



# Terms of Reference for Social Impact Assessment

## PITUFFIK

## TITANIUM PROJECT

October 2017

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## 1 INTRODUCTION

This document contains the Terms of Reference (ToR) for the Social Impact Assessment (SIA) for the proposed Pituffik Titanium Project (the Project).

Dundas Titanium A/S (Dundas Titanium) is based in Greenland and holds 100 % of the Pittuffik Titanium Project (the project). Dundas Titanium is owned by Bluejay Mining plc which is listed on the London Stock Exchange AIM market. The company structure is illustrated in the box below.

Dundas Titanium (the Company) is preparing an application for an exploitation license to develop the Project located 80 km south of Qaanaaq, in the Municipality of Qaasuitsup (from 1 January 2018 Avannaata Kommunia)<sup>1</sup>. The Project will extract Ilmenite, a primary source of titanium metal.

As part of the application process Dundas Titanium will submit a Social Impact Assessment (SIA) and an Environmental Impact Assessment (EIA) describing the potential impacts and planned mitigation measures for the Projects construction, operation and closure. Furthermore, Dundas Titanium will submit a feasibility study as part of the application.

The objectives of these Terms of Reference for the SIA are to:

- Present a non-technical project brief, including a brief introduction to local conditions,
- Present key issues that are to be addressed in the SIA,
- Describe the SIA process including the proposed public and stakeholder engagement activities for the SIA,
- Give the citizens of Greenland an option for conducting influence on how the project will benefit and impact the Greenlandic society and its people.

These ToR for the SIA are the final version, and describes the further SIA process.

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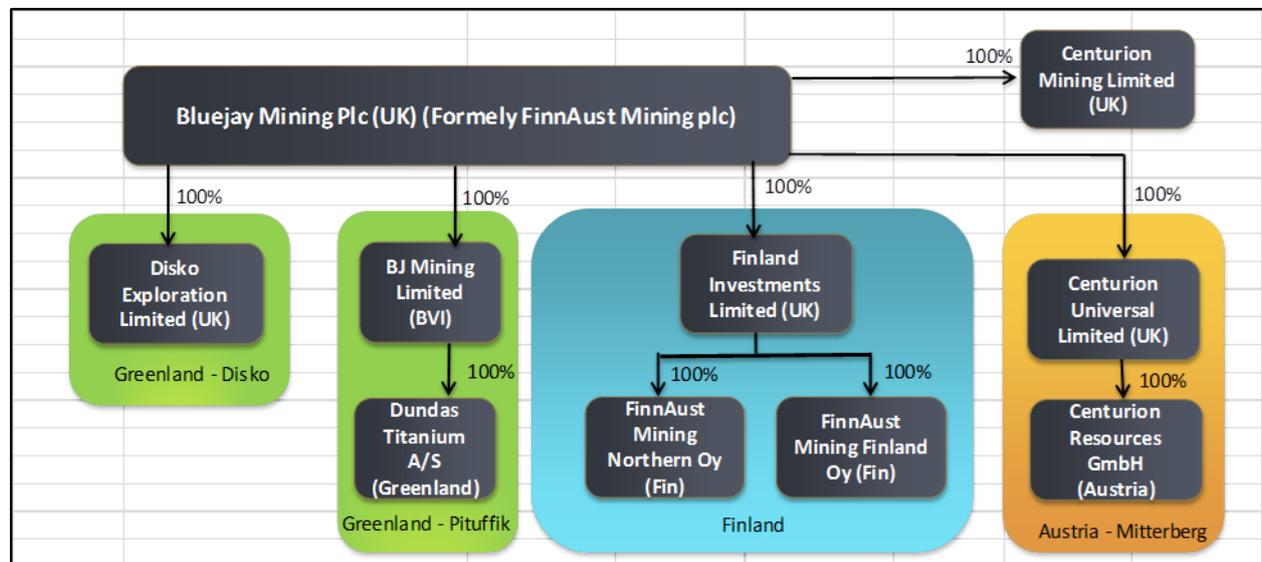
<sup>1</sup> The municipality of Qaasuisup will be divided in two by 1 January 2018: Kommune Qeqertalik and Avannaata Kommunia. The project is located in Avannaata Kommunia (Municipality of Avannaata). In these TOR Municipality of Avannaata are used when describing future activities, and municipality of Qaasuitsup to describe baseline information.

A draft version of the TOR was published for a public hearing (12 April – 19 May 2017). All responses received by the public has been published on the hearing portal together with the whitepaper, where the company and the authorities have responded to all issues raised<sup>2</sup>. These TOR has been updated according to the responses given in the whitebook.

## Dundas Titanium A/S

Dundas Titanium A/S is the Greenlandic subsidiary to Bluejay Mining. Bluejay Mining owns 100 % of Dundas Titanium. Bluejay Mining was until March 2017 named FinnAust Mining.

The figure below illustrates the full company structure of Bluejay Mining.



### 1.1 Background

Mineral sands were first described in the Thule area in 1916 but were not investigated more thoroughly until the 1970's when routine, systematic exploration was conducted by geoscientists from the Greenland Geological Survey.

2015 was the inaugural exploration year at Pituffik for the Company where work comprised geochemical sampling, marine geophysical and aerial photogrammetric surveys and general prospecting.

<sup>2</sup> <http://naalakkersuisut.gl/en/Hearings/Hearing-Archive/2017/Forhoering-for-kommissorier-for-VSB-og-VVM-for-Titaniumprojektet-ved-Pituffik>

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Geochemical sampling was completed on raised, active and drowned beaches. Samples generated are being used in both qualitative and quantitative manner for grade determination, metallurgical test work and the development of product concentrates.

In 2014 FinnAust (subsequently renamed Bluejay Mining plc) was granted a mineral license 01-01-2015 adjacent to Moriusaq, in northwest Greenland (2015/08). In July 2016, FinnAust (Bluejay Mining plc) was granted an addendum to its Exploration License, which expanded the existing license (2015/08) to an area of approximately 150 square kilometers, half of which covers the shallow marine environment. These licences have been transferred to the 100% owned Greenlandic subsidiary Dundas Titanium.

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## 2 OBJECTIVE OF THE SIA AND THE PERMISSION PROCESS

The Mineral Resource Act (MRA) aims to ensure that mineral resource activities under the act are securely performed as regards social sustainability cf section 1 (2) in the MRA.

Due to this aim of the Mineral Resource Act, it is further stipulated in section 76 in the act that exploitation activities like mining, which are assumed to have a significant impact on social conditions cannot obtain any exploitation licence before the project proponent has submitted a Social Impact Statement and which has been approved by the Government of Greenland cf. section 76 (1) in the Mineral Resource Act.

The SIA process will be developed according to the *Guidelines on the process and preparation of the SIA report for mineral projects 2016* (The guidelines) and the requirements of the Mineral Resource Act among others part 18a.

The guidelines identify the main objectives of the SIA process for mineral projects to be:

- To inform and involve relevant and affected individuals and stakeholders early in the process,
- To provide a detailed description of the social pre-project baseline situation, which, on the basis of the most recent available data, is to form the basis for planning, mitigation initiatives and future monitoring,
- To provide an assessment based on collected baseline data to identify both positive and negative social impacts at local and national levels,
- To optimize positive impacts and mitigation of negative impacts throughout the project lifetime,
- To involve in a meaningful manner affected towns, settlements and communities that may be directly or indirectly impacted,
- To develop a Benefit and Impact Plan.

An integrated aspect of the SIA is to highlight the projects potential impacts on the following essential issues in the Greenlandic context:

- The use of Greenlandic labour,
- Skill enhancement through training and education,

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- Use of Greenlandic enterprises,
  - Processing of minerals in Greenland.

## 2.1 Responsible authorities

Three authorities are responsible for administration of the mineral resources area in Greenland:

- Ministry of Mineral Resources
- Ministry of Industry, Labour, Trade and Energy
- **The Environmental Agency for Mineral Resources Activities (EAMRA)**

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

The **Ministry of Industry, Labour, Trade and Energy (MILT)** is responsible for issues concerning Industry and Labour policy. MILT is the administrative responsible for the SIA and Impact Benefit Agreements (IBA) for mineral resource companies.

The **Environmental Agency for Mineral Resources Activities (EAMRA)** is the administrative responsible for environmental issues, including the EIA.

## 2.2 The link between the SIA and the permission process

Before a company is applying for an exploitation license, there has been an exploration phase, where the company has investigated the potential of the license area.

In Greenland the application consists of the following key documents as mentioned in section 1:

- Environmental Impact Assessment (including specific studies)
- Social Impact Assessment
- Feasibility study

Based on the social impact assessment, and outcome of the public hearing process, the government, municipality and company negotiate the Impact and

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Benefit Agreement (IBA) which describes the requirements to the company in terms of employing, contracting, processing of minerals and providing training to Greenlandic employees and companies. Figure 2-1 illustrates the full SIA process including the public hearing of the draft ToR (marked with dark blue), which indicates the current phase in the SIA process (public consultation of the draft ToR).

These draft ToR for the SIA are submitted for public consultation together with the draft ToR for the EIA. All comments received during the consultation of the draft ToR will provide basis for the development of the final ToR followed by the SIA report.

Figure 2-1: SIA process towards obtaining an exploitation permit

Before the Company can start the construction phase, a number of more detailed documents must be approved by the authorities, including production and closure plans, description of activities and emergency plans.

