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Alba Mineral Resources plc

("Alba" or the "Company")

Maiden Mineral Resource Estimate for Thule Black Sands Project

Alba Mineral Resources plc (AIM: ALBA) is very pleased to announce that a Maiden Mineral Resource Estimate has been completed in respect of the Company's 100% owned Thule Black Sands Project in north-west Greenland.

Highlights:

- The Mineral Resource Estimate prepared by mineral sands specialist IHC Robbins is broken down into three components:
- An Inferred Resource of 19.0 Million Tonnes at 43.6% Total Heavy Mineral.
- An in-situ Ilmenite grade of 8.9%.
- A Contained Ilmenite of 1.7 Million Tonnes.
- Testwork has shown that the contained ilmenite within the Heavy Mineral Concentrate (HMC) ranges in TiO2 content from 45.6% to 47.4% with very low contaminant levels.
- The potential exists to increase the resource tonnage by drilling through the permafrost and additional confirmatory drilling in less explored areas.
- The offshore mineralisation adjacent to the active beaches also offers an opportunity to increase the overall size of the deposit.

Alba's Executive Chairman, George Frangeskides, commented:

"To achieve a maiden resource at TBS after just one full field season is a phenomenal result. An Inferred Resource of 19 million tonnes is a huge step forward for this high-grade ilmenite project. For a 3 million tonnes per annum mining operation, this would already mean a mine life of more than six years."

"For our team to have taken this project from a standing start to a JORC resource in the space of two years is a testament to the hard work and commitment of our technical and management team as we continually strive to find and develop projects that will deliver real value for our shareholders."

"Alba now has two projects - TBS and Melville Bay - with JORC-compliant resources. We are due to start drilling at our Limerick Base Metals project imminently, followed in June and July by drilling at Amitsoq, our graphite project with world-leading graphite grades. And this is without mentioning the ongoing

work to re-open the Clogau Gold Mine in Wales, and the ongoing exploration of the 30km stretch of the Dolgellau Gold Belt, under exclusive licence to Alba, which has already seen some very exciting results."

"With all these developments in train, Alba is extremely well-placed to make a huge step forward this year."

Mineral Resource Estimate

IHC Robbins, a multi-disciplinary firm specialising in providing services to the mineral sands and alluvial mining industry, produced the Mineral Resource Estimate for the Thule Black Sands Project using the drill data collected during the 2018 field season, including 163 Direct Push Geoprobe drillholes. All samples collected were evaluated for Total Heavy Mineral ("THM") content after screening off oversize material greater than 2mm and de-sliming the samples to remove the clay content less than 53 microns. The analysis was undertaken at MS Analytical Laboratories in Canada. Heavy Mineral Separation was carried out using TBE solution with a specific gravity of 2.93g/cm3 with the heavy liquid separation being undertaken on the sand fraction between 2mm and 53 microns once the oversize and clays had been removed.

The THM represents the fraction of the total sample that has a specific gravity greater than the heavy liquid (TBE solution) used to separate the light material from the heavy material. The resultant THM percentage quoted is the proportion of the original sample material that is considered heavy and is considered the percentage of heavy material that is in-situ. The ilmenite forms part of the THM, alongside other heavy minerals which have no material economic value.

The drillholes were completed across three main areas and were restricted in depth due to the permafrost level encountered. The maximum drillhole depth recorded was 1.8m.

Drilling and mapping of the licence area shows that the raised terrace material predominantly consists of an in-situ weathered sill, being the source of the ilmenite in the Alba licence and a common feature of the dominant Dundas Formation. High-grade active beach material occurs at various locations along the coast with the material in the active beach/wave zones being accumulations of run-off material from the raised terraces. The wave action has resulted in a natural sorting of the sand material resulting in high-grade concentration of heavy minerals.

The ilmenite-bearing sill material is exposed along the length of the Alba licence area and the drilling and mapping completed shows more intense weathering in the near-surface material with a decrease in weathering at depth and a general coarsening of material grain size. Ilmenite remains present with increasing depth although the depth of the weathering is unclear at present and deeper drilling, penetrating the permafrost, is required to determine the depth extent of the freely-liberating heavy minerals.

Geological models have been created for six areas within the licence. These are based on the drill coverage and material type, being raised terrace or active beach material. The extent to which the raised terraces continue in-land is limited by the presence of Dundas Formation sill and sediments that are exposed in the licence area along with glacial outwash plains located towards the back of the licence area.

