

White paper

Environmental Impact Assessment [EIA]

Dundas Titanium A/S

Version 06 (December 5th) 2020

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I. Short description of the white paper for the EIA report related to the Dundas Titanium project by Moriusaq

- Content and purpose of the EIA-related white paper

An exploitation permit from 2015/08 provides Dundas Titanium A/S (Dundas Titanium) with the right to explore the minerals within a defined area by Moriusaq in north-western Greenland.

Dundas Titanium presented an application for an exploitation permit for the above-mentioned area to Råstofmyndigheden (Mineral Resources Authority). This application contained a draft for an EIA report, a draft for an SIA report and a preliminary feasibility study (PFS).

The drafts for the EIA report and the SIA report have been through a public hearing. During this public hearing, comments containing questions, statements and project comments were forwarded to the Mineral Resources Authority (mlsa@nanog.gl) and also gathered during meetings for interested parties (stakeholder meetings) held in particularly affected towns and villages.

These were stakeholder meetings with GE and SIK in Qaanaaq, the Local Town Committee in Qaanaaq, Members of the Municipal Council in Avannaata Kommunia, GE and SIK in Ilulissat and members of the Local Settlement Committee in Savissivik. The stakeholder meetings were held as physical meetings in which Dundas Titanium A / S and the company's and the authorities' advisers participated via video and meetings due to the Corona situation (see the section 'Notes regarding the hearing period and the effect of the corona pandemic on the hearing' below). This white paper contains all received written EIA-related hearing comments from private citizens, NGOs and other institutions, which were received in writing by the Mineral Resources Authority during the hearing period, as well as EIA-related hearing comments presented during above-mentioned stakeholder meetings. Based on the EU General Data Protection Regulation (GDPR), questions and comments from specific stakeholder meetings have been anonymised.

The white paper contains answers, comments and statements from Dundas Titanium and Miljøstyrelsen for Råstofområdet (Environmental Agency for Mineral Resource Activities (EAMRA)), as well as specific references to sections within the updated EIA report subject to proposed amendments, in cases where a question and answer gave rise to amendments or additions to the EIA report. Following a request by (EAMRA) and based on the Mineral Resources Act § 3a, art. 4, DCE (Danish Centre for Environment and Energy)/GN (Greenland Institute of Natural Resources) have presented the following comments to the response of EAMRA with regards to the hearing answers presented and related comments from the mining company for those hearing comments which were not presented by DCE/GN during the public hearing period.

It is noted that in some cases, hearing comments and minutes from meetings with interested parties have been summarised in the white paper with a view to extracting those issues that require comments and answers from Dundas Titanium. Forwarded hearing comments and minutes from meetings with interested parties are available as complete, unedited texts on the Naalakkersuisut hearing portal: https://naalakkersuisut.gl/da/H%c3%b8ringer/Arkiv-over-h%c3%b8ringer/2020/Titaniumsprojektet_Pituffik

Apart from those sections explaining oral and written comments received during the hearing period, the document also contains a section dealing with any potential "Additional amendments" to the EIA report as compared to the report used for the public hearing.

This EIA-related white paper only deals with hearing comments regarding environmental aspects and issues presented during the hearing period. A separate SIA-related white paper has been prepared for hearing comments regarding social aspects and issues presented during the hearing period.

Dundas Titanium and Naalakkersuisut would like to give thanks to all citizens, NGOs and other institutions who have participated actively and with enthusiasm in the public hearing process. This will provide the project with a solid foundation within the Greenlandic society.

Notes regarding the hearing period and the effect of the corona pandemic on the hearing.

The hearing material, namely the draft for an EIA report and the draft for an SIA report, were ready to be included in a public hearing on the application for an exploitation permit by the end of April 2020.

However, the Corona pandemic meant that the Greenland authorities had to impose restrictions in the interests of public health and safety, which meant that the public consultation process could not be carried out in the normal way. During April to June, a number of alternative ways of conducting the public consultation were considered.

In June 2020, the result of this work was presented to Naalakkersuisut who decided, in an effort to minimise the risk of COVID-19 spreading, that external meeting participants not living in Greenland were to participate in the meeting through video or telephone conferences. It was also decided that meetings would be held for invited representatives and citizens from particularly affected local communities and representatives from various interest groups within such local communities. In addition, all meeting presentations by Dundas Titanium A/S were prepared as video presentations and were made available at the Dundas Titanium website www.dundas.gl along with all hearing and background materials. Furthermore, the duration of the hearing period was extended from the standard 8 weeks to 10 weeks in order to provide the public with more time to read through the hearing materials and present their questions.

The public hearing period began on June 24th 2020 and ended on September 2nd 2020.

Representatives from Dundas Titanium and company consultants participated in all the meetings for interested parties.

II. Forwarded written hearing answers regarding the draft for the EIA report

1. DCE and GINR¹

No.	Questions/comments	Answer/comment from Dundas Titanium A/S	Answer/comment from The Environmental Agency for Mineral Resource Activities (EAMRA)	Amendment - section or page in the EIA report
1.1	<p>DCE and GN point out the importance of realising that the evaluation of the extent to which the walrus in the fjord of Wolstenholme will be affected is very unclear.</p> <p>DCE and GN have highlighted and focused on problems regarding noise/disturbance of walrus and whales. As noted, the licence area is located close to the North Water Polynya which is an important area for walrus, beluga whales and narwhales, amongst others. These marine mammals can be extremely sensitive to disturbances and noise from marine traffic, machines and similar sources, and it was concluded that the biological knowledge, e.g. in terms of defining those periods in which marine mammals are present and might be disturbed, was</p>	<p>Dundas Titanium (DT) and its environmental consultancy company Orbicon I WSP expect to be implementing a monitoring scheme for the walrus population in the fjord of Wolstenholme as described in the EIA report, section 16.3.4. This research data will be combined with the results of already finalised research on the occurrence of walrus in the fjord system, making up a decision base for evaluation of the need for further studies.</p> <p>It is also noted that both the finalised and planned research projects</p>	<p>It is the assessment of EAMRA that the potential contribution of the project to cumulative impacts must be assessed and included in the monitoring scheme which will be defined in the process of approval at a later stage² following the issue of an exploitation permit. EAMRA requests the mining company to include a section on cumulative impacts in the</p>	<p>See hearing comment no. 4.6 and the related new chapter 11 on Cumulative Impacts in the EIA report.</p>

¹This section deals with hearing comments from DCE and GN. These comments were presented independently of the connection between these two institutions and EAMRA as independent scientific consultants. During the subsequent sections in the white paper, in which EAMRA responds to other hearing comments received, comments from DCE/GN are also included. In such sections (as of section 2), DCE/GN provide comments in their capacity as independent scientific consultants to EAMRA in accordance with the Mineral Resources Act § 3a, art. 4 (see section 2).

² Application from the mining company for approval of exploitation and closure plans as well as so-called activity approvals (articles 19, 43 and 86, respectively, in the Mineral Resources Act).

<p>limited, in particular with regards to walruses. Based on recommendations from DCE and GN, the company has carried out a range of investigations in order to identify the exact summer period in which walruses, beluga whales and narwhales are not present within the area. Such knowledge should allow for activities to be planned in a way that ensures minimum disturbance. Underwater noise from ships sailing to and from the mining area is particularly disturbing to walruses and whales; however, disturbance from land activities, which will take place throughout the entire year, can also be expected.</p> <p>DCE and GN consider it still very unclear whether marine traffic and mining activities on land will affect the population of walruses in the fjord of Wolstenholme. These uncertainties are due to limited knowledge and a lack of scientific studies related to walrus occurrence and utilisation of the fjord of Wolstenholme area as well as population sensitivity to disturbances. It is important to include hunting and fishing disturbances and consider the way in which the overall disturbance from hunting, fishing and mining activities affect walrus occurrence in the fjord of Wolstenholme. Generally, populations subject to hunting are more sensitive to disturbances than populations that are not hunted.</p>	<p>have been or will be carried out in cooperation with hunters from Qaanaaq.</p>	<p>EIA report (see the EIA guidelines, item 2.3).</p> <p>EAMRA acknowledges the importance of marine mammals in relation to the planned activities, and cumulative impacts associated with other activities. Several aspects of this are commented on in this white paper. EAMRA will focus on the uncertainties associated with disturbance of marine mammals in the upcoming approval stages, in particular in the before-mentioned monitoring scheme, and the mitigation measures associated with it.</p> <p>EAMRA will ensure that all relevant parties are included in the monitoring scheme.</p>	
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	<p>With regards to the requirements of obtaining a mining permit, DCE and GN recommend that additional studies – in addition to the monitoring scheme – are carried out and that local operators are included in a dialogue on the planning of combined regulations on both industrial disturbances and hunting activities in order to maintain the walrus population and fishing quotas.</p>			
1.2	<p>Vegetation re-establishment after mining.</p> <p>Digging up black sand means that the upper layer of soil and the vegetation within a large part of the area (8 km²) will be removed. According to the project EIA, residual materials will make up approx. 50% of the amount that has been dug up and will be returned to the mining area as refilling material. In addition, the project EIA states that any top soil that has been removed will be returned once the mining activities have ended. This will happen from the east side of the area towards the west in order to initiate revegetation as quickly as possible. It is noted that although any removed soil will be returned, revegetation is expected to take several decades.</p> <p>As part of the efforts to alleviate the long period of re-establishment, plans have been made to</p>	<p>Vegetation re-establishment in areas where mining activities have been concluded will be initiated as quickly as possible (as described in the EIA report, section 15.5.4). Before digging up the sand, the upper 5-10 cm of the soil will be scraped off. This soil will be stored and returned as top soil once the area has been re-established.</p> <p>In this way, not 50% of the material which has been dug up will be returned, but 93%.</p> <p>If it turns out that the silt material redeposited in the dug up areas has an increased salt content, activities will be implemented in</p>	<p>A plan for vegetation re-establishment studies and actual re-establishment implementation must be drawn up and included in the process of approval at a later stage³ following the issue of an exploitation permit.</p> <p>EAMRA will ensure that this plan is implemented as early as possible.</p>	None.

