# Social Impact Assessment TANBREEZ Mining Greenland A/S

Social Impact Assessment Report

Submitted MAR 2012, Review AUG/SEP 2013and updated DEC 2016 with later update JUL 2019 and JUL 2020

Approved

## Table of contents Page

# 1 NON-TECHNICAL EXECUTIVE SUMMARY

This is the non-technical executive summary of the Social Impact Assessment for the TANBREEZ mining project. The TANBREEZ mining project is located in South Greenland (see Figure 1-1), in the municipality of Kommune Kujalleq, between Qaqortoq and Narsaq, Killavaat Alannguat, in the inner part of Kangerluarsuk Fjord (see Figure 1-2).

A former project proposal contained a road form the mine site to Qaqortoq, which is not included in this project proposal.

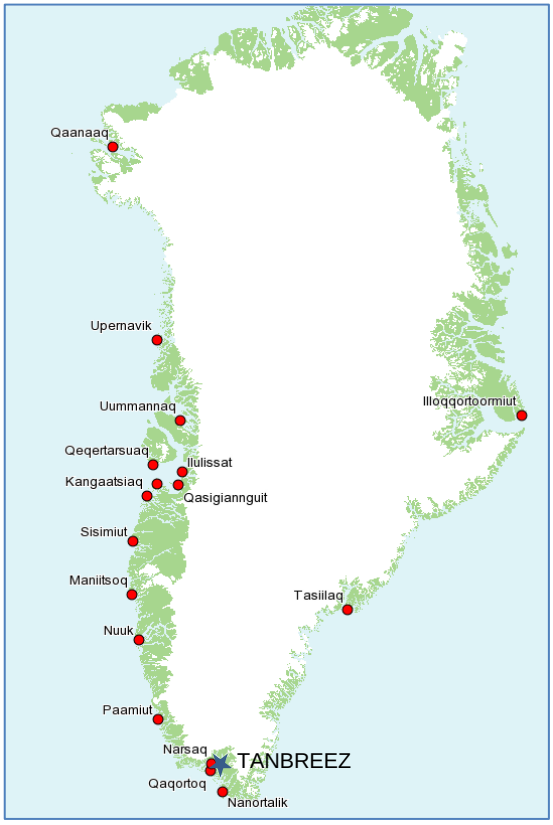


*Figure 1-1 Map over Greenland and the location of the TANBREEZ project area.*

This is an updated report prepared by Tanbreez from the original Grontmij report. Since the original submission in March 2012 the company has been able to advance the process by continually researching, drilling and assessing the project.

Except for such advancements, designed to reduce costs, leaving a cleaner environment and increase certainty and potential earnings, this report is almost identical to the original report submitted in March 2012 and accepted August 2013.

This report summarises all aspects of the social impact on the community. Full details on other aspects such as the EIA, Geology and Feasibility Study are dealt with in separate reports.


**Figure 1-2** ***Location of the mining project.***

An Environmental Impact Assessment (EIA) is prepared and reported in a separate report.

**Objective of SIA**

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

**Approach and Method**

The Bureau of Minerals and Petroleum (BMP) SIA Guidelines of November 2009 were used as the reference to establish a minimum of level of information, content and general structure of the SIA. This has been updated by using the SIA Guidelines dated April 2016. The SIA was based on a participatory approach, involving the stakeholders during the development of the SIA. The SIA identified the potential impacts from the Project of the valued socio-economic components. All relevant potential impacts were identified, with priority given to those identified as the biggest concerns by stakeholders and authorities. For the potential impacts identified, the SIA includes the evaluation of the impact (significance) and propose possible mitigations. The net impact after the application of the mitigation measures is further evaluated. Potential benefits are identified and where possible measures to maximise them are included.

**Impact Analysis Method**
The impact assessment was based on an assessment of the positive and/ or negative impacts from the project based on a set of social/ socio-economic aspects with the use of an Impact Matrix. The impact on the social/ socio-economic aspects (employment, business life, health, vulnerable groups, etc.). are assessed of the project (such as transport, provision of goods, operation of camp, mine site and processing plant etc.).

For each combination of project activity and social/ socio-economic aspect, both for the construction and the operation phases, the positive and negative impacts of the project have been predicted and its magnitude quantified as far as possible.

Mitigation measures have been identified for all negative impacts likely to occur, are adverse in nature and significant enough to require mitigation [medium and high-level (negative) impacts] in order to diminish or eliminate such impacts. Furthermore, mitigation measures that can lead to increased positive impacts have been identified.

**Legislation**
The main legislation for this project is the Act no. 7 of 7 December 2009 on Minerals and Resources (Act on Mineral Resources), which came into force on January 1, 2010 with amendments from Greenland Parliament Act No. 26 of December 18, 2012 and amended by Greenland Parliament Act No. 6 of June 8, 2014. The Social Impact Assessment is based on the Guidelines for Social Impact Assessments for mining projects in Greenland, November 2009, prepared by the Bureau of Minerals and Petroleum, and updated on the current guidelines for SIA for mining projects in Greenland, April 2016, prepared by the Ministry of Industry, Labour and Trade.

**Description of the project**
TANBREEZ mining project plan to mine Kakortokite. Kakortokite is composed of a series of three different layers. Each layer has distinct colouring due to the different combinations of minerals; Arfvedsonite (black), Eudialyte (red) and Feldspar-Nepheline (white).

TANBREEZ is an abbreviation of the metals, which are planned to be extracted from Eudialyte (red); (Ta for Tantalum, Nb for Niobium, REE for rare earth elements and Z for Zirconium-oxide).

Tantalum is very stable and used in alloys, due to its resistance to corrosion, as well as in capacitors in electronic equipment. It is also used in mobile phones and other electronic industries as the space and car industries.

Niobium is very similar to Tantalum and is also used in alloys to strengthen steel, as well as alloys with superconductive characteristics.

REE (rare earths elements) can be used for a number of increasing purposes; e.g. for several new green technologies and consumer products such as wind turbines, rechargeable batteries, hybrid cars, laptops, mobile phones and Ipods. Some REE are also used as catalysts in car exhaust pipes and in reduction of emissions from diesel cars.

Zirconium is a light metal, resistant to corrosion and is also used in alloys. Furthermore, it is used in ceramics and advances ceramics for special use, such as in the space industry.

## Summary of Benefits for Greenland

| Item | Value/ Benefit | |
|---|---|---|
| | **500,000 tpa** | |
| **Initial Capital** | DKK 1,135 million | |
| **Operating** | DKK 140 million per year | |
| **Income taxation of personnel (2 years of construction and 10 years of operation)** | DKK 154.9 million | |
| **Corporate/** | DKK 1,021 million | |
| **Royalty** | Tax on profits to be generated by the exploitation will yet be applied by the Greenland Government (also refer to section 4.2.4). However, under Article 2 of the Addendum No. 3 Section 2.01, d (2) of the Standard Terms for Exploration Licenses for Minerals 5% of the value of the minerals exploiting rare earth elements shall be paid by the licensee and 2.5% for the other products. | |
| **National Employment – construction** | 60 persons | N/A |
| **National Employment – operation** | 72 persons | N/A |
| **Employment Package** | Salary, training based on living in Qaqortoq, from elsewhere if required travel allowance, participants will live on site. | |
| **Education and Training** | Pre-employment and on-the-job training program for the required job categories during operation phase using the Fortescue model. This program is to be interwoven with Greenlandic educational institution, local authorities, central education facilities and the mining school. | |
| | It would be proposed that subjects like surface mining techniques may be able to be integrated with a broader educational program. | |
| | Apprenticeships | |
| **Business and enterprise** | Establishment of a joint group to advise/ recruit personnel required. | |
| | Opportunity to bid for contract packages for supply of goods and services, including catering services, cleaning, laundry and similar tasks, provision of local food. | |
| | Opportunity to bid for contract packages for transportation of goods and staff. | |

| | |
|---|---|
| | Opportunities for contracts for local tradesmen such as carpenters, engineers, electricians etc. |
| | Opportunities for contracts for IT and communication services. |
| | Potential opportunities for local fuel providers (as Polaroil). Special attention will be given to type of fuel and opportunities of transport of fuel to the location. |
| | Opportunity to contract for specialized services such as pilot, ships to port, miners, health services. |

Note: The numbers are for the mine in Greenland. The CSP is located outside Greenland e.g. in Denmark. A DKK/ USD exchange rate of 5,82 has been applied, cf. M.T. Højgaard (2012). The Ramping up scenario is dealt with in the updated TANBREEZ Applicationand subject to government approval.

1. The DKK 1,463 million includes the initial CAPEX of DKK 1,135 million plus the present value of additional CAPEX of DKK 328 million stemming from ramp up from year 7. The DKK 328 million is calculated as after the formula: 873/ (1 + 15%)^7.
2. The DKK 242 million is calculated as the average of the DKK 140 million in the first 5 years of operation and the DKK 343 million in the last 5 years of operation without any discounting.

The mining project.

The project consists of an open mine pit, a processing plant, a port (including a helipad), a mine camp with supporting facilities (also potentially this could be shifted to a ship at the port), a tailings deposit, and internally connecting roads. The processing of the ore is a simple process where no chemicals are used and consists of a crushing plant followed by a magnetic separator (a process that utilizes the minerals' different attractions to magnetic fields). The outcome of the separation is made up of three fractions: a black highly magnetic concentrate (Arfvedsonite), a red concentrate (eudialyte), and a white non-magnetic concentrate (feldspar). See the flow chat in Figure 1-3. The black magnetic concentrate (Arfvedsonite) is a silicate mineral and may be sold for brick/tiles making. This aspect will be developed later, it's potential cash flow is not included here. The feldspar is also a silicate mineral and may also be sold. However, the societal impacts from mining feldspar and from mining Arfvedsonite are not included in this Social Impact Statement.

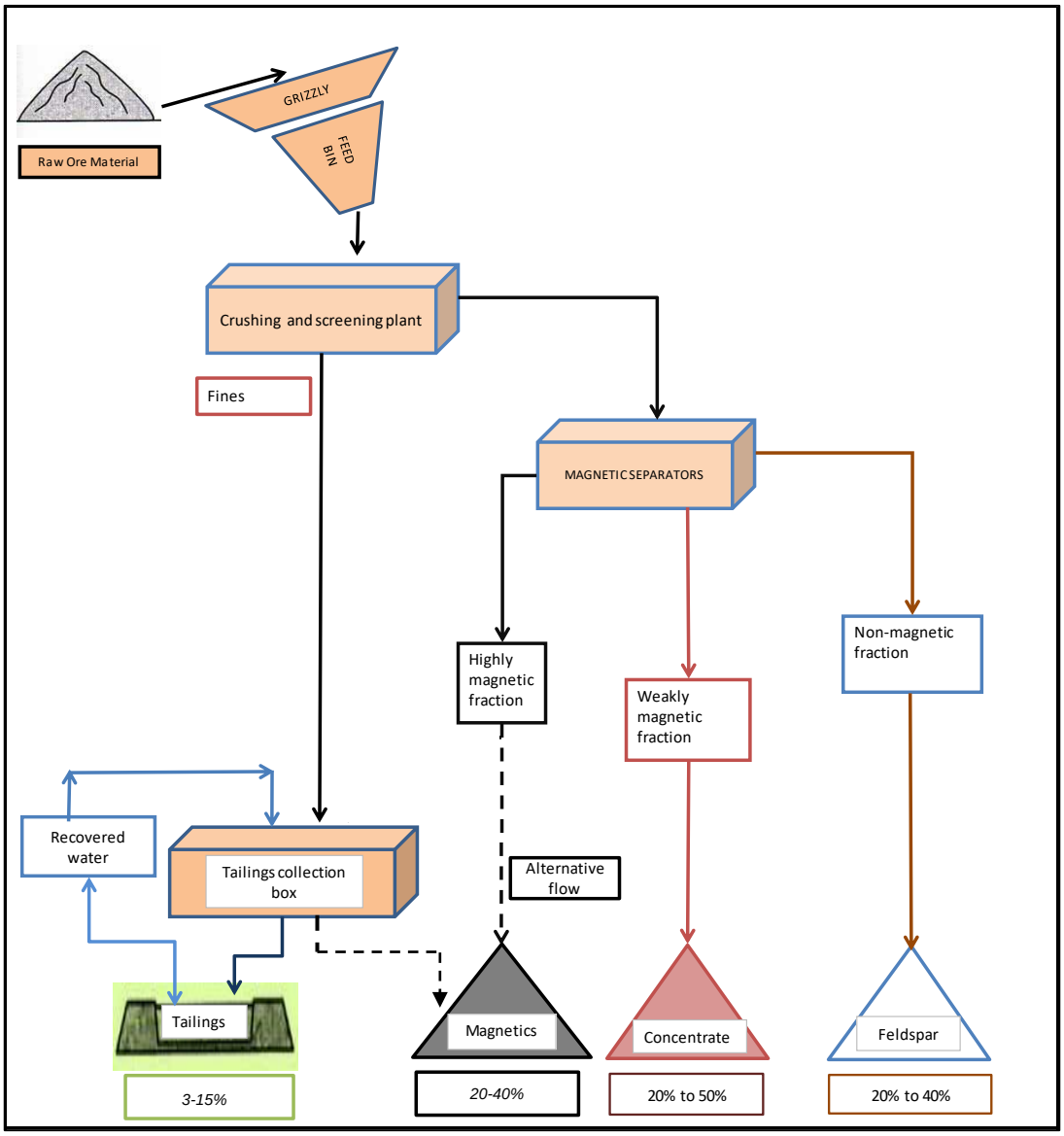


**Figure 1-3** ***Flow chat of the mining process.***

The concentrates will be stored before shipping.

The project will consist of a:

- Mine site (open pit)
- Processing plant (crushing and magnetic separation)
- Tailings deposit (Fostersø)
- Mine camp and/or vessel with accommodation
- Port site (Located in the Kangerluarsuk Fjord), main access point also for the ship which will bring supplies and manpower. Storage area for the concentrates)
- Storage (located at the port site for concentrates)
- Separate fuel storage near the harbour
- Helipad
- Infrastructure (roads between the mine site, processing plants, mine camp, tailings deposit, and to the port)
- Energy supply (heavy fuel power generators)

- Water supply (water will be supplied from the fjord and existing elevated lakes)
- Sewage treatment (liquid waste generated at the camp will be treated and discharged into the Fjord)
- Waste (solid waste generated at the site will be treated in an incineration plant on site).

The project plan is to mine initially approximately 500,000 tons of ore per annum (tpa) producing Eudialyte concentrate. The deposit is estimated to have a size of 4,700 million tonnes, and therefore will be in operation potentially for generations.

Currently, the construction phase is expected to last for 2-3 years after the license is granted, whereas the operation phase is expected to start at the end of construction. The estimated initial duration of the project is currently 10 years.

**Approaches and Methodologies**
The BMP SIA Guidelines of November 2009 and also the MILT SIA guidelines of April 2016 are the basic reference to establish the minimum level of information, content, and general structure of the SIA.

The SIA is based on a participatory approach, involving the stakeholders as often and effectively as possible at each stage of the SIA process.

The SIA identifies the potential relationships between the proposed potential impacts from the project and the valued socio-economic components.

All relevant potential impacts have been identified, with priority given to those which are identified as the biggest concerns by stakeholders and authorities.

For the potential impacts identified, the SIA includes the evaluation of the impact (significance) and proposes a possible mitigation. The net impact after the application of the mitigation measure will be further described.

For the potential benefits identified, the SIA includes the evaluation of such benefits and proposes measures to maximise it.

<u>Scoping phase</u>
First step was the scoping phase which was carried out together with the stakeholder, in order to focus the SIA on key issues identified in cooperation with the stakeholder. Scoping workshops with the stakeholders were held in April 2010.

The following topics were raised at the workshops:
- Employment, education and training, as well as business opportunities
- Livelihood and cultural conditions

The result of the scoping phase was the development of the ToR..

The SIA will cover the following stages in the project:
- The construction stage (the first 2-3 years after granting)
- The operation stage (a minimum of 10 years post construction)

The SIA also contains some considerations of the social impact when closing the mine.

<u>Secondary Processing</u>

It is a requirement under the Act that the potential for downstream processing is valuated prior to an exploitation license being granted.

A series of groups have been commissioned by Tanbreez to examine the possibility of further processing in Greenland beyond the concentrate stage. These include MT Højgaard, Paradine Pty Ltd, ALS/ Ammtec and Eureka Metallurgy and Copenhagen Economics. At this stage Tanbreez believes secondary processing is not economically, socially or environmentally feasible and has submitted that view to the government.

However, the company will continue to monitor this situation especially as local expertise improves or as the financial acceptability of such a process surface.

Baseline study

The baseline study provides information on demographic, economic conditions and trends, political structures, local organisations, cultural traits, and other factors that can influence the way in which affected communities will respond to anticipated changes brought about by the projects. The baseline also helps to predict in which way the project will be affected by these factors. The development of the baseline and the identification of the impacts are an interrelated and parallel process.

When critical issues are identified, detailed studies on specific groups (focus groups) affected by the project have been produced.

The baseline study has been based on the review of secondary sources and information obtained through qualitative, quantitative, and participatory methods.

Impact Analysis Methodologies

The impact assessment is based on an assessment of the positive and/or negative impacts from the project based on a set of social/socio-economic aspects with the use of an Impact Matrix. The social/socio-economic aspects (employment, business life, health, vulnerable groups, etc.) are used to assess the impact of each activity in the project (transport, provision of goods, operation of camp, mine site and processing plant etc).

For each combination of project activity and social/socio-economic aspect, both for the construction and the operation phases, the positive and negative impacts of the project have been predicted and its magnitude quantified as far as possible.

Mitigation measures have been identified for all negative impacts likely to occur, which are adverse in nature and significant enough to require mitigation [medium and high-level (negative) impacts] in order to diminish or eliminate such impacts.

**Description of social baseline conditions**

Demographic profile

Greenland's population primarily consists of Greenlanders, or Kalaallit, with roughly 10% comprised of Danes and other Europeans.

Since 2009, the country has been divided into 4 municipalities, Qaasuitsup Kommunia, Qeqqata Kommunia, Kommuneqarfik Sermersooq, and Kommune Kujalleq. From 2018 Qaasuitsup Kommunia was split up to 2 municilaplties and now consist of Avannaata Kommunia and Qeqertalik Kommunia, so there now are 5 municipalities. Kommune Kujalleq consists of three towns: Narsaq, Qaqortoq and Nanortalik.

The total population of Greenland is 55,847, of which 6,671 people live in Kommune Kujalleq. This figure of the population for the Kujalleq Kommune has dropped from 7417 when the original document was submitted in 2012. In addition, the number of people on pensions in the community has risen by approximately 300 as has the number of students also increased. This means that the number of people of suitable age group to become workers has fallen significantly (Statistics Greenland 2016).

The mortality rate of males aged 0-60 years is higher than that of females due to a higher suicide rate as well as fishing / hunting accidents as a result of climatic conditions (Inuuneritta II,2013-2019).

In general, Greenlanders are highly mobile. For young Greenlanders, the primary reasons for moving permanently are education and skilled job opportunities as well as the resulting higher wages. Young women particularly move permanently for education purposes or to seek new challenges (Mobilitetsstyregruppen, 2010).

Cultural values

Generally, in Greenland, traditional and cultural activities and customs are very important to the local communities, according to SLiCA, Survey of Living Conditions in the Arctic (Poppel, B. et al, 2004).

Cultural heritage

There are finds from the Thule culture (the Inuit culture which the present Greenlanders originate from) and Norse ruins. Greenland's National Museum recommends that these finds be registered and dated before any activity is undertaken in the area.
The Norse Hvalsøe ruins are located on the same peninsula, although away from any future activities.

Use of natural resources

There are three major groups that are users of Greenland's natural resources. The first group are commercial fishermen and hunters; the second group is made up of anglers and hunters who supplement their income from regular or seasonal work and the third group for recreational use. Furthermore, there are a number of sheep and reindeer farmers in South Greenland.

Socio-economic aspects

Greenland's economy is based on fishing and fish products. In addition, Greenland receives a block grant of some DKK 3.695 billion (2015) from Denmark, which is equivalent to approx. 35 % of the public revenue. (www.stat.gl, Offentlige finanser, 2016)

The private sector in Greenland primarily consists of small enterprises such as retailers, builders, fishermen, hotel and catering, as well as repair services, apart from a few large national enterprises that are owned by the Home Rule Government. These national companies employ most of the workforce, whereas the small companies employ only a minor share of the total (Skatte- og velfærdskommission, 2010).

The number of unemployed was on average 2,754 persons per month, equivalent to 11.5 % of the potential workforce in 2014. In 2013, this
number was 6.3 %. According to Statistics Greenland were the employment in 2014 is 152 for Qaqortoq 121 for Nanortalik and 133 for Narsaq. (www.stat.gl, 2016)

Development plans
Kommune Kujalleq has developed a municipal strategy for 2011 – 2022 (Kommune Kujalleq, 2010). This is valid from August 2016.

Education
University education is free in Greenland (paid through the tax system) and is only offered in Nuuk and Sisimiut. Students with a certain grade average from upper secondary school are admitted.

The vocational and commercial programs are free (paid through the tax system) and a certain grade average is required to be admitted. Most students are eligible for financial support. Most study programs offer accommodation in dormitories (rooms or apartments).

Health care
All health care treatment is free, including medication and dental treatment financed through the tax system (www.naalakkersuisut.gl)

Greenlanders are increasingly abandoning the traditional Greenlandic lifestyle and foods and choosing to adopt a Western lifestyle, resulting in more Western lifestyle diseases such as diabetes, heart diseases, cardiovascular diseases and obesity since 1993. (Bjerregaard, P. og Aidt, E.C., 2010).

Tuberculosis (TB) has been recognised as a prevalent disease in Greenland and have been increasing since in the middle of the 1980's. On average, 95 persons have contracted TB each year for the past five years (www.tuberkulose.gl).

The number of reported sexually transmitted diseases (STDs) have been a problem in Greenland for many years and the registered cases of gonorrhoea and chlamydia have increased during the last decade especially for the young people under 25 years old (Landslægeembedets Årsrapport, 2014/2015).

Vulnerable groups
The population groups that are considered to be vulnerable by interviewed local focus groups and individuals are young mothers, the elderly, handicapped persons, families where one or more members have alcohol or substance abuse problems as well as those who are unemployed.

Alcohol and substance abuse play a recurring theme in the health-related problems and conditions of vulnerable families.

**Potential impacts**

The potential impacts of the TANBREEZ project during both the construction and operation phases, as well as for the closure of the project are assessed.

The assessment is based on the valued social and socio-economic components:

- Economic aspects (employment, tax and revenues and business opportunities)
- Education and training
- Public service and plans
- Social aspects
- Health
- Culture and natural values

This non-technical summary includes only the description of the medium and high-level impacts.

Employment

The project is divided into the construction and the operation phases. The construction phase will demand 30-40 workers at the beginning. This figure is expected to increase to 120-140 during the summer month year 1 and 2 of construction (expected to be two to three years after granting). The operation phase will require approximately 80 employment positions within the categories described in Table 1.1. Catering and housekeeping duties will most probably be outsourced to local businesses but is included in Table 1.1. The majority of the employers will work 4 weeks on and 2 weeks off.

Potentially unemployed workers can benefit from the job opportunities created by TANBREEZ during both the construction and operation phases. However, the most likely scenario is that the project will mainly attract workers who are already employed in other sectors. Indirectly, this will create new opportunities for the unemployed workers.

Nanortalik has a pool of labour which is suitable for the requirements for employment at the TANBREEZ project after minor appropriate training. Furthermore, it is likely that people who left Kommune Kujalleq due to the lack of jobs will move back to Narsaq and Qaqortoq, when new job opportunities are created. In general, the mobility of people is very high in Greenland, and it is likely that people will move for jobs opportunities (Mobilitetsstyregruppen, 2010; SLICA, 2015; Interview with Grethe Nielsen).

The aim of the project is to operate with a maximum of local workforce in all job categories. With the exception of key managerial and professional positions, all positions will be offered to local workers. An estimation of the expected local involvement in workforce for the beginning of operation at the TANBREEZ project is presented in Table 1.1.

***Table 1.1 Overview of expected employment and desired share of Greenlandic workforce for the operation phase.***

| Job category | Expected workforce | Expected local workforce | Expected % local |
|---|---|---|---|
| Managers | 2 | 0 | 0% |
| Professional | 6 | 0 | 0% |
| Operator | 22 | 22 | 100% |
| Technicians | 28 | 28 | 100% |
| Apprentice | 4 | 4 | 100% |
| Plant and machine operator | 6 | 6 | 100% |
| Clerical | 4 | 4 | 100% |
| Elementary occupation | 6 | 6 | 100% |
| Cook | 2 | 2 | 100% |
| Total | 80 | 72 | 91% |

Professional (ex. HS Coordinator and Metallurgist)
Operator (ex. Excavator operator, Truck operator, Driller and wheel loader operator)
Technician (ex. Blaster, Sample preparation, Analyst and Port worker).

The impact of the direct employment during operation are characterised as positive medium to high, with the operation of mine and processing plant being the activities that will create the largest amount of jobs. A majority of job positions are available to local workers (from Kommune Kujalleq municipality), but measures should be taken in order to maximise the final share of local employment. While the duration of the employment will cease with the completion of project, benefits related to employment, such as enhancement of qualifications and experience, pension and savings, etc. will last beyond the employment time.

Business life

TANBREEZ Mining will outsource activities related to transportation of goods and staff as well as servicing of the camp, including catering, cleaning of the camp and offices, and laundry.

The significance of impacts on business life is rated high compared to direct employment in Greenland.

The main direct positive impact on business life is expected to be related to the following areas:

- Transport of goods and staff
- Services to the camp
- Provision of fuel
- Provision of goods and food
- Provision of technical services

The same trend is expected for indirect impacts on business life due to expenditure by workers. The positive impact will be more noticeable in small and medium size towns, particularly in Nanortalik, Narsaq and Qaqortoq, but will be diluted if the workers' residences are, for example, in Nuuk or Sisimiut.

For the planned and on-going industrial activities in Greenland (Alcoa project and oil activities) the employment multiplier factor has been estimated. For the Nalunaq Gold Mine project, the employment multiplier factor has been estimated to 1.3 – 1.6. This means that for each job created at the mine, 0.3 – 0.6 jobs will be created in the community. It can be concluded that, while some induced jobs will be created by the project, these are expected to be of low significance in comparison to direct jobs and indirect jobs created by business opportunities.

The overall impact for the business life is assessed to be positive medium to high.

Taxes and revenues

The main direct economic benefits from the TANBREEZ Mining project arrive from income taxes from local employers and international experts, who will be liable to pay tax in Greenland, according to the Greenland tax regulations (Act on income taxes no 12 of 2 November 2006 and amendments of no 3 of 30 November 2009 and no 20 of 18 December 2010).

In general, there is a positive medium to high income impact due to taxes and revenues. These will come in the form of taxes (e.g. profits), income tax from employment salaries, direct local employment and boosts to local businesses (also leading to further increases in tax revenues).

Education and training

In Greenland, there is a general need and wish to improve and further develop the skills and competences of labour, in order to be prepared for potential future activities e.g. in the extraction industry.

Projects such as TANBREEZ mining are considered to contribute to the general development of skills in Greenland. This development is characterised as medium positive, as knowledge and experience of mining projects are relatively low in Greenland.

Specific job related training in truck driving and operations related to the processing plant, are characterised as medium positive, as the level of education in Greenland is relatively low.

TANBREEZ has entered into a MOU with the Kujalleq Community to jointly undertake training, education and recruitment opportunities for local people in the Tanbreez project.

Social and health services

The social services in Kommune Kujalleq municipality are under pressure at the moment. This is due to high seasonal unemployment and a lack of sufficient funding to support the unemployment. The project will have a positive effect on the unemployment rate and the seasonal unemployment, which in turn will help the social unemployment services.

The health services in Kommune Kujalleq municipality and Greenland in general are under pressure, due to infrastructure, a lack of sufficient personnel resources as well as a lack of funds.

Social aspects – imbalance between towns

An imbalance between the benefit and impacts from the project for the two towns, Qaqortoq and Narsaq is likely to happen. It has been questioned if Qaqortoq will benefit relatively more from the project than Narsaq. The transportation schedules are planned to be equal from both towns to the mine site. Furthermore, the establishment of a storage facility in Narsaq is considered which could also create some activities in Narsaq.

Social aspect - vulnerable groups

In the field work performed in Narsaq and Qaqortoq, the focus groups have identified families with drug and alcohol abuse, as well as pregnant young women as the most vulnerable groups in the community.

The implications of alcohol and substance abuse, as well as the increased number of early pregnancies are serious for a small community. The scope of this assessment and the information collected during the field research do not provide enough of a base for predicting the significance of these social risks. However, due to the public concern expressed in the interviews and consultations and applying the Pre-cautionary principle which should govern the assessment of social risk, the implications assessed as negative low to medium and preventive and mitigation measures proposed.

Health - Occupational health and risk of accidents

There is a risk of accidents during transportation of goods, staff and concentrate, mainly due to the harsh weather conditions in Greenland and the involvement of heavy machinery along with human error. Although the implications are permanent, the risks of accidents are considered to be negative low based on an overall assessment.

Operational risks from the mine and the processing plant are mainly during operation of heavy machinery, explosives, and processing along with human error and harsh weather conditions. The risks of accidents from operation are therefore assessed to be negative medium.

A health screening will be required before employment at TANBREEZ in order to ensure that the workers do not have any Sexual Transmitted Disease (STD) or Tuberculosis (TB) when they start working at the mine project.

Health - public health

A mining project's operations will have an impact on the health and quality of life of the employees and the public in general. These negative impacts are often related to interactions between the local community and the influx of staff.

At the TANBREEZ mining project the employees are expected to be mainly from the Kommune Kujalleq municipality, and the expected number of international staff and from other parts of Greenland will be limited and therefore the risk of impacts on public health due to increase on STDs, TB, unwanted pregnancies, and abortions is considered to be low.

However, it is necessary to monitor the incidence of TB, STDs and unwanted pregnancies as important public health indicators. If the situation changes and more international staff and workers outside the community will be engaged to the project, the potential impact needs to be assessed further.

Based on the pre-cautionary principle and the advantages of a strong preventive and corrective health and life style campaigns among the workers, the impacts on health are assessed to be medium negative.

Environmental impact

Staff from Greenland National Museum have surveyed the project area for cultural heritage sites and biologists have studied the flora and fauna. All these studies are attached as annexes to the EIA report. Other sources of information for the EIA process include previous studies in the area and studies from other mine projects in the Arctic.

Information about the planned mine project and the project area including its biodiversity was compiled and all activities of the mine project that can potentially be a source of disturbance or pollution have been identified. For each potential impact the receptor and potential pathways have been identified.

The tailings and waste rock are potential sources of pollution because toxic heavy metals might leach out if the material is suspended in water. If this happens, deposition of tailings or waste rock in Fostersø could lead to pollution of the lake and the streams and fjord downstream from lake. This could harm fish in the river and seals in the fjord. To test this scenario, the results of the chemical analyses of tailings and waste rock have been combined with a hydrological model of the freshwater system to assess the potential release of metals from tailings deposited in Fostersø. The model shows that concentrations of metals will increase over the operation period as the lake fills. After 10 years of operation the content of lead will marginally exceeds the Greenland water quality guideline (GWQG) values. The concentrations of other metals in the lake water will be below the GWQG. Since Fostersø and the streams and rivers downstream the lake already have natural high lead contents the impact will be very small. The outflow from Fostersø contributes to about 20% of the water in Lakseelv and it is predicted that elevated lead levels in water from Fostersø will not be detectable in Lakseelv due to the large dilution. The consequence of the increase in lead in Fostersø is therefore assessed as insignificant.

Similar assessments have been carried out of the entire suite of potential impacts on play in connection with the TANBREEZ project. The potential disturbance and loss of habitat when for example vegetation is overlaid by buildings has been assessed for marine, freshwater and land animals and plants. Also, pollution from other potential sources than tailings and waste has been assessed. This includes accidental release hazardous material such as oil and other hazardous waste.

The conclusion is that if the mitigating measures proposed in the EIA report are implemented and the mining activities are carried out in accordance to good environmental practice then the significance of the impacts on the environment will be low. No significant contamination by toxic materials or other pollutants is expected to take place. Dust dispersal will be small and local and no key animals (such as White-tailed eagle and Arctic char) or plants are believed to decline or be displaced because of the mine project. Further and more specific environmental impacts are described in the Environmental Impact Statement.

Cultural and natural values

Greenlandic cultural and natural values are closely connected to social values as the traditional and cultural activities involves many social events and a rich social life compared to western societies. Hunting and fishing, naming traditions, and traditional clothing are currently being replaced by western influences, but are still well practised.

The impact on sites of cultural importance is considered medium, as the destruction during the construction phase of some of the sites are unavoidable. Nevertheless, none of the archaeological findings are considered unique or outstanding. Even the unique Hvalsøe ruins are outside and out of sight of the project area. The company responsible for design and construction, MTH, has been in dialogue with municipal and national authorities in order to find an acceptable mitigation measure.

Regarding the use of land, a report on Local use of natural resources in the “Killavaat Alannguat” region was finalised by the consultant company Orbicon in November 2010. This report describes activities in relation to present use of natural resources in this area. With “local use” is understood a broad range of activities related to fishery, hunting, sheep farming, stone collection, tourism, and recreational use by local inhabitants.

The conclusion of the Local use report states that overall mining activities will have little negative impact on local use of natural resources. The findings and conclusions of the Local Use study were confirmed during the interviews and focus groups research activities performed by the SIA team.

The low negative impacts will be perceived from construction phase and through the life of the mine.

**Proposed mitigations**

Mitigation measures will be identified for all impacts likely to occur, adverse in nature and significant enough to require mitigation (medium and high-level (negative) impacts) in order to mitigate or eliminate such impacts.

*Table 1.2 Overview of Impacts, proposed mitigations and impacts after mitigation.*

| Description of the Impact | Existing mitigation | Proposed mitigation | Impact after mitigation |
|---|---|---|---|
| **Economic environment** | | | |
| Employment before/during construction phase (direct) | | | |
| Engagement of the local workforce from the beginning of the construction phase.<br><br>+L | Training course at the School of Minerals and Petroleum.<br><br>Mapping of existing competences in Kommune Kujalleq as a pilot study for Greenland. | • Assistance in understanding of requirements to the coming workplace, like health and safety issues, financials issues etc. in corporation with the local authorities.<br>• Elaborate a description of the requirement for the different work and job categories for the construction phase<br>• Undertake an assessment of training needs in corporation with the local authorities.<br>• Develop human resources development program and benefit packages to make TANBREEZ an attractive work place for local workers[1]<br>• Design a cross-cultural workshop to enhance intercultural understanding among staff and minimise social impact in surrounding communities<br>• Ensure transport arrangements for staff both from Narsaq and Qaqortoq | The goal is that 75% of local personnel engaged in the project<br><br>+H |
| Employment before/during operation phase (direct) | | | |
| The impact of the direct employment during operation are characterised as positive medium to high, being operation of mine and processing plant the activities creating the highest amount of jobs. A majority of job positions is available to local workers (from Kommune Kujalleq).<br><br>The goal is to offer 85-90% of the job to the local workforce.<br>+H | Training course at the School og Minerals and Petroleum.<br><br>Mapping of existing competences in Kommune Kujalleq as a pilot study for Greenland. | • Develop on-the-job training for the required job categories<br>• Elaborate a description of the requirement for the different job categories for the operation phase<br>• Undertake a gender sensitive workforce assessment, in order to ensure that both women and men will apply for the jobs<br>• Develop a program as a part of the screening process during the recruitment of workforce for the operation phase.<br>• Develop human resources development program and benefit packages to make TANBREEZ an attractive work place for local workers | The goal is that approx. 90% of local personnel engaged in the project<br><br>+H |
| Business opportunities | | | |
| Camp management and transport will be outsourced to local businesses<br><br>Provision of service from the local business will be requested on ad-hoc basis. | Sulisitsisut (GE) and its committees creates initiatives to promote local business for mining companies (network workshops). | All measures are based on the condition that they are economically viable, or cost competitive, or not detrimental to the overall cost of the contract.<br><br>• Establishment of a forum for local businesses together with the local authorities. This forum will be used before and during the tender process to provide information and clarification of the coming tenders.<br>• Tender period for various tender packages including Q&A sessions.<br>• Preferential contracting practices for Greenlandic contractors (locally based in first place and secondly in Greenland) of logistics, transport of staff and goods, fuel etc. including sensitive elaboration of tender documents, specifications, etc. | Camp management and transport will be outsourced to local businesses<br><br>Provision of service from the local business will be requested on ad-hoc basis. |

[1] Ensuring that local workers are able to continue their traditional way of living, within the frame of the rotation schemes of TANBREEZ and the existing logistic opportunities. If the logistic opportunities change (new roads, airport etc) can more flexibility occur in the rotation schemes.

| Description of the Impact | Existing mitigation | Proposed mitigation | Impact after mitigation |
|---|---|---|---|
| +H | | • Unbundling of contracts for services and supplies to camp where no cost hindrance to the project.<br>• Preferential purchase of local goods and services to the mine camp. Laundry, catering, office supplies, IT maintenance, etc.<br>• Requirement in contract with the providers of catering services to supply local/traditional food. | +H |
| Salary boost | | | |
| TANBREEZ will in general stimulate the local economic activities.<br>+M | Existing pensions and insurance arrangement. | • Employment packages that include benefits other than wages (as opportunities for further training and education).<br>• Establish workshops with financial actors in order to provide support for direct employees and their families. | TANBREEZ will in general stimulate the local economic activities.<br>+ H |
| **Education** | | | |
| The project will Improve the level of education in Greenland, both with regard to general development of general skills and specific training.<br>+M | | • Develop a recruitment program in cooperation with local authorities<br>• Training programme for staff on specific duties, safety, etc.<br>• General training programmes and on-the-job training for staff will be a part of all employees work profile<br>• Early development of a reinsertion program for workers after mine closure in cooperation with local authorities<br>• Collaboration with the education institutions.<br>• Target for local workforce at all levels will be developed together with training and education programmes which encourage upgrading for all positions. | The proposed mitigations measures will even further stimulate the improvement of education in Greenland, both with regard to general development of general skills and specific training.<br>+ H |
| **Public service and development plans** | | | |
| Existing infrastructure and plans | | | |
| Improve the local infrastructure for the local communities<br>-L | Local and national plans and programmes | • Develop a contingency plan for transport/housing in case of bad weather.<br>• Develop an overview of the available transport opportunities (boats, helicopters and flights). | -L |
| Pressure on public services | | • Develop a contingency plan in collaboration with the police and other relevant authorities. | |
| Social health and services | | | |
| The increased pressure on the health system is expected to be negative partly because of the expected increased sexually transmitted diseases and other infectious diseases<br>-L | Local and national plans and programmes | • Develop clear criteria and conditions for use of local health services and communicate these to health providers all in cooperation with local authorities and other major local work places.<br>• Establish contact with local health service and work out cooperation between both parties and other major local work places.<br>• All international employees will have a health insurance. | -L |

| Description of the Impact | Existing mitigation | Proposed mitigation | Impact after mitigation |
|---|---|---|---|
| | | | |
| **Health** | | | |
| Occupational health and risk of accidents | | | |
| The risks of operation of mine and processing plant are mainly during operation of heavy machinery, explosives, and processing along with human error and harsh weather conditions and are assessed to be negative medium.<br><br>-M | Regulations which promote instruction and supervisions in order to reduce the accidents and to focus on a health and safety working environment. | • Develop and implement health and safety management plan for the mine site for staff.<br>• Establish health and safety committee with joint participation of workers that help to monitor and advice health and safety programs on mine site.<br>• Training of all staff on safety and emergency response on the mine site.<br>• Contractual requirements to providers of transportation services (Air Greenland, charter boats for staff, etc.) regarding safety measures, response time, etc. in order to minimise risk of accidents, appropriate and timely response in case of accidents, emergency evacuation from mine site, etc.<br>• Pre-notification of operations and traffic of vessels to authorities.<br>• Develop emergency and contingency plans in coordination with the Department for Occupational Health and Safety under the MLSA and other major local workplaces. | -L |
| Public health | | | |
| The risk of impacts on public health due to increase on STDs and abortions is considered to be low, as the majority of the workforce will be from Kommune Kommune Kujalleq.<br><br>Based on the pre-cautionary principle and the advantages of a strong preventive and corrective health and life style campaigns among the workers, the impacts on health are assessed to be medium negative.<br>-M | Community health campaigns. | • Promotion and availability of healthy nutrition and physical activity.<br>• Initial and regular health checks for employees. Develop and implement strategies for making healthy choice the easy choice at the mine site: healthy food, local food, attractive and available exercise program, hand washing facilities etc, for staff. Counselling services for staff. Active part of community health campaigns (e.g. safe sex, alcohol, non-smoking).<br>• Health check for both local and international employees. The content of the health check will be coordinated with the Health Authorities. | The impacts on public health are considered to be low.<br><br>-L |
| **Cultural and natural resources** | | | |
| Socio-cultural value | | • Access to Greenlandic food in the canteen.<br>• Design a cross-cultural workshop to enhance intercultural understanding among staff and minimise social impact in surrounding communities | |

| Description of the Impact | Existing mitigation | Proposed mitigation | Impact after mitigation |
|---|---|---|---|
| The impact on sites of cultural importance is considered medium, as the destruction during the construction phase of some of the sites are unavoidable. Nevertheless, none of the archaeological findings is considered unique or upstanding. The Hvalsøe ruins (Unesco Heritage) are located outside and out of sight to and from the project area.<br><br>-M | Regular studying and registering of the sites. | • Contact the Greenlandic National Museum and Archive for them to further study and register the affected archaeological features. | After register of the sites the impact are assessed to be neutral as none of the findings is considered unique or upstanding<br><br>-L |
| Access to natural resources | | • Monitoring of the fishing and hunting activities in the area. | |

Mitigation measures will be identified for all impacts likely to occur, adverse in nature and significant enough to require mitigation (medium and high-level (negative) impacts) in order to mitigate or eliminate such impacts.

