Appendix 1

The Ilmenite Project
Methodology
Appendix to SIA

Overall approach and methodology to the SIA

The purpose of this Social Impact Assessment (SIA) is to identify potential socio-economic impacts from the Dundas Ilmenite Project (positive and negative). The analysis of potential impacts is based on the socio-economic baseline and the project description as described by Dundas Titanium A/S.

The Social Impact Assessment and related engagement process for the Dundas Ilmenite Project has been developed in accordance with the Government of Greenland '*Guidelines on the process and preparation of the SIA report for mineral projects 2016*'.

The SIA has been developed by NIRAS Greenland A/S. NIRAS Greenland is an independent consultant to Dundas Titanium.

The SIA process consists of five steps, for which the approach and methodology is described below:

1. Scoping phase including development of terms of reference
2. Collection of secondary data and development of socio-economic baseline
3. Stakeholder consultation and collection of primary data
4. Analysis of social impacts and identification of mitigation measures
5. Development of benefit and impact plan (input to IBA agreement)

The SIA is based on international best practise, building on guidelines from amongst others IFC and ICMM and Mackenzie Valley Environmental Impact Review Board. The topics covered in the SIA, however, takes their point of departure in the Greenlandic context, including the experiences from mineral projects in Greenland.

1 Scoping phase and Terms of Reference

The purpose of the scoping phase was to identify key potential impacts and relevant aspects to be assessed in the SIA. The scoping formed the basis for the Terms of Reference (ToR).

The ToR for the project was submitted for public consultation in the spring of 2017, presenting the proposed scope of the SIA. During the public consultation, stakeholders sent 13 consultation responses to the TOR for the EIA and SIA. Subsequently, a White Paper was developed and the ToR was updated for final

approval by the authorities.

The scope of the assessment and the scope of issues to be covered in the SIA are described in the ToR.

The approved ToR and White Paper covering EIA and SIA topics are available in English, Danish and Greenlandic on the official public consultation page of the Greenland Government.

1.1 Scope of assessment

The SIA assesses impacts that are directly generated by the Projects operations and ancillary facilities, as well as 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.

Spatial boundaries

Spatial boundaries describe the geographical limits of the possible impacts identified during the scoping.

The license area is located in the municipality of Avannaata. The nearest town and settlements includes Qaanaaq (80 km North of the license area), Siorapaluk (120 km North of the license area). Qeqartat (130 km North-East of the license area) and Savissivik (150 km South East of the license area).

The impacts of the project have been assessed for the following regions:

- Locally: Qaanaaq, Siorapaluk, Qeqartat and Savissivik
- Regionally: Municipality of Avannaata
- Nationally: All of Greenland

For each impact in section 5 of the main report, it is described how the project is assessed to impact at the three areas of interest.

Temporal boundaries

Temporal boundaries describe different stages in the project cycle, as different stages can cause different potential impacts.

The SIA will cover three different stages of the project:

- construction phase (1.5 years)
- operation phase (at least 10 years)
- closure (2 years)

1.2 Scope of issues

In the scoping phase potential impacts from the project were identified. The impacts are listed in Table 1. Potential impacts have been identified based on experiences from similar projects and early stakeholder engagement. The impacts listed in table 1 are surveyed in the SIA.

Table 1: Potential impacts to be assessed in the SIA (source: ToR)

1. Direct employment of Greenlandic workers	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
2. Education and training of Greenlandic workers	2.1: Development of competencies
3. Use of Greenlandic enterprises	3.1: Business opportunities
4. Processing of minerals	4.1 Extra jobs 4.2. Increased public revenue
5. Public revenue	5.1 Personal income tax 5.2 Corporate tax/Royalty
6. Other socio-economic and sustainability matters	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

2 Data collection and research from secondary data

Most of the baseline information presented in this SIA is based on information available from secondary sources. The sources include research reports, relevant studies, official strategies and statistical data from Statistics Greenland. Efforts have been put into presenting the most updated information at the point of writing.

At local level, some primary sources have been used to describe the baseline situation. In the baseline it is indicated when information is received from primary sources.

A list of references is included in the main report.

2.1 Baseline study

Secondary data has especially been used to describe the socio-economic baseline.

The baseline study provides information on demographic as well as 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 Project. 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.

The baseline study has been based on reviews of secondary resources combined with information obtained through qualitative and quantitative methods.