Throughout the projects construction, operation and closure there will be continuous monitoring, evaluation and updates to the IBA and activity plans.

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### 3 REGULATORY FRAMEWORK FOR THE SIA

This section lists the key national regulation and international conventions relevant for the project, particularly for the issues and areas of interest for the Social Impact Assessment.

The main legislation under which this project will be developed and operated is the Greenland Parliament *Act no. 7 of 7 December 2009 on Minerals and Resources* (the Mineral Resources Act) which came into force on January 1, 2010 (including amendments no. 26 of December 18, 2012 and no. 6 of June 10, 2014). The most relevant provisions for the SIA process in the Mineral Resources Act are:

- I. Section 18 (1) – use of Greenland workers
- II. Section 18 (2) – use of Greenland enterprises
- III. Section 18 (3) – processing of minerals in Greenland.
- IV. Section 78 (a) – the legal basis for the IBA
- V. Part 18a – pre-consultation and consultation

#### **Greenlandic legislation covering:**

- Aviation (Danish legislation BL 5-24 on flight regulation in Greenland)
- Conservation and other heritage protection of cultural relics (Act no. 11 of May 19, 2010)
- Criminal legislation (Act no. 306 of April 30, 2008)
- Emergency management (Act. No. 14 of May 26, 2010)
- Immigration (Danish regulation no. 150 of February 23, 2001)
- Maritime Safety (order no. 882 of August 25, 2008)
- Occupational health and safety (order no. 1048 of October 26, 2005, covering act no. 295 of June 4, 1986; act no. 321 of May 18, 2005 and §3 in act no. 193 of March 26, 1991) as well as specific orders on occupational health and safety.
- Taxation (Act no. 12 of November 2, 2006 and amendments of act no 3 of November 30, 2009, act no. 20 of November 18, 2010, and act no. 37 of December 9, 2015)
- Greenland Parliament Act No. 4 of 4 June 2012 on Greenland Oil Spill Response A/S

#### **Key international conventions, declarations and initiatives:**

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- Convention of the Protection of the World Cultural and National Heritage (UNESCO)
  - European Convention on Human Rights
  - Extractive Industries Transparency Initiative (EITI)
  - ILO convention 169 - Indigenous and Tribal Peoples Convention
  - ILO convention 87 on the Freedom of Association and Protection of the Right to Organize
  - ILO convention 98 concerns the Right to Organise and to Bargain Collectively
  - ILO declaration on fundamental principles and Rights at Work
  - International Covenant on Economic, Social and Cultural Rights
  - International Union for the conservation of Nature
  - OECD guidelines for multinational enterprises
  - UN convention against corruption
  - UN convention on civil and political rights
  - UN Declaration on indigenous peoples rights

## 4 PROJECT LOCATION

The Pituffik Titanium Project is located on the south coast of Steensby Land in North-West Greenland (Figure 4-1). The nearest town is Qaanaaq which is located around 80 km north from the Project. Pituffik (the U.S. military air base known as “Thule Air Base”) is located 40 km southeast of the Project.

The project area is typified by beaches, separated by rock headlands, behind which are numerous low lying terraces or raised beaches gradually rising to a coastal scarp around 2 km from the sea. The terraces are cut by drainage patterns at regular intervals that carry summer melt water to the sea. Some small coastal lagoons occur behind the dune systems. The vegetation is generally sparse and limited to the lowlands where it consists mostly of dwarf shrub heaths with numerous lichens.

The mineral of interest is ilmenite, which is found in the so-called black sand. Ilmenite has a high content of titanium oxide ( $TiO_2$ ), an important commodity used for making pigments and other products of titanium composition.

The Project will utilise the ilmenite in the sand that occurs at the beach, on the seafloor and in the adjacent uplifted beaches.

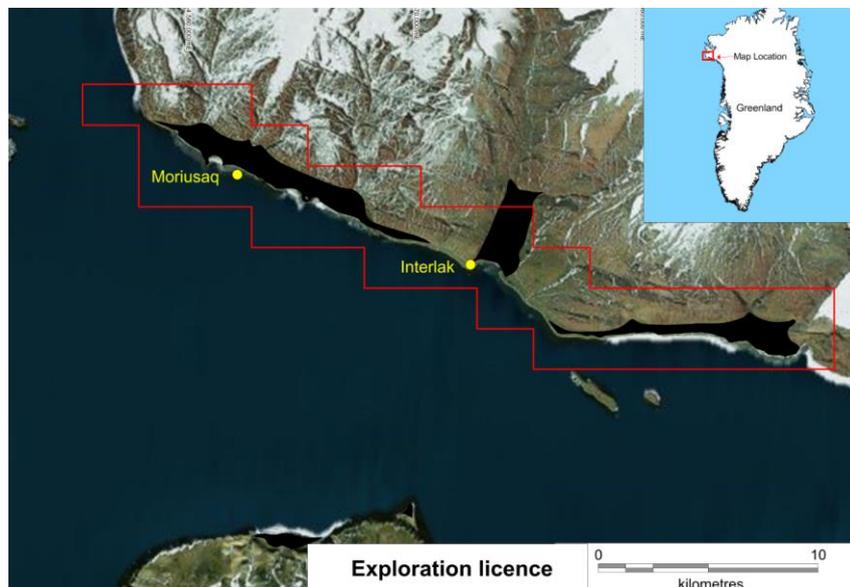


Figure 4-1. location of heavy mineral sand deposits – EL2015/08

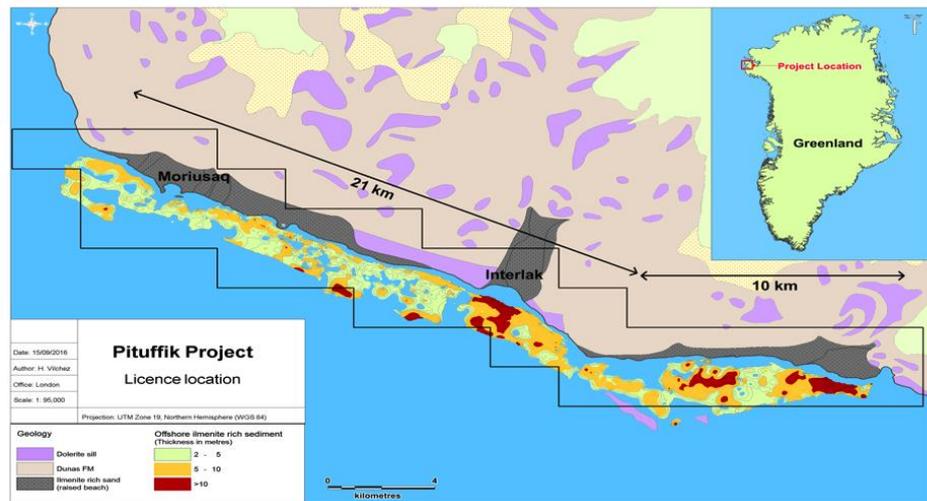
## 5 PITUFFIK TITANIUM PROJECT

### 5.1 The proposed project

The Pituffik Titanium Project will explore the valuable titanium oxide of the black sand deposit on the south coast of Steensby Land peninsula.

Pituffik comprises three main target areas along an more than 80km coastline historically proven to contain large and high-grade accumulations of primary ilmenite occurring as placer deposits in the following environments:

- Raised beaches; containing ilmenite accumulations over widths of more than 1km, of unknown depths, along more than 20km of coast-line,
- Active beaches; which refer to the area seaward of the frontal dunes, including the beach, tidal zones and surf zone, and
- Drowned beaches; refers to the areas seaward of active beaches.



Pituffik currently has an Inferred resource of 23.6Mt at 8.8% ilmenite (in situ), which includes a high-grade zone equal to 7.9Mt at 14.2% ilmenite within an Exploration Target of between 90Mt and 130Mt with an in-situ TiO<sub>2</sub> grade of between 6.3% and 8.4% ilmenite. This resource comes from an area that represents only approximately 17% of the raised beach area at Moriusaq

Dundas Titanium will focus on increasing the total mineral inventory at the project to demonstrate the global significance of the project in terms of tonnage.

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Upside potential available via Iterlak, the offshore terrace, as well as the additional 25km of raised beach which have not been included in the maiden mineral resource calculation

Initially, the Project will focus on the beaches at Moriusaq (Moriusaq Bay). Another potential target area is Iterlak 13 km southeast of Moriusaq where the largest volume with grade upside potential is found. It is currently expected that the mining will operate for only the warmer months which typically occur in a four month window from mid-late June to early October and which exhibits generally stable, calm weather. Navigation by boat is generally for four months unless utilising an ice class vessel yet years where the sea ice breaks up earlier are becoming more frequent, allowing longer periods of access.

The black sand deposit on the south coast of Steensby Land peninsula extends some 80 km within the area of Dundas Titanium's exploration license area, which include three sections which contain black sand deposits (Figure 4-1). However, only the license area south-east of Granville Bugt will be explored by the Pituffik Titanium Project.

The Project will consist of an active beach mining operation and/or off-shore dredging operation, a beneficiation plant, a ship-loading facility, workforce accommodation, concentrate storage, deposition of beach sands and general services such as power and water supply.