The result of the assessment is presented using the following colour codes indicating whether the impact is positive, neutral or negative and whether the significance of the impact is low, medium or high.

| | low | Medium | High |
|---|---|---|---|
| Positive | +L | +M | +H |
| Neutral | 0 | | |
| Negative | -L | -M | -H |

An overview of the impacts matrix, identifying areas with high, medium and low impacts before the mitigation measures are applied is presented below.

| **Impact categories** | **Impacts** | **Impact after mitigation** |
|---|---|---|
| Employment (construction) | +L | +H |
| Employment (operation) | +H | +H |
| Business opportunities | +L | +H |
| Salary boost | +M | +H |
| Education and training | +M | +H |
| Existing infrastructure and plans | -L | -L |
| Social health and services | -L | -L |
| Occupational health and risk of accidents | -M | -L |
| Public health | -M | -L |
| Cultural and natural resources | -M | -L |

**Public Participation**

Based on the SIA Guidelines from the BMP (2009) (today set out in the 2016 MILT SIA guidelines) and local knowledge has relevant stakeholders been identified for the TANBRREZ project. The identified stakeholders were invited to the scoping workshops in April 2010, which took place in Narsaq and in Qaqortoq.

In June 2010 began the collection of socio-economic and social background conditions, based on the result of the scoping phase. In Narsaq and Qaqortoq was focus groups appointed, representing larger groups of the community. Furthermore, contact to representatives in Nanortalik was made by phone. This was submitted in March 2012 as part of the application which was presented at the stakeholders' meetings in November 2013.

Additionally, an information meeting for stakeholders was presented in Nuuk took also place in June 2010, April 2013 and again in November 2013 while stakeholders' meetings that are required by the Act were held in Narsaq, Qaqortoq, Alluitsup Paa and Nanortalik in November 2013.

# 2 DEFINITIONS AND ABBREVIATIONS

| Wording or abbreviation | Explanation |
|---|---|
| *APP* | Local fishermen and hunting association |
| *AVATAQ* | Greenlandic nature and environment society |
| *Baseline Study* | The Baseline study describes the socio-economic and social conditions in the area(s) of the potentially affected by the project before the project is realised. The baseline is used to identify the expected impacts of the mining project. |
| *BAT* | Best Available Technique |
| *BIP* | Benefit and Impact Plan - A plan of the proposed initiatives to realize and optimize the benefits of the project and to minimize or mitigate the negative impacts. A draft Benefit and Impact Plan will be the starting point for negotiation of the Impact Benefit Agreement (IBA). A final Benefit and Impact Plan will be included in the IBA. |
| *BMP/ MLSA* | Bureau of Minerals and Petroleum in Greenland, now renamed Mining Licensing Safety Authority |
| *DKK* | Danish Crowns |
| *DWT* | Dead Weight Tonnage - Deadweight tonnage is a measurement of the capacity in long tonnes of cargo, fuel, stores, passengers etc. of a vessel |
| *EAMRA* | The Environmental Agency for Mineral Resource Activities |
| *EIA* | Environmental Impact Assessment. |
| *FIFO* | Fly-In-Fly-Out basis |
| *GE* | Greenland Business Association (Grønlands Erhverv) |
| *Greenlandic workforce* | Workforce from Greenland (workforce who lives permanently in Greenland). |
| *GWQG* | Greenland Water Quality Guidelines |
| *HIV/AIDS* | Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome |
| *HS* | Health and Safety |
| *HR* | Human Resources |
| *IBA* | Impact and Benefit Agreement |
| *ICC* | Inuit Circumpolar Council |
| *ICMM* | International Council on Mining and Metals |
| *IFC* | International Finance Corporation |
| *ILO* | International Labour Organization |
| *Inuit* | Aboriginal/Local people of Greenland |
| *IUCN* | International Union for Convention of Nature |
| *KANUKOKA* | Association of Greenland Municipalities – closed in 2018 |
| KNAPK | National fishermen and hunters' association |

| | |
|---|---|
| *Local workforce* | Workforce from the municipality of Kommune Kujalleq |
| *MARPOL* | Marine Pollution – International Convention for the Prevention of Pollution from Ships 1973/1978 |
| *MILTE* | The Ministry of Industry, Labour, Trade and Energy |
| *MLSA* | The Mineral Licence and Safety Authority |
| *MMR* | The Ministry of Mineral Resources |
| *MRA* | The Mineral Resources Act |
| *NUSUKA* | Greenlandic Employer's Union |
| *Naalakkersuisut* | Greenland Government |
| *OHS* | Occupational Health and Safety |
| *PAARISA* | Centre of health prevention |
| *PFA* | Danish Pension Fund |
| *RAL* | Royal Arctic Line A/S |
| *REE* | Rare Earth Elements |
| *ROM* | Run of Mine |
| *SIA* | Social Impact Assessment |
| *SIK* | Sulinermik Inuussutissarsiutteqartut Kattuffiat – Employee's Union of Greenland |
| *SISA* | Employee's Pension Fund |
| *SLiCA* | Survey of Living Conditions in the Arctic |
| *SOLAS* | International Convention for the Safety of Life at Sea |
| *STD* | Sexual Transmitted Diseases |
| *SU* | Student Grant |
| *TANBREEZ* | TANBREEZ is an abbreviation of the metals which are planned to be extracted from eudialyte (red); (Ta for Tantalum, Nb for Niobium, REE for rare earth elements and Z for Zirconium-oxide). |
| *TB* | Tuberculosis |
| *ToR* | Terms of Reference - The document which describes the expected focus and plan for the SIA process. |
| *TPA* | Tonnes per annum |
| *UNESCO* | United Nations Educational, Scientific and Cultural Organization |
| *Q&A* | Questions and Answers |

# 3 INTRODUCTION

## 3.1 Background

This report is the Social Impact Assessment for the TANBREEZ mining project which has been prepared by Grontmij A/S and updated by TANBREEZ. The TANBREEZ mining project is located in South Greenland, in the municipality of Kommune Kujalleq, between Qaqortoq and Narsaq, Killavaat Alannguat, in the inner part of Kangerluarsuk Fjord.

When mining companies apply for an exploitation license in Greenland, the Greenland Parliament and Government of Greenland requires an Environmental and a Social Impact Assessment (SIA). This Social Impact Assessment is based on the Guidelines for Social Impact Assessments for mining projects in Greenland (BMP, 2009 and MILT, 2016).

TANBREEZ Mining Greenland A/S prepared an Environmental Impact Assessment (EIA) in parallel to this SIA in 2010-11. This has been updated on several occasions – the latest in July 2020.

TANBREEZ Mining Greenland A/S is a Greenlandic registered company (reg. in 2010) which is owned by an Australian private company, Rimbal Pty Ltd, which is 100% owned by the Barnes Family Trust. Rimbal has its head office in Perth with Tanbreez's main office in Nuuk. The company also has a representative office in Qaqortoq.

Greg Barnes has been doing exploration in Greenland since his first visit in 1992 and have been working on other mining projects such as London Mining, Nordic Mining, Ivigtut, the coal project at Pulateriaq at Nuussuaq Peninsula, Kvanefjeld for Greenland Minerals and the Black Angel Mine for Angel Mining.

He has over 40 years' experience in the mining industry in which time he has successfully brought a number of mines to production around the world.

Other consultants to the group include Hans Kristian Schønwandt who has worked for Tanbreez for 12 years, is a former deputy minister for mines. Kuupik Vandersee Kleist, a former Greenlandic politician and Bolette Maqe Nielsen who has had in excess of 18 years' experience in Greenlandic mining business.

The company has been exploring this area since 2001 with a total direct and indirect expenditure of close to 225,000,000 DKK.

## 3.2 Objective of the SIA

The overall objective of the SIA is to identify and analyse the potential impacts of a proposed mining activity and to recommend initiatives, realize sustainable development opportunities as well as to mitigate the negative impacts. The SIA is based on engagement of the stakeholders.

The main objectives of a SIA process for a mineral project in Greenland are (BMP, 2009):

- To engage all relevant stakeholders in consultations and public hearings;
- To provide a detailed description and analysis of the social pre-project baseline situation as a basis for development, mitigation and future monitoring;
- To provide an assessment based on collected baseline data to identify both positive and negative social impacts at both local and national level;

- To optimize positive impacts and mitigate negative impacts from the mining activities throughout the project lifetime;
- To develop a Benefit and Impact Plan (BIP) for implementation of the Impact Benefit Agreement (IBA).

# 4 POLICY, LEGAL AND ADMININISTRATIVE FRAMEWORK

## 4.1 The political situation in Greenland

Greenland has been under home-rule from Denmark since 1979. On June 21, 2009, the new country status changed as “self-rule”. Greenlandic is now the only official language in Greenland. Under the Act on Greenland Self-Government will become a subject under international law in matters that are within its jurisdiction. Greenland can then enter into agreements and establish bilateral and multilateral relationships with other states.

The shift to self-rule is significant for mining operations in Greenland, as revenues from mining and oil/hydrocarbon activities will now remain in the country, not Denmark. Revenues in excess of DKK 75 million will go towards reducing the block grants from Denmark, as per the Act on Greenland self-government.

Greenland is a member of the Nordic Council and Nordic Council of Ministers. This membership with other Nordic Countries and autonomous regions facilitates parliamentary cooperation among the members, particularly in relation to nature and environmental issues. The current Environmental Action Plan, 2013-2018 focuses on green development, climate change. Biological diversity and ecosystems and chemicals with adverse impact on human health and the environment.

Greenland is also active in the Arctic Council since 1996 although shares their membership with Denmark.

## 4.2 Legal Framework

### 4.2.1 National Legislation

This section lists and describes the relevant regulations and guidelines for the project, particularly for the issues and areas of interest for the SIA.

| Title | Summary & Relevance | Year |
|---|---|---|
| Greenland Parliament Act no. 7 of 7 December 2009 on mineral and resources and mineral activities (the Mineral Resources Act of the Greenland Government and amendments of Act No. 26 of 18 December 2012 and amendments of Act No. 6 of 8 June 2014. | This Greenland Parliament Act aims to ensure appropriate exploitation of mineral resources, use of the subsoil, regulation of matters of importance to mineral resource activities and subsoil activities. Furthermore, it aims at ensuring that activities under the Act are performed in a sound manner as regards to safety, health, the environment, resource exploitation and social sustainability, and appropriately and according to acknowledged best international practices under similar conditions. In particular sections of the Act 29 (a-f) which cover the rights of the company and need to maximize the use of Greenlandic workers, enterprises and where commercially possible, processing in Greenland (section 18 (1-3)). The project has also completed a Social Sustainability Assessment (part 16) and has completed all pre-consultation (part 189). The company has also completed the public meetings also required under this Act.<br>Act no. 7 was created on December 7, 2009 and came into force on January 1, 2010. | 2009<br>2012<br>2014 |

| | | |
|---|---|---|
| Act no. 1048 of 26 October 2005 on Occupational Health and Safety (the Greenland Working Environment) and amendment in act no. 1382 of 23 December 2012. Act No. 302 of 26 March 2015. See also additional Orders listed below in section 4.2.2. | The Greenland Working Environment Act aim at ensuring a safe and healthy working environment which shall at any time be in accordance with the technical and social development of the Greenland society, and the basis on which the enterprises themselves will be able to solve questions relating to safety and health under the guidance of the employers' and workers' organizations, and under the guidance and supervision of the Working Environment Authority. Work with mining and exploration in preparation for exploration of mineral material in Greenland. | 2005<br>2012<br>2015 |
| Danish regulation no. 150 "§ 9, stk. 2, nr. 3, i anordning nr. 150 af 23. februar 2001 om anmodning om ikrafttræden for Grønland af udlændingeloven | Immigration policies. Although immigration rules differ slightly between Denmark and Greenland, visas for residency and employment in Greenland must be applied for through the Danish Foreign Ministry. A special procedure has been established for quick and flexible processing of working and residence permits for workforce involved in oil exploration or other occupations within the extractive industry. Requests of working and resident permits of this nature are sent to the Greenland Government for final decision. | 2001 |
| Act no. 882 of 25 August 2008 on Maritime Safety (Sikkerhed til søs) and Consolidate Act No. 1697 of 11 December 2015 for Greenland on Ships' Safe Navigation etc and Consolidation Act No. 1866 of 28 December 2015. | Rules the implementation under Greenland law of the International Convention on safety at Sea (SOLAS, 1974), the international convention for the prevention of pollution from ships, 1973 and the modified protocol (MARPOL), 1978. | 2008<br>2015 |
| Greenland Parliament Act no. 14 of 26 May 2010 on emergency services in Greenland and fire and explosion prevention (Emergency Management Act) and Greenland Parliament Act No. 14 of 3 December 2012 of amendment of G.P. Act | The act regulates the emergency management, where special attention should be given to paragraph 13 which states that in case of an emergency situation this has to be coordinated by the Policy in Greenland. | 2010<br>2012 |
| Article 24 of the Mineral Resources Act: Rules for field work and reporting regarding mineral resources | The article gives rules and guidelines regarding activities with mineral resources in Greenland and reporting of the activities and results to the BMP. | 2000 |
| Greenland Parliament Act no 11 of 19 May 2010 on conservation and other heritage protection of cultural relics | The Act serves to protect the ancient relics, finds, monuments and buildings. | 2010 |
| Greenland Parliament Act no 29 of 18 December 2003 on Nature protection, amended on GP Act No. 9 of 22 November 2011 and Consolidate Act No. 5 of 27 March 2013 | The act serves to protect the nature of Greenland and on assessment on certain plants impact on the environment and payment on environmental inspection in Greenland | 2003<br>2011<br>2013 |

| | | |
|---|---|---|
| Act no. 12 of 2 November 2006 on income tax and amendments of act no 3 of 30 November 2009 and Act no. 20 of 18 November 2010 | The Acts regulated the taxes in Greenland | 2006, 2009, 2010 |
| Addendum No. 3 of 1 July 2014 to Standard Terms for Exploration Licenses for Minerals (excluding hydrocarbons) | The addendum introduce royalty | 2014 |
| Large Scale Mining Act of 2012 | This Act covers large scale mines and does not apply at this stage to TANBREEZ | 2012 |

### 4.2.2 Orders on Occupational Health and Safety relevant to the project

| Title | Orders on Occupational Health and Safety relevant to the project | Year |
|---|---|---|
| Order no. 32 of 23 January 2006, Rest periods and off-time in Greenland | | 2006 |
| Order no. 151 of 18 April 1972, Installation and use of mechanically operated cranes, hoists and similar | | 1972 |
| Order no. 155 of 18 April 1972, Pressure contained on land | | 1972 |
| Order no. 133 of 5 February 2010, Asbestos | | 2010 |
| Order no. 363 of 6 April, Education on Occupational Health and Safety | | 2010 |
| Order no. 395 of 24 June 1986, Order on the Performance of work | | 1986 |
| Order no. 396 of 24 June 1986, Work with substances and materials (chemicals) | | 1986 |
| Order no. 398 of 24 June 1986, Technical equipment | | 1986 |
| Order no. 399 of 24 June 1986, Arrangement of workplaces | | 1986 |
| Order no. 401 of 24 June 1986, Reporting of work-related injuries | | 1986 |
| Order no. 1168 of October 2007, Work Place Assessment in Greenland | | 2007 |
| Order no. 1344 of 15 December 2005, Order on the Construction Owner’s obligations and responsibility | | 2005 |
| Order no. 1347 of 15 December 2005, Work for young people | | 2005 |
| Order no. 1346 of 15 December 2005, Order on the Occupational Health and Safety Work in Greenland and | | 2005 |
| Order no. 1348 of 15 December 2005, Order on the Arrangement of Construction Sites and similar Work Places in Greenland | | 2005 |
| Order no 364 of 6 April 2010, Amendment in occupational Health and Safety Work in Greenland | | 2010 |
| Order no. 302 of 26 March 2015, Work with Mining and Exploration in Preparation for Exploitation of Mineral Material in Greenland | | 2015 |
| Order no. 656 of 12 May 2015, use of Assistive Technology in Greenland | | 2015 |
| Order no. 655 of 12 May 2015, Décor of Assistive Technology in Greenland | | 2015 |
| Order no. 914 of 26 June 2013, Compulsory Work Environment Education in Greenland (with later changes) | | 2013 |

### 4.2.3 National guidelines relevant to the project

| Title | Summary & Relevance | Year |
|---|---|---|
| Guidelines for Social Impact Assessments for mining projects in Greenland | Guidelines prepared to assist mining companies and their consultants in preparing Social Impact Assessments (SIA), describe the role of the BMP, the SIA process and content of the SIA document. | Nov 2009 |
| Guidelines for Social Impact Assessment for mining projects in Greenland (version 2) | Guidelines prepared to assist mining companies and their consultants in preparing Social Impact Assessment (SIA), describe the role of the MILT, the SIA process and content of the SIA document. | April 2016 |
| MRA Guidelines for preparing an Environmental Impact Assessment (EIA) Report for Mineral Exploitation in Greenland | Guidelines for EIA that apply to mining companies. The report must cover the entire exploitation period from mine development prior to mine start until closure and subsequent monitoring period. The guidelines include requirements on baseline and project specific environmental studies 2-3 years in advance of EIA report preparation. Supplementary requirements for exploitation of minerals containing naturally occurring radioactive materials. | Jan 2011 2015 |
| Rules for field work and reporting regarding mineral resources (excluding hydrocarbons) in Greenland | The rules apply to licensees' field activities regarding mineral resources (excluding hydrocarbons) in Greenland and to reporting to the Greenland Home Rule (now Greenland Self-Government) Government's Bureau of Minerals and Petroleum (BMP) (now Mineral License and Safety Authority – MILT) on the activities and their results. | 2000 |
| The Danish Maritime Authority's guidelines of 2010 on investigation of navigational safety issues | The guidelines ensure that the concession holder – prior to starting the exploitation activities – must have carried out a navigational safety investigation of the conditions in the operational phase in connection with calls at ports, facilities, anchorages, etc. in the concession area. The purpose of the investigation is to illustrate that navigation can be carried out in a safe manner. | 2010 |
| Standard Terms for prospecting Licenses for Minerals (excluding hydrocarbons) in Greenland | Serves under the Mineral Resources Law. Guidelines from BMP describing application for prospecting licenses, rights and rules for prospecting of minerals in Greenland. | 2010 |
| Standard Terms for Exploration Licenses for Minerals (excluding hydrocarbons) in Greenland | Serves under the Mineral Resources Law. Guidelines from BMP describing application for exploration licenses, rights and rules for exploration of minerals in Greenland. | 2010 |

International Unions and Conventions

| Title | Summary & Relevance | Year |
|---|---|---|
| United Nations Framework Convention on Climate Change | The convention aims at protecting, preventing and reducing global warming by reducing the emissions of greenhouse gases. The convention enforces the Kyoto protocol which came into force in 2005. The Kyoto protocol is a legally binding agreement to reduce greenhouse gas emissions. | 1997 |

| | | |
|---|---|---|
| Convention for the Protection of the World Cultural and National Heritage (UNESCO / World Heritage Convention) | Aims to conserve and protect cultural heritages from destruction by traditional decay and by changing social and economic conditions. Because deterioration or disappearance of any item of cultural or natural heritage constitutes a harmful impoverishment of the heritage of all the nations of the world. | 1972 |
| International Union for the Conservation of Nature (IUCN) | IUCN, International Union for Conservation of Nature, helps the world find pragmatic solutions to the most pressing environment and development challenges | 1948 |

### 4.2.4 Taxes and Revenues

This section describes the Greenland legal framework and regulations on taxes and revenues applicable to the project. The impact analysis regarding taxes and revenues to be generated by the project is based on the legal framework described in this section. The estimating and results of the Taxes and Revenues analysis in terms of benefits to Greenland are presented in Section 8.1.8.

The information presented in this Section is based on the Act on Minerals and Resources (Inatsisartut law no. 7, dated December 7, 2009) which came into force by January 1, 2010, and the Tax Law including available information regarding the latest amendment to the income tax from November 9, 2010. The section is divided into concession fees and tax base and taxation.

**Concession fees and Royalties**

Tax on profits to be generated by the exploitation will yet be applied by the Greenland Government (also refer to section 4.2.4). However, under Article 2 of the Addendum No. 3 Section 2.01, d (2) of the Standard Terms for Exploration Licenses for Minerals 5% of the value of the minerals exploiting rare earth elements shall be paid by the licensee and 2.5% for the other products.

**Tax regulation**

This section contains an account of the corporate taxation in Greenland related to mining activities, as well as an income tax estimate related to employees. The different types of taxes that will be relevant to a limited company domiciled in Greenland are listed below and are supplied by Deloitte and Naalakkersuisut March 2012:

<u>Corporate Taxation</u>

*Capital contribution*
There is no capital contribution tax.

*Dividend tax*
Greenlandic companies are to withhold a dividend tax corresponding to the personal tax in the municipality of registration. For companies with permits under the Mineral Resources Act, the present dividend tax rate is 36%.

*Tax losses*
Companies with exploration or exploitation/mining permits under the Mineral Resources Act are entitled to carry forward tax losses without timing limitations.

*Corporate tax*
In general, the corporate tax is levied at a flat rate of 25% and the rate applies to a resident company as well as a registered branch office of a foreign company. The taxable income is determined on the basis of the profit shown in the statutory annual report, adjusted to comply with the prevailing tax provisions. Corporate tax for companies with a license under the Mineral Act is 25%

Tax depreciation and amortization can be allocated as follows:
- Buildings and related installations are depreciable in a straight line by a maximum 5% per year.
- Aircrafts and vessels by maximum 10% per year.
- All other items like machinery, equipment etc. by max 30%
- All assets costing less than DKK 100,000 are depreciable / amortizable in the year of acquisition.

*Profit amortization*
If the taxpayer has calculated a tax profit, it is possible to make further tax amortization of 50% of the profit. The amortization may freely be deducted from the balance in one of the said three amortization/depreciations groups, however, provided that the remaining balance of the group remains positive or DKK zero.

Companies with exploitation/mining permits under the Mineral Resources Act may, when computing their taxable income, deduct any change in the provisions made to ensure that a closure plan can be carried out in a financially viable way.

*Licence amortization*
An amendment to the income tax law passed by the Parliament of Greenland in November 2010, and effective from January 1, 2011 changed the amortization of licences. For mineral licences the amortization is now “pegged” and fixed at the same amount over a period of 4 years.

*Transfer prices*
The tax law now includes specific provisions on documentation of trade between related companies. Agreements between related companies/parties must be documented, including written documentation as to how prices and term are determined for the intercompany transactions.

*Thin capitalization rules*
The tax rules include specific rules on thin capitalization. Basically, it is important to note that lending between related companies/parties is to observe the arm’s length principle.

<u>Personnel taxation</u>

The amendment to the income Tax Law in November 2010 introduced a 35% flat rate tax for foreigners working in the mineral resource industry outside towns and settlements on salary originating from their income in Greenland. Only individuals who have not been liable to tax in a Greenland municipality during the past six months will be covered by the flat tax scheme.

There are tax agreements between Greenland, Denmark, Iceland, Norway and the Faroe Islands. Otherwise the income tax system is structured according to the Danish model with taxation at source.

The income tax rate for 2016 is 44 % for the municipality of Kommune Kujalleq, and 36% for areas outside municipal classification. Personal allowance for 2016 is DKK 58.000.

*Estimating of Taxes and Revenues to Greenland from the Exploitation of TANBREEZ project*

Estimating and results of a Taxes and Revenues analysis in terms of benefits to Greenland are presented in Section 8.

## 4.3 International Labour Organization Conventions

The International Labour Organizations Conventions have been incorporated in the Greenlandic legislation for working conditions.

## 4.4 Guidelines

The Social Impact Assessment is based on the Guidelines for Social Impact Assessments for mining projects in Greenland, April 2016, prepared by the Ministry of Industry, Labour and Trade. Furthermore, the guidelines from IFC and Mackenzie Valley have been used as have the BMP guidelines of November 2009.

- International Finance Corporation (IFC), Addressing the Social Dimension of Private Projects – Good practice Note, 2003
- Mackenzie Valley, Socio-Economic Impact Assessment Guidelines, Mackenzie Valley Environmental Impact Review Board, 2007
- International Council on Minerals and Metals framework and guidance notes
- Community Development Toolkit, produced by World Bank, International Council on Minerals and Metals, and the Energy Sector Management Assistance Program

## 4.5 Relevant national strategies

This section presents some of the recent strategies developed by the Self-Government which is of interest for the TANBREEZ Project.

### 4.5.1 Greenland's Mineral Strategy 2020 – 2024

The strategy contains 5 priority areas: 1)Improved sharing of geological knowledge, 2) Efficient, predictable and transparent case administration, 3) Simplified transition from exploration to exploitation, 4) Sustainable development of the mineral resources industry 5) Competitive tax and royalty model

**Taxation Model for raw materials**
The Self-Government recommends a taxation model for all metals and minerals other than uranium, rare earth and gemstones, with a royalty of 2.5%, where corporate tax/ dividend tax is deducted from the calculated royalty.

For rare earth the Self-Government recommends a royalty of 5%, where corporate tax/dividend tax are deducted from the calculated royalty.

**Sustainable development**
The Government recommends that the mining sector will be develop in a sustainable manner. Areas to be covered within this are among other are infrastructure, labor and employment, education, environment and health sectors.

**Environmental Protection**
The Environment Agency for Mineral Resources Activities (EAMRA) is responsible for environmental protection in the area of mineral resources activities. The EAMRA works closely with the Danish Centre for Environment and Energy (DCE) under the Aarhus University and the Greenland Institute of Natural Resources (GINR) to provide scientific advice concerning environmental protection in the area of mineral resources activities.

### 4.5.2 The Employment strategy 2015

An Employment strategy has been prepared by the former Ministry of Industry, Labour and Trade. The goal is to reduce the unemployment to a minimum using local workforce, tighten control of external workforce. This Strategy contains the following 16 initiatives:

1. A free and national jobportal
2. The resources at the Employment offices and Majoriaq should be utilized better
3. Extra development of local workforce
4. The unemployment amongst young people to be reduced remarkable
5. It should be easier to move where the jobs are
6. The supervision of international workforce has to improve
7. More should be offered rehabilitation
8. A special fund to be established targeting match groups and people how are searching for jobs but not yet ready
9. Implementation of projects under the fund ”Anlægs- og Renoveringsfonden”.
10. Mapping of purchasing facilities in settlements
11. New and permanent jobs in new industries and development areas
12. IBA as a tool to ensure local jobs
13. Fisheries initiative and living resources
14. Structure political efforts, initiative structure and efforts on education areas
15. Man hour arrangements
16. Construction of gravel runways in small towns.

See also:
http://naalakkersuisut.gl/~/media/Nanoq/Files/Publications/Arbejdsmarked/DK/Beskaeftigelsesstrategi_DK_01102015.pdf (October 2015)

### 4.5.3 Inuuneritta II 2013-2019

Inuuneritta II is the Self-Government’s strategies and targets for the public health for 2013-2019. The vision of Inuuneritta II is that all citizens in Greenland should have the best opportunities for a good and long life. Inuuneritta II has focus on the consequences of the Greenlandic lifestyle and the lifestyle factors which have the biggest impact on the health.

Therefore, Inuuneritta II has selected 4 themes which will be in focus:
• Alcohol and cannabis
• Smoking
• Physical activity
• Diet

Abuse and cannabis is the key focus theme and will run for the whole period of the programme.

# 5 PROJECT DESCRIPTION

## 5.1 The resource

The TANBREEZ deposits forms part of the large Ilimmaasaq intrusion. The ore is related to the lower section of this intrusion, centered on a rock type called Kakortokite and is located at two sites in the license area: The Hill Site and the Fjord Site (see figure below).

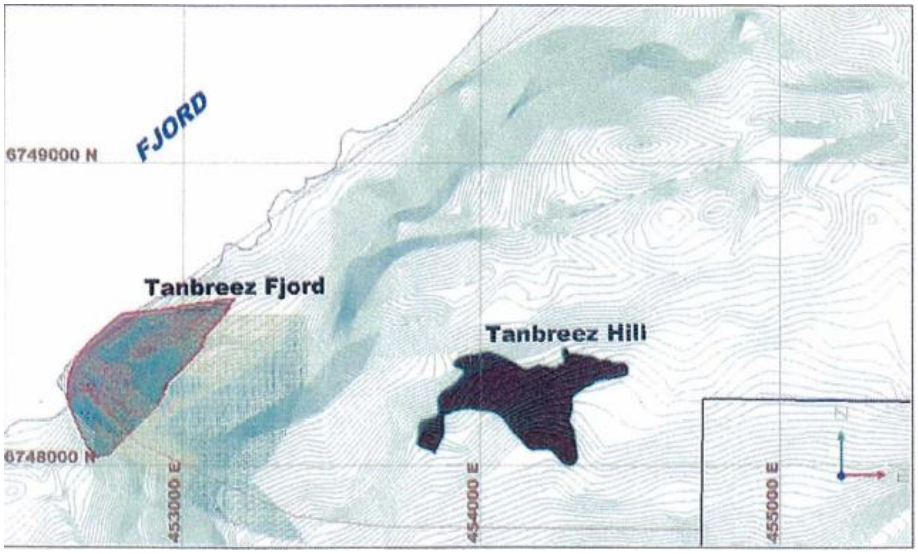


Figure 5-1: The two deposits (The Fjord Site and The Hill Site)

This deposit has been extensively drilled with current inferred resources standing at 4.9 billion tons at 1.9% **$ZrO_2$, 0.6% REO, 0.2% $Nb_2O_5$, 0.03% $Ta_2O_5$** of which 49 million tons is at an indicated resource level or greater under the Australian JORC code as assessed by a competent person. The project can be divided into a 10 year long operation phase, a 2 year long construction phase and it is estimated that the closure and rehabilitation phase will take 3 years (see figure 5-2 below)

| | |
|---|---|
| Construction phase | 2 years |
| Operation phase | 10 years |
| Closure phase | Approx. 5 months (one field season) & 3 years monitoring |

Figure 5-2: The time extension of the project's phases

Tanbreez intends to mine the two deposits over 10 years with a mining rate of 500,000 tons per annum. However, there is no doubt on this production may be extended depending on economics and further adequate permissions.

This chapter summarizes the different phases of the proposed project. Full technical details of the project can be found in the feasibility study. The chapter begins with describing the production phase (Section 5.2) because this phase has the longest extension in time and, it is also the most important phase both for the company as well as for Greenland in form of positive impacts from the project - tax, jobs, development of industries (processing of minerals) and business opportunities for Greenland enterprises. This is followed by an account for the construction phase (5.3) and an account for the closure and rehabilitation phase (5.4).

## 5.2 Production/Operation Phase

The description of the production follows the basic flow path of the ore from the mine, through processing and out either as product or mine residue. The supporting infrastructure and labor requirements are also discussed.

The TANBREEZ mine and processing plant will be operated to produce a saleable product of eudialyte concentrate.

A key principle when choosing the location of the Project facilities, which potentially may cause pollution of the environment, has been to identify sites where the danger of impact is as small as practically possible. When it comes to the methods of operation of the Project, priority has been given to meet the Best Available Technique (BAT) principle. This include the choice of machinery, processing technology and the handling of waste where emphasis has been placed on pollution prevention techniques, including cleaner technologies and waste minimization.

### 5.2.1 Overall mine design in Greenland

The mining facilities will consist of the following facilities:

a. Two open pits (mining areas)

b. A process plant incl. a crusher and stockpile area

c. A product storage

d. A port site

e. Supporting infrastructure

f. A tailing facility

g. Transportation of workers and products.

Except for a shelter near the mine area, all facilities will be located at the shore of the fjord including the power plant, fuel storage, a workshop, staff accommodations, a heliport and a wharf. The overall mine footprint is shown in figure 5-3. Small improvements to the plant are under continual review aimed at reducing the footprint of the mine on the amount of waste.

The most import consequence from the mining activities can be seen in figure 5-3. Mining production will during the first five years occur at a rate of approximately 500,000 tonnes per annum (tpa) extracted from two open pits; Mining area 1 on top of the Killavaat Alannguat mountain (Hill Site) and Mining area 2 at the shore of the fjord southwest of the port (Fjord Site). The mining area near the fjord will be mined during the first five year and the Hill Site will be mined from year 6 and onwards.

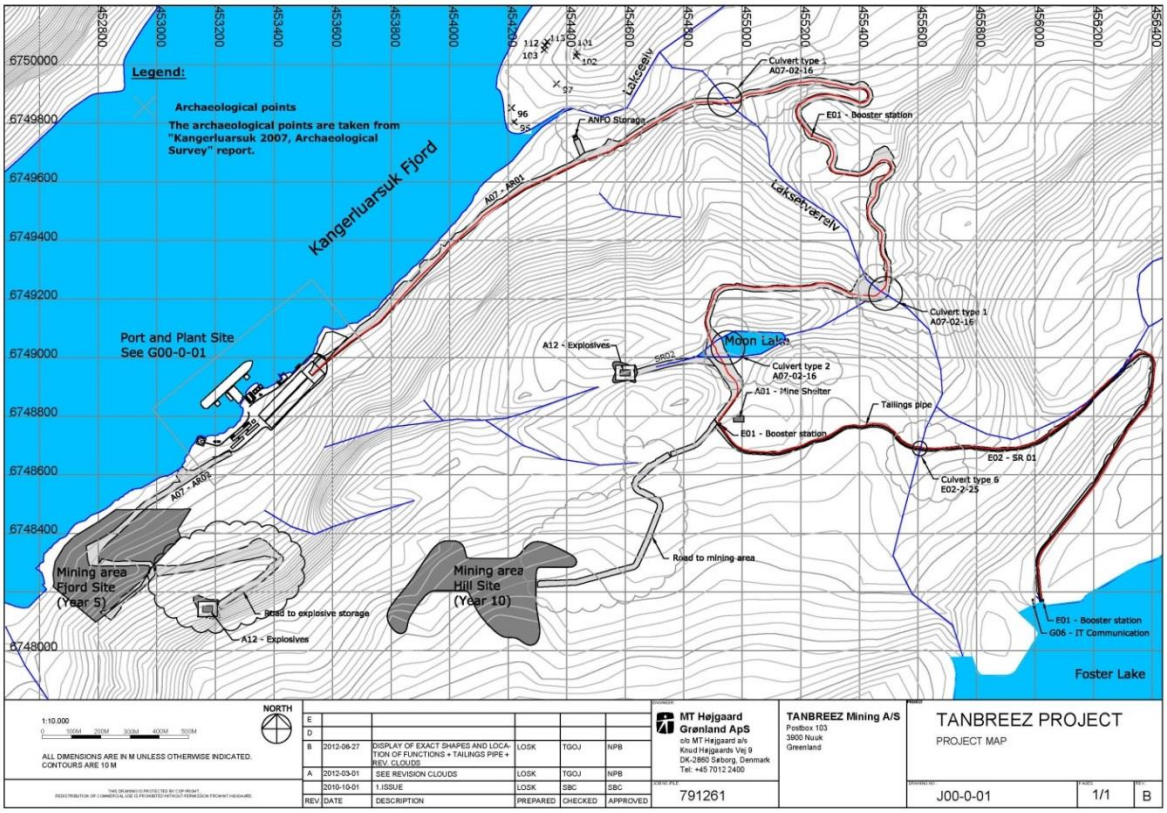


**Figure 5-3:** ***The overall mine design with two open pit mining sites, tailings deposition in Foster Lake and the cruncher, separator and all other facilities located at the fjord (note this map does not contain the option of storage tanks and a second berth for an accommodation berth).***

*a. The Mining Areas in Greenland*

Mining production will during the 10 years occur at a rate of approximately 500,000 tons per annum (tpa). The ore will be extracted from two open pits; Mining area 1 on top of the Killavaat Alannguat mountain (Hill Site) and Mining area 2 at the shore of the fjord southwest of the port (Fjord Site). The mining area near the fjord will be mined during the first five year and the Hill Site will be mined from year 6 and onwards. The annual production rate etc. is shown in Figure 5-4 below:

| | |
|---|---|
| **Year (production)** | 1-10 |
| **Annual production** | 500,000 tons |
| **Site** | The Fjord Site and the Hill Site |
| **Total production** | 5 Mill. tons |
| **No. of workers (Mine-site)** | 19 |

**Figure 5-4: Annual production at the Fjord Site and the Hill Site.**

The mining method will be drilling and blasting. A production rate at 500,000 tons per annum during the 10 years of operation requires that a maximum of 3,000 $m^3$ (4,800 tons) of ore have to be blasted twice a week. The production rate can vary from a week to another. With a mining rate of 500,000 tons per annum 306 holes will be drilled in four days each week and will be subsequently blasted. Blasting and drilling will take place 50 weeks per year. Subsequently, ore mined at the open pits will be delivered by 35 t payload trucks to the Run of Mine (ROM) pad for processing at the TANBREEZ plant. During the 10 years of operation four trucks will be needed. The required labor force for conducting the activities in the pit will during the 10 years of mining be 19 mine-workers.

*b. Mechanical processing plant in Greenland incl. crusher and stockpile area*
Haul roads will connect the two mining areas with the processing plant which will be located at the shore of the Kangerluarsuk Fjord.

The length of the haul road connection Mining area 1 with the plant will be 4.6 km with the haul road from Mining area 2 to the plant will be 1.3 km. At the processing plant the ore will first be crushed and subsequently go through a magnetic separation.

i. Crushing
The primary (coarse) crusher discharges products to a double deck screen. Fine particles are then transported to the fine screen while coarse particles are transferred to a cone crusher. The cone crusher operates in a closed circuit with the coarse screen so that crushed ore is transported back to the double deck screen. Crushed ore is then passed to a fine screen with screen oversize particles being directed to the high pressure grinding rolls for fine crushing. Product from the grinding rolls is transported back to the screen. Undersize ore from the screen is transferred to the very fine screening system where fines are removed and directed into the tailings deposit area or if testing goes as expected this can be added to the Arfvedsonite for sales. Ore particles greater than the screen size are transported to the fine ore storage bin located ahead of the magnetic separation plant.

ii. Magnetic separation
The crushed and sized ore in the fine ore storage bin is fed by vibrating feeders to the magnetic separation plant where it is passed through a number of phases of magnetic separation. The three products from the magnetic separation consist of:

- highly magnetic mafic minerals (Arfvedsonite)
- weakly magnetic (eudialyte), and
- non-magnetic (feldspar)

The annual production will during the 10 years of production be approx. 100,000 tons of eudialyte concentrate, approx. 200,000 tons of feldspar concentrate and approx. 200,000 tons of Arfvedsonite (see figure 5-5).