³ Application from the mining company for approval of exploitation and closure plans as well as so-called activity approvals (articles 19, 43 and 86, respectively, in the Mineral Resources Act).

	<p>develop a regeneration scheme in order to ensure faster vegetation re-establishment following the mining activities.</p> <p>DCE and GN recommend the implementation of such a scheme within the first year of mining activities.</p> <p>Mining of black sand uses salt water in the washing process. An increased salt content in the returned salt can hinder vegetation growth and re-establishment.</p> <p>DCE and GN have recommended re-establishment of the landscape to include depressions in order to allow ponds and marshland to be re-established. Such habitat types feature a variety of characteristic plants and are an important part of the terrestrial environment.</p>	<p>order to leach out the salt. As described in the EIA report, section 15.5.4, one option is to allow inland melt water to flow across the silt layer for a while before returning the soil layer.</p> <p>Once the silt material has been returned, it will be distributed in order to re-establish the natural depression from before the mining activities (as described in the EIA report, section 15.5.4).</p>		
1.3	<p>Minimisation of contamination in connection with wash water discharge.</p> <p>DCE and GN recommend that the authorities carefully monitor discharge of wash water and its components.</p> <p>Sand fractions containing high concentrations of ilmenite will be separated mechanically and without the application of chemicals. During processing,</p>	<p>As discussed in the preliminary monitoring scheme in the EIA report (section 16.3.2), wash water samples will be collected once a week. Such samples will be analysed immediately, e.g. with regards to the heavy metal content. Results will be compared to the Greenlandic limit values and</p>	<p>Before mining activities can commence, the final monitoring scheme will be defined during the process of approval at a later stage⁴ following the issue of an exploitation permit.</p> <p>Amongst other topics,</p>	<p>None.</p>

⁴ Application from the mining company for approval of exploitation and closure plans as well as so-called activity approvals (articles 19, 43 and 86, respectively, in the Mineral Resources Act).

	<p>large amounts of salt water are used for rinsing and cleaning the sand in order to remove small particles. The salt water used for such cleaning is discharged into the sea at a later stage. Such wash water contains both dissolved matters and particle-bound matters. Analyses of the natural content of metals in black sand deposits have shown that the discharges are generally expected to be just below the threshold limit values. However, those analyses also show that in some areas, concentrations of barium, copper and zinc, in particular, in the wash water exceed the recommended threshold limit values (Guidelines for preparing an Environmental Impact Assessment (EIA) report for mineral exploitation in Greenland, EAMRA, 2015). In the EIA report, it is stated that if the concentration of such matters approach the threshold limit values, mining in these areas will be discontinued or metals will be removed from the wash water before discharging it into the sea. The project EIA states that the metal content of the wash water will be monitored throughout the entire mining project period in order to ensure that wash water discharge does not lead to contamination of the fjord.</p>	<p>continuously be forwarded to the authorities.</p>	<p>this scheme will include wash water sampling. As part of the monitoring of the sampling carried out by the company, the scheme will also define which samples must be provided and reported on by the mining company to EAMRA and which samples will be collected by EAMRA, as a control measure.</p> <p>EAMRA is going to ensure that the monitoring scheme considers areas in which increased levels of heavy metals have already been identified in order to make sure that mitigation measures, as described by the mining company, will prevent an exceeding of those limit values defined by Naalakkersuisut.</p>	
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			Those mitigation measures, defined by the mining company in the EIA report, and related implementation procedures must be described in detail during the process of approval at a later stage following the issue of an exploitation permit.	
1.4	<p>Minimisation of the effects of sedimentation/silt-ing up in connection with wash water discharge.</p> <p>Rinsing of sand and subsequent discharging of wash water into the sea will lead to large amounts of fine particles (silt and clay) being discharged. DCE and GN have focused on this discharge in terms of potentially damaging impacts on benthic animals during sedimentation. This topic has been addressed in the project EIA and it is noted that an area of 9 x 1 km along the coast, at depths of 0 to 25 m, will be influenced by sedimentation to an extent that a high level of damage to the benthic animal population is expected. The company reckons that the benthic animals will return within 1 to 4 years and that it might take several decades until the mussel population has recovered completely.</p>	As described in the preliminary monitoring scheme in the EIA report (section 16), Dundas Titanium and its environmental consultancy company Orbicon I WSP will carefully monitor the extent to which discharged sediments distribute themselves on the seabed as expected. In that connection, the depth ratio of the seabed will be measured very precisely before discharge initiation, and afterwards, the thickness and distribution of the sediment layer will be measured continuously (the exact method is described in the final monitoring scheme). If seabed deposits do not correlate with the modelled expectations, prevention	See comments from EAMRA regarding item 1.3 on the monitoring scheme and mitigation measures. Note that a more detailed description of specific mitigation measures also includes documentation/clarification of the efficiency of such initiatives, and that an evaluation of these will be part of the processing procedure for application materials for approval by EAMRA according to articles 19,	None.

	<p>In the EIA report, it is mentioned that discharge monitoring is required and that the discharge strategy must be adjusted in case of sedimentation rates deviating from expected and described levels. Such monitoring must be in place in order to ensure that unexpected effects can be prevented or alleviated.</p> <p>DCE and GN recommend placing a strong focus on such monitoring efforts and including mitigation measures in the environmental management plan.</p> <p>This recommendation also entails that monitoring activities and results must continuously be included into the environmental management plan and be utilised to adjust the mining project.</p>	<p>measures will be implemented. Apart from those prevention measures outlined in the EIA report, section 9.3.4.6, further initiatives will be described in the final environmental management plan for the project.</p> <p>The areas of responsibility in terms of ensuring adherence to the monitoring scheme and continuous forwarding of the results to the authorities are outlined in the preliminary environmental management plan within the EIA report. Prior to the implementation of the mining project, final versions of both the environmental management plan and the monitoring scheme will be drawn up, and both plans are expected to be updated on a continuous basis throughout the course of the project.</p>	<p>43 and 86 of the Mineral Resources Act.</p>	
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2. Greenland Oil Spill Response (GOSR)

No.	Questions/comments	Answer/comment from Dundas Titanium A/S	Comments from DCE/GN ⁵	The Environmental Agency for Mineral Resource Activities (EAMRA)	Amendment - section or page in the EIA report
2.1	With great satisfaction, Greenland Oil Spill Response (GOSR) notes that the licence holder will make an oil spill response contingency plan available for the project port, including trained personnel (EIA draft, pages 27, 32 and 110).	No comments.	No comments	No comments	None.
2.2	It is understood that the risk of an oil spill related accident is expected to be highest in connection with navigation to and from the project port. However, this risk is not considered to differ significantly from the risk of navigation on other maritime routes along the Arctic coasts, including to other towns and villages in Greenland. GOSR does, however, note that an increased level of activity will lead to a higher risk, all things being equal.	No comments.	No comments	No comments	None.
2.3	The EIA report correctly states that clear procedures, oil spill response equipment and trained personnel in the project port are important factors.	Emergency equipment, procedures, personnel training	DCE/GN agree with the comment by GOSR regarding the	Actual plans for oil spill responses, including equipment,	None.

⁵ Following a request by EAMRA and based on the Mineral Resources Act § 3a, art. 4, DCE/GN have presented the following comments to the response by EAMRA with regards to the hearing answers presented and related comments from the mining company.

	<p>Apart from the licence holder providing floating barriers in suitable dimensions for those vessels entering the port (EIA draft, page 110), an exact definition of such oil spill response equipment for on-site use has not yet been provided by the licence holder.</p> <p>GOSR also highlights the need for a minimum requirement to ensure that the licence holder is in possession of the equipment needed for cleaning up and storing potential oil spills, and such equipment must be made readily available in the project port. Equipment for cleaning up and storing might include skimming systems, pumps and a sufficient tank capacity.</p> <p>GOSR recommends including a requirement to ensure that vessels arriving at the project port have floating barriers on board in case of off-shore leakages. Furthermore, requirements with regards to preventative application of floating barriers during bunkering in the project port should be considered.</p> <p>Finally, GOSP mentions that training in oil spill response requires continuous follow-up procedures and repetition of such exercises. As an example, an</p>	<p>etc. will be described in the <i>Spill Response Plan</i> as part of the project <i>Health, Safety and Environmental Management Plan</i> which will be drawn up by Dundas Titanium before project implementation.</p> <p>This document will include the recommendation that vessels arriving at the project port are required to have level 1 equipment for oil spill response on board, e.g. a sufficient number of floating booms for smaller oil spills and absorption pads etc. that will confine a spill until further</p>	<p>presence of sufficient oil spill response equipment and recommend that the contingency plan for oil spills, which is drawn up by the company, must contain a list of oil spill response equipment to be positioned in relevant places such as within the port, by the fuel storage area etc.</p> <p>Furthermore, DCE/GN recommend that agreements are entered into with companies that are able to assist with oil spill response activities and that such agreements must define the maximum response time to ensure that assistance is provided within the <i>window of opportunity</i></p>	<p>response procedures etc., will be included in the process of approval at a later stage⁶ following the issue of an exploitation permit.</p> <p>EAMRA will ensure focus on a sufficiently comprehensive and competent oil spill response plan and would like to thank GOSR for its contribution.</p> <p>EAMRA recognises the comment by DCE/GN on the Navigational Safety Investigation (NSI) drawn up by the mining company, noting that commenting on the NSI is not part of the EIA process and is</p>	
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⁶ Application from the mining company for approval of exploitation and closure plans as well as so-called activity approvals (articles 19, 43 and 86, respectively, in the Mineral Resources Act).

