4.2), additional workshops and meetings have been held with key stakeholders. Furthermore an amendment to the Mineral Resource Act in 2014 implied that all projects, which are assumed to have a significant impact on the social conditions, have to submit a Set of Terms of Reference (“ToR”) for public review and subsequently obtain approval. Due to the availability of further information on design, location etc., and due to an amendment of the Mineral Resource Act, the Draft for the Terms of Reference from 2011 needed to be updated. On a general level, the present ToR therefore reflect the latest understanding of or changes to the Project (including the above mentioned alternative project design).

The **Draft for the Updated Terms of Reference** for the social impact assessment has been subject to 35 days of public consultation (See Part 18a in the Mineral Resource Act). The public consultation was carried through from late August to early October in 2014. The comments from the consultation responses issued during the consultation period in 2014 were collected in a **White Paper**.

In the first half of 2015 GME revised the Terms of Reference based on the aforementioned consultation responses and the White Paper (see Naalakkersuisut.gl). Subsequently GME submitted the **White Paper as well as the Revised Terms of Reference** for approval.

This revised and subsequently approved **Terms of Reference** (October 2015) for the SIA of the Kvanefjeld project therefore incorporate the results of the original scoping phase and the outcomes of the most recent stakeholder engagement phase. It contains a summary of studies completed to date and an updated plan for the preparation of the SIA. Comments and input from the stakeholders received during the workshops and public review have been incorporated into this version of the ToR, which were submitted for approval in October 2015.
2 SCOPING AND SOCIAL IMPACT STUDY PLAN

As mentioned in the previous section and according to Part 18a in the Mineral Resource Act, then the applicant to a project, which is assumed to have a significant impact on the social conditions, must submit a Project Description or a set of Terms of Reference for the Social Impact Assessment Process. This shall include a detailed plan for the SIA process together with plans for social studies.

2.1 The Draft for the Terms of Reference July 2011

In February 2011, public meetings were held in the southern Greenland towns of Narsaq, Qaqortoq and Nanortalik to advise the general public of the process to scope the terms of reference for the EIA and SIA. Then through early April a series of public meetings and stakeholder workshops were held in Greenland’s capital, Nuuk, along with Narsaq and Qaqortoq; the main two towns of southern Greenland that are in close proximity to the Kvanefjeld project area. These events were followed by an Open Day in Qaqortoq, and public meetings in Narsaq and Nanortalik in early June. The June meetings provided the opportunity for the Company to provide an overview to the public on the outcomes of the stakeholder workshops, and the preferred development scenario options to be evaluated.

The workshops held in Nuuk in June were attended by representatives from a range of government departments including Finance; Health; Social Affairs; Fishing, Hunting and Agriculture; Business and Workforce; Internal Affairs, Nature and the Environment; Culture Education and Science; the National Museum; Institute of Natural Resources; and the National Association of municipalities. The Nuuk workshops were also attended by representatives from the Employees and Employers Unions, and the Fisherman and Hunters Association.

The workshops held in the south Greenland townships of Narsaq and Qaqortoq were attended by a greater proportion of local non-government organisation groups in addition to local government representatives. Local government representation included the Mayors Department, Social Services and Finances. Non-government representation included the Women’s and Elders Associations, along with the Sheep farmers, Environmental, Local Trade, and Tourist Associations.

The workshops provided a forum for Company representatives to present on the status and future plans for the Kvanefjeld project, which was followed by in-depth discussions in regard to the scope and coverage of both the EIA and SIA.

2.2 Developments since July 2011

Since 2011 GME has concluded a number of work programs in Greenland that contribute to feasibility studies and environmental and social impact assessments on the Kvanefjeld project.

The work programs undertaken included:

- environmental baseline monitoring, building on data gathered in previous years;
- background radiation monitoring;
- geological and geotechnical mapping in potential infrastructure locations;
- ongoing stakeholder engagement that included presentations to the smaller settlements outside the main townships of south Greenland;
- workshops with representatives from the MRA and other key stakeholder groups to review the requirements and scope of an exploitation license application.
a. Environmental Baseline Studies

GME has been conducting extensive environmental baseline studies in the Kvanefjeld project area for several years, as a basis to evaluate the potential environmental impacts of a mining operation. The baseline studies provide an indication of the natural chemistry of the broader project area, and the background concentrations of many chemical elements in soil, water, dust and biological matter. The Ilimaussaq Alkaline Complex is the geological entity that hosts defined mineral resources, and is renowned for its unusual minerals and chemistry. Rocks of the Ilimaussaq Complex are actively eroded into the Narsaq valley and surrounding areas, resulting in naturally elevated levels of a number of trace elements (Figure 2.1).

The environmental baseline studies have been conducted in conjunction with Orbicon, GME’s primary environmental consultant. In 2013 a botanical survey was completed and marine biota along the fjord at the base of the Narsaq valley were sampled for analysis of ecotoxicological and radioactivate components. Freshwater and stream sediment sampling stations were revisited to build on data gathered in previous years, with samples also to be analysed for ecotoxicology and radioactivity. Terrestrial sampling stations were also revisited with samples of both soils and lichens collected. The baseline sampling was repeated in 2014.

![Figure 2.1](image)

**Figure 2.1** An overview of the Narsaq Peninsula, south Greenland, and the broader Kvanefjeld project area. The Ilimaussaq Complex is comprised of extremely alkaline and unusual rock types that have been actively eroded into the surrounding environment. JORC code mineral resources have been established at Kvanefjeld, Sørensen and Zone 3.

b. Background Radiation Monitoring

Comprehensive background radiation monitoring was also undertaken in the broader project area along with the town of Narsaq, and builds on data gathered over several years.
Short term (several days) passive monitoring of radon and thoron was conducted and long term (three month) monitoring devices will be collected sequentially over the coming months. Water and soil samples were also collected for radionuclide analyses. High volume air samplers have recently been installed for the purpose of dust and air monitoring.

A gamma radiation survey was also conducted in 2013 to repeat the surveys carried out in previous years. New additional points in the Narsaq valley were included to provide more detailed coverage from the town of Narsaq to where ore material outcrops on the Kvanefjeld plateau.

c. Geotechnical Mapping

Geological and geotechnical mapping programs were undertaken in areas that are currently being investigated as potential infrastructure sites. These programs set out to assess foundation conditions including rock and soil types, as well as identifying potential geohazards and areas that require further geotechnical drilling. The outcomes provide important information to support the selection of infrastructure locations.

d. Stakeholder Engagement Program

GME has maintained an active stakeholder engagement program in relation to the Kvanefjeld project since 2008. This has primarily focussed on participating in community hall meetings in the main townships of south Greenland, which includes Narsaq, Qaqortoq, and Nanortalik. The aim of these meetings is to provide updates on the Kvanefjeld project and potential development scenarios, and importantly to identify the key areas of interest from the local populace. These forums provide the opportunity for local stakeholders to put forward questions, voice concerns and identify areas where they would like further information.

In south Greenland, the majority of the populace live in the three major towns, however, a considerable proportion lives in settlements outside of these townships. In August 2013, GME personnel undertook a tour of these regional settlements to present overviews of the Kvanefjeld project, and to provide a forum in which people could put forward questions. The settlement tour was aimed to ensure that all local stakeholders in south Greenland are included in the ongoing dialogue surrounding the potential development of the Kvanefjeld project.