The required labor force at the processing plant will be 29 workers (see figure below)

| Year | Arfvedsonite | Feldspar concentrate | Eudialyte concentrate | No. of Workers |
|---|---|---|---|---|
| **1-10** | 200,000 tons | 200,000 tons | 100,000 tons | 29 |

**Figure 5-5: Annual production at the mechanical processing plant**

Alternative location: It was considered to locate the plant next to the upper mine site, but this option was rejected because of the harsh weather conditions with wind speed regularly exceeding 50 m/s.

*c. Product Storage in Greenland*

The concentrate produced is stored within two fully enclosed concentrate shed located adjacent to the export wharf on Kangerluarsuk Fjord (see figure 5-5). The concentrate is therefore kept dry and safely stored prior to shipping to the customer. Entrance to the concentrate shed is via sealed door and the exhaust air from the shed is filtered.

The required labor force will be 4-wheel loader operators.

Alternative storage design: if Arfvedsonite can be sold three tanks will be built to contain the 3 products.

*d. Port Facility in Greenland*

The port will be located in the Kangerluarsuk Fjord (see figure 5-3). The port will be formed by a 15m wide access dike constructed of quarry run/gravel with a compacted wearing course and rock armor to the batters. The pier head will be formed by a rectangular sheet pile cell filled with quarry run/gravel. From the pier head, it will be possible to reach the ship for concentrate loading and importing supplies. A second pier will be constructed to the east of this pier if the accommodation village is required.

Alternative location: It was considered to position the port lower in the fjord to shorten the access road from the mine area, but this option was rejected for several reasons; for example, because the sea was too shallow.

*e. Supporting Infrastructure in Greenland*

i. Power supply and storage

Site power is supplied by 3 No. 2.6 KW diesel generators. Generators are located at the port. Diesel fuel for the power plant is stored in the main diesel storage tanks, which are also located in the port area. The two tanks have a storage capacity of 1150 m3 each. This capacity will be adequate to ensure continuous operation for three months with a total volume of 2300 m3. Fire safety systems will be installed to the power plant building and diesel tanks. Alternatively, some accommodation vessels may have sufficient excess power to run the plant.

Alternative location: It was considered to locate the plant next to the upper mine site, but this option was rejected because of the harsh weather conditions with wind speed regularly exceeding 50 m/s. A record alternative of wind power supplied from a ship will depend on availability of a suitable vessel.

ii. Water supply
Water supply is from a desalination plant located in the plant area.

iii. Accommodation and administration facility
Employees on site will work on a fixed rotation, which will likely be of the order of 4 weeks on, 2 weeks off. Site personnel will be housed in modern accommodation in the port area. The accommodation will be a 100-person self-contained camp (or if possible in an accommodation vessel moored adjoining the site). It should be noted that the detailed planning of the working hours will follow the rules according to the Act on Working Environment (OHS) § 41 and § 4 of the Order no 23 of 23 January 2006 about rest periods and day off.

Alternative location 1: It was considered to locate the accommodation facilities next to the upper mine site, but this option was rejected because of the harsh weather conditions with wind speed regularly exceeding 50 m/s.

Alternative location 2: One other proposal is to put the accommodation village on a boat or barge. This plan would again be environmentally an excellent idea; however, such a plan can only be realized once a firm timetable of development is finalized as the availability is not long for suitable vessels when they come to the market and these suitable approvals from the relevant Maritime authority.

iv. Workshops and warehousing
Site facilities will include a main workshop for maintenance of the mobile equipment fleet including light vehicles. Within the process plant there will be small workshop facilities to enable maintenance to be undertaken.

v. Domestic and Industrial Waste Management
Domestic and industrial waste will be disposed of through the use of an incinerator. All non-combustible waste will be removed from site. Domestic waste water will be treated in a sewage plant before discharged to the fjord.

vi. Sanitary waste water at the mine site
The sanitary sewage from the accommodation complex is piped to a treatment unit. After adequate treatment, in accordance with standards as described in the BFS and BMP guidelines the water fraction is discharged to the plant surface drainage system which is discharged toward the fjord. The dewatered sludge is transported to the incinerator. In the mine pits, dry toilets will be established.

vii. Combustible solid wastes
The project includes a waste incinerator plant located at the port site. The incinerator plant will be installed as an early priority at the beginning of the construction phase and will have sufficient capacity to handle combustible waste generated during the construction period. It will continue during the operation phase.

When the incinerator plant is constructed and in operation, the waste types suitable for incineration will be handled at the port site:

- Domestic waste produced in the camps
- Sludge cake from the wastewater treatment plant
- All debris suitable for incineration (wood, plastic, paper, packing, etc.)

Incinerator ash will be disposed of to a site landfill.

viii. Other categories of waste

Other specific procedures will be applied for waste not suitable for incineration or classified as hazardous waste. The categories include:

- Accumulators, batteries, electronic devices, glass, etc. (all assumed to be small quantities). This fraction will be stored temporary in containers and periodically handed over to Qaqortoq waste handling facility for further disposal according to regulations and after mutual agreement.
- Tires will be temporary stored at the port site and periodically exported to contractors abroad for re-cycling/re-use.
- Iron and metal scrap, etc. will be stored at the port site and periodically exported to contractors abroad for re-cycling/re-use.
- Construction waste (concrete, bricks, wood, etc.) will be re-used as much as possible for other construction purposes e.g. road maintenance.
- Hazardous waste. The handling of these waste fractions is regulated through Kommune Kujalleq regulation concerning hazardous waste (Regulations for disposal of hazardous waste /Regulativ for bortskaffelse af miljøfarligt affald, 2009). In general, hazardous waste in the municipality is shipped to Denmark and handled in compliance with a comprehensive EU initiated legal framework. Hazardous waste shall be registered and traced using code standards (EC waste list / EAK koder / Europæiske Affalds Koder).

The waste handling procedures described above will be detailed in a waste management manual to become part of the EMP for the construction phase and later detailed for the operational phase. The procedures specific to handling hazardous wastes will be detailed in collaboration with the Qaqortoq waste handling facility under Kommune Kujalleq

The estimated labor force for the supporting infrastructure appears in the table below

| Year | No. of Workers |
|---|---|
| **1-10** | 28 |

**Figure 5-6: No. of workers for supporting infrastructure**

*f. Tailing facility and waste rock deposit in Greenland*

Tailings will be pumped through a 7 km pipeline to Fostersø for deposition. A service road will lead from the end of the haul road near Mining area 1 to Fostersø. Waste rock will also be deposited in Fostersø.

Tailings Management: The tailings, fines and dust collected from the plant are piped into the tailings collection box where water is added to form slurry. This slurry will subsequently be pumped to Fostersø (at 470 m altitude) through an insulated 7 km polyethylene pipe where it will be deposited under water. Five electrical booster stations will be constructed along the pipeline. A separate pipeline will bring water from the lake to the tailings collection box at the fjord. The slurry will flow at a rate of c. 23 l/s and transport up to 60 tons of tailings to the pond per hour. To avoid the slurry from freezing during winter the pipes will be insulated. Mullock (generally barron phonolite rock) will be transported by truck to the late or used as landfill.

Alternative location: It was considered to deposit the tailings in the fjord, but this was rejected, as an assessment of this solution would require very comprehensive studies of the fjord including the marine ecosystems.

*g. Transportation*

Transport to the mine will normally be by boat and occasionally by helicopter. Transport from the port to the pit will be by car and truck.

Shipping of products from the port at Kangerluarsuk Fjord will use 57,000 DWT bulk carriers to facilitate the required shipping volume. The bulk carrier is expected to visit the port 6 (8 in Arfvedsonite is a product) times a year and will be constructed and approved for navigation in ice-filled waters. In addition, a 15,000 DWT Arctic line vessel will visit the port a few times annually with supplies. Finally, will fuel be provided 4 times a year by a 2,300 DWT ship.

In addition, it is expected that different goods and consumables will be delivered in containers by ship.

### 5.2.2 Chemical processing plant

*a. Chemical processing*

Tanbreez intends to sell the eudialyte concentrate to a customer, who in a chemical processing plant (CSP) will process it into intermediate rare earth concentrates. During the 10 years of production the CSP is expected to produce 2,000 tons of rare earth concentrate per annum and 6,900 tons of Zr/Ta/hf concentrate per annum (see figure below).

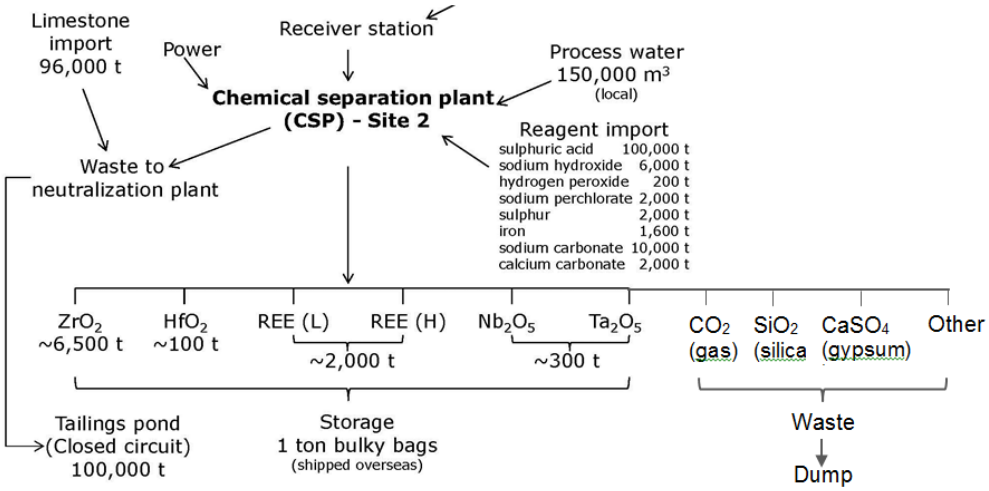


**Figure 5-7: Flow chart for the chemical separation plant.**

The design basis for the CSP is to initially treat 100,000 tons per annum of eudialyte concentrate to produce separate products of zirconium and other valuable products of tantalum, niobium, hafnium and rare earth oxides.

Production of separate products from eudialyte concentrate requires a process that includes acid baking, decomposition and leaching in acidic solutions. The leachate is filtered and the filter cake washed to obtain maximum extraction of dissolved elements. The filtrate and cake washings are then processed through solvent extraction and ion exchange where specific reagents are mixed with leachate allowing the absorption of the valuable constituents. Subsequent precipitation produces a metals salt which contains zirconium and rare earth element products.

It is estimated that the CSP in the operation phase will generate approx. 160 additional jobs. The products from the chemical plant are not end-products as more specific chemical treatment on the metal salts produced is required somewhere else in the world.

A proposed layout of chemical separation plant is shown in figure 5-8

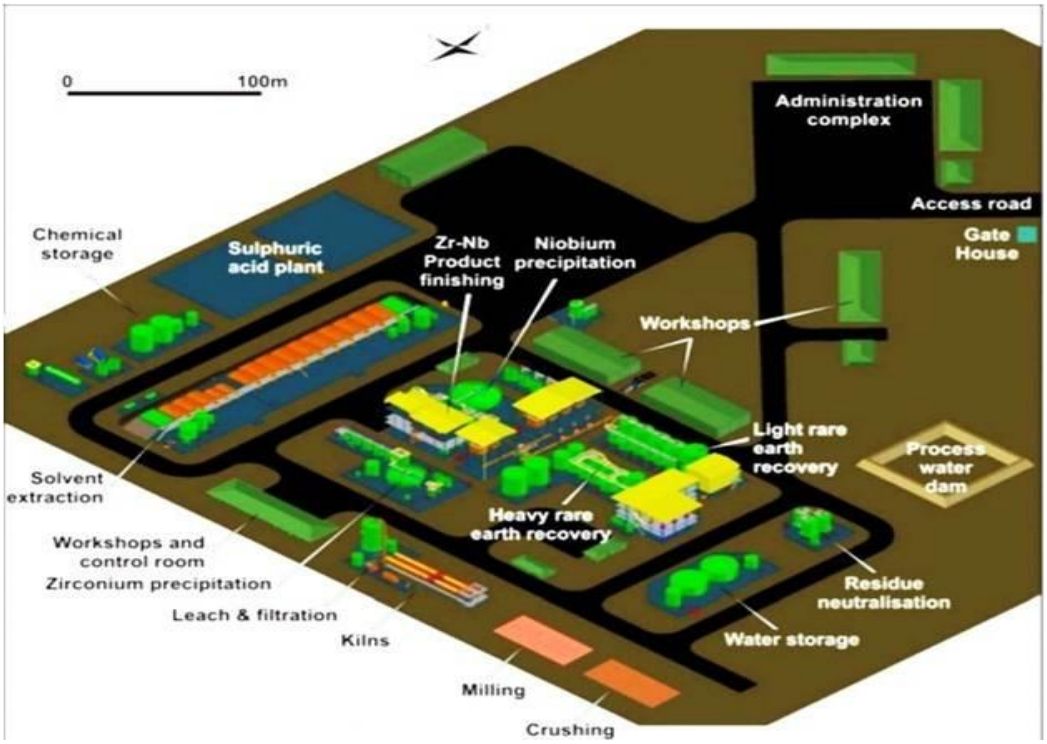


**Figure 5-8: General layout of a chemical plant**

b. *Assessment of locating a chemical processing plant in Greenland*
Tanbreez has investigated potential sites for locating a chemical separation plant in Greenland in the vicinity of the mining area and has found three potential sites for the chemical separation plant as shown below in Figure 5-9.


**Figure 5-9: Possible locations for a chemical plant, respectively 11 and 25 km away from the current site (desktop study only) While the third examined was at Ivigtut**

Figure 5-9 shows that a chemical processing plant in Greenland will require that a specific site and port will have to be developed at a new location (approx. 25 ha located up to 25 km away from the current site location) because of insufficient space at the current site. A Greenlandic chemical separation plant will therefore result in

- Additional site preparation and infrastructure for construction work
- Additional port incl. facilities
- New buildings similar to the ones illustrated in figure 5-8 incl. a possible acid neutralization facility if calcium carbonate is not chosen to be imported

Furthermore, as illustrated in the figure 5.7 then a chemical separation plant in Greenland would generate a need for annually importing reagents into Greenland among other 100,000 tons of sulphuric acid and possible 35,000 tons of hydrochloric acid.
Tanbreez is of the opinion that this would require constructing a new ice classed vessel of approx. 24,000 DWT to transport acid ice classed vessel of approx. 24,000 DWT to transport acid (this vessel does not exist today).

c. *Economic assessment of locating a chemical processing plant in or outside Greenland*
In order to further analyze the possibilities of placing the chemical plant in Greenland, comparisons between Europe and Greenland have been carried out. The Greenland Government and Tanbreez have different opinions when it comes to whether chemical processing in Greenland will generate significant higher cost and inconvenience. However, Tanbreez and the Government of Greenland have reached the conclusion that this issue will be resolved before the commencement of 10th year of production. To postpone the decision on further processing to after the production has been running for some years is a practice which is seen in several other mining countries. The benefit of the postponement is that Greenland receives further benefits from the mining project if chemical processing cannot take place outside of Greenland from the 10th year of production.

The company intends to base as much of the treatment plant in Greenland as possible.

At present a full chemical plant in Greenland is not an economic reality and neither is a social or environmental possibility either. However, the company intends to continually monitor this situation and review this status if and when the deposit is economic, environmentally safe, accepted locally and finance is available.

### 5.2.3 Processing of ROM

Ore mined at the open pits will be delivered by 35 t payload trucks to the Run Of Mine (ROM) pad for processing at the TANBREEZ plant. The length of the haul road connecting Mining area 1 with the plant will be 4.6 km with the haul road from Mining area 2 to the plant will be 1.3 km.

Crushing
The primary (coarse) crusher discharges products to a double deck screen. Fine particles are then transported to the fine screen while coarse particles are transferred to a cone crusher. The cone crusher operates in a closed circuit with the coarse screen so that crushed ore is transported back to the double deck screen.
Crushed ore is then passed to a fine screen with screen oversize particles being directed to the high-pressure grinding rolls for fine crushing. Product from the grinding rolls is transported back to the screen. Undersize ore from the screen is transferred to the very fine screening system where fines are removed and directed into the tailings deposit area or if testing goes as expected this can be added to the Arfvedsonite for sales. Ore particles greater than the screen size are transported to the fine ore storage bin located ahead of the magnetic separation plant.

Magnetic separation
The crushed and sized ore in the fine ore storage bin is fed by vibrating feeders to the magnetic separation plant where it is passed through a number of phases of magnetic separation. The three products from the magnetic separation consist of:

- highly magnetic mafic minerals (Arfvedsonite)
- weakly magnetic (eudialyte), and
- non-magnetic (feldspar)

### 5.2.4 Tailings Management

The tailings, fines and dust collected from the plant are piped into the tailings collection box where water is added to form slurry. This slurry will subsequently be pumped to Fostersø (at 470 m altitude) through an insulated 7 km polyethylene pipe where it will be deposited under water. Five electrical booster stations will be constructed along the pipeline. A separate pipeline will bring water from the lake to the tailings collection box at the fjord. The slurry will flow at a rate of c. 23 l/s and transport up to 60 tons of tailings to the pond per hour. To avoid the slurry from freezing during winter the pipes will be insulated. Mullock (generally barron phonolite rock) will be transported by truck to the late or used as landfill.

### 5.2.5 Waste rock

Waste rock will be deposited in the tailings pond (Fostersø).

### 5.2.6 Dust Management

There are several operational areas where generations of dust have to be managed. The most important are the open pit mine, the haul road, the process plant, and when loading concentrate on to the ship. All storage bins, conveyors, screens, crushers, magnetic separators and transfer points will be fitted with dust extraction arrangements to collect dust and transfer it to the tailings disposal system.

Haul road fugitive dust will be suppressed through light wetting with a water truck, but this has to be managed carefully during winter to avoid potential ice build up.

### 5.2.7 Product Storage

The concentrate produced is stored within two fully enclosed concentrate shed located adjacent to the export wharf on Kangerluarsuk Fjord (Figure 5-3). The concentrate is therefore kept dry and safely stored prior to shipping to the customer. Entrance to the concentrate shed is via sealed door and the exhaust air from the shed is filtered.

### 5.2.8 Port Facility

#### a) Construction

The port will be located in the Kangerluarsuk Fjord (Figure 5-3 and Figure 5-10). The port will be formed by a 15m wide access dike constructed of quarry run/gravel with a compacted wearing course and rock armour to the batters. The pier head will be formed by a rectangular sheet pile cell filled with quarry run/gravel. From the pier head it will be possible to reach the ship for concentrate loading and importing supplies. A second pier will be constructed to the east of this pier if the accommodation village is required.

#### b) Shipping

Shipping to and from the port at Kangerluarsuk Fjord will use 57 000 DWT bulk carriers to facilitate the required shipping volume. The bulk carrier is expected to visit the port 6 (8 in arfvedsonite is a product) times a year and will be constructed and approved for navigation in ice-filled waters. In addition, a 15,000 DWT Arctic line vessel will visit the port a few times annually with supplies. Finally, fuel will be provided 4 times a year by a 2,300 DWT ship.

### 5.2.9 Supporting Infrastructure

a) Transportation to and in the mine area

Transport to the mine will normally be by boat and occasionally by helicopter. Transport from the port the pit will be by car and truck.

b) Power supply and storage

Site power is supplied by 3 No. 2.6 KW diesel generators. Generators are located at the port. Diesel fuel for the power plant is stored in the main diesel storage tanks, which are also located in the port area. The two tanks have a storage capacity of 1150 m3 each. This capacity will be adequate to ensure continuous operation for three months with a total volume of 2300 m3. Fire safety systems will be installed to the power plant building and diesel tanks. Alternatively, some accommodation vessels may have sufficient excess power to run the plant.

c) Water supply

Water supply is from a desalination plant located in the area.

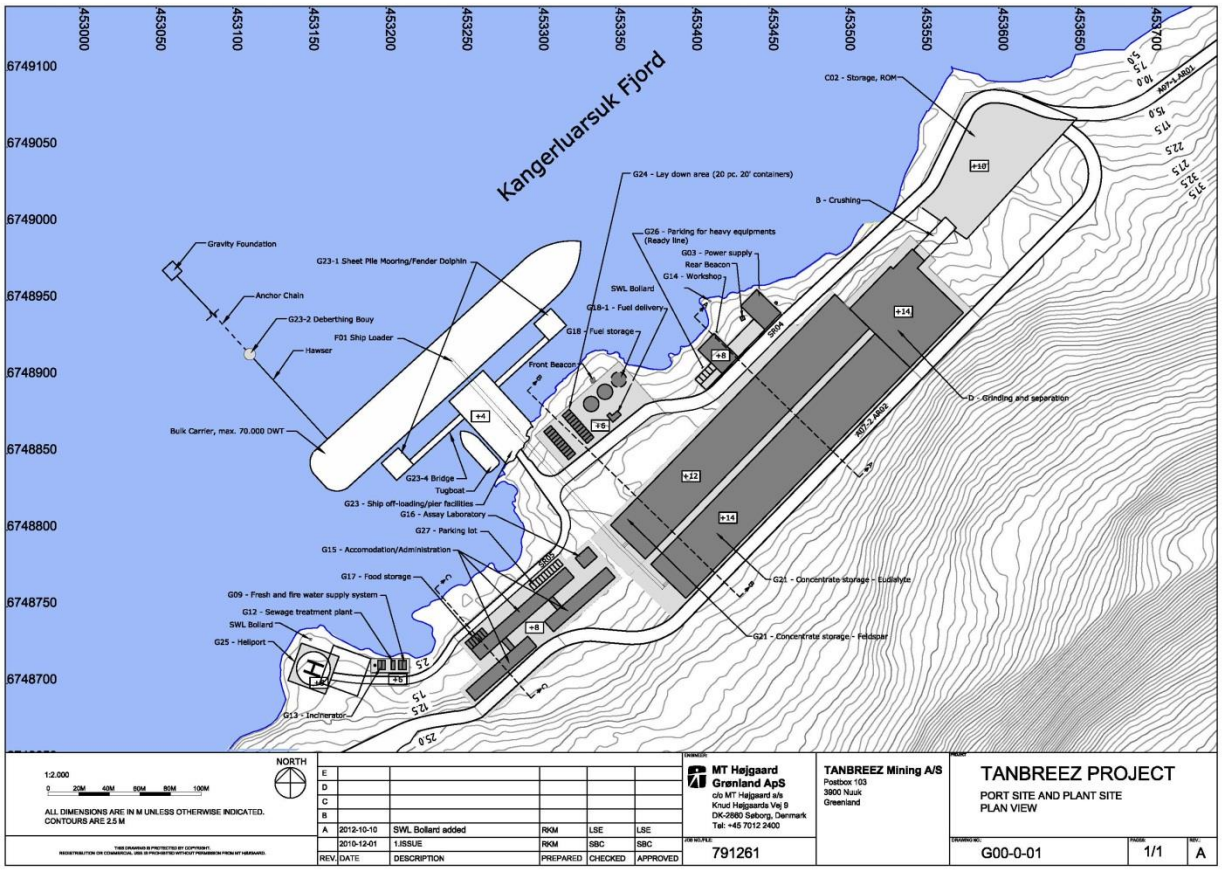


**Figure 5-10 The mine facilities at the Kangerluarsuk Fjord (note the possibilities of a 2nd berth for accommodation. Will be N.W. of the existing berth.)**

d) Accommodation

Employees on site will work on a fixed rotation, which will likely be of the order of 4 weeks on, 2 weeks off. Site personnel will be housed in modern accommodation in the port area. The accommodation will be a 100-person self-contained camp (or if possible in an accommodation vessel moored adjoining the site). It should be noted that the detailed planning of the working hours will follow the rules according to the Act on Working Environment (OHS) § 41 and § 4 of the Order no 23 of 23 January 2006 about rest periods and day off.

e) Workshops and warehousing

Site facilities will include a main workshop for maintenance of the mobile equipment fleet including light vehicles. Within the process plant there will be small workshop facilities to enable maintenance to be undertaken.

f) Domestic and Industrial Waste Management

Domestic and industrial waste will be disposed of through the use of an incinerator. All non-combustible waste will be removed from site. Domestic waste water will be treated in a sewage plant before discharged to the fjord.

g) Sanitary waste water at the mine site

The sanitary sewage from the accommodation complex is piped to a treatment unit. After adequate treatment, in accordance with standards as described in the BFS and BMP guidelines the water fraction is discharged to the plant surface drainage system which is discharged toward the fjord. The dewatered sludge is transported to the incinerator. In the mine pits dry toilets will be established.

h) Combustible solid wastes

The project includes a waste incinerator plant located at the port site. The incinerator plant will be installed as an early priority at the beginning of the construction phase and will have sufficient capacity to handle combustible waste generated during the construction period. It will continue during the operation phase.

When the incinerator plant is constructed and in operation, the waste types suitable for incineration will be handled at the port site:

- Domestic waste produced in the camps
- Sludge cake from the wastewater treatment plant
- All debris suitable for incineration (wood, plastic, paper, packing, etc.)

Incinerator ash will be disposed of to a site landfill.

i) Other categories of waste

Other specific procedures will be applied for waste not suitable for incineration or classified as hazardous waste. The categories include:

- Accumulators, batteries, electronic devices, glass, etc. (all assumed to be small quantities). This fraction will be stored temporary in containers and periodically handed over to Qaqortoq waste handling facility for further disposal according to regulations and after mutual agreement.

- Tires will be temporary stored at the port site and periodically exported to contractors abroad for re-cycling/re-use.
- Iron and metal scrap, etc. will be stored at the port site and periodically exported to contractors abroad for re-cycling/re-use.
- Construction waste (concrete, bricks, wood, etc.) will be re-used as much as possible for other construction purposes e.g. road maintenance.
- Hazardous waste. The handling of these waste fractions is regulated through Kommuneqarfik Kujalleq regulation concerning hazardous waste (Regulations for disposal for Business/Regulativ for affald fra Erhverv, Kommune Kujalleq, 2015). In general, hazardous waste in the municipality is shipped to Denmark and handled in compliance with a comprehensive EU initiated legal framework. Hazardous waste shall be registered and traced using code standards (EC waste list / EAK koder / Europæiske Affalds Koder).

The waste handling procedures described above will be detailed in a waste management manual to become part of the EMP for the construction phase and later detailed for the operational phase. The procedures specific to handling hazardous wastes will be detailed in collaboration with the Qaqortoq waste handling facility under the Kommuneqarfik Kujalleq

j) Health and Safety Management

Health and safety management will be on site to benchmark statutory regimes. This will be achieved at TANBREEZ through a well-recognised risk-based approach as per international best practice.

k) Emergency Preparedness

TANBREEZ will have to develop specific emergency plans using risk and probability analysis tools and will include necessary contingency plans. The emergency management plan will set forth specific guidelines to be followed and a management strategy to execute these guidelines, should an emergency arise. The basic premise is that emergencies, whilst not expected, will be planned for.

## 5.3 Construction work

The approx. 2-year long construction phase will consist two phases;

Phase one:
During the first nine months, a tented camp will be set up, a ware house will be constructed, and a lay down area build in the port area. In addition, the bulk of the earth work in the port area will be done. During the first year only portable water will be used. Furthermore, a temporary sewage treatment plant will be installed that meets the EU requirements for wastewater. Waste will be collected in big bags and shipped off site.

Phase two:
The second phase comprises the remaining construction works. This includes the construction of the haul roads to the two mine sites, the building of the grinding facility and separation plant, the construction of the tailings pipeline and the completion of the port. The number of employees during construction will be 80 (Stage 1)

## 5.4 Closure Plan & Rehabilitation Stage

An estimate of $6m has been put forward as the cost of pulling down the plant and rehabilitating the land. The recent removal of the equipment from the old gold mine was totally carried out by locals gives confidence such a removal and rehabilitation exercise can be almost completely done using local enterprise and workers.

The number of employees during the closure phase will be 98 (Stage 3)

# 6 APPROACHES AND METHODOLOGIES

## 6.1 SIA team

TANBREEZ Mining has commissioned Grontmij A/S to prepare the SIA for the project. The core project team consist of experts with knowledge on Social Impact assessments from Mining activities, detailed knowledge on Greenland (language and culture), Mining activities, Communication and Facilitation of processes. Grontmij A/S has acted as an independent consultant to conduct the SIA and facilitate stakeholder (including the public) involvement in the SIA process.

## 6.2 Approach to SIA

The BMP SIA Guidelines of November 2009 is our basic reference with the updated based upon MILT SIA guidelines of April 2016 to establish the minimum level of information, content, and general structure of the SIA.

During the planning and development of the SIA process, other references have been used as best practices for SIA for the mining industry (International Council on Minerals and Metals, International Reporting Initiative for Extractive Industries) as well as knowledge and experience developed in Greenland when evaluating and assessing the social conditions and impacts.

The SIA is based on a participatory approach, involving the stakeholders as much and effectively as possible at each stage of the SIA process. A high degree of communication has been promoted and implemented during especially the beginning of the SIA process.

The selection of socio-economic parameters for the baseline study has been based on the specific characteristics of the arctic living conditions. For the fieldwork information; collection and consultations protocols specific to this project, the selected stakeholders and particularities of life and work in Greenland have been developed and implemented.

### 6.2.1 General Approach

The general approach to the SIA is to focus on identifying potential relationships between the proposed potential impacts from the project and valued socio-economic components.

The identification of potential relationships (negative impacts, benefits, indirect effects, etc.) is based on the baseline study, the analysis of the project and its components and a checklist of critical questions addressing the key social issues. This includes maximising local employment opportunities for workers and entrepreneurs. Also included is a full investigation of the possibility of maximising downstream processing opportunities in Greenland providing it is economically and environmentally feasible.

All relevant potential impacts have been identified and priorities have been given to the ones which are identified as the biggest concerns by stakeholders and authorities.

For the potential impacts identified, the SIA includes the evaluation of the impact (significance) and propose a possible mitigation. The net impact after the mitigation measure is applied will be further described.

For the potential benefits identified, the SIA includes the evaluation of such benefits and propose measures to maximise it.

### 6.2.2 Approach to the scoping phase

First step was to develop a checklist of relevant questions to be addressed in the SIA. This list was based on a number of documents, as the Guideline (BMP), 'Socio-Economic Impact Assessment Guideline' (Mackenzie Valley) and 'Addressing the Social Dimensions of Private Sector Projects' (International Finance Corporation - World Bank Group). Furthermore, Greenlandic research documents and studies such as SLiCA (Survey of Living Conditions in the Arctic, 2007) were used.

Next step was to present this list and the preliminary results to the authorities and then to the selected stakeholders at two workshops, which was held in Qaqortoq 16 April 2010 and in Narsaq on 20 April 2010. At these workshops the preliminary results and questions were discussed in groups. All stakeholders were invited to send further comments. Detailed comments and suggestions were received from the group discussion afterwards.

The following topics where raised at these workshops:

- Employment, education and training as well as business opportunities
- Livelihood and cultural conditions

The result of the scoping phase was the development of the ToR.

## 6.3 Study area and temporal boundaries

The study covers the area directly impacted by the mining operations and ancillary facilities (port, processing plant, camp etc) and the towns where the impacts and benefits of employment, business opportunities and developments directly and indirectly created by the project are expected to be more noticeable.

The primary area of influence will be Narsaq and Qaqortoq and the surrounding areas.

The secondary area of influence will be the whole Kommune Kujalleq municipality and Greenland in general.

For the baseline study the information has been processed and analysed at three levels: National, Municipal (Kommune Kujalleq), and the three towns (Narsaq, Qaqortoq and Nanortalik).

The SIA will cover the following stages in the project:

- The construction stage (2-3 years after receiving the licence)
- The operation stage (the 10-year period after construction)
- Closing of the mine

## 6.4 Baseline study

The baseline study provides clear information on demographic, social economic conditions and trends, political structures, local organisations, cultural traits, and other factors that can influence the way in which affected communities will respond to anticipated changes brought about the projects. The baseline also helps to predict in which way the project will be affected by these factors. The development of the baseline and the identification of the impacts are an interrelated and parallel process.

When the critical issues are identified detailed studies on specific groups (focus groups) affected by the project have been designed. Furthermore, these studies have assessed local capabilities that can contribute to the project both from Greenlandic workers and enterprises. The critical issue of educating locals has been identified and considerable work has been done since this application was first lodged. Negotiations are required with the MILT on this issue.

The baseline study has been based on review of secondary resources and information obtained through qualitative, quantitative, and participatory methods.

The scope of the baseline study is based on identification of a number of themes which is considered important. The identification is developed based on the BMP Guidelines, SLiCA study (2007) and the note from IFC on addressing the social dimension of private projects (IFC, 2003). For each theme and sub-theme, the SIA team has considered how the information is organised and analysed.

## 6.5 Data collection and research from secondary data

First step in the baseline study was to review the information available from secondary sources. The secondary sources are official data about Greenland, Municipality of Kujalleq and the mine area of TANBREEZ. Furthermore, research reports and other relevant reports and studies have support the creation of the starting point of the baseline study.

## 6.6 Data collection and research from primary sources

The data collection and research from primary sources contain both qualitative and quantitative methods.

The SIA team have elaborated specific interview questionnaires and tools for qualitative methods which have been based on international standards, local experience and specific objectives and scope of the SIA for the TANBREEZ mining project.

International experts have ensured scientifically sound and robust methodologies and tools. Greenlandic experts have been ensured local sensitivity and adequacy. All tools have been tested before undertaking the overall survey activities (some of these surveys were done in confidence so out of respect no list of interviews was released by the surveying group).

### 6.6.1 Qualitative methods

Qualitative methods have to do with people’s perceptions, how they view themselves and the world around them. A variety of techniques have been used depending on the complexity and size of the community.

For larger groups, group meetings and group interview have been used. Focus group meetings and group interviews have been used for smaller groups which represents a larger group. Focus group discussions have provided information on key issues from stakeholder representatives. For these focus group discussions, interview guides and participatory techniques have been used for the collection of information, opinion and perceptions

Individual interviews with knowledgeable key informants have been used to collect information and get a better understanding on complex issues and past events.

### 6.6.2 Quantitative methods

The quantitative methods have been used to generate data, mostly at household level and for selected arctic living conditions indicators.

Existing high quality, recent research studies like the SLiCA study (Survey of Living Conditions in the Arctic, 2007) the Mobility Study in Greenland (2010), have been used as main references with the updates using the April 2016 SIA Guidelines

## 6.7 Impact Analysis Methodologies

The impact assessment is based on an assessment of the positive and/or negative impact from the project based on a set of social/socio-economic aspects with the use of an Impact Matrix. The social/socio-economic aspect (employment, business life, health, vulnerable groups, etc.) is used to assess the impacts for each activity in the project (transport, provision of goods, operation of camp, mine site and processing plant etc.).

For each combination of project activity and social/socio-economic aspect, for both the construction and the operation phases, have the positive and negative impacts of the project been predicted and its magnitude quantified as far as possible.

The impacts identified have been evaluated according to the following factors:

- **What is the certainty of impacts? -** Is it certain, likely, known or unknown to happen?
- **Where are the impacts?** Will the impact be Local (the municipality of Kommune Kujalleq, Greenland in general or international? Regional “winners” and “losers”?
- **What is the duration and frequency of impacts? – What will be the occurrence of the impact -** temporary, short lasting or permanent?
- **When will the impact be noticed? – Will it be** immediately or over time by the community?

The public concern has also been considered when assessing the significance of the impacts.

Mitigation measures have been identified for all impacts likely to occur, adverse in nature and significant enough to require mitigation (medium and high-level (negative) impacts) in order to mitigate or eliminate such impacts.

# 7 DESCRIPTION OF SOCIAL BASELINE CONDITIONS

## 7.1 Introduction

This chapter describes the existing social and socio-economic environment of the municipality of South Greenland (in the following called Kommune Kujalleq) including the towns of Qaqortoq, Narsaq and Nanortalik as well as Greenland in general. The information presented is based on the available documents and statistic information, as well as information collected in connection with meetings and interviews with the local population.

Since 2012 when this report was submitted the company has spent considerable time studying the potential for the use of Greenlandic workers and enterprises. Beyond this initial phase the data in this chapter shows that to date recruiting the qualified people to run such plants in Greenland has been very unsuccessful. With this in mind the company has set up a separate working group headed ex-prime minister Mr. Kuupik Vandersee Kleist, with ex deputy minister for mines Mr Hans Kristian Schønwandt, to continually review this situation. They have developed a scheme for employing and educating locals based on the very successful Fortescue Mining project in Australia. With such a scheme it has been shown it is possible to train locals into specific jobs over time. Unfortunately, extensive downstream processing which may create more jobs is not possible as international finance is not available for capital development of such projects at this stage in Greenland.

However, the company is reviewing downstream processing of other products and to attempt maximising the local participation in Tanbreez's workforce in other ways. Several alternative schemes have been offered to the government and are awaiting negotiations.

## 7.2 Demographic profile

The first Inuit cultures that inhabited Greenland migrated from Central Asia around 2,500 B.C. The present population is believed to originate from the Thule culture that migrated to West Greenland about year 1,000. The Norseman Eric the Red migrated to Southern Greenland about year 985, but his descendants are believed to have perished before 1721 when missionary Hans Egede went to Greenland to find the Norse.

Today, Greenland's population is made up of Greenlanders, or Kalaallit (a mix of mainly Inuit and an unknown percentage of European descent) along with about 10% Danes and other Europeans.

The Greenlandic population is spread over 18 towns and about 60 settlements. According to Statistics Greenland (2016) a total of 48,140 persons live in towns and 7,707 persons in settlements. Since 2009, the country has been divided into 4 municipalities, Qaasuitsup Kommunia, Qeqqata Kommunia, Kommuneqarfik Sermersooq, and Kommune Kujalleq. The largest town in Greenland is Nuuk with a population of 17,316 (the capital and main town, Nuuk, Kommuneqarfik Sermersooq). Kommune Kujalleq consists of three towns: Narsaq, Qaqortoq and Nanortalik. Figure 7-1 shows the 5 municipalities and towns in Greenland.


**Figure 7-1** ***Map of Greenland showing Municipalities (NunaGIS, © KMS).***

The means of transportation in Greenland is by boat, helicopter and/or airplane. There are - with very few exceptions - no roads or railways connecting towns and settlements.

Greenlanders live in close proximity to the sea (no more than a few hundred meters away from the sea) and the sea is an essential part of Greenlanders' lives. Greenland's climate is very harsh and changeable; a fact that Greenlanders have learned to live with and endure.

### 7.2.1 Ethnic composition

Greenland is inhabited by Inuit and Danes as well as a small number of other foreigners. According to earlier studies by Statistics Greenland the ethnic groups can be distinguished by either parent's birthplace. Approximately 89% (or 50,000 people) of Greenland's population are born in Greenland and thus can be categorised as Greenlanders. 6,102 people were born outside Greenland (Statistics Greenland, July 2016)

Another accepted way of categorising the different population groups is by birthplace, whether born in or outside Greenland. 2,834 of the people living in in Qaqortoq were born in Greenland and 277 were born outside Greenland. In Narsaq, 1,354 were born in Greenland while 81 are born outside Greenland (Statistics Greenland, July 2016).

### 7.2.2 Population

The total population of Greenland is 56,081, of which 6,439 people live in Kommune Kujalleq. In comparison 17,492 people live in Nuuk, Greenland's capital. The overall population density is 0.14 persons per $km^2$ in ice free areas (Statistics Greenland, January 2020).