Dundas Titanium is considering two potential scenarios for establishing the accommodation, beneficiation plant and ship loading facility. One scenario is construction of the facilities on-shore, adjacent to the closed town site of Moriusaq. The other scenario is to purchase a second hand bulk carrier vessel, and to install the beneficiation plant on this vessel. Workforce accommodation, power supply, and concentrate storage would also be included within the vessel. This scoping will consider both options.

The current strategy is to mine 0.5-1.5 mtpa over 30 years.<sup>3</sup>

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<sup>3</sup> <http://www.titanium.gl/documents/in-the-news/FinnAust-article-in-Paydirt-Feb-2016.pdf>

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The main components of the Project are:

### Mining

Two ways of mining will take place, either dry mining along the active or raised beaches using excavators or dozers, or wet mining of off-shore deposits along the beach to c. 10 m water depth, using suction or cutter dredges. More details on the mining process is described in section 5.2

### The beneficiation plant

The beneficiation plant separates the heavy mineral concentrates from the beach sand using gravity and magnetic recovery techniques to produce saleable Heavy Mineral sand. The plant may be located on shore, near to the mining operations. Alternatively, Dundas Titanium is considering purchasing a second hand bulk carrier and retro-fitting that to allow the beneficiation plant to operate on board.

It is planned to store the saleable Heavy Mineral Sands either on shore or in the hold of the main vessel. A ship loading facility will be established to transfer the concentrate to the cargo shipping vessels. The plan will then be to ship the bulk concentrate to customers around the world.

The beach sands left over once it has passed through the beneficiation plant will be returned to the beach to back fill the areas mined, or will be discharged at depth to the ocean floor. The method and location of the beach sands discharge will be influenced by environmental considerations.

### The ship loading facility

Dundas Titanium is considering a Floating Production, Storage and Offloading (FPSO) strategy. The bulk concentrate is transferred to a moored transfer vessel by barge or pumped as a slurry and unloaded into the hold of the transfer platform. When a large tonnage has been accumulated, it is self-unloaded into a cargo ship alongside. The offshore platform is either a barge with unloading cranes/conveyors or a converted bulk carrier designed to unload barges or accept slurry to its own modified holds. This intermediary buffer storage allows for much faster ship loading than direct barge unloading. The ship loading facilities will need to accommodate ships up to 60,000 DWT (Dead Weight Tonnes).

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### Accommodation

The accommodation will include a canteen, a laundry and opportunities for leisure and spare time activities. Dundas Titanium is considering two locations for accommodation; either utilising the existing facilities at Moriusaq or locating them on the FPSO vessel.

### Other infrastructures

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

Power and water supply and storage for the processing plant, potable water and fire protection;

- Buildings and support facilities including accommodation;
- A helipad for staff and emergency medical evacuation;
- Heating and heat recovery;
- An IT and telecommunication system; and
- Sewage and waste management.

### Expected employees

It is at this time not possible to exactly determine the number of employees, but the expected numbers are mentioned in Table 5-1.

Table 5-1: Expected number of employees

	<b>Construction</b>	<b>Operation</b>	<b>Closure</b>
Scenario 1 (FPSO vessel)	30-50persons	60-100	5
Scenario 1 (on-shore facilities)	100	60-100	5

### Ilmenite Product

Metallurgical testwork has demonstrated the quality of the ilmenite product that can be produced from the Pituffik Titanium Project.

Detailed chemical analyses of the Premium Ilmenite Product from the recent metallurgical testwork programme shows that a product with low levels of deleterious elements can be achieved:

TiO <sub>2</sub>	46.5%
FeO	39.2%
Fe(t) as Fe <sub>2</sub> O <sub>3</sub>	55.0%
SiO <sub>2</sub>	0.71%
ZrO <sub>2</sub>	0.12%
Al <sub>2</sub> O <sub>3</sub>	0.09%
CaO	0.15%
MnO	0.52%
Cr <sub>2</sub> O <sub>3</sub>	0.06%
MgO	0.78%
Nb <sub>2</sub> O <sub>5</sub>	0.029%
CeO <sub>2</sub>	0.01%
P <sub>2</sub> O <sub>5</sub>	0.002%
Na <sub>2</sub> O	0.02%
V <sub>2</sub> O <sub>5</sub>	0.35%
Th	<10ppm
U	<10ppm

The Premium Ilmenite Product is suitable for direct upgrading to a chloride slag, and is planned to be shipped to North America, Europe and Asia.

#### Extent of processing of minerals in Greenland

The SIA Report will include a section, which describes the extent to which minerals can be processed in Greenland without resulting in significant higher cost or greater inconvenience cf. section 18 (3) in the Mineral Resource Act. This section will describe the benefits (jobs and public revenues), which accrue to Greenland as a result of processing of minerals.

## **5.2 Overview of the process from mining to end-product**

Figure 5-1 illustrates the process from the ore is mined to the end product. The process is split between the activities that are planned to take place in Greenland, and activities taking place outside of Greenland.

Below the figure, each step in the process are described briefly. The specific process for this project will be further developed in the full SIA.

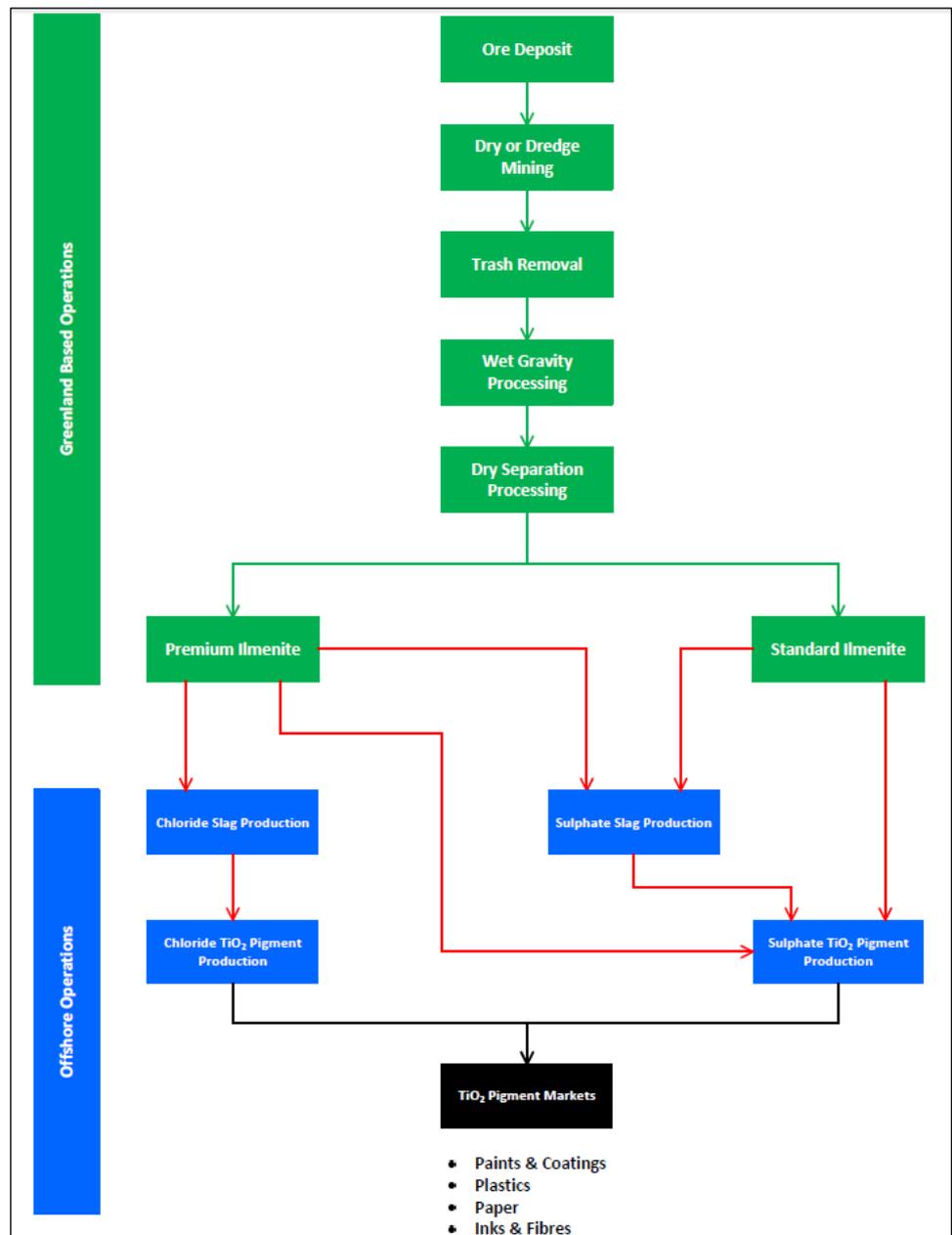


Figure 5-1: Process from ore deposit to end-product

### Mining

The mining methods considered with this deposit will most likely include conventional dry mining techniques typical of mineral sands practise. This will entail overburden removal by truck/hydraulic excavator and ore mining by scrapers and/or truck/excavator.

Such a method is typically supported by large dozers to provide rip and rake support in pit and tailings profile return for rehabilitation.

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Ore mined is directed to a road hopper at the Trash Removal Plant

#### Trash Removal Plant

At the Trash Removal Plant, ore is received at the road hopper and passes through a 250mm grizzly screen before being washed in a scrubber unit to break up conglomerates of clay, and a trommel screen for screening at 2.0 mm to remove oversize.