	<p>IMO level 1 certificate (First Responder) is only valid for 3 years as of certification date.</p>	<p>assistance arrives at the scene.</p> <p>In addition, Dundas Titanium has entered into a dialogue with GOSR and other suppliers of oil spill response materials regarding on-site and emergency services.</p>	<p>with regards to the efficiency of the oil spill response methods.</p> <p>A similar recommendation was put forward in connection with the comments by DCE/GN on the Navigational Safety Instructions (NSI) report drawn up by the mining company (note dated August 31st 2020).</p> <p>The company has explained to GOSR that such negotiations have already been initiated.</p>	<p>not final before the process of approval at a later stage following the issue of an exploitation permit.</p>	
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3. Aalisarnermut, Piniarnermut Nunalerinermullu Naalakkersuisoqarfik (APNN) / Departementet for Fiskeri, Fangst og Landbrug (The Ministry of Fisheries, Hunting and Agriculture/APNN)

No.	Questions/comments	Answer/comment from Dundas Titanium A/S	Comments from DCE/GN ⁵	The Environmental Agency for Mineral Resource Activities (EAMRA)	Amendment - section or page in the EIA report
3.1	Basically, comments on the current hearing will be in line with the hearing answer from July 15th 2020 from DCE and GN. This is particularly true with regards to the issue of disturbance of walrus and other marine mammals related to the positioning and activities of the mining project.	Reference is made to hearing answer no. 1.1 from DCE and GN, as well as the hearing answers to the questions from the World Wildlife Fund WWF (no. 15).	See hearing comment no. 1.1.	See the EAMRA comment on hearing comments no. 1.1-1.4.	None.
3.2	<p>APNN notes that the home rule act no. 20 from October 27th 2006 on walrus protection and hunting is being reviewed and that stricter rules on protection zones in haul-out areas are expected.</p> <p>Furthermore, APNN underlines the importance of this feeding area for walrus based on a large amount of benthic animals, particularly mussels.</p> <p>In a hearing answer from March 2019 related to the hearing on the project description and comments on the SIA process, APNN described those issues as being of particular interest and importance</p>	Dundas Titanium will adhere to valid acts and rules on walrus protection at any time, including any tightening of the rules on protection zones in haul-out areas. However, it is noted that no haul-out areas for walrus have been	<p>DCE/GN agree with the comment by APNN and Canadian experts with regards to the importance of the seabed as a potential feeding area for walrus.</p> <p>The EIA for the mining project handles this topic and the</p>	EAMRA notes that the legal provision for this act is based on Landsting Act no. 29, dated December 18, 2003 (Nature Protection Act), and that this act makes an exception for mineral resources activities.	None.

	<p>to APNN. Amongst other things, such issues were concerned with the surrounding animal life, including seabirds, reindeers and marine mammals. Some of these comments are included in the SIA report belonging to the current hearing request (pages 109 and 110) and for this reason, the company is expected to still be aware of these issues.</p>	<p>identified within the project area.</p> <p>Dundas Titanium is aware that the fjord of Wolstenholme is an important feeding area for walruses. Field research prior to the drawing up of the EIA report have shown, however, that no important mussel banks are located in the sea in front of the project area.</p> <p>For this reason, silt discharge to the seabed is not expected to influence the feeding options for walruses inside the fjord. Both research projects on the distribution and</p>	<p>following description is found in the English version of the EIA report on page 106: “An area just west of the Ilerlak delta with high density and biomass of mussels (figure 25) is the only significant potential feeding area for walruses close to the project area (that is within 5-8 km). This mussel bank is outside the area modelled to be impacted by high turbidity or sedimentation from the discharge of silt (see figure 27).”</p> <p>Based on limitations related to modelling of particle distribution (EIA version in English, page 102, background report on “Modelling of the discharge of</p>	<p>However, EAMRA agrees with the comment by APNN on the overall importance of the area for the walruses. Any disturbance of the walruses or any impact on their feeding or habitat remain a focus area for EAMRA during the entire approval process⁷.</p> <p>EAMRA refers to comments on hearing comment no.1.4 on the monitoring scheme and mitigation measures.</p> <p>EAMRA wants to ensure that relevant interested parties, including APNN, will be involved in the content of the monitoring scheme</p>	
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⁷ Application from the mining company for approval of exploitation and closure plans as well as so-called activity approvals (articles 19, 43 and 86, respectively, in the Mineral Resources Act).

		<p>number of walruses, and the occurrence of mussels on the seabed, are included in the monitoring scheme which will be initiated upon project kick-off (see the EIA report, section 16).</p>	<p>fine-grained sediments to the coastal waters at Moriusaq, North Greenland”, and the DCE/GN minute dated November 18, 2019), DCE/GN recommend, as previously mentioned (e.g. minute dated January 30, 2020, hearing answer), that the monitoring scheme for walruses and discharge of fine particles through wash water should be sufficiently effective and be able to: 1) identify any unexpected impacts and impact levels, and 2) regulate and alleviate mining activities with regards to impacts cascading through the food chain (e.g. from benthic animals to walruses) at a regional level.</p>	<p>before finalisation of the scheme.</p>	
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			In addition, it is recommended (as previously mentioned) that the prevention measures must be in place prior to initiation of the mining activities. As an example, this includes testing a range of nozzle heads and modelling their particle distribution features beforehand in order to document the alleviating effect of exchanging such items (see also 1.4).		
3.3	The company is asked to consider those beluga whales and narwhales that gather and pass through the North Water Polynya. Furthermore, reference is made to the hearing answer by DCE and GN with regards to beluga whales and narwhales, particularly in terms of their comments on underwater noise and general disturbances.	Conditions related to beluga whales and narwhales have been researched and described in the EIA report and will also be included in future environmental monitoring efforts.	See hearing comment no. 1.1.	See the EAMRA comment on hearing comments no. 1.1-1.4. EAMRA adds that the adjustment of the approved sailing period to marine mammal movements is considered a mitigation	None.

		<p>With regards to the mining project, noise from ships entering the project port are particularly expected to create potential problems. However, both beluga whales and narwhales will have passed the mining area whilst moving towards the northwest in spring before marine traffics starts in the middle of July. In autumn, most of the narwhales select a route east of the sailing route leading to the mine, but beluga whales are expected to cross this sailing route in autumn. In order to minimise disturbance and underwater noise, all ships must sail at reduced</p>		<p>measure. Procedures for defining the sailing period and other relevant issues must be described and will be evaluated by EAMRA as part of application material processing with regards to approval in accordance with articles 19, 43 and 86 in the Mineral Resources Act.</p>	
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		<p>speed (max. 8 knots) (see also hearing answer 4.12).</p> <p>In addition, a comprehensive monitoring scheme, including the placement of sensors in the sea for registration of passing whales and measuring of ship-induced noise (see the EIA report, section 16) will be implemented.</p>			
3.4	<p>APNN points out to the company that there is a risk of encountering polar bears.</p> <p>As a matter of form, however, it is noted that any activities in Greenland must take into consideration all valid guidelines and precautionary measures in areas where polar bears might occur. This is particularly relevant in north-western Greenland. APNN forwarded the guidelines for polar bear encounters to the company.</p>	<p>Dundas Titanium is aware of this risk and wants to ensure that the employees adhere to all company safety instructions related to this issue.</p>	No comments.	No comments.	None.

4. World Wildlife Fund WWF

No.	Questions/comments	Answer/comment from Dundas Titanium A/S	Comments from DCE/GN ⁵	The Environmental Agency for Mineral Resource Activities (EAMRA)	Amendment - section or page in the EIA report
4.1	Focus on limited fuel consumption is the only climate-related initiative described by the company in the EIA report.	Dundas Titanium are looking at options for alternative sources of energy (solar, wind, water) and their practicability, feasibility and profitability with regards to this project. Furthermore, the company is running an optimisation process that includes possibilities of reducing fuel consumption. Some of the other climate-related initiatives, which have already been included in the project or are being considered, include the use of surplus heat from processing facilities for heating offices and residential areas, waste processing facilities, waste water facilities, module-based infrastructure with options for easy reuse after project finalisation, the use of passive energy houses/buildings etc.	No comments.	EAMRA recommends that the mining company make above-mentioned climate-related initiatives clear within the EIA report.	Section 8.3.2 of the EIA report describes how the company plans to limit fuel consumption as much as possible by using Best Available Technology (BAT). The new section 3.22 is added to the EIA report in order to clarify the initiatives with regards to climate impact reduction.
4.2	World Wildlife Fund WWF would like to urge Naalakkersuisut to require the	Dundas Titanium has a positive attitude towards providing reports	DCE/GN recommend that a	EAMRA notes that plans for	None.