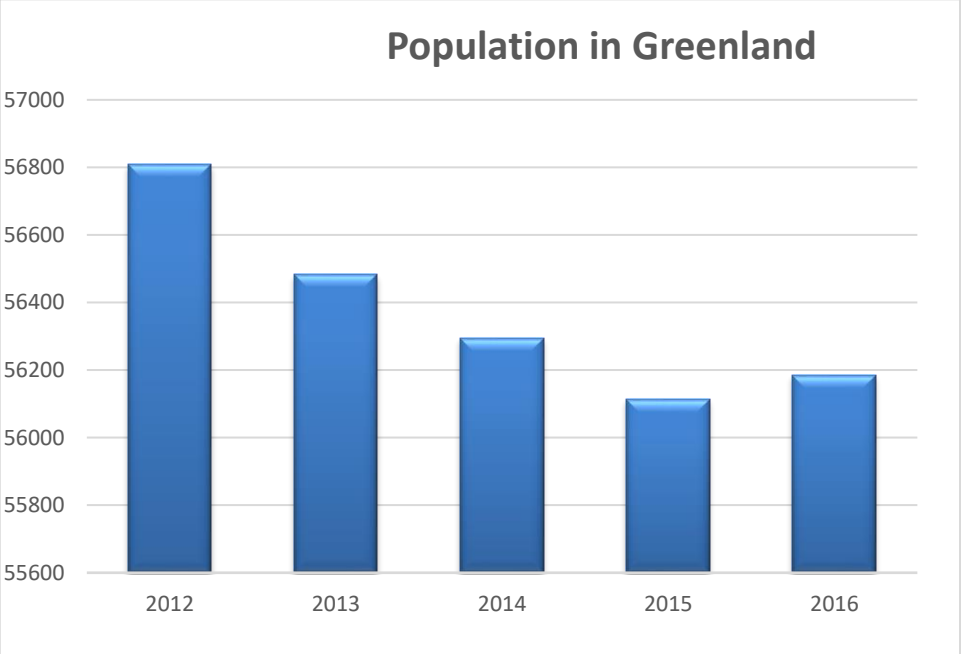


**Figure 7-2 Greenland's population from 20012 to 2016 (Statistics Greenland, July 2016).**

Figure 7-2 shows that from 2012-2016 the total population of Greenland decreased each year until 2015 and then increased in mid-2016. In the period 2012-15, emigration surpassed immigration and births. The relationship between emigration and immigration rates in relation to gender and birthplace is described further in section 7.2.6.

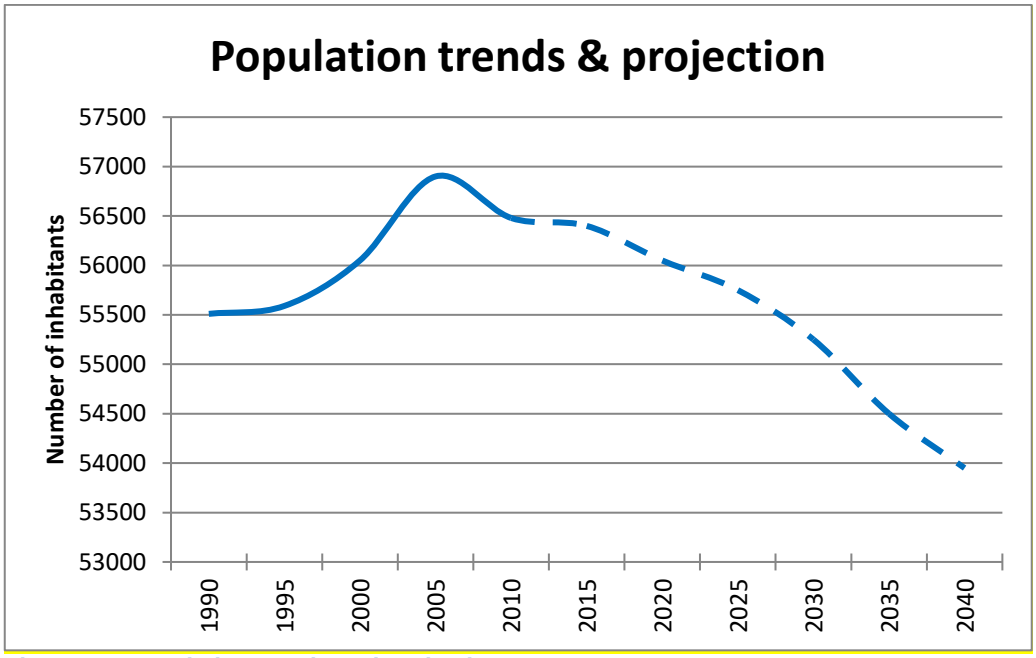


Figure 7-3 Population trends and projection

The Greenland population is expected to continue to fall so that by 2040 it will be lower by 5% than currently.

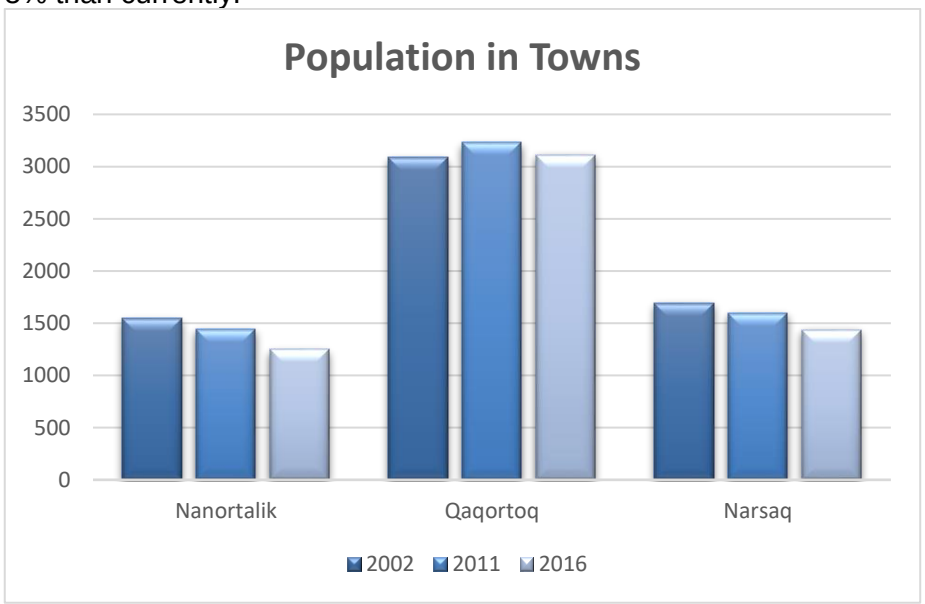


Figure 7-4 *Development in population distribution in the towns of Kommune Kujalleq 2002-2011-2016 (Statistics Greenland, 2016).*

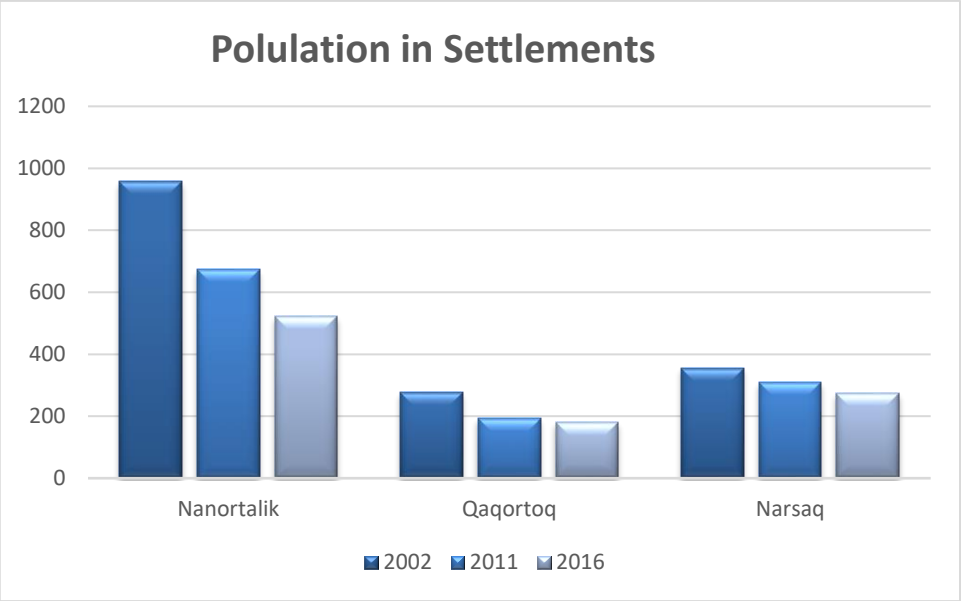


**Figure 7-5 Population in settlements**

Figure 7-4 and Figure 7-5 illustrate the development in the spatial distribution of the population between towns and settlements in Kommune Kujalleq between January 1, 2002, 2011 and July 2016.

The figures show that the population from 2011 to July 2016 has decreased in the towns of Nanortalik, Narsaq and Qaqortoq. In all settlements, there has been a decline in the population, especially in Nanortalik. A total of about 4700 persons have left the settlements reflecting the general tendency in Greenland towards urbanisation.

### 7.2.3 Age and gender distribution

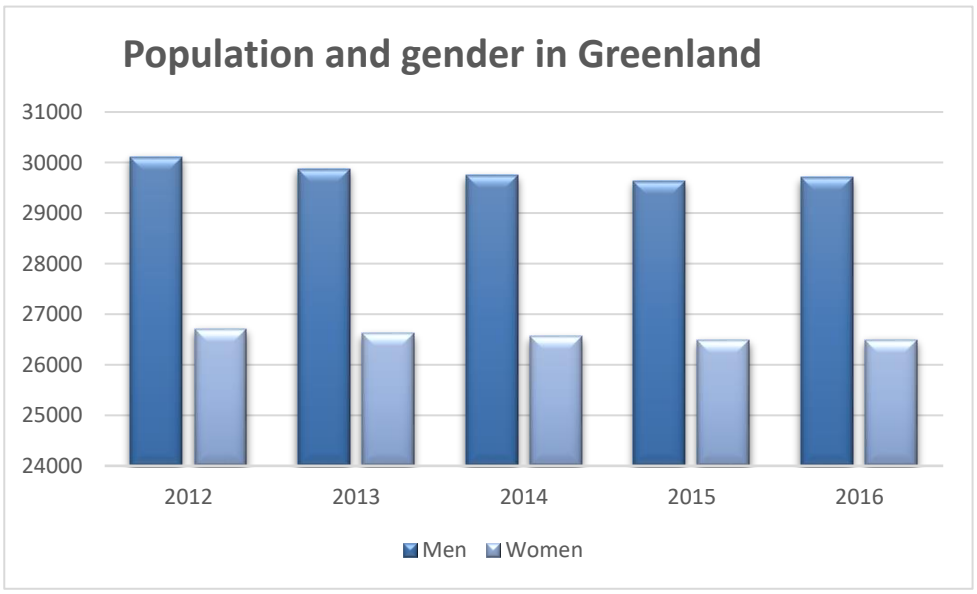


**Figure 7-6 *Total population by gender (Statistics Greenland, 2016).***

According to Figure 7-6 there is a surplus of males in Greenland of approx. 3,240. This is due to the immigration of male guest workers of all ages, brought in from especially Denmark and other Nordic countries. Women emigrate, in particularly for education purposes. The increase in both males and females in July 2016 may reflect the seasonal job opportunities that are higher in summer than in winter.

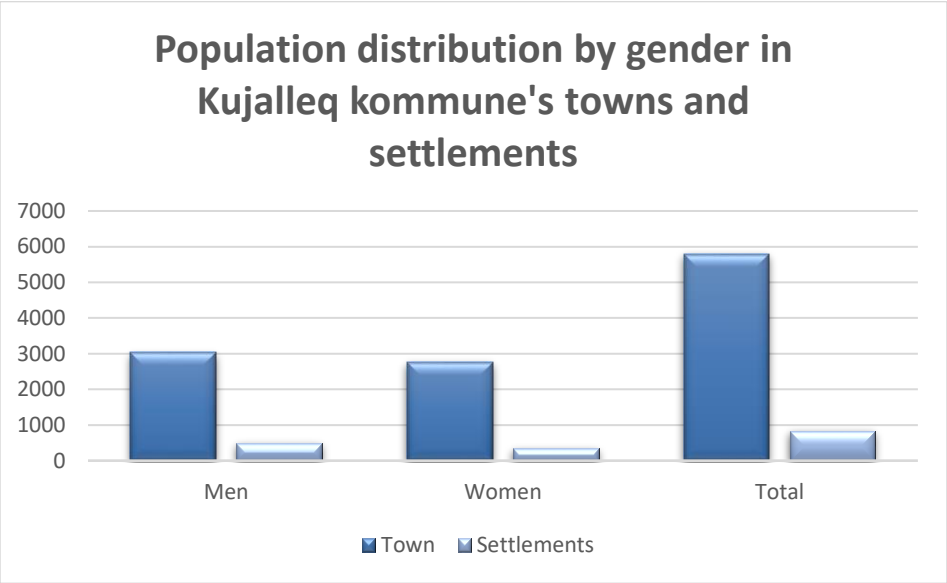


**Figure 7-7 Distribution of males and females in the towns and settlements of Kommune Kujalleq in 2016 (Statistics Greenland, 2016).**

As illustrated in Figure 7-7 above the female population is smaller than the male population in both towns and settlements in Kommune Kujalleq, which is due to the phenomena mentioned above.**Fejl! Henvisningskilde ikke fundet.**

### 7.2.4 Birth rates and life expectancy

In 2014 the total birth rate was 806 live born (738 among women born in Greenland) aged 15-45+ years (Statistics Greenland, 2016).

The average age of first-time mothers, born in Greenland, was 24.7 years. (Statistics Greenland, 2014).

Life expectancy was 73.7 years for women and 69.1 years for men in 2016 (Statistics Greenland, 2016). In comparison with other Nordic and Arctic countries, life expectancy is significantly lower.

In comparison, in 2015 the life expectancy in Denmark was 82.5 years for women and 78.5 years for men. (www.statistikbanken.dk).

### 7.2.5 Mortality

The 2011-2015 death rate was 6.5 deaths per 1,000 inhabitants (Statistics Greenland, 2015).

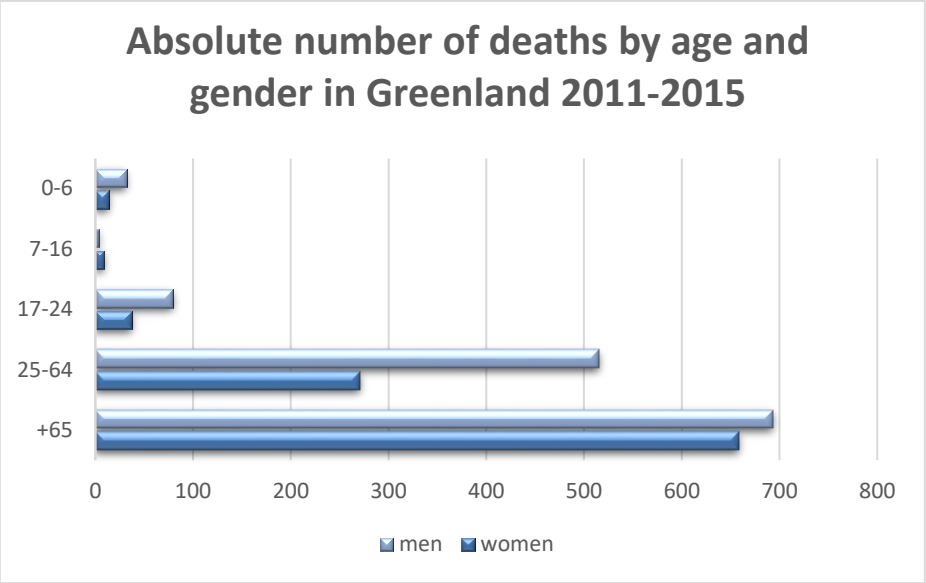


*Figure 7-9: Mortality by age and gender in 2011-2015 (Statistics Greenland, 2016).*

As illustrated in Figure 7-9 the mortality rate of males aged 17-64 years is higher than that of females due to a higher suicide rate as well as fishing / hunting accidents due to climatic conditions. Greenland's Home Rule Government has since 1999 implemented measures to prevent suicides under the prevention programme PAARISA (Inuuneritta II, 2013-2019).

According to Statistics Greenland, the infant mortality for newborns was 10 in 2005-2010 (Inuuneritta II, 2013-2019) compared to 13 in 2000-2004. The significant decrease in infant mortality is the result of various preventive measures implemented by health workers as well as health promoting initiatives by the Health Department. (Statistics Greenland 2015). However, South Greenland has a lower infant mortality rate than the country as a whole due to access to better health care facilities (Bjerregaard, 2004).

**Table 7.1** ***Number of natural deaths and non-natural deaths among men and women in 2015 (Statistics Greenland, 2016).***

| | Total | Men | Women |
|---|---|---|---|
| No. of deaths | 439 | 262 | 177 |
| No. of non-natural deaths | 77 | 56 | 21 |

Table 7.1 clearly shows that the number of non-natural deaths among women is only half that of men's. This is due to the high suicide and accident rate among men aged 17-64 years.

### 7.2.6 Migration

Emigration rates exceed immigration rates in Greenland (negative net migration -482 persons) as shown in 7-10 between 2011 and 2015. According to 7-10 the net migration rate of persons born in and outside Greenland is increased in 2012, which can be explained by the fact that emigration is highest among 17-26 year olds born in Greenland, as especially young women move from Greenland to seek higher education (Nordic Council, 2010).

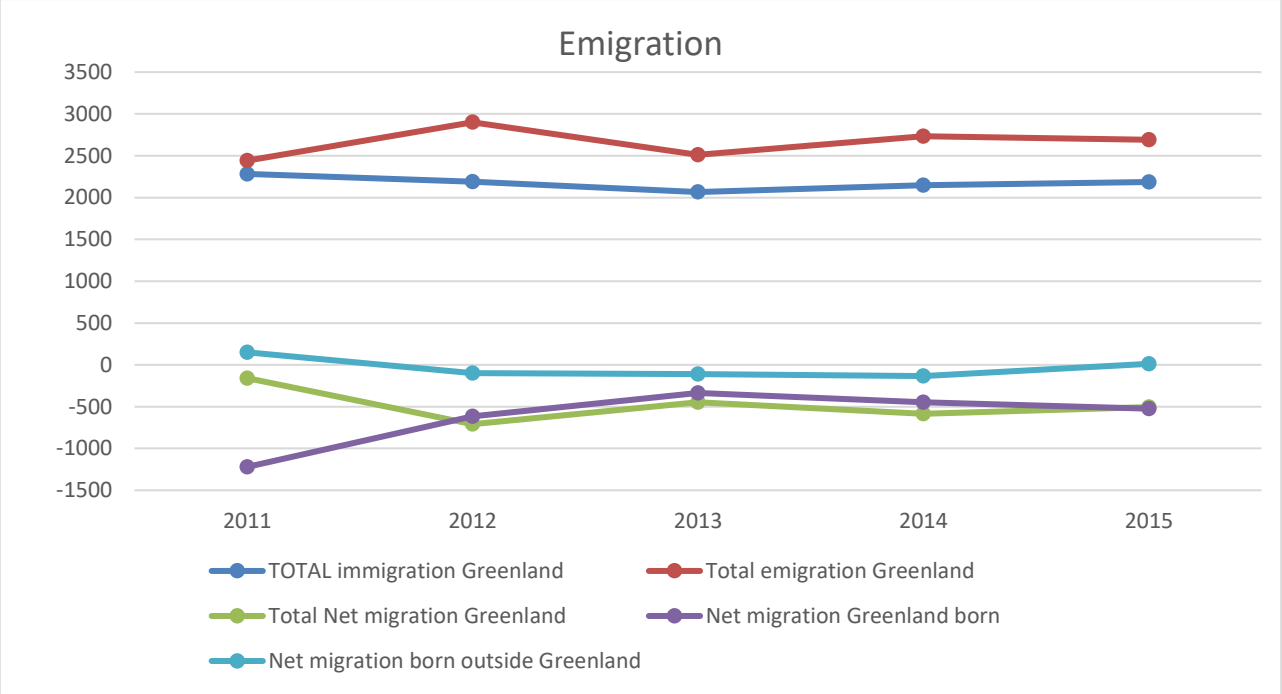


*Figure 7-10: Migration according to birth place between 2011-2015 (Statistics Greenland, 2016).*

Table 7.2 shows migration between municipalities in 2015. In 2015 a total of 3,785 persons moved within Greenland (Statistics Greenland, 2016).
According to the same table, the most popular municipality is Kommuneqarfik Sermersooq in terms of people moving to the municipality, followed by Qaasuitsup Kommunia in second place. Whereas Kommune Kujalleq had the highest net emigration and Kommuneqarfik Sermersooq the highest net immigration in 2008, there has been a slight change. Indeed, Kommuneqarfik Sermersooq is now the municipality having the highest net emigration while the other municipalities all have a positive immigration, particularly Qaasuitsup Kommunia which benefit from a strong increase.

**Table 7.2 Inter-municipal migration in 2015 (Statistics Greenland, 2016).**

| | | From municipality | | | | | |
|---|---|---|---|---|---|---|---|
| | | Greenland Total | Kommune Kujalleq | Kommune qarfik Semersooq | Qeqqata Kommunia | Qaasuitsup Kommunia | Outside municipal limits |
| To Municipality | Total Greenland | **3,785** | **1,128** | **1,196** | **863** | **1,122** | **17** |
| | Kommune Kujalleq | 479 | - | 268 | 102 | 107 | 2 |
| | Kommune qarfik Semersooq | 1,398 | 317 | - | 437 | 636 | 8 |
| | Qeqqata Kommunia | 918 | 145 | 391 | - | 377 | 5 |
| | Qaasuitsup Kommunia | 986 | 142 | 596 | 324 | - | 2 |
| | Outside municipal limits | 34 | 1 | 1 | 10 | 2 | - |

**Table 7.3 *Interregional migration in 2015 (www.stat.gl, 2016).***

| | Interregional migration | | Migration | |
|---|---|---|---|---|
| | To | From | In | Out |
| Nanortalik | 40 | 43 | 3 | 5 |
| Qaqortoq | 111 | 157 | 0 | 1 |
| Narsaq | 35 | 54 | 7 | 13 |

As shown in Table 7.3 the only positive net migration is to Qaqortoq, whereas Narsaq has the most negative net migration rate.

In general, Greenlanders are very mobile. For young Greenlanders, the primary reasons for moving permanently are education and skilled job opportunities as well as the resulting higher wages. Especially young women move permanently for education purposes or to seek new challenges. For the older segments, job safety and higher wages are the main reasons for moving. For people with higher education, particularly career and further education opportunities as well as their children's access to schools are decisive factors for moving (Mobilitetsstyregruppen, 2010). According to SLiCA, Survey of Living Conditions in the Arctic (Poppel et al, 2007), especially people in Nuuk and Central Greenland are willing to move away from their town or settlement within the next 5 years. In South Greenland 37% of the interviewed would be willing to move within the next 5 years compared to 36% at national level.

## 7.3 Social and cultural indicators of well-being

### 7.3.1 Household composition

The data on household has been maintained as no new data has been updated since the last SIA Report. The average number of persons per household in Kommune Kujalleq is smaller than the overall number for Greenland. Generally, in Greenland's settlements the number of persons per household is larger than in towns; this is however not the case of Kommune Kujalleq as shown in Table 7.4 and Table 7.5

**Table 7.4** ***Number of households and average number of persons per household in Greenland and in the towns of Kommune Kujalleq (including nursing homes, dormitories etc.). Persons listed with the same address in the population register are registered in the same household (Statistics Greenland, 2012).***

| Towns (2012) | | Total Greenland | Kommune Kujalleq |
|---|---|---|---|
| | No. of households | 19,106 | 2,607 |
| *Average no. of persons per household* | | 2.5 | 2.4 |

**Table 7.5** ***Number of households and average number of persons per household in Greenland and in the settlements of Kommune Kujalleq (including nursing homes, dormitories etc.). Persons listed with the same address in the population register are registered in the same household (Statistics Greenland, 2012).***

| Settlements | | Total Greenland | Kommune Kujalleq |
|---|---|---|---|
| | No. of households | 2,826 | 449 |
| *Average no. of persons per household* | | 2.9 | 2.2 |

The average number of persons per dwelling in the towns of Kommune Kujalleq is close to the national average whereas variations persist in the settlements as the settlements at Narsaq have more than twice as many persons per dwelling as Nanortalik or Qaqortoq and the national average.

**Table 7.6** ***Dwellings and average number of persons per dwelling in towns (Statistics Greenland, 2012).***

| Towns | Total Greenland | Nanortalik | Qaqortoq | Narsaq |
|---|---|---|---|---|
| No. of dwellings | 19,402 | 610 | 1,379 | 761 |
| *Average no. of persons per dwelling* | 2.4 | 2.4 | 2.4 | 2.1 |

**Table 7.7** ***Dwellings and average number of persons per dwelling in settlements (Statistics Greenland, 2012).***

| Settlements | Total Greenland | Nanortalik | Qaqortoq | Narsaq |
|---|---|---|---|---|
| No. of dwellings | 3,710 | 442 | 132 | 77 |
| *Average no. of persons per dwelling* | 2.3 | 1.6 | 1.7 | 3.9 |

According to SLiCA, Survey of Living Conditions in the Arctic (Poppel, B. et al, 2004), in South Greenland 17 % of the questioned were very satisfied and 47 % were rather satisfied, whereas 36 % were dissatisfied or answered 'neither / nor' as to the quality of their dwelling, which is very close to the national satisfaction figures.

### 7.3.2 Important commodities

According to SLiCA (Poppel, B., 2004) the most frequently used electronic equipment among the Greenlandic participants in the survey included DVDs, mobile phones and PCs. Also, the Internet, VHF radios and GPS devices are frequently used electronic equipment. The equipment is used both for entertainment and for more serious purposes during hunting and fishing, i.e. GPS and VHF radios.

There were 119.2 Internet users per 100 persons in 2014 and this number has been rising since 2000. In total, there were 137.2 telephone subscribers per 100 persons in 2014 and 620.0 telephone mobile subscribers per 100 persons in 2014 (Grønlands Statistik, 2016).

In Greenland, almost every town has its own sports facilities. In most major settlements there is a gymnasium or a meeting hall. In every town there is also a meeting hall. Apart from sport activities, the sports facilities and meeting halls are used for parties, bingo, associations and other local community events. The facilities are frequently used by the communities and are often the only place where people can gather.

### 7.3.3 Important values

Generally, in Greenland, traditional and cultural activities and customs are very important to the local communities according to SLiCA, Survey of Living Conditions in the Arctic (Poppel, B. et al, 2004). This particularly applies to the habit of eating traditional Greenlandic food, speaking Greenlandic and attitudes to nature. However, almost all traditional activities e.g. hunting and fishing, berry picking, name traditions, participation in traditional cultural events, clothes, literature etc. were found important by the persons questioned in the survey. Greenland has a very rich cultural life where among others music, art and storytelling are very important.

**Social and cultural ties**

Traditionally Greenlanders have very strong social ties with a large degree of interdependence in the small communities. This network of interdependence is one of the reasons why people have been able to survive in a very harsh climate.

The Greenlandic family consists not only of the immediate nuclear family, but also extended family members such as half siblings, grandparents, cousins, foster children etc.). The family is very important in Greenland and people often share their food, home and income with the rest of the external family. “Gift children” or foster children are some phenomena still found in certain circles in Greenland. “Gift children” are given especially to childless people or relatives. It is not unnormal for a well-functioning family to adopt a child from a non-functional family. However, it has become more normal to live according to Western standards, where the nuclear family is the most important social structure.

Greenlanders’ social involvement includes, among others, participating in associations, music, choirs and handicraft. It is habitual to pay unannounced visits to each other across social classes. Kaffemik (an open house event with serving of traditional Greenlandic foods, cakes and coffee) is a Greenlandic phenomenon and a very strong tradition still practiced all over Greenland. Social ties in Greenland are also strengthened by a great degree of generosity, openness and warmth.

**Social organisations**

Greenlanders have not had the tradition of establishing social organisations that participate in the public debate. However, more and more NGOs are emerging. During recent years organisations have been formed to help marginalised children including the Association for Greenlandic Children, Nanu Children and Save the Children (Meeqqat Ikiortigit).
.

Environmental and animal protection organisations include Avataq, Earth Charter and Timmiaq.

Greenland has long been a member of the Inuit Circumpolar Council (ICC), an arctic Inuit collaborative organisation working across national borders.

**Cultural heritage**

The following paragraphs are a summary of the report by Greenland’s National Museum on archaeological finds in South Greenland (Algreen Møller, N., 2007).

Southern Greenland has seen three immigration waves since year 200 when the Greenlandic Dorset culture (Inuit culture) moved to the area. Unfortunately, many of the remains of the Dorset culture, which were located close to the sea, have been devoured by the waves.

The Norse moved to the fiord areas in year 986 where even today many ruins and archaeological finds can be seen. The Norsemen disappeared from the area during the middle of the 15$^{th}$ century.

The earliest finds from the Thule culture (the Inuit culture which the present Greenlanders originate from) date from the end of the 13-14th century in Nanortalik and Cape Farewell. The finds mostly consist of earth huts, tent rings and graves. The Thule culture kept spreading after the Norse disappeared and during the 18th century it dominated the area. Tent rings have been found that may be of an older date originating from the Thule culture in the mining area close to the fiord banks. Greenland's National Museum recommends that these finds be registered and dated before any activity is undertaken in the area. There is a Norse ruin group south of Lakseelv river, which has not been recorded. This group is very important, and conservation or excavation should be done if there is a risk of the area being affected by mining activities.

Moreover, there is an area north of the Lakseelv river with remains of the Thule culture. These finds have been disturbed. It is not believed that the area will be affected by activities related to the mining project.

South-west of the mining area, several archaeological finds have been found, but it is not believed that these finds will be affected by the mining activities.

Southeast of the mining area the Hvalsø ruin is located, a Norse church built in approx. 1300. This area has been listed on UNESCO's World Heritage Centre in 2017 (whc.unesco.org).. (http:/.whc.unesco.org) These ruins will not be affected in any way by the mining activities.

### 7.3.4 Language

Greenlandic is a dialect of the Inuit language which is spoken in the Arctic regions of Canada, Greenland, Alaska and a small area in Siberia. Greenlandic can be divided into many dialects but mainly consists of Kalaallisut, spoken in West Greenland, and Tunumiutut, spoken in East Greenland. Dialectal differences occur from settlement to settlement and from town to town (Rischel, J., 2007).

The majority of people in Greenland speak and understand Greenlandic well. According to SLiCA, Survey of Living Conditions in the Arctic, 60% of the people living in towns and 75% living in settlements consider that they understand and speak Greenlandic very well. Only a small percent of the Danes living in Greenland consider that they speak Greenlandic very well (2%) or well (12%) (Poppel et al, 2007).

Danish is used frequently and schools as well as most educational institutions in Greenland teach in Danish. In the towns, it is common to be bilingual in Greenlandic and Danish whereas in the settlements people tend to only speak Greenlandic. Another minority is also monolingual, speaking only Danish and as a first language but with a very strong attachment to Greenland's cultural and social life. These people consider themselves to be Greenlandic (Lund and Nathanielsen, 2007).

English is taught in all schools but is rarely spoken by the population, apart from young people who use English more frequently.

Greenlandic (Kalaallisut) has been the official language since Greenland was granted self-government. However, both Danish and Greenlandic are spoken and used in the administration and Parliament. (Valgreen, 2004).

### 7.3.5 Use of natural resources

There are three major groups that are users of Greenland's natural resources. The first group are commercial fishermen and hunters who have fishing and hunting as their main source of income. The second group is made up of anglers and hunters who supplement their income from regular or seasonal work with fishing and hunting. The third group (usually an entire family and /or friends), the recreational group, uses natural resources exclusively on a recreational basis on weekend trips by boat or during summer cruises in the fiords. The latter group also uses the natural resources as provisions during sailing trips but not necessarily as a supplement to their income.

In 1989 Grønlands Miljøundersøgelser (Greenland's environmental survey institute) conducted a study on the use of local natural resources in Narsaq Municipality (Dietz, 1989)

Orbicon conducted the same study to update knowledge about the use of the local natural resources at the Kangerluarsuk Fiord (Orbicon, 2010). The following descriptions are excerpts from this study unless otherwise stated.

The natural resources in Kommune Kujalleq are primarily used for hunting, fishing, recreational purposes and sheep farming. Moreover, there is some tourism in the summer.

The professional hunters and fishermen can be divided into three groups: One group that only fishes, another that only hunts and a third that both fishes and hunts, either in dinghies with outboard motors or with bigger boats (cutters). The fishermen sell their fish to the fish processing plants in the area or to the crab plant in Narsaq. The hunters sell their catch in the local outdoor market, to public institutions or keep it for their own consumption.

It is very common among fishermen and hunters to help each other, and both groups depend heavily on their wives' income from paid work. The traditional Greenlandic diet is very important to the local inhabitants and is therefore also dependent on natural products. The fishermen and hunters' use of the natural resources vary greatly according to the season and occurrence of their catches, and consequently earnings also vary from year to year (workshop with focus group of fishermen and hunters in Qaqortoq and Narsaq).

The recreational group both hunts and fishes for own consumption in the area in their leisure time, particularly during the summer. This group uses motor boats or dinghies with outboard motors for transportation and stays overnight in their boats, in holiday homes or tents. This group also collects berries and clams, fishes trout, cod, shorthorn sculpin, Greenland cod as well as capelin and catches seals and birds on their way (workshop with focus group of fishermen and hunters in Qaqortoq and Narsaq).

**Hunting**

The following descriptions are excerpts from Orbicon's report unless stated otherwise (Orbicon, 2010).

The local hunters and fishermen mainly catch seal all year round (however hooded seal - Cystophora cristata - is only hunted during the ice season) by rifle, including ringed seal (Phoca hispida), harp seal (Phoca groenlandica) and to a lesser extent bearded seal

(Erignathus barbatus) and harbour seal (Phoca vitulina). The common minke whale (Balaenoptera acutorostrata) is caught occasionally (at least 3-4 specimens each year). Fin whales (Balaenoptera physalis) are relatively rare catches, hunted by harpoon from cutters. Other catches include harbour porpoises (Phocoena phocoena) as well as polar bears (Ursus maritimus). All catch is sold in the local outdoor market or caught for own consumption.

Birds are hunted by rifle. The most frequently caught birds are: common eider (Somatera mollissima) from October to February, thick-billed murre (Brünnich's gillemot, Uria lomvia) from October to March and rock ptarmigan (Lagopus muta Lagopus) from September to April.

**Fishing**

The following descriptions are excerpts from Orbicon's report unless otherwise indicated (Orbicon, 2010).

Atlantic cod (Gadus morhua) is frequently fished in Kangerluarsuk Fiord by net from May to October. In this area an overwintering cod species exists, which grows relatively large in size. Previously this cod species was very abundant in the fiord and the open sea, but stocks have decreased significantly over the last 20 years. The catch is sold to the fish processing plants, or in the outdoor markets or used for own consumption (workshop with fishermen and hunter in Qaqortoq and Narsaq).

Lumpsucker (Cyclopterus lumpus) is fished by net during March/April and is also found in Kangerluarsuk fiord and other fiords in the area. Females are sold to the fish processing plants for a short period for their spawn, whereas males are sold in the outdoor markets or used for own consumption.

Salmon (Salmo salar) is caught in Kangerluarsuk fiord and other fiords in the vicinity by salmon net from August to October. Salmon is sold in the outdoor markets or caught for own consumption.

Capelin (Mallotus villosus) is caught by net in May-July in Kangerluarsuk Fiord and other adjacent fiords. The fish is sold in the outdoor markets or caught for own consumption.

Arctic char (Salvelinus alpinus) is caught in July-August with fishing poles or nets in the trout rich Kangerluarsuk Fiord, but also in other river areas. Trout is caught for sale in the outdoor markets or for own consumption. Trout is not used by Greenland's fish processing industry (workshop with fishermen and hunter in Qaqortoq and Narsaq).

Blue mussels are collected in Kangerluarsuk Fiord, but also in the surrounding fiords and sold in the outdoor markets or used for own consumption (workshop with focus groups of fishermen and hunters in Qaqortoq and Narsaq).

Snow crab, artic crab (Chionoecetes opilio) is caught in traps by large cutters and fishing boats at depths from approx. 100 m downwards. Kangerluarsuk Fiord is normally not used for crab fishing. The crabs are fished in the surrounding deep fiords and sold to the crab factory in Narsaq (Personal communication, 2010).

**Sheep farming**

The following descriptions are excerpts from Orbicon's report unless otherwise indicated (Orbicon, 2010).

Sheep farming is practised at sheep farms everywhere in South Greenland. In 2016 there were 51 sheep farms (now 40 farms) in Kommune Kujalleq, whereof most of them are producing sheep. (Targeted subsidy to the Greenlandic farming, Copenhagen Economics, 2016). Today sheep farmers receive financial support either directly for investments and as subsidy for selling their products and indirectly through loan below the market rate as by and large all Greenlandic farms gets deficit.
Sheep herds are usually managed by individual families and sheep farms are equipped with stables for the winter season and surrounding fields for hay production. Sheep are set free to graze early in summer and gathered in September-October by the farmers' sheep dogs and Icelandic horses. Lambs are shipped to Narsaq slaughter house, Neqi A/S. Sheep wool is also collected. In addition, sheep farmers grow potatoes, turnips and carrots. Some farmers also have cattle. Sheep farmers frequently have facilities for overnight stays for tourists. The closest sheep farming area is located southeast of the mining site, where sheep graze in summer. The mining area is not attractive to sheep as vegetation is scarce (Workshop with focus groups of fishermen and hunters, Qaqortoq and Narsaq).

Icelandic sheep now imported to keep the slaughterhouse NEQI working after a dry summer in 2016. (www.neqi.gl).

**Reindeer farming**

There are two reindeer farms in South Greenland, one in Isortoq and one in Tuttutooq. The farms are far away from the mining area. Reindeer from Isortoq are slaughtered in Isortoq's own slaughterhouse with some capacity of 2000 animals per year. Isortoq has license to slaughter reindeer for export to the EU and for trophy hunting. The Tuttutooq station does not have as many reindeer as Isortoq. The reindeer from Tuttutooq are shipped to Narsaq slaughterhouse, Neqi A/S (Statistics Greenland, 2009).

**Tourism**

This section is based on"Tourism in figures" (Statistics Greenland, Tourism in figures, 2016).

Apart from tourists, the tourism statistics also include business travellers and short-term workers hired by foreign companies. The number of tourists in Greenland has rising since 2002. In 2008 South Greenland's peak season was from July to August, with June and September as the second most popular months.

Narsaq, Qaqortoq and Nanortalik had 21,246 hotel stays down (from 36,070 in 2008), of which 16,759 were permanent residents of Greenland, only 2,826 were from Denmark and 1,661 from other countries.

87 cruise ships visited Greenland in 2015 with a total of 87 calls and approx. 22,000 tourists aboard. The reason for the low number has been attributed to the higher prices for passenger fees that is higher than in other countries, this has recently been reduced to attract more tourists into Greenland.

South Greenland is a very popular tourist destination due to its mild climate, the many trekking paths, fishing and climbing opportunities and unique Norse ruins. Moreover, a number of geologists visit the area due to its unique geological deposits. Most overnighting tourists fly to Narsarsuaq and continue from there by helicopter or boat to the rest of the region.

A difficult trekking path runs through the mining area, but it is not popular and is rarely used.

**Leisure activities in the area**

A major part of the locals sails with leisure boats (dinghies with outboard motors or roofed motorboats) Most locals spend their summer holiday on the sea cruising the fiords where they stay overnight in tents or the boats and fish, seal or collect berries and angelicas. Some people have built summer homes where they spend the summer and weekends. South Greenland is popular with Greenlanders from the northern areas.

### 7.3.6 Homelessness and crime

**Homelessness**

The following sections are from the report Homelessness in Greenland conducted by the Building Research Institute of the State, 2013.

In 2013 approximately 600 persons were registered as homeless, but as being homless can be on a temporary period it is an uncertain number as there were 250 rehousing in Greenland.

**Table 7.8** ***Number of evictions in Greenland by 2005-2013 (Hjemløs I Grønland, 2013).***

| Municipalities | Total Number | Annual average | Average per dwelling |
|---|---|---|---|
| Total | 1,176 | 147 | 13 |
| Nanortalik | 85 | 11 | 29 |
| Qaqortoq | 57 | 7 | 8 |
| Narsaq | 96 | 12 | 29 |

The homeless in Greenland can be divided into three types: A) Homeless; no protection for the night B) Rehousing; people who has been evicted by INI or Iserit and put into a room in a rehousing dwelling C) Dwelling less; people who has no home but living at friends or families.
A temporarily vulnerable group consisting of students, newly divorced or separated persons, young people who want to move away from home and persons who are not entitled to staff housing. The second group has a long-term character and encompasses persons struggling with other social problems including long-term jobless, substance abusers, criminals, persons with mental disorders as well as disability pensioners. The temporary homeless usually solve their problems on their own but can become vulnerable again and in the long run become part of the group of long-term homeless people. The long-term homeless cannot help themselves and need external assistance. The survey shows that 13% of the homeless have children in their custody.