Eight settlements were visited where presentations were made and followed by informal discussions (Figure 2.2). The presentations focussed on the potential development scenarios for the Kvanefjeld project, and the work programs involved in the environmental and social impact assessments. The meetings were all well attended, with the most frequently asked questions focussed on employment opportunities, and the environmental and social impacts.
Figure 2.2 An overview of southern Greenland highlighting the three major towns of Qaqortoq, Narsaq and Nanortalik, and the communities visited on GME’s recent settlement tour. The Kvanefjeld project is located approximately 10km to the northeast of Narsaq.

2.3 Status July 2014

GME has since 2014 been working on economic calculations of the costs of carrying our processing wholly or partly in Greenland as opposed to abroad.

The MRA has advised that it follows from the section 18(3) of the Mineral Resources Act that the extent to which the licensee must process exploited mineral resources in Greenland may be laid down in a licence.

In order to be able to make this specific assessment about the possibility of carrying out chemical processing in Greenland, the different scenarios should be clarified in the application material, including the EIA and SIA reports and in the Terms of Reference.

After extensive consultation, GME and the MRA have concluded that the Terms of Reference should consider the following three development scenarios:
Table 2.1 Development Scenarios Considered

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Extent of processing in Greenland</th>
<th>Jobs in and outside Greenland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario 1</td>
<td><strong>Mechanical processing (concentrator):</strong> The ore called steenstrupine (REE+uranium) and zinc is ground and the two mineral phases are separated into two concentrates. REE and uranium are at this stage forming part of the same mineral (steenstrupine). If this is sold, both REE and uranium are sold at the same time. The zinc concentrate can be sold instantly.</td>
<td>1,000 jobs during the construction phase (primarily from abroad) and around 458 jobs during the operational phase of which 134 will be locals and 73 from the rest of Greenland and 251 from abroad.</td>
</tr>
<tr>
<td>Scenario 2</td>
<td><strong>Chemical processing (refinery):</strong> REE and uranium are chemically separated and become two products. The uranium is further chemically processed into a uranium product called yellowcake. All sale of yellowcake is subject to export control with international regulations. The REE product is now a total rare earth oxide (TREO) A zinc concentrate is also produced.</td>
<td>Up to 1171 jobs during the construction phase (primarily from abroad) and around 787 jobs during the operational phase). (numbers are from the latest Feasibility Study).</td>
</tr>
<tr>
<td>Scenario 3</td>
<td>Through additional chemical processing the TREO is refined into a product where first the light and then the heavy REE is separated from each other, if this has not already taken place in Scenario 2. The individual REE will through additional chemical process be segregated into a number of REE elements and will be sold.</td>
<td>The number of jobs is unknown at this point, but the figure is, other things being equal, higher than the 787 jobs stated in Scenario 2.</td>
</tr>
</tbody>
</table>

The Ministry of Industry and Mineral Resources (Now the Ministry of Industry, Labour and Trade) is of the immediate opinion that the processing requirement in Greenland would naturally include Scenario 1 and 2. However, there will be a need in relation to Scenario 3 for a sensitivity analysis in order to make, on an equal footing with Scenario 1 and Scenario 2, an informed decision as well to assess the socioeconomic and environmental effects.
3 REGULATORY FRAMEWORK

3.1 The Political Situation in Greenland

The Act on Greenland Self-Government was granted to Greenland on June 21, 2009 and was an extension of powers enacted in the Home Rule act of 1979. Through the Home Rule and Self-Government Acts Greenland has the right to elect its own parliament and government, the latter having sovereignty and administration over the areas mentioned in the Self-Government Act such as education, health, fisheries, environment, climate and mineral resources from the 1st of January 2010. Some of the achievements of the Self-Government Act (2009) were the recognition of Kalaallit (Greenlanders) as people, in international law, the opportunity for Greenland to become an independent state, as well as the opportunity to take on the jurisdiction of more areas (such as mineral resources and justice affairs).

Greenland is a part of the Danish Realm. The influence of the Danish authorities in Greenland has decreased since 1979 when the Home Rule was introduced. With the inception of the Self-Government Act there is the possibility that Greenland will take over the jurisdiction on more areas, however these areas are still under Danish jurisdiction:

- Justice affairs, including police, criminal procedures and the courts of law
- Defence and National security
- Financial sectors and monetary system e.g. the currency used in Greenland is Danish Kroner DKK
- Civil right law e.g. family and succession, citizenship matters etc.
- Foreign affairs

The Greenlandic Parliament, Inatsisartut (the legislative power and assembly), is put together by 31 members elected by Greenlandic people for a four-year term gathers in sessions twice a year. A Premier is elected by Inatsisartut. The Greenlandic Cabinet is put together to form nine ministries by the elected Premier. The ministries, Naalakkersuisut, form departments which are run all year round. Inatsisartut adopts laws and appropriations that Naalakkersuisut must conform to and also supervises Naalakkersuisut’s activities (http://en.inatsisartut.gl/brochure.aspx).

In 2009 18 municipalities were merged into 4 large municipalities; Qaasuitsup Kommunia, Qeqqata Kommunia, Kommuneqarfik Sermersooq, and Kommune Kujalleq. The municipalities have these following fields of responsibilities: Culture and education, social and health, economy and taxes, engineering, housing and environment (www.sermersooq.gl and www.kanukoka.gl).

Narsaq is part of Kommune Kujalleq.

Greenland is a member of the Nordic Council and Nordic Council of Ministries. This membership, together with other Nordic Countries and autonomous regions, facilitates parliamentary cooperation among the members particularly in relation to nature and environmental issues.

The Nordic Council has prepared an Environmental Action Plan, 2013-2018 which focuses greater resource efficiency and reduced environmental impact through inclusive green development, climate change and air pollution, protection and utilisation of biological diversity, and chemicals with adverse impact on human health and the environment.
3.2 Legal Framework

The main legislation under which this project will be developed and operate will be the Greenland Parliament Act no. 7 of 7 December 2009 (the Mineral Resources Act) which came into force on January 1, 2010. This Act regulates mineral resource activities. Amendments to the Mineral Resources Act were introduced in 2012, Greenland Parliament Act No 26 of December 18, effective 1 January 2013, in 2014 Greenland Parliament Act No 6 of June 8, effective 1 July 2014 and in 2015 Greenland Parliament Act No 16 of June 3, effective 1 May 2015.

a. Required licences, approvals and agreements

For development of the project GME has to obtain the following legal license and approvals:

- An exploitation licence pursuant to section 16 in the Mineral Resource Act
- An approval of an exploitation and abandonment plan pursuant to section 19 and section 43 in the Mineral Resource Act
- An approval of activities pursuant to section 86 in the Mineral Resource Act

The issuance of exploitation licence is prerequisite for obtaining any of the above mentioned approvals, and the approval of the activity plan cannot be granted before the approval of the exploitation and abandonment plan. GME has presently not obtained any of the above mentioned licence and approvals.