	<p>company to provide reports on the development of CO₂ emissions from the project on a continuous basis and oblige the company to work specifically on reducing fuel consumption and emission of CO₂ and particles (black carbon).</p> <p>World Wildlife Fund WWF also notes that this project alone is going to increase the CO₂-emission in Greenland by 17.5%. Greenland has decided not to join the Paris agreement on the grounds that they need space for economic development of new sectors and that such developments will automatically lead to an increase in emission of greenhouse gases. World Wildlife Fund WWF would like to urge Naalakkersuisut to keep taking climate change seriously and focus on finding ways to limit CO₂-emissions from activities such as this one.</p>	<p>on CO₂ emissions from the project on a continuous basis and will work on limiting fuel consumption and emission of CO₂ and particles (black carbon). Some of these optimisation efforts have already been initiated and will continue throughout the entire project period.</p> <p>Amongst other things, the project employee responsible for environmental issues will be in charge of ensuring the maximum reduction of CO₂ emissions by continuously evaluating the possibilities of implementing new climate-related and environmental initiatives.</p> <p>If CO₂-emissions from the project activities on land are combined with emissions from bulk carrier ships and flights, the total CO₂-emission amounts to 91,398 tons per year. This is going to increase the emissions in Greenland by 17.5%.</p>	<p>permit for mining activities must include specific requirements on fuel storage and fuel consumption reporting on a continuous basis. Based on fuel consumption figures, the emission of CO₂ from the mining project can be calculated and tracked.</p> <p>In general, DCE/GN recommend that a permit for mining activities must include requirements to ensure that only diesel oil is used and that all facilities and machinery</p>	<p>fuel and reporting are included in the process of approval at a later stage⁸ following the issue of an exploitation permit.</p> <p>Here it is added that all administration and regulation of mineral resources activities are subject to "Best Available Technology" and "Best Environmental Practices" (BAT and BEP) in accordance with article 52 in the Mineral Resources Act.</p>	
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⁸ Application from the mining company for approval of exploitation and closure plans as well as so-called activity approvals (articles 19, 43 and 86, respectively, in the Mineral Resources Act).

			must fulfil EU or similarly strict environmental standards.		
4.3	The report highlights that the company expects the need for 11 sailing trips per year and that such trips will be carried out by Royal Arctic Line, the company already in charge of goods shipping along the western coast of Greenland.	These 11 sailing trips, carrying the produced ilmenite, will involve "bulk carriers". A shipping company has not yet been chosen for this task. Apart from those 11 bulk carrier trips, once mining has started, container ships will also be bringing supplies, spare parts etc. (presumably, such tasks will be carried out by Royal Arctic Line as they are already providing services in this region). Furthermore, fuel will be delivered by means of tank vessels (1-2 vessels per year).	In terms of marine traffic related to the mining project, DCE/GN generally recommend that no heavy fuel oil (HFO) is used or transported in Greenland. This also applies to the new hybrid oils (low sulphur fuel oil, LFSO) until more is known about its fate and impact on the sea. See the DCE report (dce2.au.dk/pub/TR163.pdf). A similar recommendation was expressed in	EAMRA notes that the EIA report includes inconsistent information with regards to the number of sailing trips needed (11 in the section on emissions and in the key figure table, and 14 in the section on underwater noise). EAMRA request the mining company to make the text uniform in order to ensure that the total number of expected sailing trips is communicated correctly every time this	The number of sailings trips with bulk carriers needed to transport the mining product away from the mine will be 11. In addition, a number of ships will bring fuel, supplies, spare parts etc. to the mine. Such trips will probably be carried out by ships already bringing fuel and goods to towns and villages in north-western Greenland – i.e. ships from Royal Arctic

			<p>connection with the comments by DCE/GN on the NSI report from the company (minute dated August 31, 2020) in which the following was noted: "The ships should comply with MARPOL regulation 14 regarding low sulphur oxides. This means that when ships are operating within the 200 nm limit from the coast, engines, boilers and other consumables running on fuel should shift to fuel with 0.5% (SOx) or less. When operating within Canadian or US waters, the fuel should be</p>	<p>topic is mentioned. See hearing comment no. 4.4. regarding comments by DCE/GN on heavy and low sulphur fuel oil (HFO and LFSO). EAMRA acknowledges the comment by DCE/GN on ballast water, adding that this topic is considered sufficiently covered within the EIA report. See comments by EAMRA on hearing comment no. 2.3. regarding the NSI report. EAMRA notes that the Danish Maritime</p>	<p>Line and Polar-oil. Therefore, these ships have not been included in emission calculations and in the key figure table. In terms of planned research into underwater noise from ships arriving at the port by Morisuaq, it is expected that noise from all ships will be included. For this reason, this number has been defined as 14 in section 9.3.6.3 on underwater noise: 11 bulk carriers + 3 supply vessels.</p>
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			<p>changed to fuel with 0.1% (SOx) or less.”</p> <p>In that connection, DCE/GN recommended that the NSI report must be extended to include procedures for treatment of ballast water in order to minimise the risk of introduction of invasive sorts in accordance with the IMO Ballast Water Management Convention and as added to Greenlandic legislation in 2020.</p> <p>Furthermore, DCE/GN recommend that the company must ensure that all ships involved in</p>	<p>Authority is the relevant authority with regards to vessel requirements and that EAMRA can only define environment-related requirements to the mining company in this respect. The principles behind BAT and BEP still apply in this connection (see hearing comment no. 4.2).</p>	<p>In order to clarify this information, a row has been added to the key figure table for the project (table 1 in the EIA report) to show that per year, 3 supply vessels are expected in addition to those 11 ships that will transport the product.</p>
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			the mining project fulfil strict, international standards, notwithstanding that the latest rules might make exceptions for older ships.		
4.4	<p>World Wildlife Fund WWF will urge Naalakkersuisut to make a decision in principle stating that the most polluting fuel types (HFO, heavy fuel oil) must not be used in connection with mining projects.</p> <p>HFO is a residual product from crude oil refinement which is cheaper than other fuels. HFO contains sulphur and is very viscous, meaning that it creates a larger negative impact on the environment and the climate during sailing trips. It also means that the oil is difficult to collect and clean up in case of spillages.</p> <p>IMO focuses on phasing out the use of HFO and central players such as Dansk Rederiforening (Danish Shipowners' Association) have suggested a ban of the use of HFO in</p>	<p>It is expected that the International Maritime Organization (IMO) and its member states (including Greenland) are going to ban the use of heavy fuel oil (HFO) in Arctic waters as of 2024.</p> <p>Dundas Titanium wants to ensure that those shipping companies servicing the project will adhere to all valid rules within this area.</p> <p>It is also noted that no HFO will be used in connection with any activities on land.</p> <p>The estimated CO₂-emission, based on HFO, amounts to 5,340 tons of CO₂ per year for bulk carrier ships.</p>	See comments by DCE/GN on 4.2. and 4.3.	EAMRA focuses on environmental issues related to HFO, including both utilisation and transport of HFO. EAMRA is going to consider this request.	Text within the EIA report might create the erroneous impression that those ships collecting the mining product from the mine will be fuelled by diesel oil and not by HFO (Heavy Fuel Oil).
				EAMRA notes that the use and transport of fuel will be included in the process of approval at a later stage ⁹	The expected HFO fuel types the ships will

⁹ Application from the mining company for approval of exploitation and closure plans as well as so-called activity approvals (articles 19, 43 and 86, respectively, in the Mineral Resources Act).

	<p>Arctic areas. World Wildlife Fund WWF participates in current processes hosted by both IMO and Arktisk Råd (Arctic Council) in order to ensure HFO-free Arctic areas, and we have joined other green organisations in an alliance against HFO. Through this alliance, we urge all industrial players to lead the way and sign the Arctic Commitment. The list still has room for companies such as Blue Jay Mining and Royal Arctic Line.</p> <p>World Wildlife Fund WWF would like to thank Naalakkersuisut for having evaluated the socio-economical, environmental and climate-related consequences of a ban on the use of HFO, and we urge Greenland to actively support such a ban within all relevant international forums.</p> <p>Shipping is also on the Arctic Council agenda; however, the WWF Arctic Council Scorecard from 2019 highlights the fact that there is still room for improvement.</p> <p>This report is based on utilisation of Diesel Fuel Arctic (DFA) with a total emission of 5,730 tons of CO₂ per year.</p>			<p>following the issue of an exploitation permit.</p> <p>The mining company has during the white paper process, identified information concerning the planned fuel types for shipping activities which may give rise to an erroneous impression of the type of fuel planned for use. The mining company has accounted for the nature and scope of the information.</p> <p>It is the assessment of EAMRA, that the revised information must be assumed not to</p>	<p>use, including their sulphur content, are described in section 8.3.2 and the calculation of CO₂ emissions can be found in section 8.3.3.</p> <p>Dundas Titanium A/S will be subject to all applicable rules and regulations at any given time for marine navigation and shipping in Greenlandic waters, including also future IMO rules that Greenland decides to join.</p> <p>The ships' estimated fuel consumption</p>
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				<p>cause significant change in the expected environmental impacts of the planned activities related to the fuel type, as they are presented in the EIA. Reference is made to the mineral resources act section 73 (2). On account of this, it is the assessment of EAMRA, that the revised information can and must be incorporated in the final EIA, and thus that the revised information shall be approved as part of the final EIA.</p>	<p>using HFO and the emission of CO2 and soot (Black Carbon) are adjusted and described in section 8.3.3.</p> <p>Finally, section 9.4.2 on oil spills now contains detailed descriptions of the risks and consequences of discharging HFO into the sea.</p> <p>Based on the revised information and given that a spill of heavy fuel oil (HFO) may have major and potential major negative consequences for</p>
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				EAMRA requests the mining company to clarify the expected fuel type of the project, including the hereto derived clarifications and corrections associated with emissions and oil spill risks.	the environment relative to a spill with diesel, the significance of a potential impact is raised from very low to low.
4.5	The (EIA) report describes the planned reduction of the sailing speed to 8 knots in Pikialasorsuaq/the North Water Polynya, defined as the last 150 km prior to arriving at the project port. World Wildlife Fund WWF would like the report to include references to and a detailed description of the reason why 8 knots is the optimal sailing speed within this specific area.	Such calculations are available in the technical background report <i>Potential effects of underwater noise from shipping on marine mammals</i> . This report describes how noise levels from ships correlate with speed in general, arguing that a speed reduction in areas with vulnerable marine mammals will reduce noise levels and the risk of disturbance. However, a reduced speed also implies that the ship will spend more time in the area, possibly causing a longer-lasting disturbance to the marine mammals. By calculating the	The explanation of the calculation of the Sound Exposure Level offered by the company is not correct and does not correlate with the EIA for this mining project. DCE/GN have been informed that noise production from those ships sailing towards the	EAMRA notes that the topic of underwater noise and optimal sailing speed will be included in the monitoring scheme proposed by the mining company and in associated plans for mitigation measures. Further details will be defined during the	No changes in the EIA report. The comments from DCE/GN will be taken into account when an environmental monitoring program is developed for the project.