The grizzly screen and trommel screen oversize will be returned direct to the pit void behind the advancing mine face or used to construct pit access.

The <2.0 mm ore will be pumped to the surge bin at the Wet Gravity Processing Plant.

#### Wet gravity processing plant

The Wet Gravity Processing Plant will be located beside TRP.

The Wet Gravity Processing Plant will consist of the following major units of mineral separating equipment. These units consist of a constant density tank, spiral separators, upward current classifier, a filter belt and a tailings module.

#### *Constant Density Tank*

The purpose of the constant density tank is to ensure the Wet Gravity Processing Plant receives a consistent feed rate and pulp density.

#### *Spiral Separators*

The spiral separators are used to concentrate the ilmenite mineral contained in the ore and achieve a high ilmenite mineral recovery whilst rejecting most of the coarser low specific gravity uneconomic, non-valuable minerals.

#### *Upward Current Classifier*

The upward current classifier separator is used to further upgrade the ilmenite product by rejecting the finer low specific gravity uneconomic, non-valuable minerals from the ilmenite mineral.

#### *Belt Filter*

The use of a belt filter is needed to remove as much moisture as possible from the product from the upward current classifier separator prior to drying to reduce the energy required to dry the ilmenite product.

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### *Tailings Module*

The tailings flow from the constant density tank, spiral separators, upward current classifier and the belt filter are collected in a bin and are dewatered using cyclones within the tailings module.

### Dry separation processing plant

The Dry Separation Processing Plant will be located beside Wet Gravity Processing Plant.

The Dry Separation Processing Plant will consist of the following major units of mineral separating equipment. These units are a rotary dryer and two stages of Rare Earth Drum (“RED”) magnetic separators.

The filtered material from the belt filter is heated in a dryer before being passed over the RED separators. The non-magnetic stream from the first stage of RED separation is deemed a reject stream as it contains minimal ilmenite mineral. The magnetic stream from the first stage of RED separation is processed over the second stage RED separation.

The second stage of RED separation produces a **Premium Ilmenite** product and a **Standard Ilmenite** product. The two ilmenite products will be stored in a storage shed in readiness for export.

The average annual ilmenite production is envisaged to be 350,000 tonnes of ilmenite product.

### TiO<sub>2</sub> process

The two ilmenite products produced by the Dundas Titanium A/S operation in Greenland will be exported for the manufacture of TiO<sub>2</sub> pigment either directly or after upgrading to titanium slag.

Ilmenite can be processed into TiO<sub>2</sub> pigment by one of two processing routes, the sulphate TiO<sub>2</sub> pigment production (“Sulphate Process”) and the chloride TiO<sub>2</sub> pigment production (“Chloride Process”).

Direct use of Dundas ilmenite is only possible in the sulphate process; the TiO<sub>2</sub> content is too low for use in the chloride process. The sulphate process consists largely of a sequence of batch operations. The ilmenite is first milled before digestion in concentrated sulphuric acid. After removal of insoluble material the ‘process liquor’, a mixture of metal sulphates, is modified to ensure that iron sulphate can be removed by cooling before the TiO<sub>2</sub> can be selectively separat-

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ed by hydrolysis. The resulting TiO<sub>2</sub> pulp is then filtered and washed before calcination at around 1000°C to dry, remove any remaining sulphuric acid and convert the TiO<sub>2</sub> to the required crystal form and size. Acid containing waste streams are either neutralised or reconcentrated to allow reuse.

After calcination the TiO<sub>2</sub> particles are disaggregated by milling, treated with inorganic chemicals to generate properties required in the eventual end use, filtered and washed and then jet milled with steam to produce the final pigment powder.

The sulphate process is more than 100 years old and the technology is generally available. No new sulphate process factories have been built outside of China for more than 25 years.

The most appropriate route for the upgrading of the Dundas Titanium ilmenite is smelting in a specially designed electric furnace. The chloride process requires a slag product with low levels of particular compounds, particularly CaO and MgO, so only the Premium grade is a suitable feedstock. Sulphate process slag can be produced from both the premium- and standard-Ilmenite products. Several million tonnes of slag are produced annually for the manufacture of TiO<sub>2</sub> pigment. The production process is complex requiring high temperatures to keep the slag fluid and careful furnace control to prevent vessel damage by the corrosive slag. After smelting the slag is cooled, crushed and sized.

In the chloride process the slag (or other feed material with a TiO<sub>2</sub> content >85% such as rutile) is continually fed into a fluidised bed reactor with coke and chlorine at around 900°C. This converts the slag to various gaseous metal chlorides. The gas is then cooled to a temperature where most impurities solidify so that they can be removed, before further cooling and treatment to produce a pure liquid titanium tetrachloride. This is then heated to very high temperature before injection with aluminium chloride to an oxidation reactor to produce rutile TiO<sub>2</sub>. This is cooled, the TiO<sub>2</sub> powder separated from the chlorine gas liberated by the oxidation which is then recycled to the start of the process.

After oxidation the TiO<sub>2</sub> undergoes a process almost identical to the chloride process to give a final product. Unlike the sulphate process, the technology is patented and controlled by the major western producers although several chloride plants have been built in China in the last five years without their input.

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The total global market for TiO<sub>2</sub> pigment is around 6Mtpa, and growing at 2 to 3%pa. The major uses of TiO<sub>2</sub> pigment are in coatings (~60%), plastics (~25%) as well as paper, printing inks, fibres, cosmetics, sunscreens, food and pharmaceuticals.

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## 6 BRIEF ON LOCAL CONDITIONS

The license area is located in Qaasuitsup Kommunia (from 1 January 2018 Avannaata Kommunia), approximately 80 km South of the town Qaanaaq and near the former settlement Moriusaq (see Figure 4-1). The American airbase 'Thule Air Base' is located 40 km southeast of the project.

This section briefly describes the baseline conditions in the Qaanaaq area.

Qaanaaq area is home to 765 persons, of which 641 lives in Qaanaaq and 124 lives in the three nearby settlements: Savissivik, Siorapaluk and Qeqertat (2015). Furthermore the area consists of two former settlements, Qeqertarsuaq and Morisuaq, which are both known to be very good hunting places. Morisuaq was closed in 2010.

Qaanaaq is the most Northern town of Greenland, and is in some physical and cultural regards very isolated from the rest of the country. The local population is called Inughuit (the proud people) and the local cultural traditions such as drum dancing and kayaking play an important role in the cultural life of the inhabitants. Ilulissat, the main town of the municipality, is located more than 1.000 km to the South. Transportation to Qaanaaq is with a weekly plane from Ilulissat and there is supply of food by boat twice a year. Further to Greenlandic and Danish a large share of the population also speaks Inuktun language, which is different from Greenlandic.

The unemployment rate in Qaanaaq district is the highest in Greenland, with the average unemployment rate being 25 % in 2014. A larger share of women was unemployed compared to men, and the unemployment rate was generally higher in Qaanaaq town compared to the settlements. The unemployment is higher during the winter, as some seasonal work is available during the summer.

There are few private businesses in the area, and more than half of the working population are directly working within public administration. Hunting and fishing are important trades, and there is a fish processing facility located in Qaanaaq. There are currently very limited tourism activities in the area.

In general the education level is lower in the district compared to the rest of Greenland, and it is difficult to attract and retain qualified workers to the area. There are primary schools in Qaanaaq, Savissivik, Siorapaluk and Qeqertat. Furthermore there is a Majoriaq in Qaanaaq. The nearest high school is in Aasiaat.

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## 7 POTENTIAL SOCIAL IMPACTS OF THE PROJECT

As illustrated in Figure 2-1, the first phase of the SIA process is the scoping phase where key potential impacts are identified and relevant aspects are identified to be assessed in the SIA. The scoping forms the basis for this draft ToR.

The scoping is based on The guidelines (2016) as well as the recent published IAIA Guidance document on Social Impact Assessment (2015).

The scoping is done primarily as a desk-top study, based on national and international guidance, literature surveys and experiences from previous projects. Furthermore a number of stakeholder meetings will be held after the public hearing of the draft ToR in Nuuk and Ilulissat to provide inputs to drafting the SIA Report.

### 7.1 Study area and temporal boundaries

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

For the baseline study, the information will be processed and analysed at three levels: National, Regional (Avannaata Kommunia) and Local (Qaanaaq).

The SIA will cover the following phases of the project:

- Construction phase;
- Operations phase;
- Closure and rehabilitation phase.

The current strategy is to mine over 30 years.<sup>4</sup>

The SIA will also identify towns and villages, which are assessed to be particularly affected by the activities, cf. section 87c in the Mineral Resource Act.

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<sup>4</sup> <http://www.titanium.gl/documents/in-the-news/bluejay-article-in-Paydirt-Feb-2016.pdf>

## 7.2 Potential impacts

During the scoping potential impacts from the project are identified that must be surveyed further in the SIA. Below is mentioned the aspects that must be surveyed further.