The areas have been modelled to a maximum depth from surface equal to the deepest drillhole in the area, as limited by the permafrost horizon. The areas modelled and their respective modelled depths are listed below.

Area	Name	Modelled Depth (m)
1	Southeast Active	1.8

2	Southeast 1	1.8
3	Southeast 2	0.6
4	Southeast 3	1.4
5	Central	1.7
6	Northwest	1.0

A block model was created in Datamine Studio RM, an industry-leading product for mineral resource and ore reserve evaluation. THM, Oversize and Clay assays were added into the block model using an Inverse Distance Weighting algorithm. Average grades were applied to the Southeast Active and Southeast 2 zones due to the relatively limited data in these areas.

A bulk density (BD) was applied to the model using a standard linear formula originally described by Baxter (1977). This approach was refined in a practical application by this author using the following first principles calculations. This results in a regression formula used to calculate the conversion of tonnes from each cell volume and from there the calculation of material, THM and CLAY tonnes.

The estimated grade model was validated using statistical and visual techniques.

Based on existing mineral assemblage data, the ilmenite, expressed as a percentage of the THM has been applied to the block model.

Table 1 shows the Mineral Resource Statement for the Thule Black Sands Project. IHC Robbins considers that all the delineated mineralisation has reasonable prospects for eventual economic extraction and the Mineral Resource Statement has been reported at a 0% cut-off.

Mineral Resources are reported in accordance with the JORC Code (2012 Edition). Accordingly, the information in these sections should be read in conjunction with the respective explanatory Mineral Resources information included in Appendix 1.

Table 1: JORC Mineral Resource Statement for the Thule Black Sands Project with an effective date of 9th May 2019 (figures rounded to nearest decimal point)

Category	Tonnage (Mt)	In Situ THM (Mt)	THM (%)	Oversize (%) >2mm	Clay (%) <53um	Ilmenite (% of THM)*	Ilmenite Tonnes (Mt)	In-Situ Ilmenite (%)
Inferred	19.0	8.3	43.6	22.3	6.9	20.5	1.7	8.9

* based on mineral assemblage data from composite samples

The Thule Black Sands Mineral Resource is estimated to be 19.0 Million Tonnes ("Mt") at an average grade of 43.6% THM for 8.3 Mt of Heavy Mineral (ie 19.0 Mt x 43.6% = 8.3 Mt).

Ilmenite, being the only Valuable Heavy Mineral ("VHM") within the deposit, makes up 20.5% of the THM. Based on the ilmenite percentage of the THM, the currently delineated resource at the Thule Black Sands Project results in a contained ilmenite of 1.7 Mt (ie 8.3 Mt x 20.5% = 1.7 Mt) and an in-situ ilmenite grade of 8.9% (ie 1.7 Mt / 19.0 Mt = 8.9%).

The in-situ ilmenite grade simply represents the proportion of material in the ground that is ilmenite.

Area Southeast 2 has been excluded from the maiden resource statement due to the area being drilled by a single line of drillholes only. Here, a 60cm skin of semi weathered sill has been modelled and further work is required

to assess the resource potential of this area. This area does however represent further upside potential.

Ilmenite Quality Results

As previously reported, testwork has shown that the contained ilmenite within the Heavy Mineral Concentrate (HMC) ranges in TiO2 content from 45.6% to 47.4% with very low contaminant levels. Further samples will be tested in due course to continue to assess the TiO2 content of the ilmenite from the various areas drilled.

It should be noted that this represents the ilmenite quality results only and does not represent the potential final product grades attainable. Table 2 shows the ilmenite quality results.

Table 2: Ilmenite quality results

Oxide	Range (%)	Average (%)
TiO_2	45.6 - 47.4	46.4
FeO^2	38.7 - 41.4	40.0
$Fe_2O_3{}^2$	9.2 - 12.9	11.2
MgO	0.28 - 1.07	0.72
Al_2O_3	0.02 - 0.04	0.03
SiO_2	0.02 - 0.09	0.03
CaO	0.02 - 0.02	0.02
V_2O_5	0.23 - 0.34	0.29
Cr_2O_3	0.02 - 0.11	0.08
MnO	0.45 - 0.57	0.51
Nb_2O_5	0.02- 0.03	0.02

Future work

It may be possible to materially increase the resource tonnage described in this Maiden Mineral Resource Estimate by drilling deeper holes to penetrate the permafrost. Further, while limited sampling was undertaken in 2018 of the offshore zone adjacent to the active beaches, a much more comprehensive and targeted sampling programme will be required to properly assess the offshore potential at Thule Black Sands. A single sample was collected offshore during the environmental baseline studies completed in 2018. The sample, collected by Golder environmental consultants, returned a grade of 26.4% THM, 5.4% Oversize and 8.0% Clay.