b. Required documents that GME has to submit for approval

To obtain the above mentioned licence and approvals the GME has among others to submit and/or sign the following documents:

i. A Bankable Feasibility Study
ii. Terms of Reference for the content of the Social Impact Assessment Report
iii. Terms of Reference for the content of the Environmental Impact Assessment report
iv. A White Book for the ToRs, which includes written responses submitted during the pre-consultation period (see section 5)
v. A Social Impact Assessment Report (see section 5)
vi. An Environment Impact Assessment Report
vii. A White Book for the Reports, which includes written responses submitted during the consultation period as well as comments from the consultation meetings (see section 5)
viii. An Impact Benefit Agreement (IBA)
ix. A report concerning a navigational safety investigation
x. An exploitation and abandonment plan
xi. An activity plan / A description of activity

C. Significant provisions in the Mineral Resource Act regarding social sustainability

According to the Mineral Resource Act section 78 then if any mineral resource activity is assumed to have a significant impact on social conditions, a licence for and approval of the activity can only be granted, when a social impact assessment (SIA) has been made of the performance of the activity and a SIA Report has been approved by the Greenland Government.
Exploiting minerals through constructing and operating a mine are assumed to have a significant impact on social conditions. The GME will therefore not be able to apply for an exploitation licence without conducting a social impact assessment and submit a Social Impact Assessment Report. The process for conducting a social impact assessment is further described in section 5 “THE SOCIAL IMPACT ASSESSMENT”.

The purpose of the Social Impact Assessment Report is among others to give the cabinet (Naalakkersuisut) an informed basis on which they in the exploitation licence can lay down the extent to which GME must use

- Greenland Labour - section 18 (1) in the Mineral Resource Act
- Greenland Enterprises - section 18 (2) in the Mineral Resource Act
- Processing of minerals in Greenland - section 18 (3) in the Mineral Resource Act

Furthermore the report will constitute the basis for negotiating an Impact Benefit Agreement between the Government of Greenland, GME and the municipality of South Greenland, Kommune Kujalleq (see section 5.1 below).

d. Other relevant Greenlandic legislation

Includes among others:

- The Large Scale Act (Greenland Parliament Act no. 25 of 18 December 2012 on construction for large scale projects);
- Conditions for Employment (Act no. 1048 of October 262005 on Labour and working environment in Greenland);
- Orders on Health and Safety relevant to the project;
- Immigration (Regulation no. 150 of February 232001 (Danish regulation)) and
- Greenland Parliament Act No. 4 of 4 June 2012 on Greenland Oil Spill Response A/S

Furthermore it is expected that a range of relevant bills and motions will be put before parliament during the autumn session 2015. The list of these proposals is expected to appear on the Greenlandic parliament’s webpage (http://www.inatsisartut.gl) in September 2015. These acts will be included at the SIA-report, which will be subject for 8 weeks of public consultation (see section 5.1). A part of these proposals will be related to the implementation of some of the below mentioned international treaties and conventions.

In addition to the national regulations, the following international treaties and conventions will when relevant be included in the assessment;

e. UN conventions and resolutions:

- Treaty on the Non-Proliferation of Nuclear Weapons (NPT)
- Convention on Nuclear Terrorism
- UN Recommendations on Transport of Dangerous Goods;
- Radiation Protection Convention (ILO), 1960 (No. 115)
• International regulations and Codes of Practice concerning maritime transport of dangerous goods including Conventions (e.g. SOLAS 1974, MARPOL 73/78 and STCW Conventions);

f. International Atomic Energy Agency Conventions:
• The Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
• Convention on Nuclear Safety
• Convention on the Physical Protection of Nuclear Material (including amendments)

Finally a range of international guidelines and standards, including the below mentioned International Atomic Energy Agency Safety Standard will to a certain extent be included in the assessment:

International Atomic Energy Agency Safety Standard
According to the overview of Safety Standard presented in “Long term structure of the IAEA safety standards and current status” of March 2015 http://www-ns.iaea.org/committees/files/CSS/205/status.pdf is below listed all general Safety Standards applicable to all facilities and activities and to Mining and Milling.

General Safety Standards (applicable to all facilities and activities)
GSR-R-3 The Management System for Facilities and Activities (2006)
GSR Part 3 Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards (2014)
GSR Part 4 Safety Assessment for Facilities and Activities (2009)
GSR Part 6 Decommissioning of Facilities (2014)
GSR-R-2 Preparedness and Response for a Nuclear or Radiological Emergency (2002)
GSG-4 Use of External Experts by the Regulatory Body (2013)
GSG-2.1 Arrangements for Preparedness for a Nuclear or Radiological Emergency (2007)
GSG-2 Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency (2011)
GSG-3.1 Application of the Management System for Facilities and Activities (2006)
GSG-3.2 The Management System for Technical Services in Radiation Safety (2008)
GSG-1 Classification of Radioactive Waste (2009)
RS-G-1.1 Occupational Radiation Protection (1999)
RS-G-1.2 Assessment of Occupational Exposure Due to Intakes of Radionuclides (1999)
RS-G-1.3 Assessment of Occupational Exposure Due to External Sources of Radiation (1999)
RS-G-1.4 Building Competence in Radiation Protection and the Safe Use of Radiation Sources (2001)
RS-G-1.8 Environmental and Source Monitoring for Purposes of Radiation Protection (2005)
RS-G-1.9 Categorization of Radioactive Sources (2005)
WS-G-2.3 Regulatory Control of Radioactive Discharges to the Environment (2000) (under revision)
WS-G-5.1 Release of Sites from Regulatory Control on Termination of Practices (2006)

**Mining and Milling**

The OECD Nuclear Energy Agency (NEA):

- Managing Environmental and Health Impacts of Uranium Mining. OECD Nuclear Energy Agency (NEA), 2014
4 BRIEF DESCRIPTION OF THE PROJECT

4.1 The Draft for the Terms of Reference from July 2011

In the Draft for the Terms of Reference from 2011 GME had proposed to develop Scenario 2, and the following project brief was provided.

The Project will consist of an open pit mine, a processing plant, a port, mine accommodation, a tailings facility and roads connecting the parts of the project.

GME is considering two potential options for the location of the accommodation facility, processing plant and port. One option is construction of the processing facilities within the Narsaq valley and a new port immediately to the north of Narsaq in Narsap Ilua (West). The other option is construction of processing facilities approximately 15 to 20 km northeast of Narsaq and a new port to the east of Illunnguaq opposite Nunarsarnaq (East). Figure 4.1 and Figure 4.2 illustrates the two options (West and East).

Significant further investigation and community consultation and engagement will be required before the preferred location of these facilities can be identified.
The main components of the project are:

<table>
<thead>
<tr>
<th><strong>The mine</strong></th>
<th>An open pit mine, from which the ore is extracted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The processing plant</strong></td>
<td>Where metals are extracted from the ore using hydrometallurgical techniques to produce saleable products</td>
</tr>
<tr>
<td><strong>The tailings facility</strong></td>
<td>Where residues from the processing plant are securely stored</td>
</tr>
<tr>
<td><strong>The port</strong></td>
<td>For ships delivering supplies to the mine and transporting products from Greenland to the Company’s customers</td>
</tr>
<tr>
<td><strong>The accommodation</strong></td>
<td>For mine workers when working at the mine</td>
</tr>
<tr>
<td><strong>Associated infrastructure</strong></td>
<td>To ensure power supplies, effective communications and safe access to the mine</td>
</tr>
</tbody>
</table>

### 4.2 Current Project Brief (Scenario 2)

Based on these Terms of Reference, GME proposes to develop Scenario 2 (see table 2.1) on location west as the preferred development plan. Scenario 1, the mine and concentrator only, will be addressed as an alternative case in the SIA. A sensitivity analysis will be presented on Scenario 3, which considers further chemical refining of the TREO into separate light and heavy rare earth products.
The current development plan included in these Terms of Reference, differs from the project brief presented in the Terms of Reference, which were drafted in 201.