<b>1. Direct employment of Greenlandic workers</b>	1.1: Engagement of Greenlandic workers
	1.2: Indirect and induced job effects
	1.3: Cumulative impacts (related to jobs)
	1.4: Labour conditions and occupational health and safety
<b>2. Education and training of Greenlandic workers</b>	2.1: Development of competencies
<b>3. Use of Greenlandic enterprises</b>	3.1: Business opportunities
<b>4. Processing of minerals</b>	4.1 Extra jobs
	4.2. Increased public revenue
<b>5. Public revenue</b>	5.1 Personal income tax
	5.2 Corporate tax/Royalty
<b>6. Other socio-economic and sustainability matters</b>	6.1: Pressure on the public sector, infrastructure and services
	6.2: Public health
	6.3: Cumulative impacts (except impacts on jobmarket)
	6.4: Recreational/local use of the project area and cultural heritage
	6.5.: Resettlement / livelihood compensation
	6.6: Vulnerable groups

An initial screening has been carried out and is presented in table 'scoping overview' below. For each aspect is a brief description of the current baseline information, the potential impact for Scenario 1 (camp on FPSO Vessel) and Scenario 2 (camp on land). In addition, it is indicated what additional information is required for the development of the SIA.

Table 7-1 Scoping overview

1: Direct employment of Greenlandic workers				
Description of impact	Brief baseline information, based on current available sources	Potential preliminary impacts Scenario 1 On a FPSO vessel	Potential preliminary impacts Scenario 2 On land (Moriusaq)	Information required for development of the SIA and essential sources of information
1.1: Engagement of Greenlandic workforce	<p>Developments related to the Greenlandic labour force is a key issue in Greenland, with emphasis on workforce mobility, data collection on unemployment levels as well as development of the skills levels of the workforce to meet labour market needs.</p> <p>The national unemployment rate in 2014 was 10.3 %. The unemployment rate in Qaanaaq is the highest in Greenland. In 2014 it was 24,6 %.</p> <p>Seasonal unemployment is substantial, especially outside of the towns. Higher unemployment rates are seen during the winter months.</p> <p>Unemployment rates differ significantly between education levels, with the national unemployment rate for persons whose highest education is primary school being 15.5 % and for persons with a university degree being 0.8 %. This illustrates that one of the key employment challenge faced by Greenland is the characteristics of the workforce. A large share of the unemployment is structural, where skill levels do not match the skill requirements.</p>	<p>The project will only directly employ a limited number for the project due to the limited size of the project.</p> <p>The project has potential to create direct local jobs, hence decreasing unemployment.</p> <p>The project will be operating 4-5 months of the year.</p> <p>The project is expected to have a small positive impact on the local employment, especially if it would be possible to employ people from the Qaanaaq area and Avannaata Kommunia.</p> <p>The impact on national employment will be limited.</p>	<p>Same impacts as in scenario 1, however the expected employment during the construction phase is expected to be higher than in scenario 1.</p>	<p><b>Key stakeholders / information to be gathered:</b> Detailed information from Dundas Titanium on the expected types of jobs.</p> <p>Information on existing available qualification will be collected during the baseline.</p> <p>Stakeholder interviews with representatives from the municipality (Majori-aq) and SIK regarding possibility to attract workers from the Qaanaaq area.</p> <p><b>Important national strategies / documents:</b> Employment strategy 2015 (Et trygt arbejdsmarked).</p>
1.2: Indirect and induced effects (effects on other	<p>In addition to direct jobs, it is expected that a project like Pituffik will also lead to job generation through indirect and induced effects:</p>	<p>With processing and accommodation taking place on the FPSO vessel, the number of</p>	<p>With processing and accommodation being based in and around Moriusaq, it is ex-</p>	<p><b>Key stakeholders / information to be gathered:</b> Stakeholder interviews</p>

1: Direct employment of Greenlandic workers				
Description of impact	Brief baseline information, based on current available sources	Potential preliminary impacts Scenario 1 On a FPSO vessel	Potential preliminary impacts Scenario 2 On land (Moriusaq)	Information required for development of the SIA and essential sources of information
sectors)	<ul style="list-style-type: none"> <li>- Indirect jobs: Jobs that are created as suppliers to the mine hires workers to meet the increased demand of their product / service, and</li> <li>- Induced jobs: Jobs that occurs due to an increased economic activity, as the increased income of workers are used to purchase services and products from other sectors</li> </ul> <p>The calculation of the number of indirect and induced jobs created is based on the number of direct jobs multiplied with the multiplier factor.</p> <p>Experiences from Canada and Alaska have found a multiplier factor for employment of 1.6 – 2.2 in the mining sector. However, as Greenland has limited domestic production and therefore has a large import of goods, a conservative scenario would be to use a multiplier factor of 1.3, which has also been used in the SIA's for other Greenlandic mining projects.</p>	<p>indirect jobs will be limited.</p> <p>If the project is successful in employing persons from the local area the multiplier effect at local level is expected to be higher than on regional level. As the unemployment rate in the area is high, an increased income to a certain extent lead to an increased demand for local services and goods.</p> <p>On national level the multiplier effect is expected to be low.</p>	<p>pected that there will be a higher local multiplier effect related to services of the site.</p> <p>On national level the multiplier effect is expected to be low.</p>	<p>with representatives from the municipality (Majori-aq) and local business council, to gather information on local jobs and businesses and how these can be affected by the project</p> <p><b>Important national strategies / documents:</b> NA</p>
1.3: Cumulative impacts (Impacts related to jobs)	<p><b>Mineral sector:</b> In Greenland in general there are several mine exploration projects. The closest project to Pituffik which has submitted an application for exploitation is the Ironbark project (Citronen Fjord) which is situated in Peary Land in the National Park. The project is located 1.000 km to the East of Qaanaaq, and there are no infrastructure connecting Qaanaaq and Citronen Fjord.</p> <p>Red Rock Resources have made exploration in Melville Bay (Iron), only 100 km South of Pituffik. The project is</p>	<p><b>Mineral sector:</b> Due to the size of the project and the limited potential impacts, the cumulative impacts on the mining sector are considered to be very low.</p> <p>Following the construction of the Hudson and TNG project there will be an experienced Greenlandic workforce who</p>	Same as scenario 1	<p><b>Key stakeholders / information to be gathered:</b> No additional information to be collected</p> <p><b>Important national strategies / documents:</b> Greenland oil and mineral strategy 2014-2018</p>

1: Direct employment of Greenlandic workers				
Description of impact	Brief baseline information, based on current available sources	Potential preliminary impacts Scenario 1 On a FPSO vessel	Potential preliminary impacts Scenario 2 On land (Moriusaq)	Information required for development of the SIA and essential sources of information
	<p>currently on hold due to the low iron prices.</p> <p>Currently two mining projects in Greenland are close to start operation, the Ruby project (Qeqertarsuatsiaat), operated by TNG and LNS, and the Anorthosite (Naajat) project operated by Hudson Resources Inc.</p> <p>The ruby project finalized the construction phase in 2015 and will employ 40-55 persons in Aappaluttoq and 14 in Nuuk. The Hudson Resources project will employ approximately 20 persons during the construction phase and app. 40 persons in the operation phase.</p> <p>Currently, there are very limited oil exploration activities and no exploitation activities in Greenland. Several surveys have been carried out in relation to the oil activities in the Baffin Bay area. However, none of these survey have resulted further activities.</p>	<p>can possibly be employed on the project.</p> <p>If there is a significant increase in mining and oil projects which are located closer to more populated areas of Greenland, it is probable that it will become more difficult to attract workers to the Pituffik project.</p>		
1.4: Labour conditions and occupational health and safety (OHS)	<p>The labour market in Greenland is dominated by agreements between the labour unions and the employers' organisation. The labour force are largely organised and represented by SIK (Greenland workers union). Private employers are organised by GE and NUSUKA (Greenland employers' organisations).</p> <p>The annual SIK minimum wage for non-skilled and un-experienced workers is 197,306 DKK in 2016.</p> <p>The conditions for international workers must not be</p>	<p>The project must live up to Greenlandic legislation and international conventions on conditions and salaries.</p> <p>Due to the limited size of the project, it is not expected that the project will influence the national labour conditions.</p> <p>When Dundas Titanium com-</p>	Same as scenario 1	<p><b>Key stakeholders / information to be gathered:</b> Stakeholder interview with SIK regarding potential issues related to labour conditions and OHS</p> <p><b>Important strategies / documents:</b></p>

<b>1: Direct employment of Greenlandic workers</b>				
<b>Description of impact</b>	<b>Brief baseline information, based on current available sources</b>	<b>Potential preliminary impacts Scenario 1 On a FPSO vessel</b>	<b>Potential preliminary impacts Scenario 2 On land (Moriusaq)</b>	<b>Information required for development of the SIA and essential sources of information</b>
	<p>more beneficial than to those for national workers.</p> <p>ILO conventions describe the required work conditions for all workers. Furthermore the national OHS legislation sets out special regulation related to the extraction industry.</p> <p>Dundas Titanium's activities including development of OHS policy, management system and practices will be built on national legislation and international best practise.</p>	<p>ply with national regulation and international practice no additional impacts will be identified.</p>		<p>Agreements between labour markets organisations (SIK and GE).</p> <p>ILO Conventions.</p> <p>Description on the planned OHS policy and OHS management system and plan by Dundas Titanium.</p>