		<p>cumulative Sound Exposure Level (SEL), it is possible to consider this factor and identify the speed that leads to the largest possible reduction in noise impact from any given ship. Using such calculations for the bulk carriers involved in the project, it was found that the largest reduction is achieved when the ship moves with a speed of approx. 8 knots.</p>	<p>mining project report have not yet been modelled due to lacking knowledge of ship types to be used at the time of drawing up the EIA report. The EIA report in English states the following: “Underwater noise from shipping is linked to speed, with higher speeds generally generating higher noise levels (see Orbicon 2019c for a more detailed discussion of this). However, travelling slower will cause a ship to spend more time in an area, potentially</p>	<p>process of approval at a later stage¹⁰ following the issue of an exploitation permit. See also hearing comment no. 1.4 on this topic.</p> <p>EAMRA notes that the mining company will address the comment from DCE/GINR in the monitoring programme.</p>	
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¹⁰ Application from the mining company for approval of exploitation and closure plans as well as so-called activity approvals (articles 19, 43 and 86, respectively, in the Mineral Resources Act).

			<p>leading to a longer-lasting disturbance of marine mammals. By calculating the cumulative Sound Exposure Level (SEL) or the integration of the noise over a specific duration, it is possible to take this into account and to also calculate the speed that will lead to maximum net reduction in SEL for a given ship. Available data does not permit this for the bulk carriers that will call at the project port (or other ships arriving to the port) (the text has been italicised by DCE/GN). However, another</p>		
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			<p>study has found that the largest reduction in cumulative sound exposure (for a container ship) is when travelling at 8 knots (see Orbicon 2019c). Although the operational speed for a bulk carrier is slower than for container ships, it is recommended to use the same speed reduction until data on the source level of ships approaching the project port is available (see monitoring scheme, section 15.3)." <i>[new section numbering in the updated EIA report: afsnit 16.3]</i></p>		
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			<p>The EIA report also includes a description of how real time data collection for underwater noise will be carried out as input for the optimisation of ship speed limits, and this information is also mentioned in the explanation offered by the company regarding white paper hearing comment no. 4.9. As such, DCE/GN has previously recommended (e.g. minute dated July 10, 2019) that this noise modeling and calculation of the optimal ship speed with regards to noise production</p>		
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			and time spent in the North Water Polynya must be carried out as soon as information on the types of ships to be used in the mining project becomes available or as soon as real time noise recordings for the project are available.		
4.6	World Wildlife Fund WWF also highlights the importance of the EIA report relating to the cumulative consequences of marine traffic in the area. The project involves an estimated 11 sailing trips per year which must be considered in comparison to the current 17-25 sailings trips taking place. As such, the project will lead to a significant increase in the number of ships passing parts of Pikialasorsuaq/the North Water Polynya (56-82%). In this connection, World Wildlife Fund WWF is wondering why the report states that a reduced speed	Marine traffic to and from the project port will lead to an increase in the number of ships crossing parts of the North Water Polynya. The reason why the disturbance level caused by ships involved in the project is still estimated to be <i>low</i> is partly that all project-related ships sailing through the North Water Polynya will be sailing at reduced speed (8 knots), meaning that the disturbing underwater noise will be markedly reduced (see section 9.3.6.3 in the EIA	DCE/GN agree with WWF that although an increased number of ships crossing the North Water Polynya in connection with the mining project has been mentioned in the EIA report by the company, and the mitigation measure is	EAMRA refers to hearing comment no. 1.1. and requests the company to include marine traffic in the section on cumulative impacts.	A new chapter 11 on Cumulative Impacts have been added to the EIA. The cumulative impacts is addressed and discussed in this new chapter.

	<p>of 8 knots leads to the risk of disturbing the marine mammals being low.</p>	<p>report and the technical background report <i>Potential effects of underwater noise from shipping on marine mammals</i>). In addition, during the time period when such ships will be sailing (from the middle of July to the middle of October), relatively few marine mammals will be present along the sailing route in the North Water Polynya (see also the answer to question 4.12 for further details).</p>	<p>reduced speed (whereby modelling of the optimal speed related to impact minimisation has still to be carried out), the cumulative impact of marine traffic to the Thule base, as an example, and to the project port has not been evaluated in the EIA report. In a previous minute (dated July 10, 2019), DCE/GN recommended the inclusion of an overall evaluation in the EIA report.</p> <p>DCE/GN recommend that such an evaluation must be included in the EIA report</p>		
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			for the mining project or that the cumulative impacts are included in the drawing up of the monitoring scheme and the environmental management plan for the mining project.		
4.7	World Wildlife Fund WWF considers a reduced sailing speed to be a way of reducing noise and disturbances; however, we suggest to also define certain requirements with regards to where and when to sail in order to reduce negative impacts as much as possible. World Wildlife Fund WWF urges Naalakkersuisut to also request that the company must present a description of the expected sailing route, considering particularly noise-sensitive marine mammal species in the area. Such a description is missing in the current report.	<p>The expected sailing route has been described and presented to the authorities within the <i>Navigational Safety Investigation (NSI)</i> study that has been drawn up for the project. The sailing route through the North Water Polynya has also been shown in the technical background report <i>Potential effects of underwater noise from shipping on marine mammals</i>.</p> <p>The route follows the western coast of Greenland and continues east of Saunders Island but does not enter the central part of the North Water Polynya. Sailing will only take place during the ice-free</p>	No comments.	<p>EAMRA refers to the answer related to hearing comment no. 3.3.</p> <p>EAMRA notes that the mining company is going to add a map of the planned sailing route.</p> <p>EAMRA wants to ensure that noise-sensitive species are considered and that</p>	A map showing the planned sailing route through the southeastern corner of the North Water Polynya has been added to section 9.3.6 in the EIA report.

		<p>period from the middle of July to the middle of October.</p> <p>In their role as consultants to the Greenlandic authorities, DCE and GN have commented on the NSI study, providing the following conclusion regarding the sailing route: <i>“DCE/GN assess that the risk of disturbing marine mammals is minimized when using routes [in the NSI] and a time window for marine traffic to the mine site as defined (mid-July to mid-October)”</i>.</p> <p>The sailing periods correlate with the time when the walrus have moved from this area to Canadian waters (see section 9.3.6.1 in the EIA report) and is also after the time when both narwhales and beluga whales have passed the area in spring on their way to the northern areas (see section 9.3.6.3 in the EIA report).</p> <p>Therefore, any potential disturbance to marine mammals caused by marine traffic related to the mining project mainly involves a few narwhales and only during a</p>		<p>such considerations are included in the monitoring scheme and the associated mitigation measures. See also comments related to hearing comment no. 4.5.</p>	
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		<p>short period of time in autumn in some years, a larger number of beluga whales will be crossing the sailing route in front of Moriusaq (see section 9.3.6 in the EIA report).</p> <p>In order to minimise the disturbance of such whales (and other marine mammals), all ships related to the mining project are required to reduce their speed to 8 knots when sailing through the North Water Polynya.</p>			
4.8	<p>World Wildlife Fund WWF would like one of the goals of the environmental scheme behind the project to be the safeguarding of a sound image of the area by means of hydrophones. In this way, a sound image of the area before, during and after the project could be obtained; a clear picture of the noise caused by ships could be secured; and such recordings could be used for whale identification in the area afterwards.</p>	<p>As described in section 16.3.4. in the EIA report, additional data will be collected with regards to the times when marine mammals pass the area, including information on species and number of marine mammals. Such information will be collected using data logs positioned in the sea (SoundTraps). The measurements will include ship-related noise. Experts in underwater noise measuring are going to assist in developing the noise monitoring scheme. Such measurements will include all ships passing the area (not only ships entering and leaving</p>	<p>See comments by DCE/GN on 4.5.</p>	<p>See the EAMRA comments related to hearing comment no. 4.5 and 4.7.</p>	<p>None.</p>

		the project port) with the potential consequence of being able to refining the speed reduction level for project-related ships to reduce the disturbance of marine mammals even further.			
4.9	<p>Walrus depend on sea ice or peaceful haul-out areas in order to rest. World Wildlife Fund WWF would like Naalakkersuisut to initiate the protection of the areas surrounding the historical haul-out sections in the hope of slowly making walrus return to those areas.</p> <p>World Wildlife Fund WWF is worried about the project consequences in terms of the local animal life, particularly with regards to narwhales and walrus. The EIA explains that: "Based on the currently known occurrence of walrus in the fjord of Wolstenholme, the impact of noise and visual disturbances from the planned activities is regarded as low. But based on the unknown future of potential walrus hunting within the fjord system, and as changes in fjord ice conditions within the next few years might lead to walrus going to resting areas closer to the project area, the impact of such disturbances is regarded to be at a medium level." (Highlights by World</p>	If Naalakkersuisut decides to protect these historical haul-out areas for walrus within the project area, Dundas Titanium will obviously work to ensure that those areas are not disturbed by project activities.	No comments.	EAMRA refers to hearing comment no. 3.2.	None