About IHC Robbins

Alba appointed IHC Robbins to assist Alba through the geological development of the project. IHC Robbins forms part of the Royal IHC Group of companies and is a multi-disciplinary technology business specialising in providing services to the mineral sands and alluvial mining industry.

As a leading service provider, IHC Robbins delivers geological resource evaluations, metallurgical and bulk testwork programmes, bespoke project design and engineering, and specialised equipment. All projects are undertaken whilst maintaining IHC's reputation for OSBIT (On Specification, Budget, In Time).

Through its integrated service capability, IHC Robbins is uniquely positioned to support clients for the entire lifecycle of their mining project: from

discovery to construction, production, operation, tailings management and rehabilitation, in collaboration with specialist partners.

Alba engaged Mr Greg Jones of IHC Robbins to assist in the geological development of the project. Mr Jones is the IHC Geological Services Manager based in IHC's office in Perth and is a highly regarded professional in the mineral sands industry, with expertise in exploration, resource development, auditing and geo-metallurgy. His role enhances IHC's ability to service customers from the start of mining projects with integrated solutions in geology, metallurgy, engineering, plant and equipment.

Mr Jones undertook a Competent Person site visit to the project during the 2018 field campaign and as required by International Reporting Codes for Mineral Resources and Mineral Reserves.

About Ilmenite and the Titanium Dioxide Market

Ilmenite is the primary source of titanium dioxide, TiO2. Titanium dioxide is mined as ilmenite, rutile or, in lesser quantities, leucoxene. It is a dark coloured mineral which, with processing, becomes white and opaque. It is primarily used as a whitening pigment in paints, plastics and paper. Other uses include the manufacture of titanium metal.

Titanium dioxide feedstocks are graded by their titanium dioxide content. Feedstocks are either sold as raw minerals (rutile and chloride or sulphate ilmenite) or as processed or upgraded feedstocks, whereby ilmenite is processed to increase its titanium dioxide content. Upgraded feedstocks are synthetic rutile, chloride and sulphate slag and upgraded slag.

Titanium dioxide feedstocks are used predominately for the manufacture of pigment due to its opacity, UV resistance and non-toxic properties. This pigment is in turn used in paints, paper and plastics. Use in pigment accounts for approximately 80 to 90 per cent of total global demand for titanium feedstocks. Titanium metal and welding flux cord wire jointly account for the remaining 10 to 20 per cent of demand. Historically, demand for titanium feedstock has grown broadly in line with global GDP growth (source: Iluka Resources Ltd).

According to Lucintel, the global titanium dioxide market is expected to reach an estimated $18.2 billion by 2021 and is forecast to grow at a compound annual growth rate (CAGR) of 3.4% from 2016 to 2021. The major growth drivers for this market are growing demand for titanium dioxide in end use industries like paint, coatings and plastics. The Asia Pacific region is expected to remain the largest market due to growth of those end use industries, economic expansion in India and China and growing consumption of paints and coatings particularly in the automotive and construction industry (source: Lucintel, January 2017).

This announcement contains inside information for the purposes of Article 7 of EU Regulation 596/2014.

Competent Person Declaration

The information in this report that relates to the Thule Black Sands Mineral Resources is based on, and fairly represents, information and supporting documentation prepared by Mr. Greg Jones, who acts as Consultant Geologist for Alba Mineral Resources plc and is employed by IHC Robbins. Mr. Jones is a Member of the Australasian Institute of Mining and Metallurgy and has sufficient experience that is relevant to the style of mineralisation and type of deposits under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code) and as qualified person for the purposes of the AIM Rules for Companies. Mr. Jones has reviewed this report and consents to

the inclusion in this report of the Mineral Resources estimates and supporting information in the form and context in which it appears.