**Crime**

The judicial system in Greenland (police, prosecution, courts and the prison service) is not transferred to the Self-government. The legislation still belongs to the Ministry of Justice in Denmark, while the law of procedure and the forms of servings are being adapted gradually better to the community, and the Greenland probation will also gradually have more freedom.

The Greenlandic legal system is very different from the Danish. The administration of justice in Greenland is largely based on the laity, where judges and lawyers are ordinary citizens, while the prosecution is handled by the local police. The criminal law does not talk about punishment and not penalties. Instead, the court choose the right option among a number of measures on which is best suited to get the criminals to refrain from re-offending.

Today, the crime in Greenland is characterized by a relatively high gross of acts of violence, including sexual offenses, homicide and attempted homicide, compared to other countries. In recent years there have also been drug offenses, mostly marijuana, and various forms of financial crime. The proportion of Greenlanders sentenced to detention, is three times as high as the proportion of prison convicted in the other Nordic countries. The number of persons been placed in the so-called ‘anstalter’ in Greenland in relation to its population is among the world's largest.

The Police of Greenland publishes annual statistics. Latest annual statistics are for 2014 from where the figures below are shown. The number of offences for breach of the criminal law has decreased by 8.0% from 4,713 notifications in 2013 to 4,338 notifications in 2014 which is a tendency that has been shown since 2011. Although, the number for offences for breach of the specific legislation has increased by 6.6% from 1,042 to 1,116.

Despite the number of reported cases of violence has decreased every year since 2008 and has not been lower the past 14 years, the number of domestic violence cases per. capita in Greenland is still very high, as much as 1.25 times higher than in Denmark. The number of sexual offenses, apart from an increase in 2010 and in 2013, decreased since 2006. The number per. capita is still high, similar to 14 times higher than in Denmark.

The greatest crime type, property crimes (including theft), represents just over 1/2 of all violations of the criminal law, after an increasing trend over the past two years has now decreased again in 2013 and 2014.

This section is based on the Annual Statistics report for 2014 on www.politi.gl.

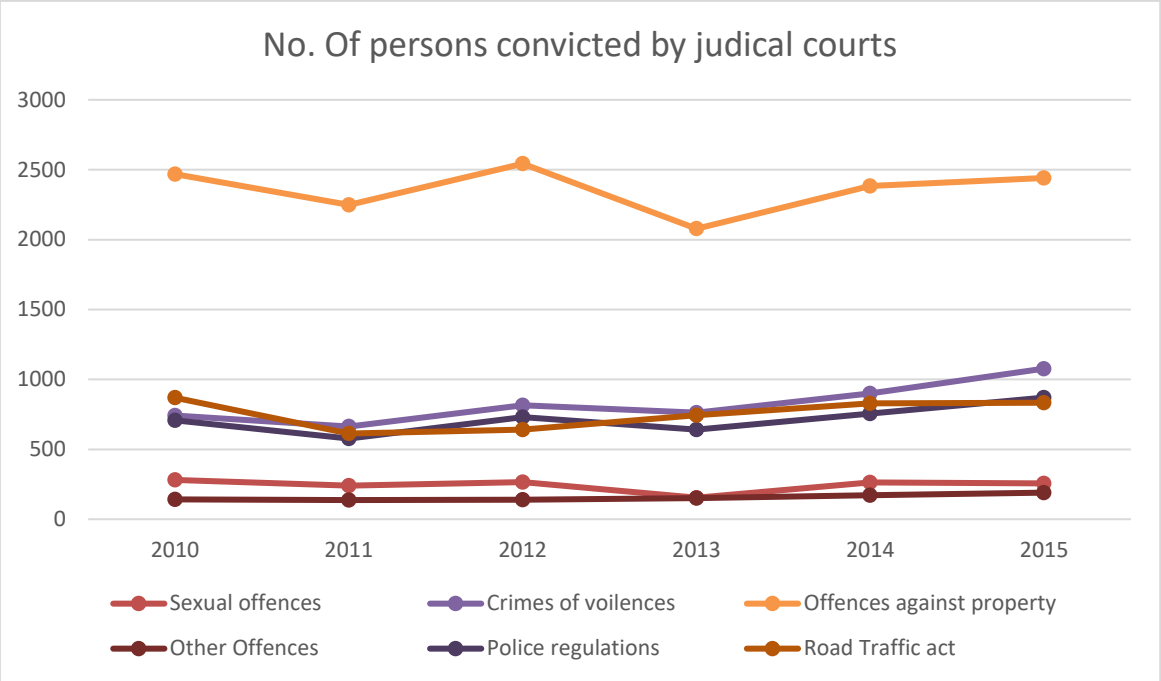


*Figure 7-11: Number of persons sentenced by judicial courts 2010 – 2015 (Statistics Greenland, 2016).*

Figure 7-11 shows that in Greenland the majority of offenders have violated the penal code. From 2010-2015 on average 2460 persons per year were found guilty of offences against property, which constitutes the major part of all penal code violations. In second place follow violent crimes with 867 in 2010, but in 2011 road traffic act becomes second place with 848 and from 2012 until 2015 the second place is taken over by police regulations on average 984 persons per year. It should be stressed that the same person may appear more than once in the statistics, according to the number of offences the person was found guilty of.

In 2014 enrichment crime was the most frequently committed criminal offence as shown in 7-12 below.

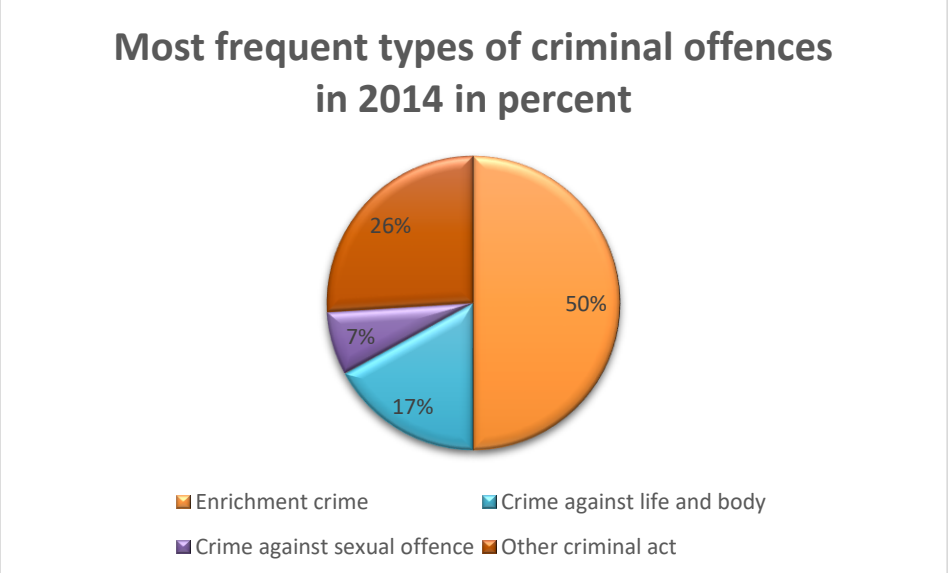


*Figure 7-12: The most frequent types of criminal offences in 2014 (www.politi.gl).*

Violence and sexual abuse is frequent in Greenland. 59 % of the persons interviewed in a population survey had experienced different types of violence or threats during their adult life. Often alcohol abuse is involved (Bjerregaard, P. and Aidt E.C., 2010).

## 7.4 Socio-economic aspects

Greenland's economy is based on fishing and fish products. In addition, Greenland receives a block grant of some DKK 3.696 billion (2015) from Denmark, equivalent to approx. 35 % of the public revenue.

### 7.4.1 Income: average income, inequalities

This section has been composed by data from Statistics Greenland unless otherwise indicated (Statistics Greenland, 2016).

Table 7.9 shows the national average taxable income per household before taxes for Kommune Kujalleq and by town in 2014 and 2015.

**Table 7.9** ***Average household income before taxes in 2014 and 2015 (Statistics Greenland, 2016).***

| | 2014 | 2015 |
|---|---|---|
| Greenland total | 381,000 DKK | 406,000 DKK |
| Kommune Kujalleq | 291,000 DKK | 320,000 DKK |
| Nanortalik | 248,000 DKK | 268,000 DKK |
| Qaqortoq | 312,000 DKK | 351,000 DKK |
| Narsaq | 296,000 DKK | 313,000 DKK |

As shown in Table 7.9 Kommune Kujalleq's household incomes are somewhat lower than the national average, particularly in Nanortalik, and that Qaqortoq lies above the municipal average. Furthermore, the figures show that the average income before taxes have increased from 2014 to 2015.

It should be noted that according to the SliCA assessment (Poppel et al, 2007), Greenlandic household incomes are often supplemented with traditional activities such as hunting and fishing for own consumption as well as handicraft etc. Table 7.10 shows participation in subsistence activities i.e. fishing, hunting, berry picking, handicrafts etc.

**Table 7.10** ***Adult participation in subsistence activities (Poppel et al., 2007).***

| **Participation in subsistence activities** | |
|---|---|
| Fishing, hunting and growing crops | 57 % |
| Preparations of hunting and fishing trips | 40 % |
| Prepare and repair equipment | 66 % |
| Maintenance of camps | 47 % |
| Flensing, food preservation | 36 % |
| Handicrafts and other work carried out for own consumption | 15 % |
| Member of reindeer hunting or whaling crew | 9 % |
| Sold fish, meat or berries | 10 % |
| Sold handicrafts | 4 % |
| *Interviewed in South Greenland* | 5,597 |

Table 7.11 illustrates the share of traditional Greenlandic food consumed by households.

**Table 7.11** ***Proportion of meat and fish consumed by households, which can be characterised as traditional Greenlandic food (Poppel et al., 2007).***

| Share of Greenlandic food in households | |
|---|---|
| None | <1 % |
| Less than 50% | 30 % |
| Around 50% | 38 % |
| More than 50% | 31 % |
| *Interviewed in South Greenland* | 5,507 |

**Table 7.12** ***Average personal income before taxes in 2015 (Statistics Greenland, 2016).***

| | |
|---|---|
| Greenland Total | 213,000 DKK |
| Kommune Kujalleq | 173,000 DKK |
| Nanortalik | 139,000 DKK |
| Qaqortoq | 193,000 DKK |
| Narsaq | 169,000 DKK |

Tabel 7.12 shows the average personal income before taxes in 2015.
In general, incomes in settlements are somewhat lower than in towns. The only exceptions are the military and naval bases Thule and Grønnedal station, which have the highest incomes in Greenland, because most of their residents are employed by the bases. The Arctic Base at Grønnedal was closed in September 2014 and moved to Nuuk, recently it is under consideration to move the base back the Arctic Base to Grønnedal again.

The average annual income of men was DKK 246,000 in 2015, whereas women on average were making DKK 177,000. This difference persists independently of how the average is calculated - by town or settlement, geographic distribution, birth place or age group (Statistics Greenland, 2016).

There is no official poverty limit in Greenland, but a relative limit was previously set at incomes below 60 % of the equivalised disposable median income. In 2015 16.2 % of the population living in a household had an income 60 % below the median income (Statistics Greenland, Income distribution 2015).

The trade group with the lowest income in Greenland are fishermen and hunters, even when catches from hunting and fishing for own consumption are included as well as handicrafts (subsistence economy) the average income is DKK 72,794 and 59,863 per person in towns and settlements, respectively (Skatte og velfærdskommissionens arbejdspapir, 2010).

### 7.4.2 Cost of living, consumer price index, construction price index, comparison with other countries

The consumer price index for Greenland as of July 1, 2016 relative to January 1, 2008 is 118.7. The increase in the index is notably caused by rising food prices and, to a lesser extent, increasing insurance costs. Moreover, the index follows the Danish index (Statistics Greenland, 2016).

The construction price index was 132.7 as of July 1, 2016, which is an increase from 130.8 the previous year (Statistics Greenland, 2016). The reason for the increase is the rising costs of building materials, shipping and wages between 2008 and 2016. The index follows the Danish index closely as almost all building materials are imported from Denmark.

### 7.4.3 Description of business structure

Greenland has a very large public sector with a substantial share of public welfare tasks such as health, social security, education etc. In recent years some tasks have been outsourced to the private market, but Greenland's Self Government is still the main shareholder or sole shareholder of Greenland's largest companies, which often hold the monopoly of their respective markets. These companies include Royal Greenland A/S, KNI A/S, TELE Greenland A/S, Royal Arctic Line A/S and Air Greenland A/S (Skatte- og velfærdskommissionen (Tax and Welfare Commission), 2010).

Greenland's largest exports are fish, prawn and fish products and are of utmost importance for the country's economy. However, the fishing sector is highly sensitive to seasonal fluctuations as well as climate change. For the past 20 years fish stocks have declined drastically and many fish factories and venues have been forced to close which has led to an increase in unemployment among Greenlandic workers and a drop-in revenue.

The private sector in Greenland mostly consists of small enterprises such as retailers, builders, fishermen, hotel and catering as well as repair services apart from a few large national enterprises owned by the Self Government. The large national companies employ most of the workforce whereas the small companies only employ a minor share of the total (Skatte- og velfærdskommission (Tax and Welfare Commission), 2010).

In general, Qaqortoq has the most flourishing business life of Kommune Kujalleq, whereas Narsaq and Nanortalik have lagged behind for many years.

Local mining support groups such as LNS, , 60° North Greenland, Xploration Services Greenland, (GNC) are local experts on mining, mining support. Since this process started a number of these companies have changed their structure with some like GMS and LNS no longer involved in mining support in South Greenland, however local experience is still available through personnel still in town such as 60° North.

### 7.4.4 Description of the existing labour market

Wage earners are, to a large extent, organised and represented through SIK (Greenland Workers Union). Moreover, there are a number of unions organised by profession including journalists, preschool teachers and school teachers, as well as university graduates.

Wage earners are insured through Lønmodtagernes Garantifond (a jointly and severally liable insurance fund that all private employers pay into) in case of employer bankruptcy, death or closure (www.atp.dk).

Private employers are organised and represented by GE (The Greenland Business Association) which includes some 400-member enterprisesand NUSUKA, a more recent organisation, which has a somewhat lower affiliation (www.knr.gl).

Occupational health and safety is monitored by the Danish Working Environment Authority in Greenland, which is a sub-department under the Danish government (www.at.gl).

Since 1999 native and expatriate wage earners with the same education and tasks have had equal rights. Working hours are 40 hours / week with 200 hours of holiday per year for full-time employees. Employers pay a 12 % holiday allowance. There are currently two pension funds in Greenland; SISA (Wage Earners' Pension Fund) as well as PFA Soraarneq, which was a pension scheme under the Danish pension fund PFA closed their pension fund in Greenland and is now under the Danish pension fund PFA Pension (Statistics Greenland, 2009 and 2018).

In Sisimiut Greenland School of Minerals & Petroleum started in 2008 with the purpose to educate staff to the upcoming mining sector in Greenland and until now, October 2016, there has been 1,108 completed courses from the school, but the number does not show how many persons graduated as some people can take more than one course. It is also with some uncertainty whether the students have received jobs in the mining sector as there so far has not yet been any mine operating yet in Greenland.

All statistics on labour conditions or workforce are calculated for 18-64-year olds, with an income above DKK 40,000 before 2014.

Table 7.13 shows the number of employed women and men by sector and gender in 2013. The table also clearly shows that the largest employment sector for women is public management, defence and social security. Greenlandic women are comfortable in this sector in relation to the traditional Greenlandic life style and have been dominating in these areas since the late 1970's. Men dominate in the traditional sectors such as fishing, trade building & construction and Transportation.

**Table 7.13** ***Employment in Greenland by sector and gender in 2014 in Greenland (Statistics Greenland, 2016).***

| | Total | Female | Male |
|---|---|---|---|
| | Sum | Sum | Sum |
| **Total** | 25,167 | 11,282 | 13,884 |
| Agriculture, hunting, forestry and fishing | 3,640 | 570 | 3,070 |
| Raw material extraction | 110 | 20 | 90 |
| Industry | 225 | 60 | 165 |
| Power, gas, heat and water supply | 382 | 60 | 322 |
| Building and construction | 1,720 | 153 | 1,567 |
| Trading | 2,918 | 1,424 | 1,494 |
| Hotel and catering | 742 | 405 | 338 |
| Transportation | 2,499 | 625 | 1,874 |
| Business Service | 1,422 | 539 | 884 |
| Public Administration and Service | 9,826 | 6,704 | 3,122 |
| Other service activities | 890 | 455 | 435 |
| International organisations | - | - | - |
| Undeclared | 792 | 268 | 524 |

Table 7.14 shows the potential workforce in South Greenland and all of Greenland as of 2014; that is, all persons in the age group 18-64 years, living in towns, born in Greenland. The possible retirement age is now 65 years, whereas in 2008 it was 63. Table 7.14 *Potential workforce – South Greenland 2014 (Statistics Greenland,* ***Workforce 2016).***

| | Total | Men | Women |
|---|---|---|---|
| Nanortalik | 1,115 | 621 | 494 |
| Qaqortoq | 2,158 | 1,127 | 1,031 |
| Narsaq | 1,119 | 590 | 529 |
| Total in Greenland | 36,303 | 19,323 | 16,980 |

The local business life in Kommune Kujalleq is organised in "Erhvervsforum" (Business forum), a consulting body to the municipal board with forums in Nanortalik, Narsaq and Qaqortoq (Interview with Jim Riis).

**Unemployment**

Unemployment statistics are calculated for persons born in Greenland (only a small part of the unemployed were born outside Greenland), of 18-64 years of age, who are not receiving training or on holiday, and have been registered by the municipality in 2014 as unemployed. These statistics may miss some small groups who cannot register as unemployed, such as seasonal workers and young people under 18. Unemployed persons have been unemployed during both the first and the second half of a given month.

The number of unemployed was on average 2,754 persons per month, equivalent to 7.6 % of the potential workforce in 2014. In 2013 this number was 7.5 %.

Table 7.15 shows the average number of unemployed persons and percentage per month of unemployed in South Greenland as well as Greenland in total. Narsaq had the lowest percentage of unemployed per month in 2006, even lower than the country average. In 2012 the average percentage has almost doubled for Narsaq. Nanortalik's unemployment figure is significant higher compared to Qaqortoq, which is closest to the country average. The substantial increase in the unemployment rate in Nanortalik and Narsaq is probably due to the declining fishing activity caused by a lack of fish and the consequent close-down of fish processing plants for various periods of time.

**Table 7.15** ***Average number of unemployed in South Greenland and Greenland in total in 2012 and 2014 (Statistics Greenland, 2016).***

| | 2012 | 2014 | 2012 | 2014 |
|---|---|---|---|---|
| Nanortalik | 128 | 121 | 16.8% | 16.4% |
| Qaqortoq | 201 | 152 | 12.6% | 10.1% |
| Narsaq | 104 | 133 | 13.0% | 16.4% |
| Total in Greenland | 2,655 | 2,754 | 9.8% | 10.3% |

Due to lack of reporting the total cannot always be directly compared over time. The total is not adjusted for incomplete reporting. Previously the workforce was defined as the population in the age group 15-62 years. In 2009 the workforce includes the population18-63 years of age and in 2010 18-64.

Table 7.16 shows how unemployment affected unskilled and skilled workers during first quarter of 2014 in the three towns of South Greenland compared with the total in Grenland. The somewhat lower figures for first quarter in relation to the second quarter of 2014 reflect the seasonal fluctuations due to increased activity in the building and construction sector as well as hunting and fishing during the summer months. Unemployment in South Greenland is very seasonally dependent and jobless rates peak from November-December to April (Interview with Grethe Nielsen).

**Table 7.16** ***Unemployed skilled and unskilled workers in first quarter of 2014 and second quarter of 2014 (Statistics Greenland, Unemployment figures 2014, 2016).***

| Town | Percentage 1Q 2014 | Percentage 2Q 2014 |
|---|---|---|
| Nanortalik | 20.1 | 16.6 |
| Qaqortoq | 13.1 | 10.0 |
| Narsaq | 19.9 | 17.4 |
| Total in Greenland | 13.3 | 10.4 |

Table 7.17 shows the average monthly number of unemployed in fourth quarter 2014 by gender and town.

**Table 7.17** ***Average monthly unemployment rate by gender and town in fourth quarter 2014 (Greenland Statistics, 2016).***

| | no. of persons by 4Q 2014 | | | percentage by 4Q 2014 | | |
|---|---|---|---|---|---|---|
| | Total | Male | Female | Total | Male | Female |
| Nanortalik | 102 | 62 | 41 | 13.5 | 14.2 | 12.9 |
| Qaqortoq | 132 | 85 | 47 | 8.9 | 10.8 | 6.7 |
| Narsaq | 109 | 64 | 44 | 13.3 | 14.0 | 12.2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| *Total Greenland* | 2,439 | 1,335 | 1.104 | 9.2 | 9.2 | 9.2 |

Due to lack of reporting the total cannot always be directly compared over time. The total is not adjusted for incomplete reporting. Previously the workforce was defined as the population in the age group 15-62 years. In 2009 the workforce includes the population18-63 years of age and in 2010 18-64.

Women have lower unemployment rates than men. This is very characteristic of Greenlandic women as they have adapted more easily to modern society than their male counterparts who have been used to working under unstable conditions as hunters and fishermen.

Table 7.18 shows the average number of unemployed per month by education and gender. Unskilled men and women are most affected by unemployment.

**Table 7.18** ***Average number of unemployed per month by education in 4th Quarter 2014 (Statistics Greenland, 2016).***

| Education or training | Total |
|---|---|
| Total | 2,754 |
| Primary and Secondary School | 2,295 |
| High Schol education | 44 |
| Total Business School | 380 |
| Art and Humanities | 14 |
| Business, administration and law | 67 |
| Engineer-science, production & construction | 129 |
| Farming, forestry, fishery & veterinary | 35 |
| Health and wellfare | 69 |
| Service sector | 65 |
| Other Business School | 3 |
| Ordinary and business continuing education | 4 |
| Higher education | 31 |

### 7.4.5 Public sector in relation to private sector

Greenland is structured as a welfare society. As mentioned in section 7.4.4, the public sector dominates Greenland's business life and economy. The below sections describe the country's employment structure by sectors with the public sector clearly being the largest sector.

The public sector consists of three public administrations and services including defence and the judicial system, which are under the Danish state; health care and Greenland's Broadcasting Organisation, which is under Greenland's Self Government; as well as the education sector, administration and social and childcare institutions which are under the municipalities. All of them are large employment sectors. The public sector also consists of the corporate sector, which include corporate enterprises such as Nukissiorfiit A/S (power, water and heating company) and government owned companies such as Royal Greenland A/S, Tele Greenland A&S. The government owned companies are owned or controlled by the government as the majority shareholder (Statistics Greenland, 2009). The distribution between the private and the public sector in Greenland as well as the monopoly-like conditions that certain government owned companies enjoy make it difficult to maintain free competition and establish new companies (Skatte- og velfærdskommissionen (Tax and Welfare Commission), 2010).

About 50 % of all public expenditure is financed by foreign transfers and 40 % are financed by different taxes. Moreover, Greenland's economy depends heavily on the fishing sector which makes the national economy very vulnerable (Skatte- og velfærdskommissionen (Tax and Welfare Commission), 2010).

Nonetheless, the changing self-governments have started to outsource more and more services, but the many large government owned companies still constitute a very large share of Greenland's business structure.

### 7.4.6 Educational level

In 2006 the Self-government adopted an Education Plan for Greenland. The overall objective was that 70% of a year should have an education in 2015 before they turn 35 years old.

The Education programme resulted in:

- 47% took an education in 2012 compared to 2005. In 2012 978 completed an education against 553 in 2005.

The below sections are composed of information from www.naalakkersuisut.gl, unless otherwise stated.

Attendance for the first 10 years of public school is required by law.
Greenland statistics has for the first time been able to complete UNESCO's educational profile by ISCED scaling of educations for the Greenland population. This has not been possible before as the Greenland educational system was not compatible.

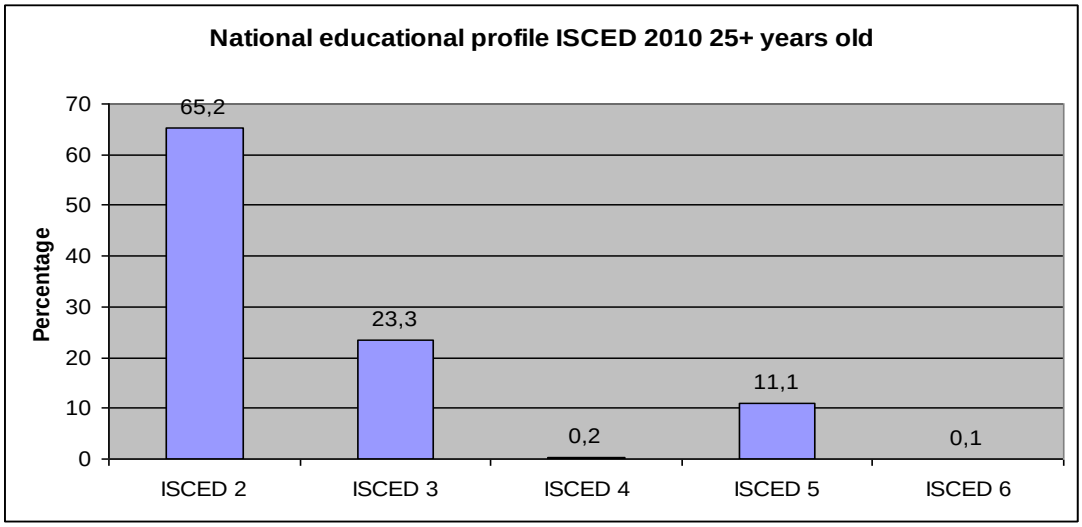


*Figure 7-13: ISCED educational levels completed according to UNESCO's international standards.*

*ISCED 2: Lower secondary, ISCED 3: Upper secondary, ISCED 4: Postsecondary non-tertiary, ISCED 5-6: Tertiary. All data is extracted from the registry for Greenlandic and Danish stipend grants. Persons born outside Greenland and Denmark and have not received Greenlandic or Danish stipend grants do not appear in the chart (Greenland Statistics, 2011).*

ISCED 1 does not apply as there is no available data from before 1980. According to international standards Greenland has a high percentage of persons who have completed public school and low percentage for ISCED 3 and 5-6 when compared to other European countries.

Table 7.19 shows the number of persons according to the most advanced level of training achieved.

**Table 7.19 Highest level of training/education achieved (Poppel B., 2011).**

| | Towns | Settlements | South Greenland | Greenland |
|---|---|---|---|---|
| Less than 7 years in public school | 9,9% | 15,2% | 11,6% | 10,8% |
| 9th grade | 56,7% | 68,2% | 60,4% | 43,4% |
| 10th grade | 14,9% | 6,1% | 12,1% | 18,9% |
| High school diploma | 12,1% | 4,5% | 9,7% | 17,2% |
| In school | 4,3% | 1,5% | 3,4% | 4,0% |
| Other | 2,1% | 4,5% | 2,9% | 5,7% |

Since 1998 the number of women enrolled in education has exceeded that of men. Women dominate in middle-range and university education (Statistics Greenland, 2009). Education possibilities in Greenland are scarce, which is why most Greenlanders go to Denmark to study. However, this requires students to be proficient in both Danish and Greenlandic.

Table 7.20 below shows the number of persons according to the most advanced level of training achieved in 2002-3 and 2006-7.

**Table 7.20 *Highest level of training/education achieved (Statistics Greenland, 2009).***

| | 2002/03 | 2006/07 |
|---|---|---|
| **Completed education, total** | **534** | **388** |
| **Vocational education and training, total** | **381** | **254** |
| Commerce and office | 127 | 45 |
| Social and health | 121 | 79 |
| **Middle-range training, total** | **132** | **89** |
| Teacher training | 41 | 26 |
| Commerce, computer science etc | 43 | 12 |
| **University education, total** | **21** | **44** |
| Natural science | 2 | 2 |
| Social science | 3 | 16 |
| Humanistic studies | 4 | 10 |
| Commerce | 3 | 2 |
| **Other studies, total** | - | 1 |

There are no reliable records of the educational level in Greenland, as the existing statistics include some uncertainties and error margins. According to Table 7.21 there is an increasing tendency among Greenlanders to complete their studies as the number of graduates has risen. However, this does not mean that the completion rate has increased in relation to the overall enrolment rate. There are no records as to the percentage of persons who both enrol and complete their studies.

**Table 7.21 Different educational levels attended, finished, interrupted, 2009 (the figures are based on the number of Greenlandic study grants given to students in Greenland, Denmark and other countries) (Statistics Greenland, Qualifying studies 2009, 2010).**

| | Commenced 2009 | Interrupted 2009 | Completed 2009 |
|---|---|---|---|
| Total | 1,216 | 557 | 518 |
| Vocational and training | 791 | 373 | 331 |
| Middle-range training | 225 | 111 | 115 |
| University and long-range education | 195 | 71 | 71 |
| *Other studies* | 5 | 2 | 1 |

The large share of interrupted studies is partially due to language problems, homesickness and other adaptation problems as most students have to leave their homes to get an education.

There is a large number of unskilled and skilled workers in Greenland who have not been formally trained but have gained competencies through practical training or applicable experience. These competencies constitute a major resource which is not reflected in the statistics concerning the educational level in Greenland. An initiative has been launched to map these competencies so that they can be put to use in society. This initiative is developed by the vocational schools, municipalities and the Department for Business and business-related education (Interview Kommune Kujalleq, 2009).

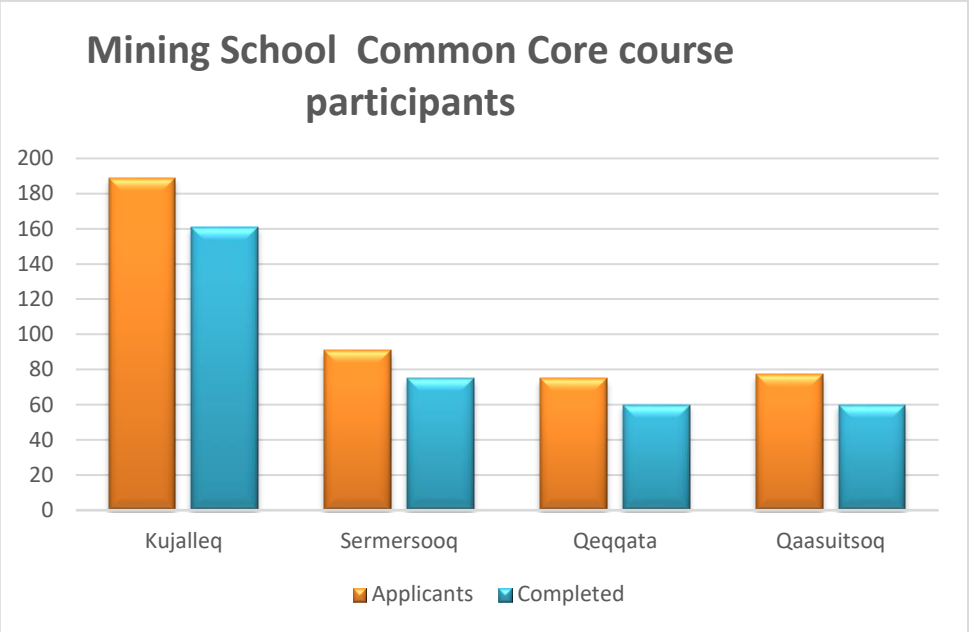


**Figure 7-14 Applicants and completed common core courses from Greenland School of Minerals & Petroleum (Kommune Kujalleq)**

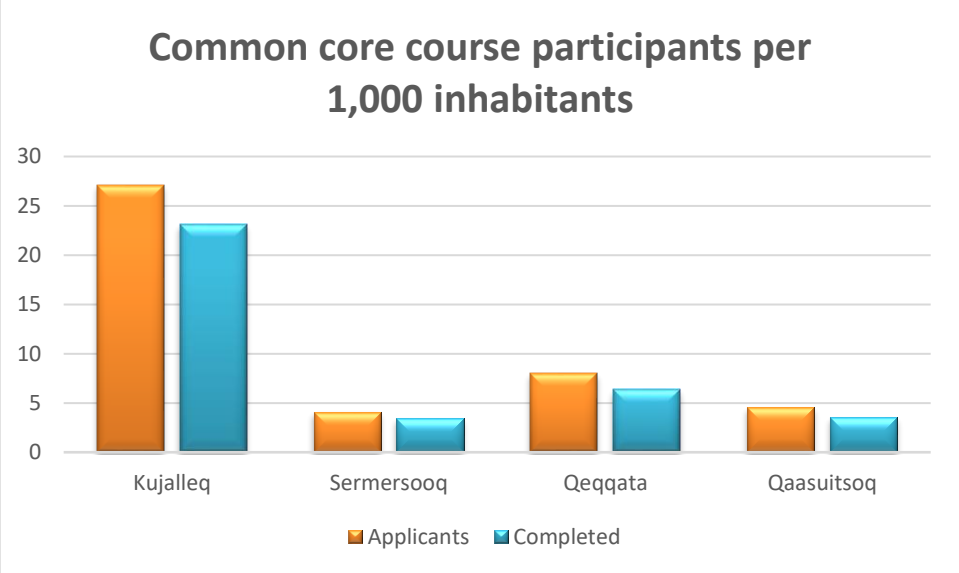


**Figure 7-15 Applicants and completed common core course participants per 1000 inhabitants from Greenland School of Minerals & Petroleum (Kommune Kujalleq).**

Figure 7-14 and 7-15 show the number of applicants and completed course participants at the Greenland School of Minerals & petroleum (Råstofskolen) in Sisimiut. It shows that 43.8% of all course members are from Municipality Kujalleq, which TANBREEZ will be able to employ to the mine.

### 7.4.7 Income and corporate tax

**Corporate taxation**

*Corporate tax*

In general, the corporate tax is levied at a flat rate of 25 % and the rate applies to a resident company as well as a registered branch office of a foreign company. The taxable income is determined on the basis of the profit shown in the statutory annual report, adjusted to comply with the prevailing tax provisions. Corporate tax for companies with a license under the Mineral Act is 25 %.

*Dividend tax*

Greenlandic companies are to withhold a dividend tax corresponding to the personal tax in the municipality of registration. For companies with permits under the Mineral Resources Act, the present dividend tax rate is 36%.

*Tax losses*

Companies with exploration or exploitation permits under the Mineral Resources Act are entitled to carry forward tax losses without timing limitations.

**Personnel taxation**

An amendment to the income tax law in November 2010 introduced a new Gross Income scheme including a tax rate of 35% tax for employees working in the mineral resource industry. The Gross tax income scheme only applies to employees, who have not been liable to pay tax in Greenland for a six-month period preceding their employment. The Gross Income tax is calculated on any income relating to the project except contributions to approved Greenland and Danish pension funds.

There are tax agreements between Greenland, Denmark, Iceland, Norway and the Faroe Islands. Otherwise, the income tax system is structured according to the Danish model with taxation at source. The income tax rate is 44 % for Kommune Kujalleq, and 36% for areas outside municipal classification. Personnel allowance is DKK 58,000.

### 7.4.8 Society structure

**Political structure**

Greenland is a democratic country with universal suffrage for all citizens above 18 years of age. Greenland is part of the Danish Kingdom and is a member of the Danish Commonwealth, which also includes the Faroe Islands. Greenland assumed self-government on 21 June 2009 after a referendum. Inatsisartut, the Parliament, has 31 members elected by voters for a four-year term, who meet two to four times a year. Naalakkersuisut, Greenland's Self Government, presently consists of nine members elected by popular vote from the parties Siumut, Inuit Ataqatigiit and Partii Naleraq. Since the institution of home rule in 1979, the administration of various areas has gradually been passed from Denmark to Greenland, including education and health care system. The remaining areas are scheduled for transfer at a later time, including police, foreign policy and defence, the judicial system as well as currency as capacity builds up (www.stm.dk and www.naalakkersuisut.gl).

Greenland is divided into five municipalities which are responsible for education (including primary and lower secondary school) and culture, social security services, technical services and utilities.

**Development plans**
Kommune Kujalleq has developed a municipal strategy for 2011 – 2022, which came in force in August 2016 (Kommune Kujalleq, 2016). A new update of this plan is due in November 2016. Qaqortoq has been designated as the main town to provide regional services such as hospital specialities, higher education and administration. Nanortalik, Qaqortoq and Narsaq serve as the main areas of residence and business and as hubs for the 11 adjacent settlements and many sheep farms.

Future local planning will focus on ensuring the framework for development of business as well as mining opportunities including manpower, infrastructure, training etc. In addition, planning will centre on food related industries with the aim of becoming self-sufficient with regard to fishing, hunting, agriculture and animal husbandry by means of crop improvement and niche production. Other focus areas include strengthening of tourism, developing and expanding the IT market and developing the service business sector.

Employment and education policies will focus on preventing long-term unemployment, upgrading the workforce, support existing educational institutions and attract new competence development of unskilled workers and support self-sufficiency in the settlements.

Kommune Kujalleq aims at providing safe living conditions for its inhabitants by strengthening services aimed at families with dependent children in terms of childcare and counselling services etc., establishment of family centres for families with problems and to provide support to the elderly and handicapped.

Cultural and leisure time activities such as associations, sports, music and other arts will be strengthened as well.

Education and childcare are another focus area. This includes renovating the three schools in the three major towns, establishing joint facilities for the educational institutions, strengthening education opportunities in settlements and sheep farms through distance teaching and strengthening the area's ability to attract and keep skilled labour in the education sector.

The municipality's cultural heritage is planned to be strengthened by ensuring and making visible relics of the past, ensuring the physical conditions of areas and neighbourhoods of environmental and cultural value and conserving and developing horticulture / gardening.

As to infrastructure, the aim is to strengthen the existing infrastructure, both by air, water and land, support regular boat connections and improve traffic safety.

The objectives for the utility area are to strengthen drinking water resources, ensure sufficient power, heating and drinking water supplies, make use of excess heat, and strengthen waste separation and treatment.

The municipality also wishes to preserve its natural resources, optimize the business activities and ensure that tourism does not have a negative impact on nature.

Close to the mining site, there is an area of special interest, the Hvalsø ruins. The Danish Culture Minister has in cooperation with Greenland Self-Government, Kujalleq Municipality and applied for inclusion of this area on UNESCO's world heritage list.

**Transport facilities and infrastructure**
Greenland is very large in geographic extent with long distances between towns and settlements. Passenger and freight transport is primarily done by ship, airplane or helicopter. There are practically no roads or railways connecting towns and settlements which makes the infrastructure vulnerable in adverse weather and climatic conditions. There are six towns with regular flights and the major settlements have a helistop (in total 39 helistops) for emergency evacuations.

Narsarsuaq and Kangerlussuaq are the two major international airports with 1,830 m and 2,810 m landing strips, respectively. These airports have regular flights arriving and departing from and to Denmark and in some seasons also to Iceland. Moreover, there are 11 airports near towns with smaller landing strips. Furthermore new airports are under construction in Nuuk and Ilulissat. Construction of an airport in Qaqortoq is scheduled to begin in 2021.

There are 16 towns with harbours and 60 minor ports in settlements across Greenland. These harbour facilities have different capacities for cargo ships and passenger boats as well as cruise ships. The closest major harbour with a large container storage area in South Greenland is located in Qaqortoq. Narsaq has a fishing and ship harbour, in Nanortalik there is a combined fishing and ship harbour. Most container cargo is shipped to Nuuk and from there distributed to Qaqortoq, and from Qaqortoq to Narsaq and Nanortalik. Passenger boats only sail regularly between towns and settlements in Greenland. In North Greenland harbours are closed due to the heavy ice conditions during the winter months (Statistics Greenland, 2016).