<p>Wildlife Fund WWF). On the Greenland Red List 2018 (Boertmann, D. and Bay, C.), the walrus population in the North Water Polynya is regarded as being vulnerable. This evaluation is based on data that shows a declining population by close to 30% until the current administration system based on hunting quotas was introduced in 2005. As of that time, the population has been recovering slightly. Overall, walruses are threatened by climate changes but also by hunting, noise and disturbances. The western part of Pikialasorsuaq/North Water Polynya is home to a range of active haul-out areas for walruses but on the Greenlandic side and all the way down the western coast of Greenland, the walruses have been driven away from their historical haul-out areas due to previous intensive hunting activities. Walruses depend on sea ice or peaceful haul-out areas in order to rest.</p> <p>World Wildlife Fund WWF reckons that the potential impact of land activities and marine traffic to and from the mine on the walrus population is still very unclear, particularly with regards to the fjord of Wolstenhome which is located close to the mine. Knowledge of the importance of the fjord of Wolstenholme to the walrus</p>				
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	<p>population in the North Water Polynya is still limited and walrus sensitiveness towards noise and disturbances has not yet been investigated sufficiently. Disturbing hunting activities in this area add to such uncertainty.</p> <p>The population decreased significantly before 1960 and kept decreasing until 2005 when hunting quotas were introduced.</p> <p>The most recent population count was carried out in April 2014 and showed a total of 2,544 animals (95% CI 1513-4279). Some of these animals must be non-sexually mature. This estimate of the winter population is higher than the available estimates of the summer populations.</p>				
4.10	<p>World Wildlife Fund WWF suggests that Naalakkersuisut requires the company to carry out new studies in order to ensure a better evaluation of the cumulative consequences for walruses within the area. Naalakkersuisut should require that the local population must be involved in such studies in order to ensure that the studies reflect the hunters' knowledge and consider their worries with regards to the project.</p>	<p>Dundas Titanium declares that walrus counting by aircraft in the fjord of Wolstenholme is scheduled to take place in the beginning of 2021. This research will bring about even more precise information on when animals are present in the fjord, and in which parts (see section 16.3.4 of the EIA report). In line with previous walrus research, future counting tasks by aircraft will</p>	No comments.	EAMRA refers to hearing comment no. 1.1.	None

		be carried out in cooperation with hunters from Qaanaaq.			
4.11	<p>The population of narwhales and beluga whales is very important to the Qaanaaq locals. The EIA report contains a description of whale migration patterns for both narwhales, beluga whales and bowhead whales. The EIA report states that only a few narwhales have been identified in the fjords by the southern coast of Steensby Land, concluding that most of the narwhales move around in the central part of the North Water Polynya.</p> <p>In this connection, World Wildlife Fund WWF would like to refer to the scope of the EIA report which states that:</p> <p>”Several groups of narwhales have been observed close to the sailing route proposed to and from the mining area (figure 11). For this reason, the topic of potential conflicts with marine traffic to and from the project area must be dealt with in the EIA report.” (page 20). Plotted narwhale observations from 2009 and 2010 do not necessary show that narwhales often move around in the central part of Pikialasorsuaq/the North Water Polynya.</p>	<p>The potential disturbance of marine mammals are discussed in the EIA report, section 9.3.6. It is stated that narwhales and beluga whales pass the project area in spring on their way north before project-related marine traffic begins in the middle of July. Whilst most narwhales spend the summer in Inglefield Bredning north of the project area, the majority of beluga whales are found in Canadian waters.</p> <p>In autumn, a few narwhales pass the project area on their way south and in some years, a larger number of beluga whales cross the sailing route in front of Moriusaq going south (section 9.3.6 in the EIA report).</p> <p>Probably, those groups of narwhales observed in the North Water Polynya in front of the planned mining area by Steensby Land in May and June 2009 and 2010, as described in a research report by</p>	See hearing comment no. 1.1.	EAMRA refers to hearing comments no. 1.1, 4.5 and 4.7.	None

		<p>Heide-Jørgensen <i>et al.</i> 2013¹¹, were on their way to Inglefield Bredning. As explained above, these whales will not be disturbed by marine traffic as the ships will only start sailing once the whales have already left the area.</p> <p>See also the answer in 4.12 which includes further information on the potential disturbance of marine mammals by marine traffic.</p>			
4.12	<p>The EIA report contains a description of whale migration patterns for both narwhales, beluga whales and bowhead whales. World Wildlife Fund WWF urges the company to use this data as a starting point for planning suitable sailing routes and times in order to limit noise and disturbance in this area as much as possible.</p>	<p>New sailing routes in Greenlandic waters are defined based on a variety of parameters such as ice conditions, depths etc. (see also project report <i>Navigational Safety Investigation</i>). With regards to sailing trips to the Dundas Titanium mine, seabirds and marine mammals have also been taken into consideration. As an example, the sailing route has been positioned 5 km from Saunders Island in order to prevent disturbance of bird colonies (see section 9.3.5 in the EIA report).</p>	No comments.	EAMRA refers to hearing comments no. 3.3 and 4.7.	None.

¹¹ Heide-Jørgensen, M.P., Burt, L.M., Guldborg Hansen, R., Hjort Nielsen, N., Rasmussen, M., Fossette, S. & H. Stern. 2013. The Significance of the North Water Polynya to Arctic Top Predators. *Ambio*. 42(5): 596-610.

		<p>In terms of marine mammals, sailing trips to the mine will take place at a time of year when only a few animals are present along the sailing route through the North Water Polynya. Bowhead whales and walrus do not stay in the eastern part of the North Water Polynya during the time of the year when sailing trips take place (table 12 in the EIA report). Narwhales and beluga whales migrate through or leave the North Water Polynya before sailing starts (table 12 in the EIA report). In autumn, only a few narwhales are expected to pass the waters in front of the project area, i.e. the sailing route, and most of them probably pass through the central part of the North Water Polynya (section 9.3.6.3 in the EIA report). Only for a short period of time in autumn will a larger number of beluga whales be passing the sailing route in front of the mining port. As the ships will be sailing at a very reduced speed, any disturbing underwater noise will be significantly reduced (section 9.3.6.3 in the EIA report).</p>			
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III. Questions from public hearing meetings related to the EIA report

Ilulissat on July 29th: GE and SIK's local associations in Ilulissat

5. Fuel handling by the mine

No.	Questions/comments	Answer/comment from Dundas Titanium A/S	Comments from DCE/GN⁵	The Environmental Agency for Mineral Resource Activities (EAMRA)	Amendment - section or page in the EIA report
5.1	<p>This is a very beautiful area up north with a unique environment and nature. How are you going to solve the issue of providing oil, diesel oil or other types of fuel for all the machines that will be needed? Will there be a tank installation?</p>	<p>Yes, a tank installation will be installed in connection with the mine. A few times during the summer months, tank vessels will arrive in order to fill up the tank installation.</p> <p>Strict and fixed procedures will be defined in order to avoid accidents and contamination through fuel, both on land and at sea. In addition, oil spill response plans and materials will be made available. The vessels bringing oil and fuel will also have their own oil spill response plan and equipment. Such materials will include a large number of floating barriers, amongst other things. Some of our employees will also be certified and trained in oil spill response procedures.</p> <p>Contingency plans, materials and procedures will adhere to current laws and guidelines within this area and such measures will be agreed upon in close cooperation with the relevant authorities.</p>	<p>DCE/GN note that in the company's EIA report, Dundas Titanium A/S has stated that diesel oil will be used for all machines.</p> <p>See also comments by DCE/GN on hearing comments no.: 4.2 on the use of diesel oil. 2.3 above on contingency plans 4.3 above on heavy fuel oil (HFO)</p>	<p>See the EAMRA comments related to hearing comments no. 2.3, 4.2 and 4.3.</p>	<p>None.</p>

Qaanaaq, July 28th: Members of the local committee in Qaanaaq

6. Have investigations into potential contamination from the B52 bomber accident been carried out?

No.	Questions/comments	Answer/comment from Dundas Titanium A/S	Comments from DCE/GN ⁵	The Environmental Agency for Mineral Resource Activities (EAMRA)	Amendment - section or page in the EIA report
6.1	There was an accident involving an American B52 bomber. Has potential contamination from this event been investigated?	<p>Yes. In connection with the studies behind the Environmental Impact Assessment (EIA) report, investigations were also carried out to find out whether the mine area had been contaminated by the accident involving the American B52 bomber. Along with previously conducted investigations, this new investigation concluded that no contamination stemming from the accident involving the B52 bomber was identified in and around Moriusaq.</p> <p>This report is available at our website as a background report for the EIA and SIA report (see https://dundas.gl/files/eia/eia12.pdf).</p>	DEC/GN have read the material, concluding that the implemented investigations are sufficient and that the topic of potential contamination has been investigated. The investigation conclusion is that the B52 bomber has caused no contamination in and around Moriusaq.	No comments.	None.