The key differences from the draft in 2011 are highlighted below:

- After extensive community and key stakeholder consultation the preferred location for the Project’s accommodation, port and processing plant has been decide to be in Narsaq valley (referred to above as location West);
- The mining rate have been reduced from 7.2 - 10.8 million tonnes per year down to 3.0 million tonnes per year;
- The process flowsheet has been modified and the whole of ore:pressure alkaline leach process has been replaced by a mineral beneficiation:atmospheric acid leach stage;
- Labour requirements for both the construction phase and the operational phase have been revised upwards;
- The preferred options for the location of the residue storage facilities have been identified.

A brief, non-technical description of Scenario 2 is provided below and the layout is presented in Figure 4.3:

*Figure 4.3 Layout for Scenario 2 with Western location. The extent of the waste rock dump and tailings facilities in the figure is after 39 years of mining*
4.2.1 The Mine

The plan is to locate the mine at Kvanefjeld on the Ilimaussaq Intrusive Complex approximately 10km from the town of Narsaq and approximately 35 km from Narsarsuaq in southern Greenland.

4.2.2 The Processing Plant

The processing plant will be located at the upper end of the Narsaq valley. It is currently expected that the plant will operate for 365 days per year and it is proposed that the plant will be designed to treat 3.0 million tonnes per year of ore.

The key advantage to the Kvanefjeld project is the unique rare earth and uranium-bearing minerals and the purpose of the processing plant is to extract these products from these minerals. These minerals can be effectively beneficiated into a low-mass, high value concentrate, then leached with conventional acidic solutions under atmospheric conditions to achieve particularly high extraction levels of both heavy rare earths and uranium. This presents a simple process route with low technical risk that effectively removes uranium from the ore and allows for the subsequent concentration, separation and recovery of rare earth elements in a form that can be sold.

It is currently proposed that the processing plant will consist of sections for crushing, grinding, flotation, leaching, filtration, uranium extraction and for the concentration of rare earth elements.

Water will be used in the processing plant and after it has passed through the plant it will be treated before either being recycled back to the plant or returned to the environment.
It is planned to place the saleable products in drums and containerise them at the processing plant and to transport the containers of drummed product from the processing plant to the port on trucks. The plan will then be to ship them to customers around the world.

4.2.3 The Tailings Storage Facility

The material left over once it has passed through the processing plant is called tailings (a mixture of fine crushed rocks and water). The majority of the sulphides, the uranium, the thorium, the fluorine and the rare earth elements will all have been removed or stabilised by this stage in the process.

The tailings storage facility will store the wet tailings from the flotation process. A number of alternative locations for the tailings storage facility, e.g. valley deposition, lake deposition and deposition in the fjord system/deep sea, are being evaluated. The location of the tailings storage facility will be influenced by environmental considerations and by the chemistry of the tailings. The current preferred options are to either use the lake Taseq or to locate the facility adjacent to the mine waste stockpile.

In addition to the mineral processing plant tailings, other waste streams may be generated and these will need to be recovered, treated and recycled if practical to do so. Otherwise they can be diverted to the tailings storage facility. While not all of these potential waste streams have yet been identified, they will include, for example:

- Residues from REE acid extraction and precipitation circuit;
- Drainage from the mine and waste rock stockpile.

4.2.4 The Port

The port facilities will consist of a wharf for ships up to 32,000 DWT (Dead Weight Tonnes) and a service wharf for receiving equipment and products with a smaller capacity. The port will also have storage facilities for saleable products and ship loading facilities. The GME is considering alternative locations for the port within Narsap Ilua.

4.2.5 The Accommodation

The accommodation will include a canteen, a laundry and opportunities for leisure and spare time activities. The GME is considering alternative locations for accommodation, either within the town planning boundary or further up the valley.

4.2.6 Other Infrastructures

The main elements of infrastructure to be provided by the project will be:

- Roads from the port to the mine, processing plant and other items of infrastructure
- A source of power, fossil fuel fired initially and then hydro-power
- Water supply and storage for the processing plant, potable water and fire protection
- Buildings and support facilities including accommodation
- A helipad for staff and emergency medical evacuation
- Heating and heat recovery
- An IT and telecommunication system
- Sewage and waste management
In relation to the above mentioned power source it has been assessed that a hydropower plant in the initial stage of the project will not make it economically feasible to extract the products of interest. When the project has reached a positive cash flow and income a hydropower plant will be considered and eventually planned to replace the fossil fuel based power supply. The power plant will be placed near the production area up the valley.

4.2.7 Expected Workforce

During the construction phase, GME expects a workforce up to 1171 people at the maximum. The construction period is expected to run for approximately 2 years.

During operations, GME estimates a total workforce of 787 people and the aim is that 3/5 shall be recruited locally from either within Narsaq or from the rest of Greenland. The optimal rotation scheme(s) will be discussed and agreed during the SIA and the IBA process in order to maximise the amount of local workforce.

4.3 Alternative Case (Scenario 1)

In 2013 an alternative project design was developed by GME. This project design includes the development of an open pit mine, a concentrator, a port, mine accommodation, tailings facility and roads connecting the parts of the project, and is referred to as Scenario 1.

The original project layout (Scenario 2) included a refinery plant near to the concentrator facility and open pit mine. The decision to consider locating the refinery offshore or remotely at another location in Greenland was a major amendment resulting from stakeholder engagement, assessment of social and environmental benefits, as well as economic viability. Further consultation with stakeholders and local authorities will help to determine the final location of the Refinery.

The current proposed site layout breaks the project into three main areas, connected by process infrastructure and services.

The first area would be co-located at the Kvanefjeld mine site at the top of Narsaq Valley and would consist of the crushing, milling and flotation circuit (the concentrator).

The second area is the Port and mineral concentrate packaging facility situated at Narsap Ilua. Concentrate from the first location would be directed here via a pipeline, and the Port would be accessed from Narsaq by a 2.5km sealed road.

The third area is the new Accommodation Village for fly in-fly out (FIFO) employees, and would be situated on the northern outskirts of the Narsaq township.

These are shown in Figure 4.5
It is planned to treat the Kvanefjeld ore by using a conventional froth flotation process to beneficiate the ore and to produce two different mineral concentrates. The first flotation stage will produce a high grade zinc sulphide concentrate, followed by a second flotation stage which produces a phosphate mineral concentrate.

The gangue minerals left behind after flotation will be dewatered and stored in the tailings facility. The recovered water will be recycled back to the concentrator, where it will be treated to remove fluoride as fluorspar (CaF₂), which can be sold, along with the zinc sulphide concentrate, to international customers. A small quantity of excess water will be produced that cannot be recycled back to the concentrator. This water, once treated to remove fluoride, will be returned to the environment at a discharge point adjacent to the concentrator, in Ikersuaq Bredefjord.

The phosphate mineral concentrate which contains both uranium and rare earth minerals, will be pumped via pipeline to the concentrate filtration and packaging plant located adjacent to the port.