**Power supply**
Presently, electric power is supplied from the hydraulic power plant in Qorlortorsuaq with a total capacity of 7.2 MW. This supply is distributed between Narsaq and Qaqortoq by cables stretching over the fells and the fiord. The previous electric power plants were run by diesel engines and serve as emergency supply today. Nanortalik has a diesel-powered power plant. The power supply is managed by Nukissiorfiit, a government owned utility.

**Drinking water**
Drinking water is primarily supplied from lakes and rivers. The water is filtrated and treated with chlorine, among others. Some households do not have running water and therefore there are free of charge drinking water stations in all towns and settlements. Nukissiorfiit also manages drinking water utilities in the rest of Greenland.

**Telephone and Internet**
TELE POST has previously been a total monopoly holder of public telecommunications in the country (including all telephone and internet communications). Today more actors exist. Both services are available in all towns and most settlements.

In 2014, there were 13,736 telephone lines, 62,005 cell phone subscriptions and 11,918 Internet connections (Statistics Greenland, 2016).

**Educational institutions**
Primary school starts with 1st grade the year the children turns six years old and is mandatory for ten years. Then this can be followed by the upper secondary schools for three years (GUX, HTX, HHX). Several schools have 1st to 10th grade but small settlements have only to 7th grade and then the children are sent to schools in towns where they live in school dormitories.

There are five upper secondary schools in West Greenland (GUX in Qaqortoq, Nuuk and Aasiaat, as well as HHX in Qaqortoq and HTX in Sisimiut. There is a free youth education programme (paid through the tax system) and Greenlandic students receive financial support.

University education is free in Greenland (paid through the tax system) and is only offered in Nuuk. Students with a certain grade average from upper secondary school are admitted.

In Greenland there are 8 vocational training schools, which offer a business directed education.

The eight vocational training schools are:

- The School of Metal and Mechanics (Saviminilerinermik Iliniarfik) in Nuuk
- The Building and Construction School (Sanartornermik Iliniarfik) in Sisimiut
- The School of Commerce (Campus Kujalleq) in Qaqotoq
- The School of Commerce (Niuernermik Iliniarfik) in Nuuk
- The Food Service and Preparation School (Inuili) in Narsaq
- The Greenland School of Minerals & Petroleum (Råstofskolen) in Sisimiut
- The School for Merchant Mariners (Imarsiornermik Ilinniarfik) in Paamiut and Nuuk
- The School for Hunting and Fishing in Uummannaq

**Childcare**
There are several childcare facilities in all three towns in South Greenland. The facilities are mainly for children aged 0-6 years, but there are also homes for orphans and disabled children. Kommune Kujalleq provides financial support to parents depending on their income. Typically, parents pay between DKK 177 – 2,000 monthly for childcare based on a 40-hour working week in Kommune Kujalleq (www.kujalleq.gl).

**Health care**
All health care treatment is free, including medication and dental treatment financed through the tax system (www.naalakkersuisut.gl). Greenland is currently divided into 5 health districts. (www.peqqik.gl).

Queen Ingrid's Hospital, located in Nuuk, is the largest specialist hospital in Greenland with the most modern equipment. The hospital has 191 beds in special and treatment wards. The hospital also has a patient hotel (www.peqqik.gl).

There are 16 other hospitals, one in each of the other towns of Greenland and more than 60 nursing clinics and health stations. The latter are most frequent in settlements with +50 inhabitants and have a nurse and a social and health care assistant attached (www.peqqik.gl).

There are 17 dental clinics, one in each town. There are no dental clinics in the settlements (www.peqqik.gl).

The Greenland Institute for Circumpolar Health Research (GIHR) was established in 2008 with the objective to improve cooperation between researchers from other countries and health care personnel in Greenland and stimulate research in Greenland. The institute is based in Nuuk (www.pi.gl).

The alcohol treatment centre Qaqiffik is financed by the Self Government and has been operating since 1995 (www.qaqiffik.gl).

The Centre for Health Care Studies manages the nursing, health assistant and dental studies in Nuuk (www.pi.gl).

Det Grønlandske Patienthjem in Østerbro, suburb of Copenhagen, Denmark, provides accommodation for patients and their relatives from Greenland before and after hospitalisations (www.peqqik.gl).

In the summer of 2010, telemedicine equipment ('Pipaluk') was set up in 16 health districts. In total, a 'Pipaluk' will be set up in 77 towns and settlements with more than 50 inhabitants by December 2010 (www.peqqik.gl).

## 7.5 Health

The 2005-09 population survey of Greenland (Bjerregaard, P. og Aidt, E.C., 2010) maps Greenlanders' health habits, lifestyle, health status and self-perceived health. The survey is based on the collection of data from 2,971 adults from 8 towns and 10 settlements and will together with previous population studies provide information about the public health situation before the public health programme, Inuuneritta, was initiated in 2007.

Below the survey's conclusions are summarised, unless otherwise indicated.

Greenlanders are abandoning the traditional Greenlandic lifestyle and foods and are increasingly adopting the Western life style, which has resulted in more Western life style diseases such as diabetes, heart diseases, cardiovascular diseases and obesity since 1993. Greenlanders eat more unhealthy food and more people are obese, especially the number of obese women is on the increase. Since 1993 the population has become more urbanised, the population figure has increased significantly, and the choice of foods in the stores of the major towns has become more varied particularly with respect to fruits and vegetables. 28 % of the population above 65 years has type 2 diabetes with the highest rates occurring in the settlements.

66 % of the persons surveyed are smokers, which is less than in 1993. Particularly men have stopped smoking and currently more women than men smoke. Nevertheless, the number of smokers is still higher than in other countries. Less alcohol is consumed now than in 1993, particularly among men. Moreover, the weekly consumption of hashish has dropped since 1993.

The population's self-perception of their health has become more negative than in 1993. The reason may be that people expect to be in better health because of the improved sanitary conditions. 96 % had experienced one or more health-related inconveniences or symptoms within the last 14 days.

Satisfaction with the health system is higher than in 1993. In general, Greenlanders would like to have more permanent doctors and other trained health personnel.

### Tuberculosis and sexually transmitted diseases

Tuberculosis (TB) has been recognised as a prevalent disease in Greenland and have been increasing since the 1980 ties. On average, 88 persons have contracted TB each year for the past five years. The majority of the cases have been reported in municipality of Sermersooq, especially Tasilliaq have had many cases since 2010, see Figure 7- 16 (Landslægeembedets årsberetning, 2011 & 2012).

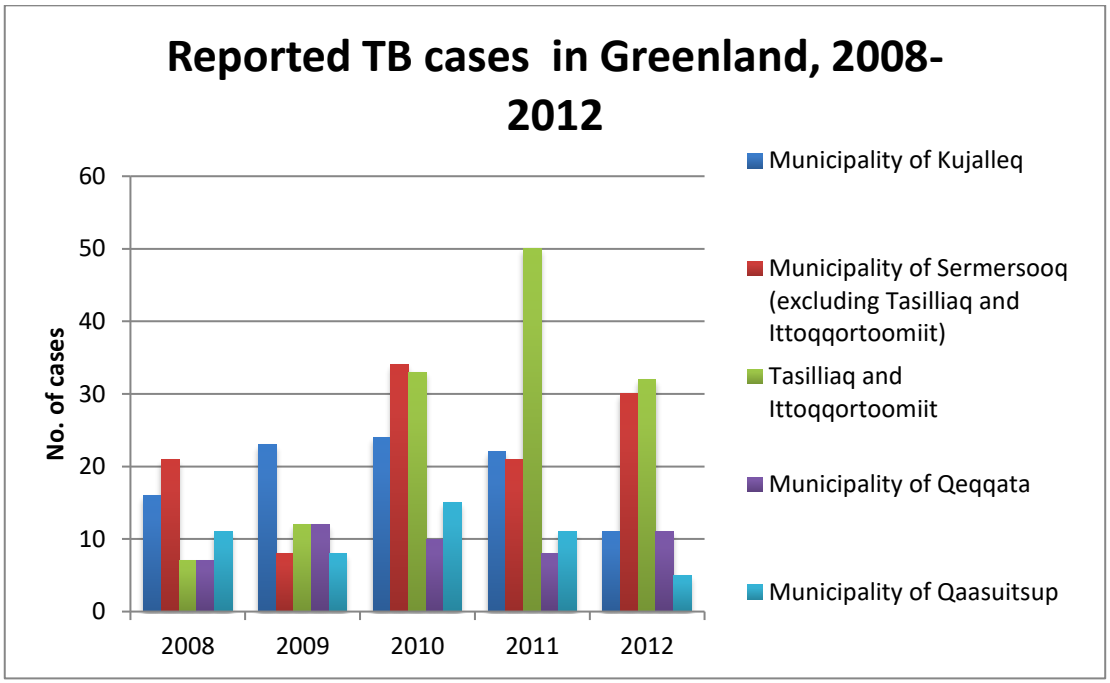


*Figure 7-16: No. of reported TB cases in Greenland for de four municipalities (Landslægeembedets årsberetning, 2011 & 2012).*

The number of reported sexually transmitted diseases (STDs) is shown in Table 7.22. STDs have been a problem in Greenland for many years, and the number of cases of as well gonorrhoea as chlamydia has been increasing over the past decade, especially the cases aged under 16.

**Table 7.22 Number of reported cases of gonorrhoea and chlamydia in Greenland in 2014 (www.stat.gl, 2016).**

| *Age* | *<16* | *16+* | Total |
|---|---|---|---|
| Gonorrhoea | 138 | 1,422 | 1,560 |
| Chlamydia | 402 | 3,054 | 3,456 |

### 7.5.1 Vulnerable groups

The population groups that are considered to be vulnerable by interviewed local focus groups and individuals are young mothers, the elderly, handicapped persons, families where one or more members have alcohol or substance abuse problems as well as unemployed persons.

The focus groups point out that more and more young girls have children. Usually the girl's parents assume responsibility for raising and caring for the child, sometimes the child is given to family members or others as a gift. The focus groups stress that the information campaigns on birth control do not serve their purpose, as the campaigns are very dry and boring. Young mothers are usually from unskilled and dysfunctional families but increasingly the phenomenon is also seen in well-functioning families (Workshop with focus groups of persons/institutions within the social field in Narsaq and Qaqortoq)

Traditionally families have cared for the elderly and sick at home. However, particularly in towns the elderly are increasingly being cared for in nursing homes or live in special housing units with minimal care), as is reflected by the increasing demand for nursing home care (Interview with Tove Blidorf).

Alcohol and substance abuse create many side-effect problems for the affected families such as conflicts, child neglect, malnutrition, diseases including tuberculosis, respiratory diseases etc (Workshop with focus group of persons/institutions within the social field, Qaqortoq). In addition, people in this group frequently live in poor housing conditions because of rental arrears.

**Suicide**

Suicidal thoughts are still just as frequent among the persons surveyed as in 1993, but now twice as many women between 25-34 years of age have suicide thoughts. 59 % of the questioned have experienced different types of violence and threats, particularly the younger segment in the survey. The level is high compared to other countries (Bjerregaard, P. og Aidt, E.C., 2010).

**Abortion and young mothers**

The number of legal abortions performed has remained largely unchanged for years. In 2011 and 2012, 737 (2011) and 787 (2012) abortions were made with an abortion rate per 1000 15-49-year-old women at 51.5 (2011) and 55.1 (2012). In 2011 and 2012 the total abortion rate to a Greenlandic woman in her child-bearing age between 15-49 were on average 1.8 (2011) and 1.9 (2012) abortions. This figure is very high compared to international conditions, where abortion rate in Denmark is 0.48 (2009), Iceland 0,43 (2009) and 0.51 in Norway (2009) (Landslægeembedets Årsberetning 2011 and 2012).

A study from 2001 (Bjerregaard, P. (red), 2001) shows that abortion seekers have a low education level and poor proficiency in Danish and that the proportion of young and older abortion seekers is equally large.

Although contraception is free in Greenland, information material is available and there are frequent information campaigns about contraception, this is still a major social problem. One of the reasons for the problem may be excessive alcohol use, which causes young people forget to use contraception. Moreover, in Greenland motherhood enhances a woman's status, giving her a chance to prove her worth (Bjerregaard, P.(red), 2001). The possibility of giving one's child away is another reason why young girls choose to give birth instead of having an abortion.

**Families and well-being**

Child neglect is a sign that a family is dysfunctional. Children suffer when their caretakers are not functioning well with each other or in society.

The primary reasons for referring children and young people to 24-hour care centres are child neglect as well as alcohol and drug abuse in the home, see Table 7.23. In addition, a number of children are placed in foster families; this is not included in the table below.

**Table 7.23** ***Primary reasons for referring children and young people to 24-hour care centres in Greenland in 2007(Sparre L, 2009).***

| Reason | Number |
|---|---|
| Alcohol and drug abuse in the home | 17 |
| Child neglect due to lack of parenting skills | 7 |
| Child neglect in general | 18 |
| Sexual abuse | 2 |
| Psychological violence | - |
| Physical violence | 4 |
| Orphans | 1 |
| Disabilities | 1 |
| Other | 4 |

According to Table 7.24 Qaqortoq has a higher proportion of children referred to 24-hour care centres in comparison with Nanortalik and Narsaq. This discordance may be misguiding as the referring authority may not have the sufficient facilities and therefore places children in foster care instead.

**Table 7.24 Children and youngsters placed in 24-hour care centres by the referring municipality 2004-2006 per 1,000 children (Sparre L, 2009).**

| Municipality | Number | In relation to no. of children in the municipality |
|---|---|---|
| Nanortalik | 6 | 8.6 |
| Qaqortoq | 16 | 16.0 |
| Narsaq | 4 | 7.2 |
| *Total Greenland* | 215 | 12.7 |

According to a survey on Greenlandic children's wellbeing (Christensen, E. et al, 2008), 12% of the children questioned had experienced neglect to some degree and 15 % were seriously affected. Child neglect can be linked to caretakers' lack of wellbeing. Moreover, violence against mothers (physical and sexual) tends to occur in combination with alcohol problems.

A study of school children in Greenland shows that a number of children go hungry to bed, see Table 7.25.

**Table 7.25** ***Proportion of interviewed children who went hungry to bed in 2006. 2,462 children participated in the study (Niclasen, B. et al., 2007).***

| Never go hungry to bed | Always or often go hungry to bed | Sometimes go hungry to bed |
|---|---|---|
| 59 % | 17 % | Ca. 22 % |

According to SLiCA (Poppel, B. et al., 2007), Greenlanders consider that their country's most important social problems are unemployment, alcohol abuse and suicide. See Table 7.26.

**Table 7.26** ***Perception of social problems among adult Greenlanders in percent (Poppel, B. et al. 2007.)***

| **Social problems** | |
|---|---|
| Unemployment | 84 % |
| Alcohol abuse | 79 % |
| Suicide | 67 % |
| Drug abuse | 68 % |
| Family violence | 63 % |
| Sexual abuse | 58 % |
| Total no. of interviews | 37,401 |

The health-related problems and conditions of vulnerable families frequently have a recurring theme: alcohol and abuse problems in the families.

# 8 POTENTIAL IMPACTS AND MAXIMIZATION OF DEVELOPMENT OF OPPORTUNITIES AND MITIGATIONG NEGATIVE IMPACTS

The potential impacts of the TANBREEZ project are assessed for both the construction and operation phases, as well as for the closure of the project.

To carry out the assessment, valued social and socio-economic components have been identified and prioritised in consultations with stakeholders and authorities in April 2010, based on the Guideline from BMP (2009) and from the discussions at the stakeholder workshops in April in Narsaq and Qaqortoq (The report from the workshops is included in the ToR which is in Annex 2).

These socio-economic values are:

- Economic aspects (employment, tax and revenues and business opportunities)
- Education and training
- Public service and plans
- Social aspects
- Health
- Culture and natural values

In order to help the analysis of impacts and identification of mitigation measures, main activities or components of the project have been listed. Furthermore, the project is divided into different activities during the operation:

- Transport of goods and staff
- Transport and sale of concentrate
- Operation of camp, mine and processing plant
- Infrastructure (electricity, waste water, waste management etc).

The impact assessment is based on an assessment of the positive and/or negative impact from the different activities during the project phases based on a set of social/socio-economic aspects with the use of an Impact Matrix.

For each combination of project activity and social/socio-economic aspect, for both the construction and the operation phases, have the positive and negative impacts of the project been predicted and its magnitude quantified as far as possible.

The impacts identified have been evaluated according to the following factors:

- **What is the certainty of impacts? -** Is it certain, likely, known or unknown to happen?
- **Where are the impacts?** Will the impact be Local (the municipality of Kommune Kujalleq, Greenland in general or international? regional “winners” and “losers”?
- **What is the duration and frequency of impacts? – What will be the occurrence of the impact -** temporary, short lasting or permanent?
- **When will the impact be noticed? – Will it be** immediately or over time by the community?

The public concern identified during the consultations with stakeholders in Narsaq, Nuuk and Qaqortoq have also been considered when assessing the significance of the impacts.

Mitigation measures will be identified for all impacts likely to occur, adverse in nature and significant enough to require mitigation (medium and high-level (negative) impacts) in order to mitigate or eliminate such impacts.

The result of the assessment is presented using the following colour codes indicating whether the impact is positive, neutral or negative and whether the significance of the impact is low, medium or high.

| | low | Medium | High |
|---|---|---|---|
| Positive | +L | +M | +H |
| Neutral | 0 | | |
| Negative | -L | -M | -H |

## 8.1 Economic environment

Under economic environment the following aspects are analysed:

- Direct employment at the project;
- Indirect employment created from outsourced activities related to the project;
- General business opportunities;
- Taxes and revenues.

### 8.1.1 Employment

The construction activities are expected to start after granting, will demand 30-40 workers. The number of workers required is expected to increase to 120-140 during the summer month of year 1 and year 2 of construction. It is expected that many of the persons involved in the construction phase will be from the local community and will continues when the operation starts. The permanent mine camp or vessel will be established after granting.

The mine in South Greenland will add significantly to employment situation in South Greenland. The company's policy as set out at the public meeting has been to employ all personnel who are qualified in the following preference:

1. Those living in the community
2. Those living in the country
3. Those Greenlanders' living overseas and who wish to return
4. Members of the Danish realm

The company is very aware of the problem of mining companies employing locals and leaving holes in the workforce, leading to social problems. Extensive discussions have been undertaken with the community on this potential problem.

As no finance is available for a much more extensive chemical plant, at this stage there cannot be a chemical plant in Greenland.

Mining School – At this stage few people who have graduated through the school could be employed in this mine without additional training. The mining school and Tanbreez have had discussions on how their course can be adapted to suit the company.

Secondly discussions have commenced on the possibility of a mining practice school to be established on the high grade EALS body, a student mining scheme. These discussions, at an early stage, offer chances for the school to develop further.

Both these ideas depend upon further discussion with government, the mining school, the community and other stakeholders.

However, at all times preference will be given to the employment of locals provided they are qualified and willing to work under the normal condition of working at a mine.

Preference will be given to qualified locals from mining or construction schools provided their education reaches the standards required by external financial institutions who ultimately finance the project. If not, training to get personnel to the required standard is to be attempted.

The operation phase will require approximately 80 job positions within the categories described in previous sections.

Table 8.1. Catering and housekeeping duties will most probably be outsourced to local business. The majority of the employers will work 4 weeks in and 2 weeks out.

**Table 8.1** ***Overview of jobs at the operation of the TANBREEZ mining project divided into different job categories (source: TANBREEZ Mining).***

| Personnel Plan | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Description | Number/ shift | Shifts | Total | Local Personnel | Hours/day | Days/week | Weekly Hours based on 4 weeks on 2 off | Total Hours worked/wk | Job Category |
| **Mine operations** | | | | | | | | | |
| Mine manager | 1 | 1 | 1 | | 12 | 6 | 48 | 48 | Manager |
| HS Coordinator | 1 | 1 | 1 | | 12 | 6 | 48 | 48 | Professional |
| Metallurgist | 1 | 1 | 1 | | 12 | 6 | 48 | 48 | Professional |
| Excavator operator | 1 | 1 | 1 | 1 | 12 | 6 | 48 | 48 | Operator |
| Secondary excavator operator | 0,5 | 1 | 0,5 | 0,5 | 12 | 6 | 48 | 24 | Operator |
| Truck operator | 4 | 1 | 4 | 4 | 12 | 6 | 48 | 192 | Operator |
| Wheel loader operator | 0,5 | 1 | 0,5 | 0,5 | 12 | 6 | 48 | 24 | Operator |
| Driller | 6 | 1 | 6 | 6 | 12 | 6 | 48 | 288 | Operator |
| Blaster | 1 | 1 | 1 | 1 | 12 | 6 | 48 | 48 | Techniciens |
| Explosive worker | 1 | 1 | 1 | 1 | 12 | 6 | 48 | 48 | Operator |
| Maintenance Engineer | 1 | 1 | 1 | | 12 | 6 | 48 | 48 | Professional |
| Apprentice | 2 | 1 | 2 | 2 | 12 | 6 | 48 | 96 | Apprentice |
| Mine Geologist | 2 | 1 | 2 | | 12 | 6 | 48 | 96 | Professional |
| Sub total | | | 22 | 16 | | | | | |
| **Process operations** | | | | | | | | | |
| Plant manager | 1 | 1 | 1 | | 12 | 7 | 56 | 56 | Manager |
| Chemist | 1 | 1 | 1 | | 12 | 7 | 56 | 56 | Professional |
| Grinding and screen | 1 | 2 | 2 | 2 | 12 | 7 | 56 | 112 | Plant & machine operator |
| magnetics | 1 | 2 | 2 | 2 | 12 | 7 | 56 | 112 | Plant & machine operator |
| Analyst | 2 | 2 | 4 | 4 | 12 | 7 | 56 | 224 | Technicians |
| Sample preparation | 3 | 2 | 6 | 6 | 12 | 7 | 56 | 336 | Technicians |
| Plant foreman | 1 | 2 | 2 | 2 | 12 | 7 | 56 | 112 | Plant & machine operator |
| Day crew | 3 | 1 | 3 | 3 | 12 | 7 | 56 | 168 | Technicians |
| Training officer | 1 | 2 | 2 | 2 | 12 | 7 | 56 | 112 | Technicians |
| Apprentice | 1 | 2 | 2 | 2 | 12 | 7 | 56 | 112 | Apprentice |
| Wheel loader operator | 7 | 1 | 7 | 7 | 12 | 7 | 56 | 392 | Operator |
| Sub total | | | 32 | 30 | | | | | |
| **Adminitration, camp and warehouse** | | | | | | | | | |
| Camp Manager | 1 | 1 | 1 | 1 | 12 | 6 | 48 | 48 | Clerical |
| Accountant | 1 | 1 | 1 | 1 | 12 | 6 | 48 | 48 | Clerical |
| Secretarial | 1 | 1 | 1 | 1 | 12 | 6 | 48 | 48 | Clerical |
| Cleaners | 2 | 1 | 2 | 2 | 12 | 6 | 48 | 96 | Elementary occupation |
| Cook | 2 | 1 | 2 | 2 | 12 | 6 | 48 | 96 | Cook |
| Kitchen helpers | 4 | 1 | 4 | 4 | 12 | 6 | 48 | 192 | Elementary occupation |
| Medically responsible | 1 | 1 | 1 | 1 | 12 | 6 | 48 | 48 | Clerical |
| Mechanic | 1 | 1 | 1 | 1 | 12 | 6 | 48 | 48 | Technicians |
| Maintenance worker | 6 | 1 | 6 | 6 | 12 | 6 | 48 | 288 | Technicians |
| Lubrication vehicle | 1 | 1 | 1 | 1 | 12 | 6 | 48 | 48 | Operator |
| Electrician | 4 | 1 | 4 | 4 | 12 | 6 | 48 | 192 | Technicians |
| Instrumentation | 1 | 1 | 1 | 1 | 12 | 6 | 48 | 48 | Technicians |
| Haul road maintenance | 1 | 1 | 1 | 1 | 12 | 6 | 48 | 48 | Operator |
| | | | 26 | 26 | | | | | |
| Total | | | 80 | 72 | | | | | |

The unemployment rate for Greenland in 2014 is 10.3% equivalent to 2754 persons, hereof 406 in South Greenland. Unemployment rate in South Greenland is particularly high, being 16.4 % in Nanortalik, 16.4 % in Narsaq and 10.1 % in Qaqortoq. Unemployment is mainly seen among unskilled workers, however, workers with vocational training in areas such as iron and metal, building and construction, trade and office, shipping and navigation and fishing are also experiencing unemployment.

Potentially unemployed workers can benefit from the job opportunities created by TANBREEZ both during construction and operation phase. However, the most likely scenario is that the project will attract mainly worker already employed in other sectors. Indirectly, this will create new opportunities for the unemployed workers.

According to the Nalunaq Gold Mine A/S SIA (Angel mine, 2009) and information received from the Kommune Kujalleq, Nanortalik have a pool of labour which are suitable for the requirements for employment at the TANBREEZ project after minor appropriate training.

Furthermore, it is likely that people who left Kommune Kujalleq due to the lack of jobs will move back to Narsaq and Qaqortoq, when new job opportunities are created. In general, the mobility of people is very high in Greenland, and it is likely that people will move for jobs opportunities (Mobilitetsstyregruppen, 2010), (SLiCA 2007), (Interview with Kommune Kujalleq).

The aim of the project is to operate with a maximum of local workforce in all job categories. Except key managerial and processing plant positions, all positions will be offered to local workers. An estimation of the expected local involvement in workforce for the beginning of operation at the TANBREEZ project is presented in Table 8.2.

**Table 8.2** ***Overview of expected employment and desired share of Greenlandic workforce for the operation phase.***

| Job category | Expected workforce | Expected local workforce | Expected % local |
|---|---|---|---|
| Managers | 2 | 0 | 0% |
| Professional | 6 | 0 | 0% |
| Operator | 22 | 22 | 100% |
| Technicians | 28 | 28 | 100% |
| Apprentice | 4 | 4 | 100% |
| Plant and machine operator | 6 | 6 | 100% |
| Clerical | 4 | 4 | 100% |
| Elementary occupation | 6 | 6 | 100% |
| Cook | 2 | 2 | 100% |
| Total | 80 | 72 | 91% |

Professional (ex. HS Coordinator and Metallurgist)
Operator (ex. Excavator operator, Truck operator, Driller and wheel loader operator)
Technician (ex. Blaster, Sample preparation, Analyst and Port worker).

Based on experiences from previous mining projects and consultations, barriers for achieving the expected high percentages of local workforce may include:

- Lack of minimum qualifications/experience for the required positions
- Low levels of retention of local workers due to difficulties to adapt to the working conditions
- Health limitations among qualified candidates

The positive impact of employment at household and community level goes beyond the economic benefits, as providing for the family is considered the main role of a Greenlandic man. One of the groups where positive impacts of employment in the mine will be more outspoken are expected to be young families with children and middle age men/women where the children has left the home or can take care of themselves. On the same line, positive impacts will be more clearly perceived in settlements and small towns than in larger towns.

The impact of the direct employment during operation are characterised as positive medium to high, being operation of mine and processing plant the activities creating the highest amount of jobs. A majority of job positions is available to local workers (from Kommune Kujalleq), but measures should be taken in order to maximise the share of final local employment. While the duration of the employment will cease together with the project, the benefits related to employment, such as enhancement of qualifications and experience, pension and savings, etc. will last beyond the employment time.

Proposed measures:

- Elaborate a description of the requirement for the different work and job categories for the construction and operation phase
- Assistance in understanding of requirements to the coming workplace, like health and safety issues etc., in cooperation with the local authorities
- Undertake an assessment of training needs in cooperation with local authorities
- Develop a pre-employment and on-the-job training program for the required job categories during operation phase
- Develop human resources development program and benefit packages to make TANBREEZ an attractive work place for local workers[2]
- Undertake a gender sensitive workforce assessment, in order to ensure that both women and men will apply for the jobs during the operation phase
- Develop a program as part of the screening process during the recruitment of workforce for the operation phase
- Design a cross-cultural workshop to enhance intercultural understanding among staff and minimise social impact in surrounding communities
- Ensure transport arrangements for staff both from Narsaq and Qaqortoq

### 8.1.2 Business life

TANBREEZ Mining will outsource activities related to transportation of goods and staff as well as service of the camp, including catering, cleaning of the camp and offices, and laundry.

The significance of impacts in business life is rated high compared to direct employment in Greenland: while job multipliers are very low, spin off impacts of recent oil and mining activities are perceived as very high.. Despite the low employment of Greenlandic workforce, it is perceived to have produced a high positive impact on the general business life and economy in Nuuk and the west coast (personal communication with Kommuneqarfik Sermersooq, LNS (former GMS), GE).

[2] Ensuring that local workers are able to continue their traditional way of living within the frame of the rotation schemes of TANBREEZ and the existing logistic opportunities. If the logistic opportunities change (new roads, airport etc.) more flexibility can occur in the rotation schemes.

The main direct positive impact on business life is expected to be related to the following areas:

- Transport of goods and staff
- Services to the camp
- Provision of fuel
- Provision of goods and food
- Provision of technical services

Transport of **goods and staff** will mainly be by boat between the mine site and Qaqortoq and Narsaq respectively. The same boats will transport goods and staff. The transportation is scheduled once a week both from Narsaq and from Qaqortoq. This service will be tendered with preference to local companies that can fulfil the requirements.

The transport of concentrate from the mine is scheduled 6 times a year using 57,000 DWT vessels. Fuel will be provided 4 times a year (1200 m3 each time).

The primary access to the area will be by boat. There are two possible routes to the project area. One through the Ikersuaq Fjord (Bredefjord) to the Narsap Saava and to the Skovfjord, and a second between the Simiutaq islands or the Mato Løb to the Skovfjord. Both of the routes connect in the Kangerluarsuk Fjord.

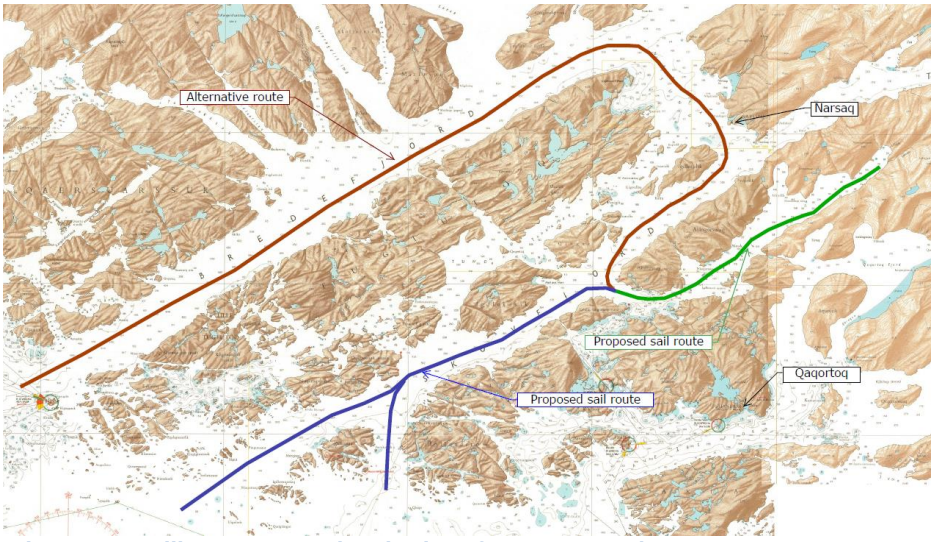


**Figure 8-1** ***Sailing routes to the site (e.g. from overseas).***

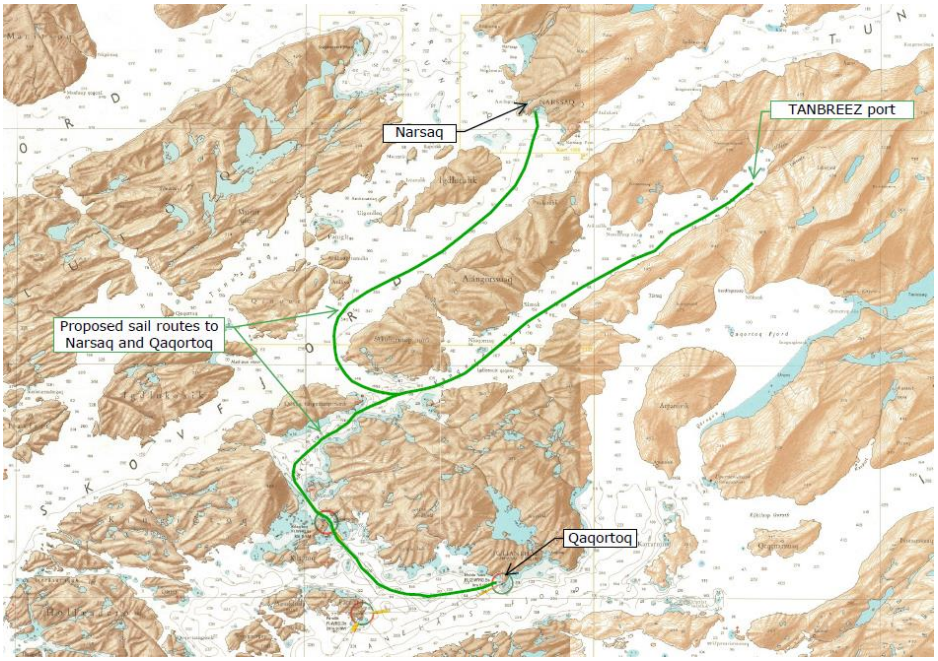


*Figure 8-2: Illustrates the options of routes for the transport of people.*

Furthermore, helicopter service will be used to and from the mine, probably provided by Air Greenland. This service will be used for transportation of selected staff and visitors as well as a service for emergency use.

The **service of the camp** will be tendered and is expected to involve approximately 9 workers. Such services include catering services, cleaning, laundry and similar tasks. Moreover, there will be a number of services provided for the mine when contracting local tradesmen (carpenters, engineers, electricians etc.). Also, IT services could be requested during the operation and provided locally.

The provision of services to the camp will last from the construction of the mine, increasing during operation and running to the closure of the mine. The impact of the service of the camp is characterised as positive medium.

The outsourced catering services of the camp will require the **provision of food and consumables**, which will be highly desirable to be provided locally as far as possible (by such people as local sheep farmers). Menu will include both local/traditional and international food. Arranges can be done by the catering company with local fishers and hunters for the provision of fish and meet for traditional food. The local shops as Brugsen, Pilersuisoq and Pisiffik in Qaqortoq and Narsaq could be involved in providing most of regular food and consumables for the canteen and camp in general.

Other consumables to be directly purchased during the operation phase of the project like: light vehicles and vehicles supplies, furniture and equipment for the camp, stationery, clothes and safety shoes, protective gear and equipment. Most of these articles are likely to be purchased from outside Greenland.

**Provision of fuel** will be purchased from Polaroil A/S, a Greenland Government owned company.

Regarding **accommodation services**, although the majority of all international staff will be on a fly-in fly-out basis (FIFO), it is expected that some international experts and consultants will stay in Qaqortoq or Narsaq, and in lesser degree Nuuk, for shorter periods of time, demanding rooms at hotels, pensions, restaurants, etc.

Equipment for the mining activities such as dump trucks, excavators, wheel-loaders, drill rigs etc. are expected to be purchased directly from outside Greenland.

For transport of goods on regularly basis to Greenland, Royal Arctic Line A/S(RAL) will be involved. Transport of bulk materials, equipment, etc. could be by chartered ship from either RAL or another company.

The transport of goods and staff to the mine, services to the camp, provisions of fuel, goods and food will start during the construction of the mine, peak during operation and run until the closure of the mine. The direct impact on the local business life is conservative characterised as positive medium. The more services and goods are purchased from providers in Narsaq and Qaqortoq, the more positive and lasting the significance of the impact on local business.

The same trend is expected for indirect impacts on business life due to expenditure of workers. The positive impact will be more noticed in small and medium size towns, particularly in Nanortalik, Narsaq and Qaqortoq, but will be diluted if the workers residences are, for example, in Nuuk or Sisimiut.

Above is presented the different types of opportunities that are expected to arise from the project to the local businesses, i.e. jobs that will not be created directly to the project but the so-called indirect jobs during the servicing and support of the project.

In addition to the so-called indirect jobs it is also expected that there will be created opportunities and jobs due to the general increase in economic activity in Greenland in general and especially in southern Greenland. It is expected to be happen to the extent that the employees spend their earnings on consumption in Greenland, this will create new local jobs, and hence new revenue. This new revenue, in turn, will be spent partly on consumption, with a constant decrease in the secondary, tertiary etc. effects generated. These induced jobs are the consequence of the direct job at the mine site as well as the indirect jobs from the out-sourcing activities. The total jobs created from one job in the mine can be calculated with the use of the so-called **multiplier factor for employment.**

For planned industrial activities in Greenland there have previously been estimated a multiplier factor for employment. For the Nalunaq gold mine project was multiplier factor for employment estimated to be 1.3-1.6. A multiplier factor of 1.3-1.6 means that for each job created in the mine additional 0.3 to 0.6 jobs will be created (indirect and induced).

Experiences from Canada and Alaska shows that they used a multiplier factor for employment of 1.6 - 1.8 in the mining sector. This information was confirmed in 2010 by Keith Storey (Department of Geography at Memorial University, Newfoundland).

Furthermore, a study from the Mining Association of British Columbia (Economic Impact Assessment of PWC October 2011), reported on the website https://www.fraserinstitute.org/categories/miningindicates a multiplier factor of 2.2.

As Greenland has limited domestic production and therefore has a large import of goods, a conservative scenario would be to use a Multiplier of 1.3, while an optimistic scenario would be to use a factor of 2.2.

To conclude, some jobs will be created directly in connection with the project while other jobs will be created indirectly even also as part of the overall expected increase in economic activity in Greenland and the local area. But all the opportunities that will be created by the project both to local business and direct jobs are very important for Greenland in general and for the Kujalleq in particular.

Proposed measures:
All measures are based on the condition that they are economically viable, or cost competitive, or not detrimental to the overall cost of the contract.

- Preferential contracting practices for Greenlandic contractors (locally based in first place and secondly in Greenland) of logistics, transport of staff and goods, fuel etc. including sensitive elaboration of tender documents, specifications, etc.
- Unbundling of contracts for services and supplies to camp where no cost hindrance to the project
- Preferential purchase of local goods and services to the mine camp. Laundry, catering, office supplies, IT maintenance, etc.
- Requirement in contract with the providers of catering services to supply local/traditional food
- Establishment of a forum for local businesses together with the authorities. This forum will be used before and during the tender process to provide information and clarification of the tenders
- Tender period for various tender packages including Q&A sessions

### 8.1.3 Small Local Business

A number of aspects of this deposit offer potential for a small local business be established and complete a particular aspect or services. This includes:

i). Transport to and from the mine from the town and airport by boat
ii). Helicopter services
iii). Pilot service for the ship to port
iv). Fuel
v). Camp Maintenance
vi). Camp cleaning
vii). Environmental monitoring services
viii). Contract miners
ix). Accommodation services
x). Sewerage/ rubbish removal
xi). Food procurement
xii). Recruitment

In the event of a chemical plant in Greenland, approx. 60-85% of the workforce will have to be fly in-fly out workers.

### 8.1.4 Closure of mine

The main potential negative impact on the employment will be at the closure of the mine either at the end or stopped before planned.

The closure of the mine is a process that is believed to be able to be almost totally undertaken by locals who have already had similar experience. For example, the closing of the gold mine. Monitoring of the tailings/ mullock heap is also something that can be handled by Greenlanders. Although Tanbreez forsees the closure date will be extended beyond the 10-year mine life.

### 8.1.5 Conflict with other sectors

In order to decrease the potential negative impacts, it is recommended to develop an exit strategy early in the operation of the mine project.
The transport of goods and staff will take place once a week between the mine and Narsaq and Qaqortoq, respectively. The transport of concentrate from the mine is scheduled 6 times a year. It is likely that the transport will have a low impact on the fishing and hunting activities on the Kangerluarsuk Fjord, due to low numbers of vessels entering the fjord per year.

The area of Narsaq and Qaqortoq is popular for tourism activities. It is expected that, unless there is a proportional expansion on the flying transport and accommodation services, the demand of the mine may produce some pressure on the availability of seats on flight routes and accommodation for tourists and local travellers.