2: Education and training of Greenlandic workers				
Description of impact	Brief baseline information	Potential preliminary impacts Scenario 1 On a FPSO vessel	Potential preliminary impacts Scenario 2 On land (Moriusaq)	Information required for development of the SIA and essential sources of information
2.1: Development of competences	<p>Vocational education and training is provided by Tech College Greenland (KTI), which offers educations in in Sisimiut and Nuuk. The School for Minerals and Petroleum is part of KTI, and is based in Sisimiut.</p> <p>The Maritime Centre in Greenland (Imarsiornermik Ilinniarfik) provides education within the maritime sector in Paamiut, Nuuk and Uummannaq.</p> <p>The number of students completing vocational education, mid-range training and higher education has been increasing during the past decade.</p> <p>Furthermore, the exploration for potential mines, and the construction of the True North Gems and Hudson Mining projects have led to an increase in 'available' national competences, even though the number of projects and possibilities for building competences in the sector are still limited.</p>	<p>The project has potential for providing on-site training and apprentices in cooperation with educational institutions, especially the school for minerals and petroleum.</p> <p>The project can play a role in closing the competence gap in the sector.</p> <p>However, due to the size of the project this positive impact will be limited.</p>	Same as scenario 1	<p><b>Key stakeholders / information to be gathered:</b> Stakeholder interviews with the mining school and the maritime Centre gathering baseline information on the education level and graduates within different fields.</p> <p><b>Important national strategies / documents:</b> Education plan II 2017 and potential updates (Uddannelsesplan II) Kommuneplan 2014-2026 (Qaasuitsup Kommunia) Greenland oil and mineral strategy 2014-2018</p>

3: Use of Greenland Enterprises				
Description of impact	Brief baseline information	Potential preliminary impacts Scenario 1 On a FPSO vessel	Potential preliminary impacts Scenario 2 On land (Moriuaq)	Information required for development of the SIA and essential sources of information
3.1: Business opportunities	<p>Local businesses in Greenland in generally and especially in Qaanaaq and Ilulissat are small in size and have few employees, primarily operating within fishing sector, transport sector and building sector.</p> <p>There are a few Greenlandic companies who are specialized in provision of logistic support to mining activities, like Exploration Services and 21 North.</p>	Potential positive impact on local businesses through involvement of local services providers and local logistical support.	Same as scenario 1 – potentially a larger impact if the project will be placed on land.	<p><b>Key stakeholders / information to be gathered:</b> Detailed information on existing local businesses that can benefit from the project will be collected during the baseline.</p> <p>Stakeholder interview with GE (Greenland Business Association) and potential local representatives in Qaanaaq and Ilulissat on the potential opportunities and the lessons learned on previous successful engagement of local businesses</p> <p><b>Important strategies / documents:</b></p> <p>Greenland oil and mineral strategy 2014-2018.</p> <p>Yearly labour market review (Lovpligtig arbejdsmarkedsredegørelse)</p>

4: Other socio-economic and sustainability matters				
Description of impact	Brief baseline information	Potential preliminary impacts Scenario 1 On a FPSO vessel	Potential preliminary impacts Scenario 2 On land (Moriusaq)	Information required for development of the SIA and essential sources of information
4.1 Pressure on the public sector, infrastructure and services	<p>Today there is a big pressure on the public service in Greenland in general and especially in Avannaata Kommunia. The public service includes amongst other health service, public administration, public institutions (schools, child - and elderly care etc.), public housing and all kind of social benefits.</p> <p>The public sector is under pressure due to a decrease in public income and at the same time increase in public expenditure following an increased demand of services. The pressure is expected to increase in the future due to the demographic profile of Greenland where a larger share will be dependent on services.</p> <p>There is a health centre in Qaanaaq, and the closest regional hospital is in illulisat.</p> <p>The infrastructure in North Greenland is limited. There are airports in Qaanaaq and in Pituffik (Thule Airbase). Morisuaq has a heliport which has been closed since the settlement was closed. A new airport is planned in Illulissat (2200m).</p> <p>It has been discussed to close the airport in Qaanaaq and instead use helicopter transport from Pituffik (Thule Airbase) to Qaanaaq.</p> <p>Both Qaanaaq and the settlements are serviced twice a year by boat (Royal Artic Line). Furthermore, Qaanaaq and the settlement services with fuel.</p>	<p>The project will make use of some of the public services such as access to health service, the police and custom and on the general service as approval and supervision of the activities in relation to the project.</p> <p>The project's impact on the public sector is expected to be limited due to the limited size of the project, however this will be examined in the SIA.</p> <p>The project's impact on the public infrastructure will be limited due to the limited size of the project. With this scenario of using the FPSO vessel the impact on the infrastructure is expected to be even lower.</p> <p>From the screening no conflicts with the current development plan for Qaasuitsup Kommunia are foreseen. This will be checked during stakeholder engagement activities</p>	<p>As with scenario 1 the impact on public services are expected to be relatively low.</p> <p>If the camp and production facilities are on land, the access is at this stage planned to be via the previous heliport from Morisuaq and potentially also the airport in Pituffik airbase/Qaanaaq. The airport in Pituffik is not a public airport, so special agreement is needed.</p>	<p><b>Key stakeholders / information to be gathered:</b></p> <p>Stakeholder interviews with representatives from the municipality on public services, including potential impacts in case of emergencies.</p> <p>Stakeholder interviews with representatives from Pituffik (airbase) regarding the infrastructure.</p> <p><b>Important national strategies / documents:</b></p> <p>The current development plan for Qaasuitsup Kommunia is for 2014-2026.</p> <p>Expected development plans for Avannaata Kommunia</p>

4: Other socio-economic and sustainability matters				
Description of impact	Brief baseline information	Potential preliminary impacts Scenario 1 On a FPSO vessel	Potential preliminary impacts Scenario 2 On land (Moriusaq)	Information required for development of the SIA and essential sources of information
		with the municipality		
4.2 Public revenue	<p>The project will contribute to the public revenues via:</p> <ul style="list-style-type: none"> <li>- Personal taxation</li> <li>- Corporate taxation</li> <li>- Royalties</li> </ul> <p>The income tax percentage for National workers is dependent on the home municipality (municipality of Qaasuitsup has 44 % tax rate in 2017). National workers have an annual tax-free allowance of DKK 58,000.</p> <p>International workers' pay a tax rate of 35 % with no personal allowance.</p> <p>The tax percent for corporate tax is 30 %.</p> <p>The share of royalty is a part of the negotiation of the license.</p>	The SIA will contain an estimate of the expected public revenue that the project will generate throughout the project life.	Same as scenario 1	<p><b>Key stakeholders / information to be gathered:</b></p> <p>Detailed information on level of salary to be provided by Dundas Titanium.</p> <p><b>Important national strategies / documents:</b></p> <p>Greenlandic tax legislation</p> <p>Greenland oil and mineral strategy 2014-2018.</p>
4.3: Public health	<p>The health survey from 2010 (Bjerregaard and Dahl-Petersen, 2010) shows that in the Qaanaaq area (Avanersuaq) both smoking and alcohol abuse are more frequently than the rest of Greenland.</p> <p>In general the diet in Avanersuaq is more traditional than the rest of Greenland (more seal and whale as well as less fruit and vegetables), which is mirrored in a considerable higher concentration of mercury in the blood of the participants in the survey than the rest of Green-</p>	<p>For the few local workers at the project, a potential higher income from the salary at the project, can lead to a positive impact on their health and their family's health.</p> <p>Due to the limited size of the project is it expected that the project will have no further</p>	Same as scenario 1	<p><b>Key stakeholders / information to be gathered:</b></p> <p>No additional information, than the available information on the public health will be collected due to the size of the project.</p>

4: Other socio-economic and sustainability matters				
Description of impact	Brief baseline information	Potential preliminary impacts Scenario 1 On a FPSO vessel	Potential preliminary impacts Scenario 2 On land (Moriusaq)	Information required for development of the SIA and essential sources of information
	land.	<p>impact on the public health.</p> <p>The potential impact on the local health services are studied in 4.1: Pressure on the public sector, infrastructure and services.</p>		<p><b>Important strategies / documents:</b></p> <p>Annual report of the Health Inspection Authority (Landslægeembedets årsrapport)</p> <p>Inuuneritta II 2013-2019 - Naalakkersuisuts strategier og målsætninger for folkesundheden 2013-2019</p>
4.4: Cumulative impacts (except impacts on job-market)	<p>Two potential cumulative impacts related to fishing/hunting activities that have been identified as part of the screening are:</p> <p><b>Climate change:</b> The climate changes in Greenland has already had an impact on the fishing/hunting activities. Climate change has resulted in a change in of species and where to catch them.</p> <p><b>Maritime traffic:</b> In general very limited maritime traffic in the Baffin Bay, however the traffic from mining projects on the Canadian side of Baffin Bay (especially the Mary River Iron project) and from Pituffik is currently unknown. This must be considered for the cumulative impacts</p>	Due to the size of the project and the limited potential impacts, the cumulative impacts are considered be very low.	Same as scenario 1	<p><b>Key stakeholders / information to be gathered:</b></p> <p><b>Important strategies / documents:</b></p> <p>Status on the Canadian Baffinland Mary River project to be collected.</p>