The phosphate mineral concentrate is rich in valuable metals. It is expected that this product will be bagged, containerised and transported to an off-shore Refinery. The location of the Refinery is yet to be decided (see Figure 4.6)
It is expected that the plant will operate for 365 days per year and it is proposed that the plant will be designed to treat up to 3.0 million tonnes per year of ore.

5 THE SOCIAL IMPACT ASSESSMENT

5.1 The Social Impact Assessment - the process

a. Prehearing (public review of the Draft for the ToR)
Grontmij has assisted the GME in drafting this document. As mention in section 1.4 then due to an amendment in the Mineral Resource Act in 2014 (see section 3.2), a Draft for the Updated Terms of Reference was subject to 35 days of public consultation from late August to early October in 2014. In the first half of 2015 GME submitted a revised ToR to the MILT. The revision of the Draft for the ToR was based on the content of the consultation responses submitted during the aforementioned consultation period in 2014. The consultation responses have been published on Naalakkersuisut.gl and the significant comments from them have been collected and gathered in a White Paper, which also has been published on Naalakkersuisut.gl.

b. Social Impact Assessment Report
GME will continue to engage suitably experienced and competent advisors to assist, when drafting the Social Impact Assessment Report. External international and local experts will be involved in the analysis of specific matters such as health and economics.

The Guidelines (2009) set out the framework for, the contents of and the minimum level of information required for conducting an SIA.
During the planning and development of the SIA process, a number of references and sources will be considered in order to achieve international mining industry best practices for the SIA. These sources will include, amongst others:

- The International Council on Minerals and Metals (ICMM);
- The International Atomic Energy Agency (IAEA);
- The International Reporting Initiative for Extractive Industries; and
- The International Finance Corporation (“The Equator Principles”).

In addition, knowledge and experience developed in Greenland will be utilised when evaluating and assessing social conditions and the impact of project activities.

The drafting of the Social Impact Assessment Report will be based on a participative approach, involving the stakeholders as much and effectively as possible at all stages of the process. A high degree of communication will be a significant feature of the entire process.


When the Draft for Social Impact Assessment Report has been written and approved for a public review, the Greenland Government will for a period of at least 8 weeks make the Draft for the Social Impact Assessment Report available for public consultation on Naalakkersuisut.gl (see Part 18a in the Mineral Resource Act). During the consultation period the government is according to law obliged to conduct public consultation meetings in towns and villages particularly affected by the project. Furthermore and similar to the process for the ToR, the comments from the stakeholders to the Draft for the SIA Report will be gathered and collected in a White Paper. The white paper shall include the comments raised during the aforementioned consultation meetings. The White Paper will subsequently be used to revise the Draft for the Social Impact Assessment Report.

d. Approval of the revised report and concluding an Impact Benefit Agreement

The Revised Social Impact Assessment Report will afterwards be submitted for approval. The Approved Social Impact Assessment Report will constitute the basis for the negotiations of an Impact Benefit Agreement (IBA). The IBA will be concluded between the government, Kommune Kujalleq (The southern municipality in Greenland) and GME. One but not the only purpose of an IBA is to secure a dialogue between GME, the municipality and not least with the citizens in the region during the life of mine. The IBA will have to be signed before the issuance of an Exploitation Licence.

5.2 What are Social Impacts?

A convenient way of conceptualising social impacts is as changes to one or more of the following:

- People’s way of life – that is, how they live, work, play and interact with one another on a day-to-day basis;
- Their culture – that is, their shared beliefs, customs, values and language or dialect;
- Their community – its cohesion, stability, character, services and facilities;
- Their political systems – the extent to which people are able to participate in decisions that affect their lives, the level of democratisation that is taking place, and the resources provided for this purpose;
- Their environment – the quality of the air and water people use; the availability and quality of the food they eat; the level of hazard or risk, dust and noise they are exposed to; the adequacy of sanitation, their physical safety, and their access to and control over resources;
Their health and wellbeing – health is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity;
Their level of education and the opportunity to develop competences and capacities even further, both within general skills as well as within the mining sector.
Their personal and property rights – particularly whether people are economically affected, or experience personal disadvantage which may include a violation of their civil liberties; and
Their fears and aspirations – their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children.

5.3 Scoping Phase

The initial assessment of the social, and environmental, issues likely to arise from the implementation of the Kvanefjeld Project was first discussed and reported in the “Preliminary Project Strategy – Kvanefjeld Multi-element Project” by Coffey Natural Systems in September 2009.

A second study, the “Socio-economic Desktop Study for the Kvanefjeld Multi-element Project” was carried out by Grontmij Carl Bro in July 2010.

The main social issues (both positive and negative) identified for the project were summarised as follows:

- Effects of land alienation from existing uses that will be required by the project components and ancillary infrastructure;
- Effects on the amenity of Narsaq and surrounding settlements resulting from dust, noise and light emissions from the project area;
- Effects of the project on the water supply for Narsaq township and surrounding settlements;
- Effects on subsistence, artisanal and commercial fishing and hunting (including fish spawning and nursery areas and seal pupping areas);
- Effects on cultural heritage and archaeological sites (including sacred and spiritual places, traditional fishing or hunting campsites, traditional trails and burial grounds);
- Effects on transportation infrastructure and incremental traffic flows (air, land and sea) and transportation risks;
- Effects of the project on local infrastructure, health, education and other government services;
- Opportunities for training, employment and business development during construction, and operations;
- Monetary (such as taxes and royalties) and other benefits (such as improved sanitation and health services) associated with the project;
- Economic multipliers associated with the project, as well as backward and forward economic linkages within Greenland economic sectors that drive economic growth; and
- Improvements in the nation’s balance of trade, infrastructure development, and commercial, employment and educational opportunities.

In March 2011, a Strategic Environmental Assessment workshop was held in Perth, Western Australia. The workshop was attended by representatives of Grontmij and Orbicon and the social and environmental aspects of the project were assessed. The outcome of the workshop formed the basis of a “Project Brief”, which described the project in lay or non-scientific terms.
The next step was to commence the Stakeholder Engagement process. Four stakeholder workshops were conducted:

- On 30 March in Qaqortoq;
- On 31 March in Narsaq; and
- On 4 and 5 April in Nuuk.

Prior to holding the workshops, the approach to the workshops and the list of identified stakeholders were both approved by the BMP.

Invitations to attend the stakeholder meetings were sent to all agreed stakeholders together with the Project Brief. This was done with the objective of promoting more informed participation in the workshops themselves and to provide opportunities for stakeholders to ask clarifying questions of, and to express concerns to, company representatives and SIA consultants during the workshops.

Currently, GME is working with two development options, scenarios 1 and 2. The scoping phase took as its starting point scenario 2 and looked at two layout options (East and West). Stakeholders were invited to discuss opportunities and concerns that they may have had for each.

In 2013 GME commenced an additional round of key stakeholder consultation in order to assess an alternative option for the project, namely Scenario 2.

In August 2013 two workshops were held with Government Institutions to present Scenario 2 and the then status of the EIA/ SIA processes and to receive input to the EIA/ SIA processes based on the alternative project design.

Since August 2013, GME has conducted a number of constructive and informative workshops with representatives of the Mining Licence and Safety Authority (MLSA), the Ministry of Industry & Mineral Resources, the Environmental Agency for the Mineral Resources Area (EAMRA) and the Kommune Kujalleq, to discuss the various development options available.