While the impact is low and will only be perceived locally, it can be considered as non-mitigable, as transport of goods, concentrate and staff can only take place by boat/vessels.

There is very little vegetation that grows on the complex and thus it is very rare that any grazing animal is found. The nearest sheep farm is about 10 km to the north and sheep are very rare visitors to the area (2 recorded in 16 years of visits to site). So little or no conflict with sheep farmers is foreseen.

Conflict may also arise where workers preferring to work at the mine leave a similar job in the town, this will cause work place shortages in town in professions such as electricians, plumbers and carpenters. Such shortages are well documented worldwide and are being discussed in detail with the community well in advance of mining commencing.

Conflict with hunters and fishermen is also discussed elsewhere in detail in the EIA. Essentially as there is extremely limited vegetation on the licence animals are limited so hunting does not take place. Fishing within the fjord and the Lakseelv river currently does take place to a limited extent. The environmental assessment sees little change in the ability to fish in this fjord.

### 8.1.6 Changes on subsistence economy

One of the conclusions from the SLiCA study (Poppel et al, 2007) is that “a combination of wage job and participation on traditional activities as fishing and hunting is the preferred life style among the aboriginal people in the arctic. It is expensive to do fishing and hunting; households with higher incomes can choose (and they do) using more money on these activities. Nine out of ten Inuit consider traditional activities as fishing and hunting important for their identity”

The results of this study, interviews with the SLiCA Greenlandic team and results of the focus groups interviews performed by the SIA team in April and June 2010 were used as reference for the analysis of this section and natural and cultural values. SLiCA provides a strong base of quantitative and qualitative information, as 20 % of population of south Greenland was interviewed during the study. As Narsaq was not included in the sample, focus groups research helped to validate the results from SLiCA in 2004-6, to register the perceptions of important groups on the communities in Narsaq and Qaqortoq and to capture eventual difference between the two towns.

A significant percent of people in the potential workforce is very attached to the traditional activities in Kommune Kujalleq municipality; fishing, outdoor activities are a significant element in the lifestyle and household economy in Kommune Kujalleq.

According to SLiCA, approximately 5,059 adults participate in subsistence activities, counting harvesting fishing and hunting for 66% of the interviewed persons, 61% who declare being involved in butchering and preserving food, 14% on sale of fish, meat or berries, 11% on sold of carvings and other goods.

For local employees who will be employed at the TANBREEZ mining project it is likely that their opportunities for going fishing and hunting may be reduced, when working full time on the mine site. Furthermore, it is illegal for the employees to fish and hunt in the concession area when at the site during their work period according to the Mineral Resource Act (2009).

Nevertheless, it is important to mention that work on the mine it is not incompatible with traditional activities, as the two weeks outside the mine allows time for traditional activities on a spare time basis. Furthermore, a regular income will allow the purchase of equipment for fishing as well as hunting marine mammals (seals) and birds in households where these activities have a high priority.

The impact of the subsistence economy is local and likely to happen. It is temporary and will occur short after the start of the operation of the mine. Based on this and that the impact is mitigable the impact is characterised as low negative.

### 8.1.7 Salary boost

It is expected that there will be an increase in the economic activity in the area, due to a salary increase for the local workers which will boost the economic activities as increased request for services, restaurants, cafés and purchasing of goods in general. Furthermore, involvement of local business in the project will stimulate the local economic environment.

From the baseline focus group discussions (Focus group discussions in Narsaq and Qaqortoq 2010) it was emphasized that spending patterns stemming from income increases are likely to follow socio-economic status. Well-functioning families are likely to spend the increase on long term investments such as education for their children, better housing and pensions, whereas dysfunctional families are more likely to spend the income increase on consumable goods such as food, alcohol and electronics etc.

The operation of the fish factory and consequent salary boost that occur in Narsaq during the 1950s and to early 1980s (Interview with Agnethe Nielsen) was dominated by a positive social environment and good social health. However, as the employment in the factory deteriorated and later closed definitively, social problems increased dramatically and a majority of former workers and their family eventually left Narsaq. A similar situation can occur at the closing of the mine, unless other job opportunities are available for the local mine workers and provisions are made for the future at family and community level at an early stage and while the economic benefits exist.

Experience from other sectors and projects show that the problems can be minimised to a certain extend by implementing appropriate mitigation measures.

There is a risk that negative consequences of salary boost may arise among families where alcohol, violence and overspending are found. If prices of housing, goods and services raise as a consequence of the salary boost and growth of local economy, unemployed, unskilled or low paid workers that have not access to the benefits of the mine will probably find themselves and their families in an even harder position. However, salary boost is also expected to have a positive impact on well-functioning families when spending the salary in long term investment or sharing salary with less well functioning families.

Proposed mitigations measures to minimise risk and negative impacts:

- Employment packages that include benefits other than wage (as opportunities for further training and education
- Establish workshops with financial actors in order to provide support for direct employees and their families through counselling services

### 8.1.8 Taxes and revenues

The main direct economic benefits from the TANBREEZ Mining project arrives from income taxes from local employers and income taxes from the international experts as they will be liable to pay tax in Greenland according to the Greenland tax regulation (Act on income taxes no 12 of 2 November 2006).

The project will contribute to increased public revenues through paid fees and taxes. As there are no royalty systems applied in Greenland, the direct revenues and tax contribution of the project will be generated by corporate taxation and personnel taxation.

Table 8.3 summarizes the estimated contribution of the sources:

**Table 8.3** ***Overview of expected income taxation of personnel.***

| Taxes and dues | Status |
|---|---|
| Corporate taxation | Calculated to be in the range of 1,021 (million DKK) |
| Income taxation of personnel (2 year of construction and 10 year of operation) | Calculated to be in the range of 154.9 (million DKK). |

**Corporate taxation**

*Corporate tax*
In general the corporate tax is levied at a flat rate of 25 % and the rate applies to a resident company as well as a registered branch office of a foreign company. The taxable income is determined on the basis of the profit shown in the statutory annual report, adjusted to comply with the prevailing tax provisions. The "Greenland Commission on tax and welfare" (March 2011) propose to increase the corporate tax rate to 37%.

*Dividend tax*
Greenlandic companies are to withhold a dividend tax corresponding to the personal tax in the municipality of registration. For companies operating in the area of municipality Kujalleq under the Mineral Resources Act, the present dividend tax rate is 36%.

*Tax losses*
Companies with exploration or exploitation/mining permits under the Mineral Resources Act are entitled to carry forward tax losses without timing limitations.

**Personnel taxation**

An amendment to the income tax law in November 2010 introduced a new Gross Income scheme including a tax rate of 35% tax for employees working in the mineral resource industry. The Gross tax income scheme only applies to employees, who have not been liable to pay tax in Greenland for a six-month period preceding their employment. The Gross Income tax is calculated on any income relating to the project except contributions to approved Greenland and Danish pension funds.

There are double tax agreements between Greenland, Denmark, Iceland, Norway and the Faroe Islands. Otherwise, the income tax system is structured according to the Danish model with taxation at source. The income tax rate is 44 % for Kommune Kujalleq, and 35% for areas outside municipal classification. Personnel allowance is DKK 58,000. For the local staff the income tax rate used is 44%, despite some will come from other municipalities in Greenland.

The construction phase as well as the production phase will carry positive impacts on taxes and revenues during the project's lifetime. Below is a compilation of the figures for employment, salary and income tax generated from the project.

<u>Personnel income tax during the construction period</u>

A variable number of workers will be employed during the construction period which is planned to last approximately 2 years. The estimation below is based on 30-40 in the beginning and 120-140 during the summer month of year 1 and 2. In average over each of the 2 years, is used the same number of expected workers for the operation phase.

The number of workers and the calculated annual income tax for each of the years can be seen in Table 8.4, where the income tax is calculated according to the Gross income tax scheme. The tax rate for the local staff is averaged at 44 % for Kommune Kujalleq, assuming that this rate will be fixed over the mine life.

**Table 8.4** ***Overview of expected annual and total income tax for local and non-Greenland based workers during the construction phase.***

| | No of expected workers | Annual income tax (1000 DKK) | Total income tax 2 years (1000 DKK) |
|---|---|---|---|
| **Expected local workers (75%)** | 60 | 10,652 | 21,304 |
| **Expected non-Greenland based workers** | 20 | 2,520 | 5,040 |
| **Total** | 80 | 13,172 | 26,344 |

The total generated income tax to Greenland from construction workers during the two years of construction, is calculated to 26.3 million DKK.

Personnel income tax during the operation period

In Table 8.5 is a summary of the staffing divided over local staff and non-Greenland based staff over an operating period of 10 years. The calculations are based on labour estimate data supplied by MT Højgaard august 2012. Total average annual staff is 80 in year 1-10. The Table includes the salary and income tax calculations for the local staff.
Total income tax revenue is calculated to be DKK 128.5 million.

**Table 8.5** ***Overview of income tax for local staff and non- Greenland based staff (based on 45% tax rate for Kommune Kujalleq and 35% flat rate for non Greenland based staff).***

| | No of expected workers | Annual income tax (1000 DKK) | Total income tax 10 years (1000 DKK) |
|---|---|---|---|
| **Expected local workers (90%)** | 72 | 10,339 | 103,389 |
| **Expected non-Greenland based workers** | 8 | 2,520 | 25,200 |
| **Total** | 80 | 12,859 | 128,589 |

Based on the above mentioned assumptions, that the local tax rate will average to 44 % for the local staff, and that all the non-Greenland based staff will be taxed in accordance with the Gross income tax scheme, the total estimated income tax from both local and non-Greenland based staff over 2 years of construction and 10 years of production is calculated to be DKK 154.9 million.

Note: the tax return for the Greenland government is continually changing due to constant changing commodity prices – also there are other unknowns such as cost of finance, full list of government charges etc. Tanbreez has contracted the services of Copenhagen Economics to give regular updates on taxes and returns which are to be supplied to the government. A chemical plant in Greenland at this stage cannot be justified, however the company is awaiting a reply to its suggested alternatives on this.

Royalties are not applicable to this application but the company has accepted them in good faith and is awaiting government negotiation on certain aspects of the royalties.

**Other aspects of Revenues to Greenland Society**

In addition to the so-called direct jobs it is also expected that there will be created indirect jobs by providing service and support to the project. Furthermore, it is also expected that there will be created opportunities and jobs due to the general increase in economic activity in Greenland in general and especially in southern Greenland. It is expected to happen to the extent that the employees spend their earnings on consumption in Greenland, this will create new local jobs, and hence new revenue. The total jobs created from one job in the mine can be calculated with the use of the so-called **multiplier factor for employment.**

As stated in section 8.2.1 a multiplier factor for employment will be 1.3 to 2.2 for this project. A factor of 1.3 is a result of that Greenland has limited home production and therefore a lot of the goods have to be imported, why this is considered to be a conservative scenario, while an optimistic scenario would be to use a factor of 2.2.

Based on a multiplier employment factor of 1.3 (conservative scenario), and a total primary income over the project period of DKK 154.9 million, the total tax base generated by the project is calculated to be DKK 201.4 million. However in some areas of the world in mining the multiplier factor can reach 6.0.

To use the more optimistic scenarios with a multiplier factor of 2.2 the total primary income created by the project will be DKK 340.8 million.

In general, there is a positive medium to high impact related to income due to taxes and revenues, likely being the biggest contribution due to taxes (e.g. profits), income tax from employees' salaries, direct local employment and boost on local businesses (also leading to further increases in tax revenue).

If the last resolutions on distribution of income due to taxation for mining projects are to be the same during the taxable period of the project, most of the benefits and therefore positive impact will be centralised and will not be significant at municipal level.

## 8.2 Education and training

According to Greenland Statistics (see also 7.4.6 Educational level) the education level increased from 2005 to 2009 illustrated by the number of finalised educations for the categories: skilled labour and higher education (bachelor and master level). This increase has mainly arrived within the category 'skilled' labour, with a total increase from 400 in 2005 to 518 in 2009. However, these data are based on students who receive student grant (SU) from Greenland and have their permanent address in Greenland, although some might be studying outside Greenland (Denmark). A lot of these students will not necessary return to Greenland.

However, there is a general need and wish to improve and further develop the skills and competences of labour in Greenland, in order to be prepared for the potential future activities e.g. in the extraction industry. This development will be supported both by the general training (language, creation of a job culture etc.), as well as the on-the-job training.

Projects like TANBREEZ mining is considered to contribute to the general development of skills in Greenland, arriving from general skills development through employment in a mining project, and language skills. It is likely that the development of the general skills will be visible after a short time of operation of the mine. The skills developed during the engagement at the project will exist also after closure of the mine. As the majority of the employee at the mine is expected to be local the impact will local as well.

The development of general skills are characterised as medium positive, as the knowledge and experience from a mining project is relatively low in Greenland.

Specific job related training in the mine (the so-called upgrading of qualifications at site) such as truck drivers and operators in the processing plant will be conducted at the mine. The result of the training will be visible shortly after the start of the operation of the mine. The skills developed during employment at the project will exist also after closure of the mine. As the majority of those employed at the mine is expected to be local, the impact will local as well.

Furthermore, there will be an on-going upgrading of competences at all levels in order to ensure that the local workforce will be up-graded at all levels.

The specific training activities is characterised as medium positive, as the level of education in Greenland is relative low.

The issue of education and training is of high interest also in a long term investment perspective for Greenland in general. Therefore the education and training in a long term perspective will increase the opportunity for a higher degree of local employment in the future either for the TANBREEZ project or for the mining sector in general.

In order to maximize the potential for maximum participation of local employment and education of personnel to work in the proposed mine Tanbreez has entered into an agreement with the Kujalleq Community aimed at maximizing local participation.

Proposed measures:
- Develop a recruitment program in cooperation with local authorities
- Training programme for staff on specific duties, safety, etc.
- General training programmes and on-the-job training for staff will be part of all employees' work profile
- Early development of a reinsertion program for workers after mine closure in cooperation with local authorities
- Collaboration with the education institutions.
- Target for local workforce at all levels will be developed together with training and education programmes which encourage upgrading for all positions.

## 8.3 Public service and development plans

### 8.3.1 Existing infrastructure and services

The existing infrastructure in Greenland in general and South Greenland is very scarce as it is a country with vast distances and a small population scattered around the coast. Transport of goods is carried out through air or water, and the cheapest and roomiest way is through water by boats and ships. The existing transport ways are very busy on the containerships, fuel ships as well as passenger ships and boats.

The mining activities and the need for provision of goods, service and staff will increase the pressure on the existing vessels, boats and aircraft.

The transport of international staff will be via Narsarsuaq International Airport, and further transport either by boat or helicopter service. The expected number of international staff will be limited, consequently there is only expected to be a minor on the international flights which is very limited from and to Narsarsuaq.

However, in general air transport of people to/from outside Greenland is very busy and air transport by international flights is often well booked which makes travelling frequently difficult. If more international staff than expected will be involved in the project the potential pressure on the existing helicopters, international and interregional flights as well as on the airport will need to be considered. If the intention is to air transport all international staff, weather or technical problems would likely necessitate transport by boat from time to time.

If staff will come from other regions in Greenland than Kommune Kujalleq, potential there could be a pressure on transports within Greenland. However, this is considered to be less likely since there are currently overcapacity on routes between southern Greenland and Kangerlussuaq. However, there could instead be a potential pressure on the regional service contract on helicopter air services, especially during periods of pack-ice, where transportation of people depends on the helicopters.

The low negative implications will occur throughout mine life from the beginning of mine operation, increasing pressure on the infrastructure and means of transportation. The implications are considered low because of the small size of the mining project and the limited number of international staff.

Proposed measures:
- Develop a contingency plan for transport/housing in case of bad weather.
- Develop an overview of the available transport opportunities (boats, helicopters and flights).

### 8.3.2 Pressure on development plans

The development plans for Kommune Kujalleq involves strengthening the existing transport infrastructure by water, air and on land and support to regular boat connections and to increase transport safety.

South Greenland has for many years debated whether to build an airport close to Qaqortoq or to renovate the existing airport in Narsarsuaq (Interview with Jim Riis). The Transport Commission (www.transportkommissionen.gl) has recently proposed to move the airport from Narsarsuaq to Qaqortoq.

The increased pressure on the existing infrastructure by water, air and land will influence the local development plans and may give revenue to the establishment of improved or new ports of travel.
An increased pressure on development plans are likely to occur due to the TANBREEZ project. This is considered to have a high positive effect for the local population since it would increase the means of transportation available. This will have permanent effect and the implications will be apparent sometime after mine start. The effects on development of transportation (or regular transportation) are also considered to be positive.

### 8.3.3 Pressure on the public service

The public service is expected to be affected in a number of areas, including:
- Increased workload for Police
- Increased workload for the authorities in general (local and national)
- Increased pressure on health services

Tasks for police
In relation to the project, increased tasks for the Police are expected both in terms of activities directly related to the project and in relation to customs control of the international workforce when traveling in and out of Greenland. As the project expects a small international workforce this expected workload for the police to be limited in this area.

The Police acts as a rescue authority in Greenland, both on land and at sea, and there will always be a risk of increased rescue activities related to the project. In addition, the Police has the role of coordination, if any accident / incident occurs on site such as fire.

There is therefore a need to develop a contingency plan in close cooperation with the relevant authorities.

Work and residence permits
Work permits for foreign workers are usually issued by the Danish Immigration Service (Udlændingeservice). As the share of international workforce is expected to be small, the processing of work permits is expected to be limited.

In general, there is expected to be increased pressure on the local authorities in connection with the administration of areas undertaken by the municipality, some directly related to the project including local tasks regarding environment, but also in connection with the potential workforce to move to Qaqortoq either from the Kujalleq or Greenland in general.

The increased pressure on the health benefits described in section 8.3.4.

Proposed measures:
- Develop a contingency plan in collaboration with the police and other relevant authorities.

### 8.3.4 Social and health services

The social services in Kommune Kujalleq are under pressure at the moment because of high seasonal unemployment and lack of sufficient budget to support the unemployment. The project will have a positive effect on the unemployment rate and the seasonal unemployment which in turn will help the social unemployment services.

The health services in Kommune Kujalleq and Greenland in general are under pressure due to the infrastructure and the lack of sufficient personnel resources as well as a low budget. The health services are busy and challenged with a high abortion rate, high TB rate, increasing diabetes and other lifestyle health problems. At the same, time the health services are challenged to develop and implement prevention strategies. The infrastructure also challenges the system making centralization of expertise very expensive because of the travelling cost for the patients and personnel.

The increased pressure on the health system is expected to be negative mainly because of assistance from the health service during the operation of TANBREEZ mining. If any staff of the mine (from another region in Greenland) may bring their families, this will add pressure to the local schools and day care centres (workshops with social groups, 2010).

The negative implications are low as the mining project is relatively small, and a majority of the workforce will be local. As the workforce will mainly be local and as there will be a health screening required for employment at the mine the implications related to the risk of increase on rates of infectious diseases such as STDs and TB among the locals and the migrant workers are considered low as well.

Proposed mitigation measures:
- Develop clear criteria and conditions for use of local health services and communicate these to health providers all in cooperation with local authorities and other major local work places
- Establish contact with local health service and work out cooperation between both parties and other major local work places
- All international employees will have a health insurance

## 8.4 Social aspects

### 8.4.1 Demography and population

The Kommune Kujalleq in general has experienced decline in the population, especially because of increase of unemployment over the past few years. The well-educated and the families who are doing well have moved to other parts of Greenland or to Denmark in search of better opportunities (Interview with stakeholders).

It is expected that many of the migrated families will return to seek jobs at the mining project. This will be positive for the municipality because of increased taxes and to increased population (well-functioning families earn more money and will circulate more money in the community). Especially residents that have moved from Narsaq are expected to return if there were any available jobs (Interview with Birger Poppel).

This positive implication will be for the duration of the mine life and will occur immediately and sometime after mine start.

### 8.4.2 Social conflicts

Social conflict is in this regard is the potential imbalance between the benefit and impacts from the project for the two towns, Qaqortoq and Narsaq. It has been questioned if Qaqortoq will benefit relatively more from the project than Narsaq.

One of the actions which have been discussed to avoid this imbalance is to ensure that transportation of staff and goods will take place with the same frequency from both towns to the mine site. Furthermore, it has been considered that the project could establish a storage facility in Narsaq which could create some additional activities in Narsaq.

It is proposed to be aware about this possible imbalance of benefits from the project for the two towns.

### 8.4.3 Vulnerable groups

Vulnerable groups need to be identified during the SIA as the vulnerable groups of a community are often likely to be more impacted by a project (Mackenzie Valley, 2006). In the field work performed in Narsaq and Qaqortoq, the focus groups have identified families with alcohol and drug abuse, either from both parents or one parent as well as young women to be the two most vulnerable groups in the community.

It is difficult at this stage to assess to what extend the project may create a risk of increasing number of early pregnancies. Based on international and local experience, it can be stated that the risk is proportional to the amount of workers in the project from outside Narsaq and Qaqortoq. The project intends to engage a vast majority of local workers which, in case is achieved, may indicate a low impact on the number of young pregnant women.

As the focus groups appointed the pregnant young women to be the vulnerable groups and as it is known that mining projects and other industrial projects involving many young migrant male workers in Greenland have resulted in increasing number of unwanted pregnancies and STDs among young women over time (Rendal, G, 2004), it is important to have this in mind, although the number of employees outside Greenland is expected to be low.

Early pregnancies and STDs have a severe impact on the life of young women, as well as the child. Furthermore, most single young mothers receive support from the state for her and her children, and therefore an increase in their number will put a lot of pressure on the social system (see chapter 7).

Families that experience alcohol or drug abuse by at least one member may become more vulnerable even if the healthy functional adult in the household is employed at the mine site. The absence of the stronger and more resourceful parent may weaken the rest of the family and children may suffer neglect if the abuser has access to alcohol or drugs. The risk of increasing abuse of alcohol at home by workers that will not consume it while in the camp has also been identified during focus groups interviews in Narsaq and Qaqortoq.

The implications of alcohol and substance abuse as well as the increased number of early pregnancies are serious for a small community. The scope of this assessment and the information collected during the field research do not provide enough basis for predicting the significance of these social risks.

Due to the public concern expressed in the interviews and consultations, and on the Pre-cautionary principle that should govern the assessment of social risk, the implications assessed as negative low to medium and preventive and mitigation measures proposed.

The proposed mitigation measures will be covered under public health in general.

## 8.5 Health

### 8.5.1 Occupational health and risk of accidents

There is a risk of accidents during transportation of goods, staff and concentrate, mainly due to the harsh weather conditions in Greenland and the involvement of heavy machinery along with human error. Even though the likelihood of accidents is low, the repercussions are very serious if anything is to happen to workers and transporters. The risks of accidents during transportation are present from the beginning of the construction, and through the operation and closure of the mine. Although the implications are permanent, the risks of accidents are considered to be negative low based on an overall assessment.

The risks of operation of mine and processing plant are mainly during operation of heavy machinery, explosives, and processing along with human error and harsh weather conditions. Because of the amount of workers involved and type of accidents involving explosives and heavy machinery the risks is significant. Safety training and instructions, as well as use of protective equipment mandatory for all workers, contractors and visitors may reduce the likelihood of accidents in the mining and processing operations.

The risks of accidents from operation are therefore assessed to be negative medium.

Proposed mitigation measures:

- For planning and preparation of the work a workplace risk assessment must consist of: -Areas of significant risks, -Procedures on specific dangerous activities, -overview on working areas, -coordination on corporation between several employers so regulations are understood and followed, -Information on ventilation systems, description on equipment and effort required for prevention of explosions and exposes on materials and substances that are hazardous to health, -experienced supervision and communication, -supervision at least once per shift, -Personal protective Equipment (PPE), -Light conditions, -Traffic Roads, -working places, -ventilations, dangers on fire and explosions
- Develop and implement health and safety management plan for staff in the mine site
- Establish health and safety committee with joint participation of workers that help to monitor and advice health and safety programs on mine site
- Training of all staff on safety and emergency response on the mine site
- Contractual requirements to providers of transportation services (Air Greenland, charter boats for staff, etc.) regarding safety measures, response time, etc. in order to minimise risk of accidents, appropriate and timely response in case of accidents, emergency evacuation from mine site, etc.
- Pre-notification of operations and traffic of vessels to authorities
- Develop emergency and contingency plans in coordination with Greenland Contingency Committee and other major local workplaces

## 8.6 Public health and quality of life

Operation of a mine project will have an impact on the health and quality of life of the employees and the public in general.

The negative impacts on health and quality of life of the community related to a mining operation are often related to interactions between the local community and the influx of staff. In other parts of the world mining has resulted in increase in STDs and HIV/AIDS among the general population and sex workers (Desmond N, 2005; Campbell C, 1997).

At the TANBREEZ mining project the employees are expected to be mainly from Kommune Kujalleq municipality, and the expected number of international staff and from other parts of Greenland will be limited and therefore the risk of impacts on public health due to increase on STDs and abortions is considered to be low.

Despite the liberal sexual behavior and little extended use of condoms among the teenagers and young adults in Greenland, reflected in high levels of STDs, unwanted pregnancies and abortions[3], incidence of HIV is very low in Greenland. Health authorities consider HIV a ticking bomb that has not yet exploded only because HIV has been identified in persons above 45 years, not related with the young.

In Greenland prostitution for money or material goods is very limited. The focus groups in Qaqortoq and Narsaq discussed this issue and it is believed that the presence of organised prostitution is non-existing.

[3] In 2008 and 2009 the number of abortions has surpassed the amount of births. Previous studies have shown that it is not possible to pinpoint specific groups more likely to have abortions, has women of all ages and various social classes have them

Although the internal staff and staff from other parts of Greenland will be limited, it is necessary to monitor the incidence of both STDs and unwanted pregnancies as important public health indicators. If the situation changes and more international staff and workers outside the community will be engaged to the project, the potential impact on needs to be assessed further.

If any changes in the community occur due to other factors than the interactions with the TANBREEZ project, these have to be taken into account in the future monitoring and evaluations.

Based on the pre-cautionary principle and the advantages of a strong preventive and corrective health and life style campaigns among the workers, the impacts on health are assessed to be medium negative.

The cultural influences from migrant workers is considered to have a very limited impact on eating habits among the local community due to the expected limitied number of migrant workers.

Public health

Proposed mitigation measures:

- Promotion and availability of healthy nutrition and physical activity for workers and their families
- Initial and regular health checks for employees
- Develop and implement strategies for making healthy choice the easy choice at the mine site: healthy food, local food, attractive and available exercise program, hand washing facilities, etc. for staff
- Counselling services for staff
- Active part of community health campaigns (e.g. safe sex, alcohol, non-smoking)
- Health check for both local and international employees. The content of the health check will be coordinated with the Health Authorities.
- Guidelines set out by the MLSA.

### 8.6.1 Environmental impact

The following potential impacts have been identified in the Environmental Impact Assessment report:

Physical environment:

- The process of open pit mining will remove a significant proportion of the outcrop at Killavaat Alannguat, leaving an open pit
- The construction of the roads, pipeline and buildings will cause re-profiling of the terrain, in particular in connection with building the haul road. These topographical changes are permanent except for the building which will be removed during mine closure.
- The re-profiling for the facilities at fjord will lead to loss of the soil layer and to loss of natural vegetation.

Air environment:

- The dispersal of dust and exhaust emissions can potentially cause pollution of water and land, affect visibility, result in dusty surfaces and settle onto vegetation, making it less palatable to wildlife and potentially toxic.

- Carbon dioxide and other greenhouse gases will be generated by the diesel power plant and vehicles. Visiting ships will also generate greenhouse gases. This will ultimately contribute to climate change

Water environment:

- The deposition of large amounts of tailings and waste rock during the mine live will significantly change the depth and water volume of the lake. This change is permanent.
- Changes in flow patterns and capacity of freshwater resources can take place due to construction of infrastructure near freshwater resources, the use of Fostersø for tailings and waste rock and water abstraction of Laksetværelv due to pumping of water to mine area.
- Erosion caused by land clearing activities can lead to increased sediment in water resources.
- Geochemical reactions of either exposed ore body, waste rock or tailings can generate either acid rock drainage or contaminated leachate.
- Toxic materials from affluent water from tailings or other sources can impact the water environment.
- Transport, storage, handling and disposal of hazardous materials such as fuel, grease, paint, chemicals etc. can contaminate fresh and marine waters.
- Fostersø can potentially be contaminated from pit pumping

Natural environment:

- Mine activities such as noise from blasting at the pit site and noise from the crushers, power plant, trucks and other infrastructure can disturb mammals and birds in the area.
- Shipping in the Kangerluarsuk Fjord can potentially lead to disturbance of marine mammals and sea birds.
- The re-profiling to construct mine facilities along the fjord will lead to loss of natural vegetation and displacement of most terrestrial animals from the area.
- The use of Fostersø as tailings and waste rock pond will potentially impact the freshwater habitats.
- The re-profiling of the shore of the fjord for the construction of pier head will lead to permanent loss of inter-tidal habitat.
- The Project could potentially lead to increased direct mortally among animals due to road kills
- In order to eliminate or minimize the identified potential impacts the following mitigations are proposed:

Physical environment:

- The aesthetic impact can be lowered by planning open pit to blend as far as practical with the surrounding landscape
- Plan the equipment at the tailings pond to blend as far as practical with the surrounding landscape and remove buildings and other equipment at the end of mine life.
- Lower the aesthetic impact by planning roads to blend as far as practicable with the surrounding landscape
- Minimize the area to be disturbed by planning infrastructure to have as small a footprint as possible, and conserve topsoil for use in progressive and end of life mine rehabilitation.

Air environment:

- Use Best Available Technique (BAT) filters in crusher building to minimise the dust emissions
- Choose vehicles and other equipment based on energy efficiency technologies to optimise emissions rates
- Maintain diesel power plant, vehicles and other fuel powered equipment in accordance with manufacture's specifications to minimise on emissions
- Reduce energy use through deployment of BAT and energy efficient practices.

Water environment:

- To minimize impact from oil spill in fjord prepare contingency plans in collaboration with appropriate authorities. In addition have efficient combat organization in place and proper equipment readily available.
- Prepare incident- and season-dependant contingency plans to combat oil spill on land including efficient combat readiness training.
- Require compulsory pilotage for ships calling in at the port

Natural environment:

- Restrict the movement of people outside the Project area during spring and summer to minimize the general disturbance of wildlife
- Ensure that shipping contractors are made aware of the presence of marine mammals in the fjord and asked to approach the port site with caution
- During detailed design and sighting of infrastructure avoid as far as possible areas with continuous vegetation. This can be done by fine-scale mapping of sensitive areas around the power plant, access roads and port.
- Ensure stipulated speed limits are enforced along roads to minimise the risk of road kills

An independent assessment of the environmental impact was undertaken by Orbicon. Their assessment showed minimal effects of the mine on local environment. This fact was taken to the people in 4 official public meetings attended by the environment minister. All questions on the environment raised at these meetings and all subsequent questions that have arisen either verbally, in writing or by email have been addressed by the company in the White Paper. At this stage the company sees no problems with establishing in the mine as set out in the White Paper
The company does however agree with submission from the community, NGO's (such as WWE and Greenpeace), the company's environmentalist and even the government's own environmentalists that a chemical plant on site to treat the eudialyte ore would be extremely difficult to justify on environmental grounds.

## 8.7 Cultural and natural values

Generally in Greenland, traditional and cultural activities and customs are very important to the local communities. This particularly applies to the habit of eating traditional Greenlandic food, speaking Greenlandic and the access to nature. In addition, Greenlanders have very string relations to their family and social relations with a high degree of dependency in the smaller communities.

Greenlandic cultural and natural values are closely connected to social values as the traditional and cultural activities involves many social events and a rich social life compared to western societies.

Hunting and fishing, naming traditions, and traditional clothing are currently being replaced by western influences, but are still well practised. These traditions will continue to get weaker and the importance may decline because of influence from international workers and due to the fact that the local workers will have more money in their hands to use for travels and material goods. Consumable goods such as faster boats, snowmobiles, computers and clothes may influence locals to spend less time on traditional activities.

The traditional activities such as gathering around music, art, traditional Greenlandic foods and other social events is very strong and it is quite likely that this will prevail even if influenced by this project.

The traditional way of life is more pronounced in Nanortalik and Narsaq compared to Qaqortoq. The influence especially in Narsaq, because of the natural port for workers and the immediate vicinity to the mining location, will be stronger than the influence on Nanortalik.

Qaqortoq has developed into a western influenced Greenlandic town with strong local cultural and social characteristics. The town is the regional centre with some international traffic, which has made the locals used to western influences and may not be as vulnerable to outside influences - also because of a higher number of residents.

The cultural impacts from international workers' influence is considered to be very limited due to a very low number of international workers.
However, potentially impacts from the international employees may not be entirely negative as some new phenomenon and culture may be created that may become characteristic or special to the area. This happened for a coalmining town of Qullissat, on the northwest coast of Greenland (with ca. 1000 inhabitants from 1923 -1972), where a new unique variant of Greenlandic music was created by the inhabitants, called Vaigat music. All Greenlandic music except the traditional drum dancing has been influenced by international music.

Proposed measures:
- Access to Greenlandic food in the canteen.
- Design a cross-cultural workshop to enhance intercultural understanding among staff and minimise social impact in surrounding communities

### 8.7.1 Sites of monumental or cultural importance

An archaeological Survey was performed by the Greenland National Museum and Archives in November 2007. According to the Survey, there are several archaeological sites from older Inuit (Thule culture) and Norse settlements in the immediate vicinity of the mine site. All substantial manmade features were registered. In sites of particularly archaeological interest the features were measured with a more precise differential GPS and the basic description supplied by sketches and interpretations. All records of the survey, including digital photography and GPS registrations are kept at the Greenland National Museum and Archives.

There are both findings in the Kangerluarsuk fjord and southeast of the mine site. All findings are close to the fjord. There is a site with findings of Inuit tent rings from summer settlements in the immediate vicinity of the plans for the port site in Kangerluarsuk Fjord. This site will be destroyed by the port constructions,

Another site north of the Lakseelv and the mine site in Kangerluarsuk fjord shows several finding of remains from Inuit and Norse settlements however, these are not close to any mining activities and is unlikely to be disturbed.

The Hvalsø church ruins from 1408 are located in the Qaqortukulooq are considered to be of high culture importance and is also a tourist attraction. These ruins are placed at such distance from the mining activities that it is unlikely that the remains will be influenced by sight or sound. No conflicts have been identified by the stakeholders or authorities regarding the preservation or value of this archaeological site and the project.

The impact on sites of cultural importance is considered medium, as the destruction during the construction phase of some of the sites are unavoidable. Nevertheless, none of the archaeological findings is considered unique or upstanding. The company responsible for design and construction, MTH, has been in dialogue with municipal and national authorities in order to find an acceptable mitigation measure.

It has been agreed that all archaeological features to be destroyed or affected by the project will be reported, registered and examined by archaeologist before any destructive intervention is made.

Proposed mitigation measures:

- Contact the Greenlandic National Museum and Archive for them to further study and register the affected archaeological features.

### 8.7.2 Access to natural areas

A report on Local land use of natural resources in the “Killavaat Alannguat” region was finalised by the consultant company Orbicon in November 2010. This report describes activities in relation to present use of natural resources in this area. With “local use” is understood a broad range of activities related to fishery, hunting, sheep farming, stone collection, tourism, and recreational use by local inhabitants.

The most important organisms exploited by local people in the project area are fish, marine mammals and bird species. The exploitation in relation to freshwater species, other marine groups than fish and mammals and terrestrial animals is small and of little importance.

Many of the fish species in the area are exploited by both professional fishermen and private persons. They are used for private consumption, sold at “Brædtet”, and in many cases also sold to local fish factories. The most important fish species exploited are: Atlantic Cod, Lumpsucker, Greenland Halibut, Spotted Wolffish, and Redfish.

Similarly for the bird species many of these are shoot for private consumption or sold at Brædtet. The most important bird species exploited in the area are Common Eiders, Brünnich’s Guillemot and Ptarmigan. A number of other bird species are hunted to a more limited extent.

Several seal and whale species has high importance for the local communities, especially Minke Whale, Harbour Porpoise, Harp Seal, and Ringed Seal. Terrestrial animals are of much less importance and are indeed more rarely found. They comprise Arctic Fox, Arctic Hare, and occasionally Polar Bear.

The most important animals for farming are sheep. Meat from the lambs as well as wool is exploited. In the region is also cattle breeding, though not as common as sheep. The cattle are used for meat as well as milk production. Horses are found on many of the farms, where horseback riding is used when sheep are brought to the farms in the autumn. One farm planned to offer horseback riding for tourists.

Due to the total lack of vegetation plus the distance to the nearest sheep farm, means this site will have no effect on sheep farming as there is absolutely nothing for sheet to eat as virtually the entire hill outcrop rocks.

Generally, tourism in the project area has been steadily growing. In particular the number of cruise liners visiting the area has been increasing in recent years. Tourists arrive to the area to experience Greenlandic culture and landscapes, but are also in some cases, by hunting, fishing or collecting stones, involved in direct use of local natural resources.

The project area is characterized by its mild climate with relatively rich vegetation, a number of unique mineral deposit sites, agricultural areas and cultural heritage. The latter includes former Inuit cultures as well as buildings established by Vikings arriving to Greenland (the Norse culture), all interesting from a touristic point of view. Accordingly, recreational use of the study area does take place to a large extent. However, the planned mining and plant sites are rarely used compared to other areas closer to towns and settlements in the region.

The conclusion of the Local Use study states that overall mining activities will have little negative impact on local use of natural resources.

Fishing is the most important activity that could potentially be affected. However, fishing close to the sites where mining facilities will be established, is limited and involve only few people from the local communities.

The findings and conclusions of the Local Use study were confirmed during the interviews and focus groups research activities performed by the SIA team.

The low negative impacts will be perceived from construction phase and trough the life of the mine.

Proposed measures:
- Monitoring plan for fishing and hunting activities in the area.

## 8.8 Cumulative impacts

Cumulative impacts in this SIA is the social and socio-economic changes expected to be caused by TANBRREEZ project in combination of one or more other activities that have either taken place, is taking place now or is reasonably expected to occur in the future.

For the TANBREEZ project it is assessed in particular important to look at the cumulative impacts related to the planned Kvanefjeld Project close to Narsaq where the license is owned by the Australian company Greenland Minerals. The elements of this project are light rare earths, zinc and uranium. Tanbreez derives about 35% of its cash flow from REE compared to GME 90%, plus GME orebody appears to be largely dependent on the light rare earths. Tanbreez believes it has a market for its light rare earths, thus further reducing any competition. As such there appears little or no competition with that company. It has been assessed by Tanbreez that Tanbreez funding of acid and chlor-alkali plants will not be possible in Greenland between the two-potential producer and even if it was local, green pressure could stop the construction.

It is therefore expected, that there will be a number of factors where the cumulative impacts are relevant regarding this project.

The most important impacts is likely to be associated with the recruitment of local labour, both projects will be competing for the local workforce. Generally, this issue is also relevant if other mine or oil projects get started in Greenland.

Moreover, it is expected to be even greater pressure on public services and infrastructure. Therefore, a special effort is needed in relation to transportation in South Greenland. And special attention should also be related to pressure on health services.

At the same time it is considered to be worth to examine further the opportunities and synergies that might be created by major projects in the region, such as regional education and training opportunities, increased opportunities for local businesses, improved logistics in South Greenland, joint monitoring programs and last but not least common approaches that are capable of improving public health in the region.