7. Animal life around Moriusaq?

No.	Questions/comments	Answer/comment from Dundas Titanium A/S	Comments from DCE/GN ⁵	The Environmental Agency for Mineral Resource Activities (EAMRA)	Amendment - section or page in the EIA report
7.1	<p>Many birds (razorbills, eiders, long-tailed ducks, Arctic terns) used to live on the islands east and south of Moriusaq. Once Moriusaq had been depopulated, only a few birds were left, probably due to foxes eating lots of bird eggs. As those islands are far away from populated areas, there might be a chance that some of those birds have returned.</p>	<p>Investigations carried out in connection with project impacts on the environment also included a comprehensive task of registering the bird life on Moriusaq and areas close by. One of the background reports for the EIA report includes an extensive section on this bird life (see https://dundas.gl/files/eia/eia08.pdf). In line with observations by the inquirer, actual bird colonies have only been identified on the island clusters of Manson and Three Sister Bees east of the project area. In addition, bird colonies have been found on Saunders Island south of the project area. Most of these birds are migratory birds that arrive in May or June and leave the area again in September, October or November.</p> <p>Arctic terns have been observed closer to Moriusaq, including on some of the rocks/peninsulas located right in front of Moriusaq. Foxes have been observed along the entire coast of Moriusaq. It is unknown whether or not they also live on the island clusters east of Moriusaq; however, they are expected to also be crossing the ice in the winter.</p>	<p>No comments; however DCE/GN would like to note that the bird colony on Saunders Island is the largest one in the country with more than 180,000 birds.</p>	<p>No comments.</p>	<p>None.</p>

		Dundas Titanium A/S will not be carrying out any activities on the islands in front of, east of and south of Moriusaq, including the island clusters Manson and Three Sister Bees as well as Saunders Island. Mine employees will not be going to these areas. Overall, it is concluded that the project will lead to only a low level of disturbance/impact on land mammals and birds within this area.			
7.2	There used to be walrus by Moriusaq. When sea ice builds up in the winter by the end of October or the beginning of November, they return to lie on the ice. We have now found out that the walrus have returned to the region.	<p>It is correct that walrus have been observed within the region. Walrus have been observed on and by the island clusters south of Saunders Island. In addition, walrus have been detected by the island cluster Manson east of the project area. No walrus have been observed within the project area. The walrus migrate to Canada at the end of June. During the EIA investigations, walrus were last observed within the region at the beginning of July. They return to north-western Greenland from Canada at the end of October/beginning of November. When the walrus are in the area during the winter period, they are mainly lying by the edge of the ice. No ships approach the mining area during this period.</p> <p>Potential project impacts on walrus:</p> <ol style="list-style-type: none"> 1. Noise and visual disturbances caused by project activities on land and passing ships. 2. Underwater noise from ships. 	See hearing comment no. 1.1 and comments by DCE/GN related to hearing comment no. 4.6 on cumulative impacts and the walrus monitoring scheme.	See the EAMRA comment related to hearing comments no. 1.1 and 4.6.	None.

		<p>3. Fewer feeding resources (primarily mussels).</p> <p>In order to minimise those impacts as much as possible, all noise and visual disturbance factors will be alleviated by specific measures. Ships arriving to the project area will be lowering their speed in order to minimise noise and the route towards the project area will pass west of Saunders Island to prevent impacts on island clusters and the area south of Saunders Island.</p> <p>Regarding fewer feeding resources. In connection with discharge of sea water which has been used to rinse and weight-separate the sand by Moriusaq, fine sand and mud materials will be deposited on the seabed around the discharge area in the fjord of Wolstenholme in front of Moriusaq. The discharge positions have been planned in a way that prevents them from influencing areas where a large amount of mussels are expected to be located in the fjord of Wolstenholme. The largest mussel populations identified in the fjord of Wolstenholme are located east of the project area and are not expected to be influenced by the project.</p> <p>A thorough monitoring scheme, including the monitoring of walruses and any changes to their habits, will be drawn up.</p>			
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8. Landscape re-establishment once production ends and the mine is closed down

No.	Questions/comments	Answer/comment from Dundas Titanium A/S	Comments from DCE/GN ⁵	The Environmental Agency for Mineral Resource Activities (EAMRA)	Amendment - section or page in the EIA report
8.1	Will the area be left in an acceptable state once production ends and the mine is closed down?	<p>Before digging up the black sand, the surface soil will be moved to the side and retained. Following sorting, approximately 97% of the dug up sand will be returned to its original position. Only material with a high content of ilmenite will be exported. Once mining has ended in a specific area, the surface soil will be spread out again, allowing plants and other vegetation elements to re-establish themselves. As part of the landscape re-establishment by Moriusaq, lakes, wetlands and other hydrological conditions will also be re-established. In this way, the terrain and landscape of the area will be restored.</p> <p>A closure plan will be drawn up in cooperation with the authorities. The principle behind such a plan is that all buildings, large structures and equipment must be dismantled and removed. Foundations are also removed wherever possible or covered with natural materials to make them fit to the surroundings. Mining roads will be levelled. Pipes and pipe underpasses will be removed. Upon agreement with the authorities, elements such as accommodation facilities for</p>	See comments by DCE/GN related to hearing comment no. 1.2 on revegetation studies.	<p>See comments by EAMRA on hearing comment no. 1.2.</p> <p>EAMRA notes that the process of approval at a later stage will also reflect the conditions related to closing down the mining activities and how the area is left behind afterwards.</p>	None.

		transit visitors or other infrastructure components (e.g. pier and port facilities) can be left in the area.			
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Savissivik, August 12th: The village council in Savissivik

9. Bird life around Moriusaq?

No.	Questions/comments	Answer/comment from Dundas Titanium A/S	Comments from DCE/GN ⁵	The Environmental Agency for Mineral Resource Activities (EAMRA)	Amendment - section or page in the EIA report
10.1	<p>Arctic murres, eiders and other birds live in this region but their numbers are decreasing. I do not expect that this [project] will affect the bird life by Moriusaq. Has this issue been investigated and what are the thoughts on the bird life in this area? Will the mining activities impact the bird life? I am also wondering about the issues of traffic and transport.</p>	<p>Amongst the numerous investigations that have been carried out in order to evaluate potential project impacts on the environment, comprehensive work has been undertaken to register the bird life by Moriusaq and surrounding areas. One of the background reports for the EIA report includes an extensive section on this bird life (see https://dundas.gl/files/eia/eia08.pdf). Actual bird colonies close to the mining area have only been identified on the island clusters of Manson and Three Sister Bees east of the project area. In addition, bird colonies, including colonies of Arctic murres, are located on Saunders Island south of the project area. Most of these birds are migratory birds that arrive in May or June and leave the area again in September, October or November.</p> <p>Dundas Titanium A/S will not be carrying out any activities on the islands close to Moriusaq, including the island clusters Manson and Three Sister Bees as well as Saunders Island. Mine employees will not be going to these areas. Overall, it is</p>	<p>No comments; however DCE/GN would like to note that the colony of Arctic murres on Saunders Island is the largest one in the country with more than 180,000 birds.</p>	<p>No comments.</p>	<p>None.</p>

		<p>concluded that the project will lead to only a low level of disturbance/impact on birds within this area.</p> <p>With regards to sailing activities related to shipping the ilmenite product from the mine, the sailing route will be positioned in a way that prevents disturbance of bird colonies.</p> <p>See also comment no. 7.1.</p>			
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Ilulissat on July 30th: The municipal council and members of the Finance and Business Committee from Avannaata Kommunia in Ilulissat

10. Potential impact on prey routes?

No.	Questions/comments	Answer/comment from Dundas Titanium A/S	Comments from DCE/GN ⁵	The Environmental Agency for Mineral Resource Activities (EAMRA)	Amendment - section or page in the EIA report
10.1	<p>I would like to see this mineral resources development get off to a good start. The information on labour forces and operations is pleasing. I hope to experience many new opportunities if this mining project is implemented. I will say, however, that running a mining operation without causing any impacts on the environment and no contamination at all is very difficult, and we have experienced that with previous mining operations. For this reason, we must expect this mine to carry certain consequences. According to the reports from the mineral</p>	<p>With regards to prey such as whales and walrus, it is estimated that potential disturbances to these animals will mainly be caused by marine traffic to the mine. This traffic will, however, mainly happen at times when there is no ice in the fjord by Moriusaq, meaning at a time of the year when only a few animals are present along the sailing route through the North Water Polynya south of the project. This sailing route has also been chosen in order to reduce disturbance of animal life in the region to an absolute minimum and all ships will be sailing at reduced speed in order to reduce the noise.</p> <p>Bowhead whales and walrus do not stay in the eastern part of the North Water Polynya during the time of the year when sailing trips take place (table 12 in the EIA report). Narwhals and beluga whales migrate through or leave the North Water Polynya before sailing starts in spring (table 12 in</p>	<p>See the comment by DCE/GN related to hearing comment no. 4.5, stating that modeling of underwater noise has not yet been carried out in order to calculate the optimal ship speed with regards to noise production and time spent in the North Water Polynya with a view to minimising underwater disturbances stemming from marine traffic to and from the mine.</p>	<p>See the EAMRA comment related to hearing comments no. 4.5 and 4.7.</p>	<p>None.</p>

	<p>resources companies, it seems that those consequences will not be that serious. However, prey routes might change. For this reason, I would like to know what will be done about the conditions related to prey in case the mining operations last for several years?</p>	<p>the EIA report). In autumn, only a few narwhales are expected to pass the waters in front of the project area, i.e. the sailing route, and most of them probably pass through the central part of the North Water Polynya (section 9.3.6.3 in the EIA report). Only for a short period of time in autumn a larger number of beluga whales will be passing the sailing route . As the ships will be sailing at a very reduced speed, any disturbing underwater noise will be significantly reduced (section 9.3.6.3 in the EIA report).</p> <p>A monitoring scheme will be implemented in order to collect data on the distribution of prey (marine mammals) and monitor any unwanted impacts on the animals in the area. This includes investigations into the efficiency of mitigation measures such as reduced marine traffic.</p> <p>Based on this information, we reckon that mining operations can be carried out without any major impact on prey routes.</p> <p>See also hearing comments 4.7 to 4.9 as well as 4.12.</p>			
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11. What happens in case of a ship accident?