Additional stakeholders have been identified during the stakeholder workshops in 2013, especially the Police department.

Based on responses from the workshops, common concerns and opportunities were identified. The ToR set out in this document have been developed in part from the responses from the workshops. This feedback has been supplemented from a number of sources including:

- The Guidelines (2009) (BMP);
- ‘Socio-Economic Impact Assessment Guidelines’ (Mackenzie Valley); and

Furthermore, Greenlandic research documents and studies such as SLiCA (Survey of Living Conditions in the Arctic) were used.
5.4 Study Area and Temporal Boundaries

The study will cover the area directly impacted by the mining operations and ancillary facilities and the towns and settlements where the impacts and benefits of employment, business opportunities and developments directly and indirectly created by the project are expected to be more noticeable.

For the baseline study, the information will be processed and analysed at three levels: National, Regional (Kommune Kujalleq) and Local (Narsaq and Qaqortoq).

For the areas of special interest and/or concern within Narsaq, a fourth level baseline study will be conducted with information specific only to Narsaq.

The SIA will cover the following phases of the project:

- Construction phase;
- Operations phase;
- Closure and rehabilitation phase.
6 KEY SOCIAL ISSUES TO BE ADDRESSED

Arising from the scoping exercise, corresponding consultations and feedback, the main issues and concerns have been identified as:

- Integration of workforce from outside Greenland;
- Infrastructure (opportunities for the public and a need to coordinate with public infrastructure plans);
- Sheep farmers (potential conflicts and synergies with existing sheep farmers);
- Access to natural areas of cultural importance use for recreational and livelihood purposes; and
- Concern for pollution created by dust and fluoride.

Amongst other important social and economic issues and key questions that will be addressed during the SIA processes are:

- Activities conducted pursuant to the exploration licence.
- Changes in demography, production systems and livelihood in Narsaq and Qaqortoq;
- Public health and occupational health (including protection against any potential radiation);
- Potential business opportunities and direct benefits of the project (impact/spin off on tourism and shipping);
- Employment opportunities at the project both in short and long term for locals as well as non-locals;
- Education demands and opportunities for all project activities there will take place in Greenland (knowledge transfer and training);
- Potential effects on and potential conflicts with other economic activities
- A description of a procedure for how claims for compensation from local farmers, local commercial hunters and fishermen will be addressed
- Potential business opportunities for local farmers, commercial hunters and commercial fishermen
- Potential impacts on public services and infrastructures;
- Potential social conflicts (competition for jobs, vulnerable groups and lifestyle and culture); and
- Cumulative effects of several issues.

During the workshop in August 2013 the following issues were raised:

- Concerns for public health;
- Concerns for Occupational, Health and Safety;
- Risks and contingency planning;
- Concerns for pressure on public institution (health service, police, general extra administrative burden due to mining of uranium);
- Infrastructure (coordination of public and project infrastructure).

Based on workshops in 2011 and 2013 as well as Guidelines from BMP (2009) and international best practice, the Social Impact Assessment Report will among others contain an assessment of the impact divided into the following aspects:

- National, regional and local economy (including public revenues)
- Public service, sector, plans and infrastructure
- Employment and labour conditions
- Local business opportunities (benefit from local suppliers)
- Potential risks for local business
- Education and training
- Social conditions
- Socio-cultural values
- Health
- Cumulative impacts
7 SIA METHODOLOGIES

7.1 Baseline Studies

Arising from the stakeholder workshops in 2011, four specific studies were identified as being required to obtain information to assess the potential impact and support the identification of mitigation measures and selection of monitoring indicators.

These four studies cover:

- Traditional living conditions in South Greenland;
- Mapping of the infrastructure;
- A Local Use Study focusing on recreational use of the area; and
- A health study based on secondary sources.

All studies have been completed in 2011 apart from the mapping of infrastructure which still await the final project design.

No further baseline studies have been identified due to the concerns raised at the workshops in August 2013.

Apart from these four studies the baseline conditions will provide information on demographic, economic conditions and trends (including local businesses and existing business networks), education, political structures, local organisations, cultural traits, living conditions and other factors that may influence the way in which affected communities respond to anticipated changes brought about by the Project.

If other critical issues are subsequently identified they will be incorporated into the final SIA.

The baseline study will also incorporate a review of reference information and material available in the public domain.

7.2 Data Collection and Research from Primary Sources

Data collection and research from primary sources will incorporate both qualitative and quantitative methods.

7.2.1 Qualitative

Qualitative methods have to do with people’s perceptions, how they view themselves and the world around them.

For larger groups, group meetings and group interviews will be used to develop qualitative information. Focus group meetings and group interviews will be used for smaller groups participating as representatives of larger groups. For these focus group discussions, interview guides and participatory techniques will be used for the collection of information, opinion and perceptions.

Individual interviews with knowledgeable key informants will also be used to collect information and get a better understanding of complex issues and past events.

Information to be collected from focus groups by qualitative methods:

- Land and natural resources use
- Livelihood and cultural change
• Public health and vulnerable groups
• Business opportunities
• Family budget and consumption/expenditure patterns

7.2.2 Quantitative

Where information cannot be found or calculated from secondary sources, or the available data need to be updated, quantitative methods will be used to generate data, mostly at household level, for selected arctic living conditions indicators.

Existing high quality secondary data from recent research studies and older studies like the SLiCA (Survey of Living Conditions in the Arctic), the Mobility Study in Greenland, 2010, will be used. Quantitative collection of data will be compatible with such studies.

7.2.3 Traditional Living Conditions in South Greenland

The integration of the workforce from outside the local region, in particular from outside of Greenland, was raised as a key issue. Therefore it is proposed to use data collected for the SLiCA survey as the basis for generating the information required to assess impacts and propose mitigation measures.

SLiCA contains data from a survey (by interview) of a representative sample of 1200 Greenlandic people. Data was collected from Qaqortoq, Nanortalik and five settlements in the area. This is considered to be representative for the living conditions in South Greenland.

Any review of the requirement to collect any further data will be based on the information contained in the SLiCA survey.

The areas which will be covered in the study on traditional living conditions are:

• Social networks;
• The use and importance of the Greenlandic language;
• Health;
• Housing and living conditions;
• Traditional food;
• Engagement in society;
• Social problems; and
• Safety and security.

7.2.4 Infrastructure Requirements

Both the opportunities provided by the project and the need for coordination of planned infrastructure in the area were identified as key issues.

It is proposed that the SIA contain a detailed assessment of:

• Existing infrastructure in the local area;
• Infrastructure planned in the local area (including the proposal from the Transportation Commission Report, April 2011);
• Infrastructure potentially to be provided by the project (harbour, roads, power supply, water supply etc); and
• Infrastructure needs in the region.
7.2.5 Detailed Local Use Study of the Impact Area

Access to natural areas of cultural importance for use for recreational and livelihood purposes and the potential impact of the Project on local sheep farmers have been identified as key issues.

It is proposed to carry out interviews of the community who use the area for recreational use, the two sheep farmers in the area (illustrated at the maps in figure 1 and 2) as well as Narsaq Museum and the tourist organisations. The study will be conducted in accordance with established scientific methods.