4: Other socio-economic and sustainability matters				
Description of impact	Brief baseline information	Potential preliminary impacts Scenario 1 On a FPSO vessel	Potential preliminary impacts Scenario 2 On land (Morisuaq)	Information required for development of the SIA and essential sources of information
4.5: Use of the project areas and cultural heritage	<p>The settlement Morisuaq was closed in 2010. The current use of Morisuaq is unknown. Some indications shows that some of the houses are used as summer-houses.</p> <p>Currently, no information exist on cultural heritage and possible archaeology in the project area (this will be studied as a part of the EIA).</p> <p><b>Fishing and hunting:</b> A study of the hunting activities in the area of Qaanaaq (Egevang, 2015) shows that there are hunting of narwhales and walrus in the area of Qaanaaq. In the past the fishing activities was limited however, recently more hunters are now fishing of halibut in the area of Qaanaaq. The income from halibut fishing is considered to be major important for the local community where the opportunities for income is limited (Egevang, 2015).</p>	Potential restricted access to the mine area is considered to have limited impact due to the closed settlement.	Same as scenario 1	<p><b>Key stakeholders / information to be gathered:</b></p> <p>Detailed information on the use of Morisuaq is to be collected from the municipal and local stakeholders in Qaanaaq during the stakeholder engagement activities.</p> <p>Detailed information on use of the project area during the stakeholder engagement activities (interview with KNAPK and focus groups in Qaanaaq).</p> <p><b>Important strategies / documents:</b></p> <p>Egevang, 2015 Henriksen, 2016</p>
4. 6: Resettlement / livelihood compensation	The settlement Morisuaq was closed in 2010. The current use of Morisuaq is unknown. Some indications shows that some of the houses are used as summer-houses.	<p>No resettlement will take place.</p> <p>During the stakeholder engagement the projects potential impact on local hunters</p>	Same as scenario 1	<p><b>Key stakeholders / information to be gathered:</b></p> <p>Description of the current livelihood and trends within the fishing and hunting</p>

4: Other socio-economic and sustainability matters				
Description of impact	Brief baseline information	Potential preliminary impacts Scenario 1 On a FPSO vessel	Potential preliminary impacts Scenario 2 On land (Moriusaq)	Information required for development of the SIA and essential sources of information
		livelihood must be studied.		activities based on data collected from stakeholder engagement activities.  <b>Important strategies / documents:</b> NA
4.7: Vulnerable groups	<p>Vulnerability is often linked to/caused by factors such as health, education and employment.</p> <p>A health survey was carried out in the area of Qaanaaq (Avanersuaq) in 2010 which concluded that the education level is lower in Qaanaaq compared to the rest of Greenland. Twice as many live as hunters or fishermen than the rest of Greenland and housing conditions was worse. Both wealth and income were lower in Avanersuaq than in the rest of the country. Furthermore, many of the participants in the survey had experienced alcohol problems or violence in their childhood home. In addition, several of the participants (especially the women), stated that they have been sexual abused.</p>	<p>It is not foreseen that the vulnerable groups will be directly impacted by the project.</p> <p>However, indirect impacts could be caused by the fact that these groups might not benefit from the increased employment and business opportunities.</p>	Same as scenario 1	<p><b>Key stakeholders / information to be gathered:</b> Stakeholder engagement interviews (Qaanaaq and the municipality), focusing on vulnerable groups and the projects potential impacts on these groups</p> <p><b>Important strategies / documents:</b> NA</p>

## 8 STAKEHOLDER ENGAGEMENT

### 8.1 Public relations during permitting and life of mine

The Mineral Resource Act aims to ensure that mineral resource activities under the act are securely performed as regards social sustainability of section 1 (2) in the MRA.

A key component in the “social licence” of the project is the engagement of stakeholders, including public consultations.

Figure 8-1 below illustrates the main steps for developing the SIA, and indicates how inputs from stakeholders are essential in all steps.

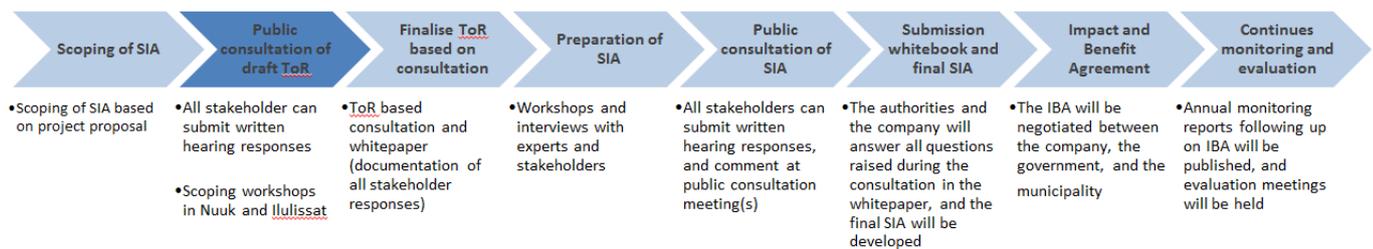


Figure 8-1: Stakeholder engagement during the SIA process and life of mine.

Stakeholders will be engaged through different activities, depending on the type of stakeholder and the stage of the SIA process, the activities *before public consultation of the SIA report* will include:

- Interviews, focusing on specific aspects such as baseline information or identification of impacts and/or mitigation measures
- Workshops
- Public consultation of ToR
- Written information with the possibility to comment

*After public consultation of the SIA report*, the benefits and the measures, which will mitigate impacts, identified in the social impact assessment report (see section 7 above) will constitute the basis for the provisions in the appendices to the IBA. These impacts and measures will be annually monitored and evaluated. If the parties to the IBA are in agreement the monitoring and evaluation will result in adjustment of the provisions stipulated in the appendices to the IBA for the following year. Any proposed change in the content of the appendices to the IBA will before adoption by the parties to the IBA (the company, the Gov-

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ernment of Greenland and one or several municipalities), be submitted for a review by organisations or associations whose articles of associations aim to promote important interest in connection with social sustainability e.g. job, business and potentially affected educational institutions in Greenland (see Section 18 of the Mineral Resource Act).

## **8.2 Engagement activities carried out prior to September 2017**

In February 2017 Dundas Titanium held an open information meeting in Qaanaaq. At the meeting representatives from the company, the EIA Consultant (Orbicon) and the SIA consultant (NIRAS) participated.

At the meeting the interested residents in Qaanaaq was given information about the project, the planned activities for the field work in the Summer of 2017, as well as the license process with focus on the EIA and SIA. During and after the presentations the public was able to raise questions and concerns. The meeting was held in Danish and translated into Greenlandic. 14 persons participated in the meeting.

Further to the open meeting, eight semi-structured interviews with stakeholders were carried out, focusing on gathering baseline information on local conditions, including the use of the Moriusaq area.

A more comprehensive description of the engagement activities carried out prior to the approval of the ToR will be described in the SIA, together with activities that will take place during the development of the SIA.

## **8.3 Establishment of a grievance mechanism**

In order for members of the local community as well as other stakeholders to be able to raise concerns or issues, a grievance mechanism must be established.

The grievance mechanism should give all citizens the opportunity to express verbal or written complaints in Greenlandic, Danish or English related to grievances caused by or related to project activities, the project staff, its consultants or contractors.

The mechanism must be set up according to international best practice, and ensure that procedures for filing complaints are simple and widely communicated, so that all stakeholders are aware of the possibility and able to raise concerns.

The SIA will describe how a grievance mechanism can be set up.

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#### **8.4 Stakeholders to be engaged during the SIA process**

Based on The guidelines from 2016 and local knowledge, relevant stakeholders have been identified for the Pituffik Titanium Project. Table 8-1 contains a list of all identified stakeholders. The list of stakeholders is divided into relevant groups and includes a proposal for stakeholder engagement activity during the SIA process.

Table 8-1 List of identified stakeholders and proposed stakeholder activity

Stakeholders (English name)	Proposed stakeholders engagement activities
<b>Authorities</b>	
The Mineral License and Safety Authority (MLSA)	Key contact point for Dundas Titanium to Mineral Resource Authority in Greenland
Environment Agency for Mineral Resources Activities (EAMRA)	To be invited to workshop #1 by Dundas Titanium (Nuuk) after the pre-hearing period
The Premier's Office <i>Naalakkersuisut Siulittaasuata Naalakkersuisoqarfia</i>	To be informed via Ministry of Industry, Labour, Trade and Energy (MILT)
Ministry of Health <i>Peqqissutsimut Naalakkersuisoqarfik</i>	To be invited to workshop #1 by Dundas Titanium (Nuuk) after the pre-hearing period
Ministry of Finance And Taxes <i>Aningaasaqarnermut Akileraartarnermullu Naalakkersuisoqarfik</i>	To be informed via MILT
Ministry of Mineral Resources (MMR) <i>Aatsitassanut, Ikummatissanullu Naalakkersuisoqarfik</i>	To be informed via MILT
Ministry of Industry, Labour, Trade and Energy (MILTE) <i>Inuussutissarsiornermut, Suliffeqarnermut Niuernemullu Naalakkersuisoqarfik</i>	To be invited to workshop #1 by Dundas Titanium (Nuuk) after the pre-hearing period
Ministry of Independence, Foreign Affairs and Agriculture <i>Namminiilivinnermut, Nunanut Allanut Nunalerinermullu Naalakkersuisoqarfik</i>	To be informed via MILT
Ministry of Fisheries and Hunting <i>Aalisarnermut Piniarnermullu Naalakkersuisoqarfik</i>	To be invited to workshop #1 by Dundas Titanium (Nuuk) after the pre-hearing period
Ministry of Social Welfare, Family, Gender Equality and Justice <i>Isumaginninnermut, Ilaqutariinnermut, Naligiisitaanermut Inatsisinillu Atuutsitsinermut Naalakkersuisoqarfik</i>	To be informed via MILT
Ministry of Education, Culture, Research and Church <i>Ilinniartitaanermut, Kultureqarnermut, Illisimatusarnermut Ilageeqarnermullu Naalakkersuisoqarfik</i>	To be informed via MILT
Ministry of Nature and Environment <i>Pinngortitamut, Avatangiisinullu Naalakkersuisoqarfik</i>	To be informed via MILT
Ministry of Municipalities, Settlements, Remote Districts, Infrastructure and Housing <i>Kommuninut, Nunaqarfinnut, Isorliunerusunut, Attaveqaqatigiinnermut Ineqarnermullu Naalakkersuisoqarfik</i>	To be informed via MILT
Municipality – Qaasuitsup Kommunia / Avannaata Kommunia:	To be invited to workshop #3 by Dundas Titanium (Ilulissat) after the pre-hearing period