No.	Questions/comments	Answer/comment from Dundas Titanium A/S	Comments from DCE/GN ⁵	The Environmental Agency for Mineral Resource Activities (EAMRA)	Amendment - section or page in the EIA report
11.1	<p>First of all, I would like to say that I am happy that an investigation has been carried out to ensure that the environment will not be damaged/influenced. I am also happy about the information on animal and bird life. If freight ships are really supposed to start arriving in summer, I would like to know what will be done to prepare for potential accidents, including coordination of such initiatives. How will a ship accident be handled? Which plans are in place? What are the thoughts on such a scenario?</p>	<p>Dundas Titanium A/S has ordered a certified "Safety Navigational Investigation" report to be compiled, and this report (covers) shows that navigation and marine traffic to the mine can be carried out in a safe and suitable way in terms of marine safety. This investigation has been presented to the Greenlandic and Danish authorities, and it has been approved by the Danish Maritime Authority which is the highest authority with regards to sailing in Greenlandic waters. The report also explains the contingency plan and equipment which must be in place in case of an accident.</p> <p>In addition, detailed contingency plans, e.g. related to oil spills at sea, will be drawn up, and equipment, procedures, trained and certified personnel etc. must be available to deal with an emergency at the mining port. Prior to project implementation, Dundas Titanium will draw up a <i>Health, Safety and Environmental Management Plan</i>, including a <i>Spill Response Plan</i>. This document will include the recommendation that vessels arriving at the project port are required to have level 1 equipment for oil spill response on</p>	<p>See comment by DCE/GN related to hearing comments no.: 2.3 on contingency plans 4.2 on fuel consumption 4.3 on fuel for the ships</p> <p>Furthermore, DCE/GN recommend that the company must ensure that all ships involved in the mining project fulfil strict, international standards (IMO standards), notwithstanding that the latest rules might make exceptions for older ships.</p>	<p>See the EAMRA comments related to hearing comments no. 2.3, 4.2 and 4.3.</p>	<p>None</p>

		<p>board, e.g. a sufficient number of floating booms for smaller oil spills and absorption pads etc. that will confine a spill until further assistance arrives at the scene.</p> <p>As part of the preparations for the mining operations, the seabed has been measured in detail in order to establish a safe sailing route heading towards the mine.</p> <p>Reference is also made to hearing comment no. 2 on this topic.</p>			
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12. What happens in case of environmental consequences of mining operations?

No.	Questions/comments	Answer/comment from Dundas Titanium A/S	Comments from DCE/GN ⁵	The Environmental Agency for Mineral Resource Activities (EAMRA)	Amendment - section or page in the EIA report
12.1	I am wondering about the situation once mining operations begin and the environmental impacts that will occur. What happens if the impact of the mining operations is bigger than expected, e.g. close to the Qaanaaq area? What if the hunting area is largely	<p>First of all, it must be pointed out that the project is expected to have no significant impact on the environment. This also applies to prey.</p> <p>The project will have no direct impact on the environment and the hunting opportunities by Qaanaaq. Today, only very little hunting takes place close to Moriusaq so no consequences are expected in this area. As explained in hearing comment no. 11, the migration routes and occurrence</p>	<p>According to the EIA for the mining project, it is correct that most of the mining project activities are expected to have no big impact on the environment. However, the report mentions four issues where the impact level</p>	<p>EAMRA notes that the mining company has clarified EIA comments on disturbance of prey in accordance with the DCE/GN comment.</p> <p>See comments by EAMRA related to hearing comments no. 1.3 and 1.4 on the</p>	None.

<p>affected, meaning that hunting is significantly affected? How will the company prepare for that situation? As an example, a hunter went to the Maarmorilik mine, and they were not as well-prepared as today. Nothing had been done to prepare the residents and professional hunters were treated ruthlessly in terms of the consequences that they experienced. They lost a lot but it seems to me that this plan is much better. Perhaps it is more reassuring? Still, if the impact on the locals is bigger than expected, will the company be prepared for this, for example by setting up a fund in order to compensate for loss of earnings/prey? Perhaps not all losses can be covered? Has the company considered any of this?</p>	<p>of prey in the entire area of north-western Greenland are not expected to be affected.</p> <p>In cooperation with the authorities, a comprehensive monitoring scheme will be established once mining begins. The purpose of such a scheme is to monitor and make sure that the negative impact on the environment is not too big. If significant, negative impacts on the environment are registered, which exceed expectations, a variety of mitigation measures and operational changes can be implemented. The company is prepared to monitor the actual consequences of the mining operations and is ready to act in case of too big negative impacts.</p> <p>Those monitoring schemes will be adjusted on a continuous basis and all implemented mitigation measures will be evaluated and optimised in order to minimise the environmental impact.</p> <p>Please also refer to the SIA-related white paper and hearing comment no. 43 related to the reactions to hearing comments on social topics.</p>	<p>is evaluated as "medium" (on a scale from very low, low, medium to high), including the impact on walrus. This must be included in the explanation by the company.</p> <p>The monitoring scheme and the environmental management plan for the mining project must ensure that unexpected environmental impacts are identified and that mitigation measures are implemented. For this reason, DCE/GN recommend that the monitoring scheme must be sufficiently comprehensive to provide a solid amount of data in order to be able to regulate and alleviate any changes in the walrus population.</p>	<p>connection between the monitoring scheme, the environmental management plan and mitigation measures.</p> <p>It is noted that the social impact of the project, including potential financial losses for hunters, belongs to the SIA report.</p>	
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			<p>In their comments related to the hearing comments, DCE/GN have included recommendations for the monitoring scheme and the environmental management plan as described in hearing comments no.:</p> <p>1.1 and 3.2 on the walrus population in the fjord of Wolstenholme and within the region.</p> <p>1.3 on discharge of wash water and its components.</p> <p>1.4 and 3.2 on sedimentation of fine particles.</p> <p>4.5 on underwater noise.</p> <p>It is also noted that even through an efficient monitoring scheme is established, such a scheme cannot</p>		
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			necessarily explain everything, e.g. with regards to changes in the walrus population in the fjord of Wolstenholme which might also happen for other reasons such as climate changes.		
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VI. Short description of other amendments to the EIA report related to the Dundas Titanium project by Moriusaq

The following sections of the white paper contain a short explanation of other amendments to the EIA report compared to the version, an approved draft, which made up the basis of the hearing.

13. Other amendments

No.	Background/purpose of the amendment	Comment from Dundas Titanium A/S	Comment from EAMRA	Amendment - section or page in the EIA report
13.1	<p>The EIA report is subject to the <i>Convention on Environmental Impact Assessment in a Transboundary Context</i>), also known as the Espoo convention. The reason for this is that the mining project might potentially impact marine mammal populations shared with Canada. The Espoo convention has not been mentioned in section 4.4 on international obligations.</p>	<p>The following text on the Espoo convention has been added to the EIA report:</p> <p><i>The Convention on Environmental Impact Assessment in a Transboundary Context</i> is also known as the Espoo convention. This convention lists the obligations of those states that have agreed to be bound by the convention with regards to evaluating the environmental impact of certain activities at an early planning stage. It also defines general obligations of the states with regards to communicating with each other on all major projects under consideration which might lead to a significant, negative impact on the environment across state borders.</p> <p>It is noted that Dundas Titanium, in cooperation with EAMRA, has carried out an Espoo-related hearing assisted by an Espoo contact person in Denmark (Point of Contact for Notification (Espoo)), Landscape and Forest, Ministry of Environment and Food of Denmark, Environmental Protection Agency), leading to a dialogue with Canadian authorities represented through Fisheries and Oceans Canada (DFO). All materials and literature related to the EIA report were made available to the Canadian authorities during a corresponding period as the hearing period in Greenland. Following this hearing period, a dialogue has been maintained through e-mails and by means of a video conference held on October 13th 2020. The Canadian authorities have accepted the Espoo process which was concluded on November 19th 2020. Likewise, on November 25th 2020, Point of Contact in Denmark concluded</p>	No comments.	The text about the Espoo convention is added to section 4.4.

		that the Espoo process for the Dundas ilmenite project had been carried out in a satisfactory manner and had been finalised.		
13.2	The bowhead whale is not mentioned in the EIA report.	Although the bowhead whale rarely enters the waters in front of the mining area and will only occur during periods without any marine traffic to and from the mine, it must be briefly mentioned in the section on marine mammals within the EIA report.	No comments.	The bowhead whale has been added to table 12 which includes information on local marine mammals, including status, habitats, red list status and population importance. It has also been added to table 13 on species that have been entered onto the Greenland red list. Finally, a short text on the bowhead whale has been included in the technical background report on flora and fauna.