Glossary

Block Model	The block model is a set of specifically sized "blocks" in the shape of the mineralised orebody. The blocks contain geological, metallurgical and estimated numeric data that are assigned during a mineral resource estimate.
Chlorinatable Feedstock	Material such as ilmenite or titania slag, which is suitable for pigment production using the "chloride" production route.
Chloride Process	The process for manufacture of TiO_2 pigment by chlorination of titanium-bearing raw materials.
Cut-Off	The minimum grade required for a mineral or metal to be economically mined (or processed). Material found to be above this grade is considered to be ore, while material below this grade is considered to be waste.
FeO	Ferrous Iron Oxide.
Heavy Mineral Separation	The separation of material above/below a given specific gravity.
HMC	Heavy Mineral Concentrate. Concentrated heavy mineral mix extracted from deposits containing ilmenite, zircon, rutile and other heavy minerals.
Ilmenite	The most common titanium-bearing mineral, consisting of $FeO.TiO_2$, with up to 6% Fe_2O_3 in solid solution.
Ilmenite Product	Commercial products containing ilmenite and pseudorutile, averaging 35%-65% TiO_2.
Inferred Resource	Definition of mineral deposit at low level of confidence.
Inverse Distance Weighting algorithm	A type of deterministic method for multivariate interpolation with a known scattered set of points. The assigned values to unknown points are calculated with a weighted average of the values available at the known points.

Maiden Mineral Resource Estimate	The first resource estimate to be completed on a project.
Mineral Assemblage	The different mineral species found within a sample.
Permafrost	A thick subsurface layer of soil that remains below freezing point throughout the year.
Rutile	The purest, naturally occurring titanium-bearing mineral, containing over 95% TiO_2.
Slag	An enriched TiO_2 product arising from smelting of ilmenite, typically containing 75%-85% TiO_2.
Slimes	The fine silt fraction of the ore.
Specific Gravity or Relative Density	The ratio of the density of a substance to the density of a standard, usually water for a liquid or solid, and air for a gas.
Sulphatable Feedstock	Material such as ilmenite or titania slag which is suitable for pigment production using the "sulphate" production route.
Sulphate Process	The process for production of $Ti0_2$ pigment by digestion of titanium-bearing raw materials in sulfuric acid.
Synthetic Rutile	A product manufactured from an ilmenite product by removal of most of the iron content of the ilmenite, typically containing 90%-95% TiO_2.
TBE Solution or Tetrabromoethane	A liquid that has a fixed specific gravity.
THM	Total Heavy Minerals. All heavy minerals in mineral sands with specific gravity >2.9.
TiO_2	Titanium dioxide, occurring in a number of minerals including ilmenite, rutile and leucoxene. The main commercial application of TiO_2 is as a whitening pigment.
Titanium	Titanium is mainly used to produce titanium dioxide pigment which is non-toxic, inert and imparts a brilliance and opacity. It is widely used in paints, plastics and paper. It is also used to produce titanium metal which has a high strength to weight ratio, is non-reactive and resistant to oxidation. It is

	used increasingly in aircraft and space craft. Because it is non-reactive, it is used extensively in surgery.
VHM	Valuable Heavy Mineral content. This is the mass fraction that contains the valuable TiO_2 (Ilmenite, Leucoxene and Rutile) and zircon minerals in the THM.
Zircon	Zircon is a form of zirconium which because of heat and corrosion resistance properties, is used in chemical processing equipment, sanitary ware, refractories and electronic appliances and also in jewellery as zirconia.

Alba's Project & Investment Portfolio

Mining

Amitsoq (Graphite, Greenland): Alba owns a 90 per cent interest in the Amitsoq Graphite Project in Southern Greenland and has an option over the remaining 10 per cent.

Clogau (Gold, Wales): Alba owns a 90 per cent interest in Gold Mines of Wales Limited ("GMOW"), the ultimate owner of the Clogau Gold project situated in the Dolgellau Gold Belt in Wales.

Inglefield Land (Copper, Cobalt, Gold): Alba owns 100 per cent of mineral exploration licence ("MEL") 2017/40 and 2018/25 in north-west Greenland.

Limerick (Base Metals, Ireland): Alba owns 100 per cent of the Limerick base metal project in the Republic of Ireland.

Melville Bay (Iron Ore, Greenland): Alba is entitled to a 51 per cent interest in MEL 2017/41 in Melville Bay, north-west Greenland. The licence area benefits from an existing inferred JORC resource of 67 Mt @ 31.4% Fe.

Thule Black Sands (Ilmenite, Greenland): Alba owns 100 per cent of MEL 2017/29 in the Thule region, north-west Greenland.

Oil & Gas

Brockham (Oil & Gas, UK): Alba has a direct 5 per cent interest in Production Licence 235, which comprises the previously producing onshore Brockham Oil Field.

Horse Hill (Oil & Gas, UK): Alba holds an 11.765 per cent effective interest in the Horse Hill oil and gas project (licences PEDL 137 and PEDL 246 covering a total area of 142.9 km^2) in the UK Weald Basin.