**Table 8.6** ***Overview of Impacts, proposed mitigations and impacts after mitigation (draft Benefit and Impact Plan)***

| Description of the Impact | Existing mitigation | Proposed mitigation | Impact after mitigation |
|---|---|---|---|
| **Economic environment** | | | |
| Employment before/during construction phase (direct) | | | |
| Engagement of the local workforce from the beginning of the construction phase.<br><br>+L | Training course at the School of Minerals and Petroleum.<br><br>Mapping of existing competences in Kommune Kujalleq as a pilot study for Greenland. | • Assistance in understanding of requirements to the coming workplace, like health and safety issues, financials issues etc. in corporation with the local authorities.<br>• Elaborate a description of the requirement for the different work and job categories for the construction phase<br>• Undertake an assessment of training needs in corporation with the local authorities.<br>• Develop human resources development program and benefit packages to make TANBREEZ an attractive work place for local workers[4]<br>• Design a cross-cultural workshop to enhance intercultural understanding among staff and minimise social impact in surrounding communities<br>• Ensure transport arrangements for staff both from Narsaq and Qaqortoq | The goal is that 75% of local personnel engaged in the project<br><br>+H |
| Employment before/during operation phase (direct) | | | |
| The impact of the direct employment during operation are characterised as positive medium to high, being operation of mine and processing plant the activities creating the highest amount of jobs. A majority of job positions is available to local workers (from Kommune Kujalleq).<br><br>The goal is to offer 85-90% of the job to the local workforce.<br>+H | Training course at the School og Minerals and Petroleum.<br><br>Mapping of existing competences in Kommune Kujalleq as a pilot study for Greenland. | • Develop on-the-job training for the required job categories<br>• Elaborate a description of the requirement for the different job categories for the operation phase<br>• Undertake a gender sensitive workforce assessment, in order to ensure that both women and men will apply for the jobs<br>• Develop a program as a part of the screening process during the recruitment of workforce for the operation phase.<br>• Develop human resources development program and benefit packages to make TANBREEZ an attractive work place for local workers[4] | The goal is that approx. 90% of local personnel engaged in the project<br><br>+H |
| Business opportunities | | | |
| Camp management and transport will be outsourced to local businesses<br><br>Provision of service from the local business will be requested on ad-hoc basis. | Sulisitsisut (GA) and its committees creates initiatives to promote local business for mining companies (network workshops). | All measures are based on the condition that they are economically viable, or cost competitive, or not detrimental to the overall cost of the contract.<br><br>• Establishment of a forum for local businesses together with the authorities. This forum will be used before and during the tender process to provide information and clarification of the coming tenders.<br>• Tender period for various tender packages including Q&A sessions. | Camp management and transport will be outsourced to local businesses<br><br>Provision of service from the local business will be requested on ad-hoc basis. |

[4] Ensuring that local workers are able to continue their traditional way of living, within the frame of the rotation schemes of TANBREEZ and the existing logistic opportunities. If the logistic opportunities change (new roads, airport etc) can more flexibility occur in the rotation schemes.

| Description of the Impact | Existing mitigation | Proposed mitigation | Impact after mitigation |
|---|---|---|---|
| +H | | • Preferential contracting practices for Greenlandic contractors (locally based in first place and secondly in Greenland) of logistics, transport of staff and goods, fuel etc. including sensitive elaboration of tender documents, specifications, etc.<br>• Unbundling of contracts for services and supplies to camp where no cost hindrance to the project.<br>• Preferential purchase of local goods and services to the mine camp. Laundry, catering, office supplies, IT maintenance, etc.<br>• Requirement in contract with the providers of catering services to supply local/traditional food. | +H |
| Salary boost | | | |
| TANBREEZ will in general stimulate the local economic activities.<br>+M | Existing pensions and insurance arrangement. | • Employment packages that include benefits other than wages (as opportunities for further training and education).<br>• Establish workshops with financial actors in order to provide support for direct employees and their families. | TANBREEZ will in general stimulate the local economic activities.<br>+ H |
| **Education** | | | |
| The project will Improve the level of education in Greenland, both with regard to general development of general skills and specific training.<br>+M | | • Develop a recruitment program in cooperation with local authorities<br>• Training programme for staff on specific duties, safety, etc.<br>• General training programmes and on-the-job training for staff will be a part of all employees work profile<br>• Early development of a reinsertion program for workers after mine closure in cooperation with local authorities<br>• Collaboration with the education institutions.<br>• Target for local workforce at all levels will be developed together with training and education programmes which encourage upgrading for all positions. | The proposed mitigations measures will even further stimulate the improvement of education in Greenland, both with regard to general development of general skills and specific training.<br>+ H |
| **Public service and development plans** | | | |
| Existing infrastructure and plans | | | |
| Improve the local infrastructure for the local communities<br>-L | Local and national plans and programmes | • Develop a contingency plan for transport/housing in case of bad weather.<br>• Develop an overview of the available transport opportunities (boats, helicopters and flights). | -L |
| Pressure on public services | | • Develop a contingency plan in collaboration with the police and other relevant authorities. | |
| Social health and services | | | |

| Description of the Impact | Existing mitigation | Proposed mitigation | Impact after mitigation |
|---|---|---|---|
| The increased pressure on the health system is expected to be negative partly because of the expected increased sexually transmitted diseases and other infectious diseases<br>-L | Local and national plans and programmes | • Develop clear criteria and conditions for use of local health services and communicate these to health providers all in cooperation with local authorities and other major local workplaces.<br>• Establish contact with local health service and work out cooperation between both parties and other major local workplaces.<br>• All international employees will have a health insurance. | -L |
| **Health** | | | |
| Occupational health and risk of accidents | | | |
| The risks of operation of mine and processing plant are mainly during operation of heavy machinery, explosives, and processing along with human error and harsh weather conditions and are assessed to be negative medium.<br>-M | Regulations which promote instruction and supervisions in order to reduce the accidents and to focus on a health and safety working environment. | • Develop and implement health and safety management plan for the mine site for staff.<br>• Establish health and safety committee with joint participation of workers that help to monitor and advice health and safety programs on mine site.<br>• Training of all staff on safety and emergency response on the mine site.<br>• Contractual requirements to providers of transportation services (Air Greenland, charter boats for staff, etc.) regarding safety measures, response time, etc. in order to minimise risk of accidents, appropriate and timely response in case of accidents, emergency evacuation from mine site, etc.<br>• Pre-notification of operations and traffic of vessels to authorities.,<br>• Develop emergency and contingency plans in coordination with the Department for Occupational Health and Safety under the MLSA and other major local workplaces. | -L |
| Public health | | | |
| The risk of impacts on public health due to increase on STDs and abortions is considered to be low, as the majority of the workforce will be from Kommune Kommune Kujalleq.<br><br>Based on the pre-cautionary principle and the advantages of a strong preventive and corrective health and life style campaigns among the workers, the impacts on health are assessed to be medium negative.<br>-M | Community health campaigns. | • Promotion and availability of healthy nutrition and physical activity.<br>• Initial and regular health checks for employees. Develop and implement strategies for making healthy choice the easy choice at the mine site: healthy food, local food, attractive and available exercise program, hand washing facilities etc, for staff. Counselling services for staff. Active part of community health campaigns (e.g. safe sex, alcohol, non-smoking).<br>• Health check for both local and international employees. The content of the health check will be coordinated with the Health Authorities. | The impacts on public health are considered to be low.<br>-L |
| **Cultural and natural resources** | | | |
| Socio-cultural value | | • Access to Greenlandic food in the canteen. | |

| Description of the Impact | Existing mitigation | Proposed mitigation | Impact after mitigation |
|---|---|---|---|
| | | • Design a cross-cultural workshop to enhance intercultural understanding among staff and minimize social impact in surrounding communities | |
| The impact on sites of cultural importance is considered medium, as the destruction during the construction phase of some of the sites are unavoidable. Nevertheless, none of the archaeological findings is considered unique or upstanding. The Hvalsøe ruins are located outside and out of sight to and from the project area.<br><br>-M | Regular studying and registering of the sites. | • Contact the Greenlandic National Museum and Archive for them to further study and register the affected archaeological features. | After register of the sites the impact are assessed to be neutral as none of the findings is considered unique or upstanding<br><br>-L |
| Access to natural resources | | • Monitoring of the fishing and hunting activities in the area. | |

Mitigation measures will be identified for all impacts likely to occur, adverse in nature and significant enough to require mitigation (medium and high-level (negative) impacts) in order to mitigate or eliminate such impacts.

The result of the assessment is presented using the following colour codes indicating whether the impact is positive, neutral or negative and whether the significance of the impact is low, medium or high.

| | low | Medium | High |
|---|---|---|---|
| Positive | +L | +M | +H |
| Neutral | 0 | | |
| Negative | -L | -M | -H |

An overview of the impacts matrix, identifying areas with high, medium and low impacts before the mitigation measures are applied is presented below.

**Table 8.7** ***Impact Matrix before and after mitigation.***

| **Impact categories** | **Impacts** | **Impact after mitigation** |
|---|---|---|
| Employment (construction) | +L | +H |
| Employment (operation) | +H | +H |
| Business opportunities | +L | +H |
| Salary boost | +M | +H |
| Education and training | +M | +H |
| Existing infrastructure and plans | -L | -L |
| Social health and services | -L | -L |
| Occupational health and risk of accidents | -M | -L |
| Public health | -M | -L |
| Cultural and natural resources | -M | -L |

# 9 DRAFT MONITORING PLAN AND DRAFT EVALUATION PLAN

The draft monitoring and the draft evaluation plan are prepared with the use of a logical framework approach (ICMM, 2005)

The SIA report contains the draft monitoring and evaluation reports. When developing the Impact Benefit Agreement, these plans will be incorporated as final versions.

## 9.1 Draft monitoring plan

| Project description (Intervention Logic)<br>(Impact and Benefit Plan) | Objectively verifiable indicators<br>(Monitoring Plan) | Sources of verification | Risks and assumptions |
|---|---|---|---|
| Results | | | |
| **Economic Environment** | | | |
| **Logical Framework Matrix for Recruitment Programme for Local Workforce** | | | |
| Goal: Achieve the proposed percentage of local workforce per job category | Percentage of local workforce (85-90%) | | |
| Outcome 2: Increased awareness on the requirements for applying for the different job categories for the operation phase | | | Local workforce available and interested in working in the mine operation |
| Output a): Training Needs Assessment carried out in cooperation between the mining company and authorities<br>Output b): Authorities and relevant organisations take measures in order to ensure qualifications of local workers | Number of initiatives taken by authorities and organisations to improve qualifications of potential candidates<br>Number of people enrolled in specific courses on relevance to the mining sector | Training Needs Assessment report<br>Reports of training activities of relevant organisations | Resources allocated to the cooperation between the mining company and authorities |
| Input: Detailed job description and requirements for all categories of job during operation phase made public available to community, municipality, unions and technical schools | Job descriptions and qualification requirements developed and distributed to all relevant stakeholders | Report and list of distribution | |
| Outcome 1: Creating an attractive working place for recruitment and retention of local workforce | | | |
| Output: Elimination of main cultural, gender and geographical barriers within the Kommune Kujalleq | Number of workforces from Narsaq, Qaqortoq, and Nanortalik<br>Percentage of female workforce per job category<br>Percentage of Greenlandic monolingual workforce | Annual report | Female and monolingual workers available and interested in working in mine operation and related services<br>Workers available in both Narsaq. Qaqortoq and Nanortalik |
| Input: Addressing cultural, gender and geographical issues under SIA, incorporating findings into planning of the project (rotation scheme, transport arrangements and working conditions at camp) | Stakeholder engagement process conducted | Meeting protocol | |

| Project description (Intervention Logic)<br>(Impact and Benefit Plan) | Objectively verifiable indicators<br>(Monitoring Plan) | Sources of verification | Risks and assumptions |
|---|---|---|---|
| **Logical Framework Matrix for Business Life** | | | |
| Goal: Positive impact on general business life | | | |
| Outcome: High level of purchase and contracts with local businesses | | | |
| Output a): Local actors engaged and informed about tender procedure and type of contracts available from the mine<br>Output b): Local actors able to engage in specific contract agreements with the mine | Number of local actors involved in the tender process | Received proposals | Local business has the necessary capacity to invest in service delivery |
| Input a): Forum for local businesses<br>Input b): Unbundling of contracts for services and supplies to camp where no cost hindrance to the project<br>Input c): Sensitive elaboration of tender documents | Number of local business participating in the forum<br>Number of contracts tendered | Meeting protocol<br>Tender documents | |
| **Logical Framework Matrix for Education and Training** | | | |
| Goal: Contribute to the development of skills and competences of workforce in Greenland | | | |
| Outcome: High level of skills and competences among workforce | | | |
| Output: Provision of high-quality competency development of staff | | | Staff motivated to invest time in training activities |
| Input a): Employment programme (as part of the recruitment process) for potential staff on specific duties<br>Input b): On-the-job training programme for staff<br>Input c): Reinsertion program for workers after mine closure | Number of potential staff participating in the pre-employment training<br>Number of on-the-job training conducted | Training protocols | |
| **Public services and development plans** | | | |
| **Logical Framework Matrix for Social and Health Services** | | | |

| Project description (Intervention Logic)<br>(Impact and Benefit Plan) | Objectively verifiable indicators<br>(Monitoring Plan) | Sources of verification | Risks and assumptions |
|---|---|---|---|
| Goal: Minimize pressure on local health services | | | |
| Outcome: Ensuring smooth cooperation with local health service | | | |
| Output: Clear communication to local health services on the criteria and conditions for local health services delivery to TANBREEZ | Dialogue meeting held | Minutes of meeting | Local health services willing to cooperate |
| Input a): Guideline including criteria and conditions for use of local health services<br>Input b): Establish cooperation with local health services | Cooperation with local health services established<br>Guideline developed and distributed | Cooperation agreements<br>Guideline document | |
| **Health** | | | |
| **Logical Framework Matrix for Health and Public Health** | | | |
| Goal: Positive development on public health in Kommune Kujalleq | | | |
| Outcome: High standard of health and wellbeing among workforce and their families | | | |
| Output a): Minimize the risks of negative influence of the project on existing vulnerable groups<br>Output b): Minimizing absence and turnover of workforce due to social health issues<br>Output c): Minimize the impact from eventual environmental accidents | Number of treatments initiated (alcohol, violence etc.) in the community<br>Percentage of turnover in workforce<br>Number of environmental accidents | Annual performance report<br>Accident statistics / reporting to authorities | Local authorities have necessary capacity and resources allocated for response |
| Input a): Active part on community health campaigns (safe sex, alcohol)<br>Input b): Counselling services for staff and their families<br>Input c): Response plan for spills, unwanted discharges and accidents in coordination with local authorities | Amount and time spend on community campaigns<br>Number of families receiving counselling<br>Response plan developed and distributed to local authorities | Expense and time registration<br>Counselling protocols<br>Response plan document<br>List of distribution | |
| **Logical Framework Matrix for Occupational Health and Safety** | | | |
| Goal: Avoid accidents related to the mine (0-tolerance) | | | |

| Project description (Intervention Logic)<br>(Impact and Benefit Plan) | Objectively verifiable indicators<br>(Monitoring Plan) | Sources of verification | Risks and assumptions |
|---|---|---|---|
| Outcome: High standard of OHS on the mine site and in related operations | | | |
| Output a): Minimize the risks of accidents directly at the mine site<br>Output b): Minimize the risks of accidents related to the mine operation<br>Output c): Ensuring appropriate and timely response in case of accidents and emergency evacuation from mine site | Number of accidents at the mine site<br>Number of accidents related to the mine operation<br>Preparedness exercise | Quarterly report on accidents<br>Emergency report from authorities<br>Report – authorities | Local authorities have the necessary capacity and resources allocated for response |
| Input a): Emergency and contingency plans in coordination with Greenland Contingency Committee<br>Input b): Health and safety plan for the mine site<br>Input c): Contractual requirements to suppliers regarding safety measures and response time<br>Input d): Training of staff on safety and emergency response on the mine site<br>Input e): Establish health and safety committee with joint participation of workers helping to monitor and advice health and safety programmes<br>Input d): Notification of operations and traffic of vessels to authorities, hunting and fishing groups and users of Kangerluarsuk fjord | Emergency and contingency plans developed<br>Health and safety plan developed<br>Requirements to suppliers developed<br>Number of staff trained<br>H&S committee established<br>Notification procedures developed | Emergency and contingency plan document<br>Acknowledgement from Greenland Contingency Committee<br>Health and safety plan document<br>Supplier contracts<br>Training protocols<br>List of committee members<br>Agreement on committee authority<br>Notification procedures document<br>List of authorities and groups to be notified | |

# 10 PUBLIC PARTICIPATION

Based on the Guidelines from the BMP (2009) and local knowledge has relevant stakeholders been identified for the TANBRREZ project. The identified stakeholders were invited to the scoping workshops in April 2010, which took place in Narsaq and in Qaqortoq. The objective of the workshops was to get input to the scope of the SIA process, but also to identify relevant stakeholders and key informant which was relevant to be involved in the baseline study. The workshops contain first an presentation of the project followed by a group session with discussions on the scope of the SIA of the project.

The participants were asked during the workshop to consider a number of questions, which was planned to be answers during the SIA process, in order to highlight topic and conditions which was a special concern for the stakeholders. Furthermore, were additional questions raised which should be answers during the SIA process.

In June 2010 began the collection of socio-economic and social background conditions, based on the result of the scoping phase. In Narsaq and Qaqortoq was focus groups appointed, representing larger group of the community. The groups went through a number of scenarios and were asked to discuss potential impact from the TANBREEZ project on the present group. Furthermore, contact to representatives in Nanortalik was made by phone.

Furthermore, an information meeting for stakeholders present in Nuuk took also place in June 2010.

In November 2013 the SIA was presented to the public at 4 meetings. This cumulated in a White Book completion in April 2014 in which all public participation and comments as set out.

The proposed mined has three and possibly four stages of development: Construction, Mining, Extension and Closure. With the chart below listing the sort of participation required for each step.

| Construction | Comments |
|---|---|
| **Pit Design/ Contracts** | International recognised consultants using local labour |
| **Road Construction** | Local |
| **Plant Pad Construction** | International consultant using local labour |
| **Port Construction** | International recognised consultants |
| **Water Supply** | Local |
| **Electricity** | International recognised consultant |
| **Canteen** | Local |
| **Activity Room** | Local |
| **Accommodation** | Local |
| **Waste to Fosters Lake** | Local |
| **Explosives Dept** | Local |
| **Helipad Construction** | Local |
| **Workshop Construction/ Producers** | Local |
| **Recruitment** | Local |
| **Education** | Partially undertaken |
| **Plant Construction** | International |
| **Accounts/ Secretarial** | Local |
| **Management** | To be decided |

| Mining | Comments |
|---|---|
| **Potential Sub Contractors** | |
| **Piloting** | Has to meet international standards |
| **Boat Charter** | Local |
| **Mining** | Possibility |
| **Mining High Grade** | Examining as a mining school option |
| **Transport Ore** | Local Contractors |
| **Transport Waste** | Local Contractors |
| **Environmental** | Qualified Personnel |
| **Geological** | Qualified to write reports to ASX etc |
| **Mining Engineer** | International contractor |
| **Civil Engineer** | International contractor |
| **Maintenance** | Probably Local |
| **Office Staff** | Local |
| **Recruitment** | Done in Qaqortoq |
| **Training/ Education** | Partly Local |
| **PR** | Partly Local |
| **Sales** | Potentially Local |
| **Control on Grade** | Independent |

| Extension of Mine Life or Size | Comments |
|---|---|
| **Geology for Reserves** | Complete |
| **Exploration** | International who can sign |
| **Management** | International |
| **Project Foreman** | Initially foreign |
| **Helicopter** | Air Greenland |
| **Environmental** | International |
| **Engineering** | Internationally Accepted |
| **Mine Plans** | Internationally Accepted |
| **Financing** | Internationally Accepted |
| **Government Applications** | International/ Local |
| **Sales** | International/ Local |
| **Metallurgical Testing** | International |
| **Design/ Drafting** | Combination of Local/ International |

| Closure | |
|---|---|
| **Removal Plant** | Local |
| **Sales of Plant & Equipment** | International |
| **Transport of Waste** | Local |
| **Environmental** | Local under supervision |
| **Rehabilitation of Site** | Local under supervision |
| **Accommodation (closing) + Clean Up** | Local under supervision |

## 10.1 Stakeholders and focus groups

### 10.1.1 Stakeholders

Stakeholders in relation to the SIA is characterised as groups of persons, groups or units, which will have an influence or will be influences by the mining project in one way or another.

For this project is have the following list of stakeholders been identified, with the use of the Guidelines from BMP (2009) and based on dialogue with Stakeholders at the workshops in April 2010. The list can be extended during the lifetime of the project.

*Table 10.1 Stakeholders identified for the TANBREEZ project.*

| Stakeholders | Invited | Participated in the workshops either in April 2010 or in June 2010. |
|---|---|---|
| BMP – Bureau of Minerals and Petroleum | X | X |
| Government of Greenland – Ministries (2010):<br>- Health<br>- Social affairs<br>- Fisheries, hunting and agriculture<br>- Industry and labor<br>- Domestic affairs, Nature and Environment<br>- Housing, infrastructure and transport<br>- Culture, education and research and Church | <br>X<br>X<br>X<br>X<br>X<br>X<br>X | -<br>-<br>-<br>-<br>X<br>-<br>- |
| Kommune Kommune Kujalleq –<br>- Industry and labor<br>- Culture, Leisure and Prevention<br>- Technology, Environment & Housing<br>- Schools and day care centres<br>- Financial administration<br>- Social services department | <br>X<br>X<br>X<br>X<br>X<br>X | <br>X<br>X<br>X<br>-<br>-<br>- |
| Greenland's Instiute of Nature | X | - |
| Association of Local Government (KANUKOKA) | X | - |
| Greenlandic Employee's Trade Union (SIK) | X | X |
| Greenlandic Employer Union (NUSUKA) | X | - |
| Job center (Piareersarfik) | X | ? |
| Cooking school in Narsaq | X | |
| School of Minerals and Petroleum | X | - |
| Fishing industry school | | |
| School of mechanics | | |
| Visit Greenland (former Greennland's Tourist - og Trade council, GTE) | X | |
| Fishermen and hunter's organisation. National og local (KNAPK, APP) | X | X |
| Sheep farmers association | | |
| Agricultural testcentre | | |
| National museum og archives | X | - |
| Narsaq Museum | X | X |
| UNESCO | | |
| Nature society | | |
| Women's association | X | X |
| Association for the elderly | | |
| Working environment authority | X | - |
| ICC | X | - |
| Earth Charter, AVATAQ, Timmiaq osv. | X | X (partly) |
| Local business | X | X |

### 10.1.2 Focus groups and informants

Focus groups have been identified based on inputs from the scoping phase. The groups were created so the individual participants had a depth overview and knowledge of the existing conditions, in order for the focus groups to represent a larger groups perception, concerns, view etc. As an example, was how the group of women was created with a distribution of income, age, public/private sector. Below is a list of focus groups which was used in the collection of information for the baseline study.

*Table 10.2 Informants and focus groups, which have been identified for the TANBREEZ project.*

| **Informants** | **Focus groups** |
|---|---|
| Erhvervsforum | Women and eldely people |
| Birger Poppel (SLiCA) | Workers (craftsmen, workers etc.)håndværkere, fabriksarbejdere osv.) |
| Industry and labor department (Kommune Kujalleq municipality) | Unemployed |
| Social services (Kommune Kujalleq ) | Local business |
| Culture, Leisure and Prevention(Kommune Kujalleq ) | Fishermen and hunters |
| Home for elderly people in Qaqortoq | |
| KNAPK | |
| Nature and environment (Greenlandic autonomous government) | |

## 10.2 Involvement of stakeholders in the SIA process

Table 10.3 *Involvement of stakeholders in the different phases of the SIA process.*

| ***SIA phase*** | ***Stakeholders*** | ***Objective of the involvement*** | ***Time*** |
|---|---|---|---|
| Scoping and ToR | List of participants in the stakeholder workshops Annex 1. | Objective was partly to inform about the project, to present the SIA process and to present and discuss the proposed scope of the SIA. | 16 and 20 April 2010 |

| ***SIA phase*** | ***Stakeholders*** | ***Objective of the involement*** | ***Time*** |
|---|---|---|---|
| Baseline study<br><br>(Qualitative methods) | Authorities and key informants | Objective is to collect information to the Baseline Study, which is not available via secondary sources and to verify already collected. | June 2010 |
| Baseline study<br><br>(Qualitative methods) | Focus groups and key informants | Objective is to collect information, perception/concerns from specific group of stakeholders, which will be affected of the project (e.g. fishermen and hunters). | June 2010 |
| Baseline study<br><br>(Quantitative methods) | Representatives from the communities in Narsaq, Qaqortoq and partly from Nanortalik. | Objective is to collect data at household level for baseline study, for especially selected potential impacted groups, which represents the community. | June 2010 |

| *SIA phase* | *Stakeholders* | *Objective of the involement* | *Tidsplan* |
|---|---|---|---|
| Development of draft Benefit and Impact plan | Involved stakeholders (tabel 7.1) | Objective is to identify potential main points to the Impact and Benefit plan. This will take place with a high degree of involvement of relevant stakeholders. | June 2010 – November 2010 |
| Development of monitoring-[5] and evaluation-[6] plans | BMP and selected stakeholders | Objective is to define how the monitoring and evaluation is proposed to take place. | August 2010 – November 2010 |

| *SIA phase* | *Stakeholders* | *Objective of the involvement* | *Time* |
|---|---|---|---|
| SIA report in public hearing | Involved stakeholders Public | Objective is to present, clarify, verify and receive reactions to the assessment of the impact and benefit of the project and to the proposed Benefit and Impact plan. | To be defined |
| Development and sign the Impact and Benefit Agreement | BMP, Kommune Kujalleq municipality and TANBREEZ Mining | Objective is to agree on the content of the Impact and Agreement contain the final Benefit and Impact Plan, the monitoring plan and the evaluation plan. | To be defined |

[5] **Monitoring**: ongoing, methodical collection and analysis of data on development activities, which provides program managers and stakeholders with early indications of progress and achievements of goals. Monitoring often measures output and is undertaken more often than evaluation. Often done by people involved in the program.

[2] **Evaluation**: Primarily concerned with longer-term results of development activities, or the measurement of outcomes/impacts. It aims to identify how and why activities succeeded, failed or where changed to improve effectiveness. Evaluations can be done periodically by independent, external advisors, but self-evaluation can be very useful.

# 11 REFERENCES

Act on Mineral Resource no. 7 of 7 December 2009.

Act on income taxes no 12 of 2 November 2006.

Act no. 26 of 18 December 2012, Amendment on Mineral Resources Act.

Act no. 6 of 8 June 2014, Amendment to Mineral Resources Act.

Act no. 3 of 30 November 2009, Amendment to Income Taxes

Act no. 20 of 18 December 2010, Amendment to Income Taxes

Algreen Møller, Niels. Kangerluarsuk 2007. Archaeological Survey. Nunatta Katersugaasivia Allagaateqarfiatalu. Nuuk, November 2007.

Bjerregaard, Peter og Direktoratet fyor Kultur, Uddannelse, Forskning og Kirke. Folkesundhed i Grønland. INUSSUK – Arktisk forskningsjournal 1, 2004.

Bjerregaard, Peter (Red) og Direktoratet for Kultur, Uddannelse, Forskning og Kirke. Abort i Grønland. INUSSUK – Arktisk forskningsjournal 2, 2001.

Bjerregaard, P. og Aidt E.C. Levevilkår, livsstil og helbred. Statens Institut for Folkesundhed. København, 2010.

BMP, Guidelines for Social Impact Assessments for mining projects in Greenland, November 2009

Campbell C. Migrancy, masculine identities and AIDS: The psychosocial context of HIV transmission on the South African gold mines. Soc Sci Med 1997;45:273–281.

Christensen, E. Kristensen, L. and Baviskar, S. SFI – Det nationale forskningscenter for velfærd. Børn i Grønland. København, 2008.

Danmarks Statistik. Kriminalitet 2008. København, 2009.

Departementet for Sociale Anliggender, Grønlands Selvstyre. Tryg barndom 2010. Nuuk, 2010.

Den Nordatlantiske Gruppe. Grønlændere bosiddende i Danmark. 2007.

Desmond N, Allen CF, Clift S, et al. A typology of groups at risk of HIV/STD in a gold mining town in north-western Tanzania. Soc Sci Med 2005; 60:1739–1749.

Dietz, R. Nuværende anvendelse af områder i og tilgrænsede Narsaq kommune, 1988. Grønlands Miljøundersøgelser. 1989.

Et trygt arbejdsmarked – Beskæftigelsesstrategi 2015 – Departementet for Erhverv, Arbejdsmarked og Handel, Grønlands Selvstyre, 2015
Exploitation in Greenland. Bureau of Mineral and Petroleum, March 2007

- Online: www.govmin.gl (minerals)

Gad, F. Grønland. Politikkens Danmarks Historie. Politikkens Forlag A/S. 1984.

Goldberg, Claus. Local use of natural resources in the ”Killavaat Alannguat” region in Kommune Kujalleq Municipality. Orbicon. Roskilde, april 2010.

Greenland Venture. Kommune Kommune Kujalleq – Vilkår for udvikling. Nuuk, 2009.

Greenland Venture. Kommune Kujalleq – Vilkår for udvikling. Nuuk, 2009.

Grønlands Statistik. Befolkning, Dødsfald 2011/2015. Nuuk, 2016.

Grønlands Statistik. Befolkningens bevægelser 2011/2015. Nuuk, 2016.

Grønlands Statistik. Grønland 2016, Statistisk Årbog. Nuuk, 2016.

Grønlands Statistik. Grønlands befolkning 2002, 2011, 2016. Nuuk, 2016.

Grønlands Statistik. Indkomstfordeling 2014 - 2015. Nuuk, 2016.

Grønlands Statistik. Indkomststatistik 2008. Nuuk, 2010.

Grønlands Statistik. Kompetencegivende uddannelser 2009. Nuuk, 2010.

Grønlands Statistik. Ledighed 2014. Nuuk, 2016.

Grønlands Statistik. Offentlige Finanser 2015. Nuuk, 2016.

Grønlands Statistik. Turisme i tal. Nuuk, 2016.

Grønlands Statistik, Bolatta Vahl og Naduk Kleemann, 2016

Hjemløshed i Grønland, 2013, Statens Byggeforskningsinstitut

Ilaqutariinnermut Pisortaqarfik Familiedirektoratet. Ilaqutariit inuuniarnerminni atugarisaat 2004, Familiers Levevilkår 2004. Nuuk, 2004.

Inatsisartutlov nr. 26 af 18. december 2012 om ændring af inatsisartutlov nr. 7 af 7. december 2009 om mineralske råstoffer og aktiviteter af betydning herfor (råstofloven) (Ændringer af regler om råstofmyndigheden, om småskala efterforskning og udnyttelse af mineraler, om indsamling og brydning af mineraler uden tilladelse og om samfundsmæssig bæredygtighed m.v.)

Inatsisartutlov nr. 6 af 8. juni 2014 om ændring af inatsisartutlov nr. 7 af 7. december 2009 om mineralske råstoffer og aktiviteter af betydning herfor (råstofloven) (Tidlig borgerinddragelse og offentlig høring)

Inatsisartutlov nr. 3 af 30. november 2009 om ændring af landstingslov om indkomstskat(Skattepligt i forbindelse med råstofaktiviteter, skærpet beskatning af fri bil, handel med skattemæssige afskrivninger og udvidet indeholdelsespligt)

International Council on Mining and Metals (ICMM), Toolkit for community development, 2005 *(Værktøjskasse for samfundsudvikling)*

International Principles for Social Impact Assessment. *(Internationale principper for Vurdering af Samfundsmæssig Bæredygtighed)* IAIA Special Publication Series No. 2. May 2003.
https://www.tandfonline.com/doi/abs/10.3152/147154603781766491
Interview med Agnethe Nielsen, 16. juni, Narsaq, 2010.

Interview med Arbejdsmarkedsforvaltningen, Kommune Kujalleq, 15. juni, Narsaq, 2010.

Interview med Birger Poppel (forskning), 19. juni, Nuuk, 2010

Interview med Erhvervsforum, 14. juni, Qaqortoq, 2010

Interview med Great Greenland, 14. juni, Qaqortoq, 2010

Inuuneritta, Grønlands Hjemmestyre. Inuuneritta – Folkesundhedsprogram. Landsstyrets strategier og målætninger for folkesundheden 2007 – 2012. Nuuk, 2006.

Inuunneritta II, Naalakkersuisut, Government of Greenland, Naalakkersuisut's strategier og målsætninger for folkesundheden 2013 - 2019. Nuuk 2012

Kommune Kujalleq Kommune Kujalleq 2011 – 2022, kommuneplanstrategi 2010. Qaqortoq, 2010.

Kommune Kujalleq, Minekonsulent Ole Christiansen, december 2016

Landslægeembedets Årsberetning 2011 & 2012

Leopold, L. B., Clarke, F. E., Hanshaw, B. B. and Balsley, J. R. A procedure for evaluating environmental impact. Geological Survey Circular 645, Government Printing Office, Washington, D.C. 13 pp, 1971. *(Procedure for vurdering af miljøpåvirkninger)*

Lov om indkomstskat nr. 20 af 18. november 2010.

Lund, N.A. og Nathanielsen, N. Sprogbrug hos grønlandske studerende. Speciale. 2001.
http://www.kamikposten.dk/default.aspx?tag=periode&folder=hvadermeningen&sprog=da&punkt=200102&udvalgt=2001020701

Mackenzie Valley, Socio-Economic Impact Assessment Guidelines *(Retningslinier for samfundsøkonomiske vurderinger)*
http://reviewboard.ca/reference_material/socio_economic_impact_assessment
Meeqqat Inuusuttullu Pillugit Ilisimasaqarfik. Videnscenter om Børn og Unge. Statistik om børn og unge I Grønland. 2007-2008. Nuuk, 2009.

Mobilitetsstyregruppen. Mobilitet i Grønland, januar 2010

Møde med Borgmester i Kommune Kujalleq, 11. juni, Qaqortoq, 2010.

Møde med Kommune Kujalleq, 11. juni, Qaqortoq, 2010.

Målrettet støtte til det grønlandske landbrug, Copenhagen Economics, april 2016

Naalakkersuit, Setting up a business in Greenland, Grønlands Selvstyre, 2010 *(Start af virksomhed i Grønland)*

Niclasen B., Løngaard K., Kærgaard Laursen L. og Schnohr C. Sundhed på toppen – resultater fra Health behaviour in School-aged Children (HBSC) undersøgelsen i Grønland i 2006. Inussuk – Arktisk forskningsjournal 1. Nuuk, 2007.

Norden: SLICA: Arctic Living conditions – Living conditions and quality of life among Inuit, Saami and indigenous peoples of Chukotka and the Kola Peninsula, Birger Poppel (ed.), 2015

Nordisk Ministerråd. Nordisk Statistisk årbog 2007. København 2007

Our Mineral Resources – Creating prosperity for Greenland, Greenland's Oil & Mineral Strategy 2014 – 2018, Naalakkersuisut, Government of Greenland, maj 2014

Pedersen, C. P., Dahl-Petersen, I. and Bjerregaard, P. MIPI – Videnscenter om Børn og Unge. Notat om selvmordstanker og selvmordsforsøg blandt unge I Grønland. Nuuk, 2007.

Principles and guidelines for social impact assessment in the USA. *(Principper og retningslinjer for VSB i USA.)* The Interorganizational Committee on Principles and Guidelines for Social Impact Assessment, 2003
- Online: https://www.tandfonline.com/doi/abs/10.3152/147154603781766293

Yderligere relevant litteratur findes i følgende publikation (p. 100-103):

Rendal, G. Syfiliskrigen, Bachelorprojekt. Institut for kultur og samfundshistorie, Ilisimatusarfik. Nuuk, 2004.

Retningslinjer for samfundsmæssige analyser af håndtering af naturressourcer Verdensbanken
- Online:
http://info.worldbank.org/etools/library/view_p.asp?lprogram=107&objectid=238462

Rischel, J. Geografisk dialektfordeling og lydforandring i grønlandsk. Nuuk, 2007.
https://oqaasileriffik.gl/udgivelser/om-groenlandsk-sprog/

Råstofdirektoratet, Retningslinjer for Vurdering af Samfundsmæssig Bæredygtighed i forbindelse med mineprojekter i Grønland, November 2009

Råstofloven, lov nr. 7 af 7. december 2009

Skattestyrelsen/Råstofdirektoratet. Vejledning til udfyldelse af skatteindberetningsskema. Nuuk, august 2010.

Sitting on Gold – A report on the use of informally acquired skills in Greenland, University of Copenhagen, Ilisimatusarfik – University of Greenland, Aalborg Universitet, 2016

Skattestyrelsen/Råstofdirektoratet. Vejledning til udfyldelse af skatteindberetningsskema. Nuuk, august 2010.

Skatte- og velfærdskommissionen. Hvordan sikres vækst og velfærd i Grønland? Baggrundsrapport. Nuuk, Maj 2010.

Skatte- og velfærdskommissionen. Indkomster og indkomstfordeling i Grønland 2007. Arbejdspapir. Nuuk, Juli 2010.

Social Impact Assessment (SIA). Guidelines on the process and preparation of the SIA Report for mineral projects, April 2016. Prepared by Ministry of Industry, Labour and Trade

Sparre, L. MIPI – Videnscenter om Børn og Unge. Nøgletal om børn og unge i Grønland. Nuuk, 2009.

Tusagassiivik – Grønlands Hjemmestyres informationskontor. Tuberkulose er en folkesygdom. Nuuk, 2007.

Udnyttelse i Grønland. Råstofdirektoratet, Marts 2007
- Online: www.bmp.gl (minerals)

Valgreen, L. En analyse af de sprogpolitiske problemstillinger i det postkoloniale Grønland (1979-2003) - med særligt henblik på den enkeltsprogedes situation i forhold til den førte politik og samfundsdebat. Københavns Universitet. https://tors.ku.dk/forskning/publikationer/specialer/eskimologi/Lisbeth_Valgreen_speciale.pdfWorkshop med fokusgruppe af beskæftigede og arbejdsløse, 12. juni, Qaqortoq, 2010.

Workshop med fokusgruppe af beskæftigede og arbejdsløse, 15. juni, Narsaq, 2010.

Workshop med fokusgruppe af fiskere og jægere, 12. juni, Qaqortoq, 2010.

Workshop med fokusgruppe af fiskere og jægere, 15. juni, Narsaq, 2010.

Workshop med fokusgruppe af personer og institutioner på det sociale område, 13. juni, Qaqortoq, 2010.

Workshop med fokusgruppe af personer og institutioner på det sociale område, 16. juni, Narsaq, 2010.

Andre links, der henvises til i rapporten:

http://unesco.org

https://govmin.gl/images/stories/minerals/sia_guideline/SIA_guideline.pdf

https://govmin.gl/images/stories/faelles/standard_terms_for_Exploration_Licences_for_Minerals - Addendum_no_3.pdf

http://naalakkersuisut.gl/~/media/nanoq/files/publications/arbejdsmarked/DK/beskaeftigelsesstrategi_DK_01102015.pdf

http://naalakkersuisut.gl/en/naalakkersusisut/departments/erhverv0arbejdsmarked-og-handel/large-scale-projects-Act

https//govmin.gl/images/stories/faelles/standard_terms_for_exploration_licences_for_minerals_addendum_no_3.pdf

https://govmin.gl/images/stories/minerals/health_care_prices.pdf

http://www.nunalerineq.gl/dansk/sps/index-sps.htm

http://wch.unesco.org

www.abortnet.dk Sex & Samfund

www.data.un.org De Forenede Nationer

www.forsvaret.dk/GLK Grønlandskommandoen, Forsvaret

www.kanukoka.gl De Grønlandske Kommuners Landsforening

www.kni.gl Kalaallit Niuerfiat A/S

www.kujalleq.gl Kommune Kommune Kujalleq

http://www.naalakkersuisut.gl/ Government of Greenland (replaces www.nanoq.gl )

www.neqi.gl

www.peqqik.gl Departementet for Sundhed
www.politi.gl
www.stat.gl

www.statistikbanken.dk

www.transportkommissionen.gl

Addendum No. 3 of 1 July 2014 to standard terms for exploration licenses for minerals (excluding hydrocarbons) in Greenland

Arbejdstilsynets bekendtgørelse nr. 302 af 26. marts 2015; Arbejde med udvinding og efterforskning med henblik på udvinding af mineralske materialer i Grønland

Inatsisartutlov nr. 6 af 8. juni 2014 om ændring af inatsisartutlov nr. 7 af 7. december 2009 om mineralske råstoffer og aktiviteter af betydning herfor (råstofloven) (Tidlig borgerinddragelse og offentlig høring)

Inatsisartutlov nr. 10 af 29. november 2013 om ændring af landstingslov om indkomstskat (Ophævelse af rentefradragsbegrænsning, afskaffelse af "carry back" og udskydelse af afregningstidspunktet for A-skat og udbytteskat)