The data collected will be cross-checked and completed with information from secondary sources.

An EIA will also be prepared as part of the studies required for the Project. As part of the EIA, a Local Use Study will be prepared with special focus on the use of the area for hunting, fishing and tourism. The special focus in the SIA on sheep farmers and the use of the area for recreation by the community will require close co-operation between the teams completing the two studies.

7.2.6 A Health Study

The potential impact on health has been identified as a key issue, both with regard to the occupational health and the general health in the community. Specific concerns about the impact of dust and fluoride have been raised.

The health study shall include an estimate for what kind of health incidents that can occur to workers at the mine. The estimation shall be based similar size already developed open mine project in Australia or Canada. The estimation shall also include an overview of the number of the different kinds of health incidents.

First step will be to prepare a health and well being profile with the use of existing data (national and local demographic, social, economic, environmental and health data). The national data will be assessed to determine, where it can be used to identify mitigation measures. Based on the quality of information available, the need to carry out further base line surveys will be assessed.

The community profile to be developed will generally include:

- Prevalence and rates of infectious and chronic diseases;
- Trends in existing health problems;
- Health knowledge, practices and attitudes;
- Health and social care services;
- Nutrition pattern;
- Existing levels of environmental pollution and natural level of radiation;
- Housing conditions;
- Social problems such as drug use and suicide;
- Literacy rates and levels of education;
- Employment and unemployment rates; and
- Existing community concerns and aspirations.

Relevant health information like the “Levevikår, livsstil og helbred - Befolkningsundersøgelse 2005-2009”, Statens Institut for Folkesundhed (Bjerregaard, P. & Aidt E.C) will be used.
7.2.7 Strategic Impact Analysis

Synergies and conflicts with other projects in the area will be evaluated:

- Competition for human resources;
- Competition for use of existing services and infrastructure;
- Access to natural resources and business opportunities.

Synergies and conflicts with other mining projects in Greenland, particularly in terms of education and development of human resources will be also included in the analysis.

7.3 Impact Analysis Methodologies

The potential social impacts, both positive and negative, of the various phase of the Project will be assessed and quantified as far as possible using an Impact Matrix.

The significance of the impacts identified will be evaluated according to the following significance factors:

- **Certainty of impacts**: likelihood of occurrence, level of certainty of its occurrence
- **Extension of the impacts**: geographical range of the impacts, regional “winners” and “losers”?
- **Duration and frequency of impacts**: temporary occurrence of the impacts, (short lasting or permanent?), wide fluctuations that could disrupt the community over time (boom-and bust periods)
- **Period of Manifestation**: the impacts could be noticed immediately or over time by the community

Public concern will also be considered when assessing the significance of the impacts.

An impact matrix will be developed to identify the social impact of the Project and what mitigation measures may need to be implemented to reduce the impact.

Mitigation measures will be determined based on the likelihood and the severity of the impact.
8 REPORTING FORMAT OF THE SIA REPORT

The draft SIA report has to be submitted to MRA in Greenlandic, English and Danish, as stated in the BMP Guidelines (2009), unless otherwise agreed between GME and MRA.

The Table of Contents for the draft SIA Report for the Kvanefjeld Multi-Element Project will be elaborated as per the Guidelines (2009), unless otherwise agreed between GME and BMP:

1. Front page
2. Executive summary
3. Introduction
4. Project description
5. Methodologies
6. Public Participation
7. Analysis of alternative projects proposals
8. Summary of the social baseline conditions
9. Potential impacts and draft Benefit and Impact Plan
   Appendices
   i. Definitions and abbreviations
   ii. Policy, legal and administrative framework
   iii. Social baseline conditions
For this project, the list of stakeholders identified and further completed during the consultations for the scoping phase until 2015 is the following:

### Table 9.1 List of stakeholders for the Kvanefjeld Multi-Element Project (2015)

<table>
<thead>
<tr>
<th>English Description</th>
<th>Greenlandic names</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AUTHORITIES</strong></td>
<td></td>
</tr>
<tr>
<td>MLSA</td>
<td>Aatsitassanut Ikummatissanullu Aqutsisoqarfik</td>
</tr>
<tr>
<td>Ministries in Greenland:</td>
<td></td>
</tr>
<tr>
<td>- Finances</td>
<td>Naalakkersuisoqarfiiit:</td>
</tr>
<tr>
<td>- Mineral Resources</td>
<td>- Aningaasaqarnermut</td>
</tr>
<tr>
<td>- Housing, Building and Infrastructure</td>
<td>- Aatsitassanut Ikummatissanullu</td>
</tr>
<tr>
<td>- Fisheries, Hunting and Agriculture</td>
<td>- Ineqarnermut, Sanaartornermut Attaveqarnermullu</td>
</tr>
<tr>
<td>- Industry, Labour and Trade</td>
<td>- Aalisarnermut, Piniarnermut Nunalerinermullu</td>
</tr>
<tr>
<td>- Family, Equality and Social Welfare</td>
<td>- Inuussutissariosiernermut, Suliffeqarnermut Niuernermullu</td>
</tr>
<tr>
<td>- Health</td>
<td>- Ilaqutariinnermut, Naligiissitaanermut Isumaginninnermullu</td>
</tr>
<tr>
<td>- Education, Culture, Research and Church</td>
<td>- Peqqissutsimut</td>
</tr>
<tr>
<td>- Nature, Environment and Justice</td>
<td>- Ilinniartitaanermut, Kultureqarnermut, Ilisimatusarnermut Ilageeqarnermullu</td>
</tr>
<tr>
<td></td>
<td>- Pinngortitamut, Avatangiisinut Inatsisinillu Atuutsitsinermut</td>
</tr>
<tr>
<td><strong>Municipality – Kommune Kujalleq:</strong></td>
<td></td>
</tr>
<tr>
<td>- The Mayor’s department (Qaqortoq)</td>
<td>Kommune Kujalleq:</td>
</tr>
<tr>
<td>- Industry and labour market, (Narsaq)</td>
<td>- Borgmesterip allaffia</td>
</tr>
<tr>
<td>- Culture, leisure and prevention (Narsaq)</td>
<td>- Inuussutissariosiernermut Suliffeqarnermullu Ingerlatsivik</td>
</tr>
<tr>
<td>- Prevention consultant (Narsaq)</td>
<td>- Kulturi, Sunngiffik Pitsaaliunermi</td>
</tr>
<tr>
<td>- Housing and Environment (Qaqortoq)</td>
<td>- Pitsaaliuinnermi Siunnersorti</td>
</tr>
<tr>
<td></td>
<td>- Teknikkeqarnermut, Ineqarnermut &amp; Avatangiisinullu Ingerlatsivik</td>
</tr>
<tr>
<td><strong>GOVERNMENT ORGANISATIONS</strong></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td></td>
</tr>
<tr>
<td>The Greenland Nature Institute</td>
<td>Pinngortaliriffik</td>
</tr>
<tr>
<td>National Museum</td>
<td>Kalaalit Nunaata Katersugaasivia</td>
</tr>
<tr>
<td>Narsaq Museum</td>
<td>Narsap Katersugaasivia</td>
</tr>
<tr>
<td>Working Environment Authority</td>
<td>Sullivinnik Nakkutilliisoqarfiik</td>
</tr>
<tr>
<td>National Association of Municipalities</td>
<td>KANUKOKA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>WORKERS AND EMPLOYERS ORGANIZATIONS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers Union</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Greenland’s Employers’ Association</td>
</tr>
<tr>
<td>Greenlandic Employers’ Association</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ORGANIZATIONS RELATED TO BUSINESS AND DEVELOPMENT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit Greenland</td>
</tr>
<tr>
<td>Greenland Venture</td>
</tr>
<tr>
<td>Greenland Business</td>
</tr>
<tr>
<td>Local Trade Forum</td>
</tr>
<tr>
<td>Private rock and gemstone gatherers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ORGANIZATIONS RELATED TO FISHING, HUNTING AND FARMING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fisherman and Hunters Association</td>
</tr>
<tr>
<td>Locally representatives (APP)</td>
</tr>
<tr>
<td>Sheep Farmers’ Association</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ORGANIZATIONS RELATED TO EDUCATION AND TRAINING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>School of minerals and petroleum (Råstofskolen)</td>
</tr>
<tr>
<td>(School of Metal and Mechanics (from Jan 11 associated to School of Mining))</td>
</tr>
<tr>
<td>Cooking School</td>
</tr>
<tr>
<td>The workers’ school</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>OTHER ORGANISATIONS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Narsaq Earth Charter</td>
</tr>
<tr>
<td>Against uranium in Narsaq</td>
</tr>
<tr>
<td>AVATAQ</td>
</tr>
</tbody>
</table>
Additional stakeholders identified during the stakeholder workshops in 2013:

- The Police

The stakeholders invited to the stakeholder workshops in August 2013 are listed in Table 9.2 below.

**Table 9.2 List of invitees and list of participants for the 2013 workshops**

<table>
<thead>
<tr>
<th>List of Invitees</th>
<th>List of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Råstofstyrelsen</td>
<td>Politiet</td>
</tr>
<tr>
<td>ISiIN (Departementet for Erhverv, Råstoffer og Arbejdsmarked)</td>
<td>Skattestyrelsen</td>
</tr>
<tr>
<td>APNN (Departementet for Fiskeri, Fangst og Landbrug</td>
<td>Råstofstyrelsen</td>
</tr>
<tr>
<td>IAAN (Departementet for Boliger, Natur og Miljø)</td>
<td>KANUKOKA</td>
</tr>
<tr>
<td>PAN (Departementet for Sundhed og Infrastruktur)</td>
<td>PAN (Sundhed og Infrastruktur)</td>
</tr>
<tr>
<td>OED (Departementet for Finanser og Indenrigsanlæggende)</td>
<td>IPAN (Boliger, Natur og Miljø)</td>
</tr>
<tr>
<td>IIKNN (Departementet for Familie og Justitsvæsen)</td>
<td>IIAN (Familie og Justitsvæsen)</td>
</tr>
<tr>
<td>Grønlands national Museum og Arkiv</td>
<td>IIKNN (Uddannelse, Kirke, Kultur og Ligestilling)</td>
</tr>
<tr>
<td>Grønlands Naturinstitut</td>
<td>Natur Instituttet</td>
</tr>
<tr>
<td>KANUKOKA</td>
<td>Miljøstyrelsen for Råstoffer</td>
</tr>
<tr>
<td>Politiet</td>
<td>Kommuneqarfik Sermersooq</td>
</tr>
<tr>
<td>Nature Institute</td>
<td></td>
</tr>
<tr>
<td>SIA Phases</td>
<td>Stakeholder</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Scoping and ToRs</td>
<td>Participants at the workshops on 20 and 21 August 2013</td>
</tr>
<tr>
<td></td>
<td>Participants at the workshops and the invited institutions who did not participate.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline study</td>
<td>Authorities and key-informants</td>
</tr>
<tr>
<td></td>
<td>Focus groups and key informants (focus groups to be appointed later)</td>
</tr>
<tr>
<td></td>
<td>Communities of Narsaq (and Qaqortoq)</td>
</tr>
<tr>
<td>Development of draft Benefit and Impact Plan</td>
<td>Selected groups of interest related to the implementation of benefit and impact areas</td>
</tr>
</tbody>
</table>
and propose measures (mitigations/enhancement) to be included in the draft Benefit and Impact Plan. The objective of the involvement is also to ensure that the proposed plan/measures in the BIP is coordinated with current public plans/programmes/initiatives.

<table>
<thead>
<tr>
<th>Development of draft monitoring and draft evaluation plans</th>
<th>BMP, selected partner(s) for each specific program (area)</th>
<th>The objective is to define how to monitor and evaluate the benefit and impact plans.</th>
<th>Define how to monitor and evaluate the benefit and impact plans, to define the role of the stakeholders and design tools and programs for monitoring and evaluation.</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft SIA Report and Public Hearing</td>
<td>List of stakeholders General Public</td>
<td>The objective is to present, clarify, validate and receive feedback on the findings of the impact analysis, recommendations and draft Benefit and Impact Plan as well as the draft Monitoring and Evaluation Plan.</td>
<td>Public Hearing.</td>
<td>Tba</td>
</tr>
<tr>
<td>IBA</td>
<td>BMP, Municipality (Kommune Kujalleq)</td>
<td>The objective is to develop the Impact and Benefit Agreement in close cooperation with the BMP and the municipality.</td>
<td>Development of the IBA. The IBA will contain the final benefit and impact plan as well the final monitoring and evaluation plans.</td>
<td>Tba</td>
</tr>
</tbody>
</table>

Tba: to be agreed
# Expected Implementation of the SIA Schedule

<table>
<thead>
<tr>
<th>SIA Phases</th>
<th>Time period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amendment to ToR</td>
<td>July 2014</td>
</tr>
<tr>
<td>Validation of baseline studies together with impact analysis and mitigation measures (input to draft SIA)</td>
<td>August 2014 – October 2015</td>
</tr>
<tr>
<td>Draft Benefit, Impact and Monitoring Plan (input to draft SIA)</td>
<td>August – September 2015</td>
</tr>
<tr>
<td>Draft Monitoring and evaluation Plan (input to draft SIA)</td>
<td>September 2015</td>
</tr>
<tr>
<td>Draft SIA Report for BMP in English</td>
<td>October 2015</td>
</tr>
<tr>
<td>Public hearing (draft SIA) translated versions</td>
<td>2016</td>
</tr>
<tr>
<td>Final SIA</td>
<td>2016</td>
</tr>
<tr>
<td>Impact and Benefit Agreement</td>
<td>2016</td>
</tr>
</tbody>
</table>
REFERENCES

Amec Minproc, Prefeasibility study for Kvanefjeldet. Executive summary, December 2009

Bureau of Minerals and Petroleum (BMP), Permit to conduct feasibility studies at Kvanefjeld, Letter dated on 9 December 2011 to GME Ltd.


Grontmij Carl Bro, Socio-economic Desktop Study for the Kvanefjeld Multi-element Project, July 2010.


NIRAS Infrastructure reports, March 2011

Strategic Environmental Assessment (SMV) for the Aluminium Project, Health studies, http://www.smv.gl/US/baggrundsrapporter.htm

Strategic Environmental Assessment (SMV), Mobilitet i Grønland, Mobilitetsstyregruppen, Nuuk, January 2010 http://www.smv.gl/DK/mobilitet/mobilitet.htm