Department for Industry, mineral and tourism Department for infrastructure, construction and environment Department for social issues and family Transition Committee Avannaata Kommunia	
Representative from the settlements (Siorapaluk, Qeqertat, Moriusaq, Savissivik) One common institution (Bygdebestyrelse)	Potential interviews during baseline phase and impact assessment phase by NIRAS
The High Commissioner of Greenland	To be informed via MILT
Danish Maritime Authorities	To be informed via MILT
The Police	To be invited to workshop#1 and #3 by Dundas Titanium (Nuuk) and (Ilulissat) after the pre-hearing period
Arctic Command	To be invited to workshop#1 and #3 by Dundas Titanium (Nuuk) and (Ilulissat) after the pre-hearing period
<b>Governmental organisations</b>	
The Greenland Nature Institute <i>Pinngortitaleriffik</i>	To be invited to workshop #1 by Dundas Titanium (Nuuk) after the pre-hearing period
National Museum <i>Kalaallit Nunaata Katersugaasivia</i>	To be invited to workshop #1 by Dundas Titanium (Nuuk) after the pre-hearing period
Working Environment Authority <i>Sullivinnik Nakkutilliisoqarfik</i>	To be informed via MILT
<b>Other public organizations</b>	
KANUKOKA (National Association of Municipalities)	To be invited to workshop #1 Dundas Titanium (Nuuk) after the pre-hearing period
<b>Workers and employers organizations</b>	
Workers Union, SIK Local department of SIK in Qaanaaq and Ilulissat	To be invited to workshops #2 and #3 by Dundas Titanium (Nuuk) and (Ilulissat) after the pre-hearing period  Interview and discussion with local representatives in Qaanaaq and Ilulissat during baseline/impact assessment phase by NIRAS
Greenland Business Association Sulisitsisut Local department of GE in Qaanaaq and Ilulissat	To be invited to workshops #2 and #3 by Dundas Titanium (Nuuk) and (Ilulissat) after the pre-hearing period  Interview and discussion with local representatives in Qaanaaq and Ilulissat during baseline/impact assessment phase by NIRAS
Greenlandic Employers' Association Nunaqavisissut Suliffiutillit Kattuffiat ( <b>NUSUKA</b> )	To be invited to workshops #2 and #3 by Dundas Titanium (Nuuk) and (Ilulissat) after the pre-hearing period
<b>Organizations related to business and development</b>	
Visit Greenland	To be invited to workshop #2 by Dundas Titanium (Nuuk) after the pre-hearing period

Local Trade Forum (to be checked)	To be invited to workshop #3 Dundas Titanium (Ilulissat) after the pre-hearing period
<b>Organizations related to fishing, hunting and farming</b>	
Fisherman and Hunters Association KNAPK Locally representatives in Qaanaaq (Tobias Simigaaq) <i>Kalaallit Nunaanni Aalisartut Piniartullu Kattuffiat</i> KNAPK	To be invited to workshops #2 and #3 by Dundas Titanium (Nuuk) and (Ilulissat) after the pre-hearing period  Interview and discussion with local representatives in Qaanaaq and Ilulissat during baseline/impact assessment phase by NIRAS
<b>Organizations related to education and training</b>	
School of minerals and petroleum <i>Sanaartornermik Ilinniarfik - Sanilin</i> (Sisimiut)	To be invited to workshop #2 by Dundas Titanium (Nuuk) after the pre-hearing period
Prep-school for young and adults Piareersarfik (Qaanaaq) (Johnny Jensen)	Interview and discussion with local representatives in Qaanaaq and Ilulissat during baseline/impact assessment phase by NIRAS
Greenland Maritime School, Nuuk <i>Imarsionermik Ilinniarfik</i>	To be invited to workshop #2 by Dundas Titanium (Nuuk) after the pre-hearing period
Arctic Technology Centre (ARTEK)	To be invited to workshop #2 by Dundas Titanium (Nuuk) after the pre-hearing period
<b>Representatives from the local community</b>	
Local businesses in Qaanaaq and Ilulissat (GE use of local representative of GE)	Interview and discussion with local representatives in Qaanaaq and Ilulissat during baseline/impact assessment phase by NIRAS
Focus groups of fishermen/hunter in Qaanaaq	Interview and discussion with local representatives in Qaanaaq and Ilulissat during baseline/impact assessment phase by NIRAS
Local tourism operator (Kristian Eipe)	Interview and discussion with local representatives in Qaanaaq and Ilulissat during baseline/impact assessment phase by NIRAS
Local Museum (Navarana Sørensen)	Interview and discussion with local representatives in Qaanaaq and Ilulissat during baseline/impact assessment phase by NIRAS
Local fish factory (owned by Inughuit Seafood and Royal Greenland), (Qulutat Qvist)	Interview and discussion with local representatives in Qaanaaq and Ilulissat during baseline/impact assessment phase by NIRAS
<b>Other civil society organizations</b>	
AVATAQ	To be invited to workshop #2 by Dundas Titanium (Nuuk) after the pre-hearing period
WWF (local representative)	To be invited to workshop #2 by Dundas Titanium (Nuuk) after the pre-hearing period

Transparency Greenland	To be invited to workshop #2 by Dundas Titanium (Nuuk) after the pre-hearing period
ICC – Inuit Circumpolar Conference	To be invited to workshop #2 by Dundas Titanium (Nuuk) after the pre-hearing period
Pikialasorsuaq Commission	To be invited to workshop #2 by Dundas Titanium (Nuuk) after the pre-hearing period
<b>Other relevant stakeholders</b>	
Pituffik (Thule airbase)	To be involved in the scoping phase – proposed to contact Pituffik (Dundas Titanium or NIRAS) via the US Embassy in Denmark
Vectrus (Thule Airbase)	Telephone interview during baseline phase by NIRAS
Royal Arctic Line	Telephone interview during baseline phase by NIRAS
Air Greenland	Telephone interview during baseline phase by NIRAS
<b>Relevant informants</b>	
Kåre Hendriksen, ARTEK (Infrastructure and business survey, 2016)	Telephone interview during baseline phase by NIRAS
Carsten Egevang, (Hunting survey in Qaanaaq, 2015)	Telephone interview during baseline phase by NIRAS
Peter Bjerregaard (Health survey in Avanersuaq, 2010)	Telephone interview during baseline phase by NIRAS

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## 9 EXISTING STUDIES OF RELEVANCE FOR THE PROJECT

Below is a list of studies of relevance for the SIA of the project which NIRAS are aware of:

Bjerregaard, P. og Dahl-Petersen I.K. Sundhedsundersøgelse i Avanersuaq. SIF's, Grønlandsskrifter 23. SIF. 2010

Bjerregaard, P. & Aidt E.C. Levevilkår, livsstil og helbred. Befolkningsundersøgelse 2005-2009, Statens Institut for Folkesundhed. København. 2010.

Boertmann, D., Mosbech, A., Schiedek, D. & Johansen, K. (eds) 2009. The eastern Baffin Bay. A preliminary strategic environmental impact assessment of hydrocarbon activities in the KANUMAS West area. National Environmental Research Institute, Aarhus University, Denmark. 238 pp. – NERI Technical report no. 720.

Boertmann, D. & Mosbech, A. (eds.) 2011. Eastern Baffin Bay - A strategic environmental impact assessment of hydrocarbon activities. Aarhus University, DCE – Danish Centre for Environment and Energy, 270 pp. - Scientific Report from DCE – Danish Centre for Environment and Energy no. 9.

Egevang, C. Fugleobservationer i Nordvandet og lokalviden om fangst, Qaanaaq juni 2013, Grønlands Naturinstitut, 2015.

Henriksen, K & Hoffmann B. Qaanaaq Distrikt – Infrastruktur og erhvervsgrundlag. Center for Arktisk Teknologi, DTU Byg, og Center for Design, Innovation & Bæredygtig Omstilling ved AAU. DTU BYG, Januar 2016.

National Board of Health (Landslægeembedet). Year Report 2011 and 2012.

Nielsen, S.P & Roos, P. Thule-2007 - Investigation of radioactive pollution on land. DTU, 2011

Poppel, et al. SLiCA. Survey of living conditions in the Arctic, 2009

Sundhedsstyrelsen. 2011. Undersøgelse af radioaktiv forurening på landjorden ved Thule og vurdering af stråledoser.