The scope of the baseline study is based on identification of a number of themes which are considered important. Identification of these themes are based on a critical assessment of whether the baseline data collected is relevant to the specific project cf. the Guidelines and on the note from IFC addressing the social dimension of private projects (IFC, 2003). For each theme and sub-theme it has been considered how to organise and analyse the information.

3 Stakeholder consultation and data collection from primary sources

To qualify the data collected through secondary sources, data has also been collected from primary sources.

In-person interviews and meetings have been held during consultation trips to Qaanaaq (February 2017) and Nuuk and Ilulissat (October 2017).

Phone and in-person interviews have been carried out with researchers and key stakeholders in the period December 2018-February 2019.

An overview of stakeholder engagement is included in the main report.

4 Impact analysis methodology and identification of mitigation measures

The impact assessment is based on an assessment of the identified positive and/or negative impact from the project based on a set of social/socio-economic categories with the use of a Risk Assessment Matrix (inspired by Leopold, 1971).

For each identified impact, the risk/chance of the impact have been qualified as far as possible. The qualification takes into consideration the likelihood of the impact to happen (likely, possible or unlikely) and the severity of the impact if it occurs (insignificant, minor, moderate or significant).

The result of the assessment for each impact is presented using the colour codes presented in Table 2. The colour indicates whether the impact is very high, high, medium or low (positive or negative) or not significant. The result is found by combining the likelihood and the magnitude of the impact.

Table 2: Impact assessment codes

		Severity of impact							
		Negative				**Positive**			
Likelihood of impact		**Significant** *High impact with large influence*	**Moderate** *Effects are felt and influence som stakeholders*	**Minor** *Effects are observed*	**Insignifi-cant** *Little to no effect if impact occurs*	**Insignifi-cant** *Little to no effect if impact occurs*	**Minor** *Effects are observed*	**Moderate** *Effects are felt and influence some stakeholders*	**Significant** *High impact with large influence*
	Unlikely *Impact is unlikely to occur*								
	Possible *Impact will likely occur*	High impact	Medium impact	Low impact	Insignificant impact	Insignificant impact	Low impact	Medium impact	High impact
	Likely *Impact is expected to occur*								

Different methodologies have been used to characterise, assess significance and evaluate the impacts for different impact categories. All the tools and

methodologies for impact characterization and prediction are known and accepted by other international SIA guidelines such as the Mackenzie Valley Environmental Review Board, IFC and ICMM.

Public concern (perceived impacts) has been considered when assessing the significance of the impacts.

Criteria used for determination of likelihood is:

Likely:	Consequence very likely to occur, already planned
Possible:	Expected but not planned; has occurred on numerous similar projects; is a common consequence of such a project
Unlikely:	Not expected, uncommon consequence of such projects

The severity of an impact is categorised is described as:

Significant:	Large impact and large influence
Moderate:	Effects are felt, and influence several groups of stakeholders
Minor:	Effects are observed
Insignificant:	Little to no effect on stakeholders, if impact occurs

To determine the severity of the impact, the following factors are taken into consideration:

Extent of the impacts:	Geographical range of the impacts, number and situation (vulnerability, resilience to change, etc.) of the receptors/beneficiaries
Duration and frequency of impacts:	Temporary occurrence of the impacts (short lasting or permanent), wide fluctuations that could disrupt the community over time (boom- and bust periods)
Period of Manifestation:	The impacts could be noticed immediately or over time by the community
Public concerns:	Potentially affected/beneficiary groups in the community, authorities, stakeholders and general public.

4.1 Mitigation measures

For each identified negative or positive impact, a number of mitigation measures are presented.

Mitigation measures for impacts that are assessed to be negative, have the aim to reduce the negative impact.

Mitigation measures for impacts that are assessed to be positive, have the aim to increase the positive impact.

The measures presented in the SIA have been proposed by:

- Stakeholders and authorities during consultations
- SIA consultants based on international experience from similar projects, best practices and their own understanding of the local context and opportunities.

5 Benefit and Impact Plan & Monitoring and Evaluation Plan

A Benefit and Impact Plan (BIP) and a Monitoring and Evaluation Plan (MEP) are presented in the SIA.

The BIP describes the mitigation measures that are identified during the SIA-process. Furthermore, the BIP describes the expected effect of the impacts before and after implementation of mitigation measures.

The MEP describes goals and indicators for the projects potential social impacts, which can be monitored and evaluated if the project materialises.