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APPENDIX

JORC TABLE 1

JORC CODE, 2012 EDITION - TABLE 1 REPORT

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	· *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* · *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* · *Aspects of the determination of mineralisation that are Material to the Public Report.* · *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation*	· *Drillhole samples using a Geoprobe MT direct push drill rig* · *Samples are collected within a plastic pipe that is cut open to retrieve the samples. Sample runs are 1m in length with 100% of the sand material bagged for analysis. Samples are ~1kg in weight.* · *Heavy mineral sand with an ilmenite content is present at surface with the hole terminating in mineralisation. All samples collected were analysed with a Niton XRF to check for the presence of TiO2.* · *All samples were dispatched to MS Analytical Laboratories in Canada for heavy liquid separation at 2.93g/cc. Analysis includes determination of heavy mineral content, oversize >2mm and clays <53 microns.*

	types (eg submarine nodules) may warrant disclosure of detailed information.	
Drilling techniques	· *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	· *Drillhole samples using a Geoprobe MT direct push drill rig. Drillholes were depth restricted due to permafrost being prevalent across the licence with the maximum hole depth being 1.8m.*
Drill sample recovery	· *Method of recording and assessing core and chip sample recoveries and results assessed.* · *Measures taken to maximise sample recovery and ensure representative nature of the samples.* · *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	· *Core recovery monitored visually with the 1m direct push drill runs returning a high recovery that does not impact the quality of the sample. Core catcher within the inner plastic tube prevents core loss. Low clay content and minimal loss of fines. Holes generally wet. In general, hole conditions were good although potential exists for a bias in recovery due to poor recovery due to oversize material that may have been "pushed" away from the drill bit.*
Logging	· *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* · *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* · *The total length and percentage of the relevant intersections logged.*	· *All "resource" holes logged as heavy mineral sand bearing material with varying oversize (>2mm) as determined through the laboratory analysis. The depth restriction prevents detailed logging although a colour change from brown / orange to green grey is observed with depth due to reduction in organic matter with depth.*

Sub-sampling techniques and sample preparation	· *If core, whether cut or sawn and whether quarter, half or all core taken.* · *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* · *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* · *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* · *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* · *Whether sample sizes are appropriate to the grain size of the material being sampled.*	· *100% of the sample was bagged for analysis.* · *Field duplicates collected during the programme. Standards were also generated from a bulk sample to allow standards to be inserted into the assay stream.* *Samples are considered representative due to 100% of the material being analysed.* · *Sample size sufficient to enable heavy liquid separation tests to be completed.*
Quality of assay data and laboratory tests	· *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* · *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* · *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	· *Industry standard sample preparation and assaying with drying and screening at 2mm and 53µm to determine the oversize and clay fractions. The 2mm to 53µm sand fraction is then separated using a 2.93g/cc heavy liquid to generate a heavy mineral concentrate (total heavy mineral) and a light fraction. All heavy liquid separation was conducted at MS Analytical Laboratories.* · *Hand held XRF Niton analysis conducted by qualified personnel on raw samples in the field. No XRF analysis has been completed by MS Analytical or any other external laboratory.*

		· *Standards generated during the fieldwork and submitted to the laboratory.*
Verification of sampling and assaying	· *The verification of significant intersections by either independent or alternative company personnel.* · *The use of twinned holes.* · *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* · *Discuss any adjustment to assay data.*	· *All sampling undertaken by independent consultants and an Independent Competent person site visit was completed by Greg Jones of IHC Robbins.* · *No twinned drillholes have been completed.* · *All data captured in excel database.* · *No adjustments to the assay data have been made.*
Location of data points	· *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* · *Specification of the grid system used.* · *Quality and adequacy of topographic control.*	· *All sample locations captured using a hand-held Garmin GPS and later projected to the topographic surface, generated from aerial photographs captured and processed into a DEM by GEUS, the Geological Survey of Denmark and Greenland.* · *UTM WGS84 Zone 19.* · *Topography believed to be accurate to 0.5m to 2m as generated by GEUS.*
Data spacing and distribution	· *Data spacing for reporting of Exploration Results.* · *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* · *Whether sample compositing has been applied.*	· *Drillholes completed on a predominant grid of 250m x 100m.* · *Inferred classification assigned to the deposit with the samples collected verifying the presence of THM bearing coarse sand material from surface. The geological continuity is further verified through mapping and the aerial*

		photography completed which shows the correlation between the sample locations and the sedimentary active beaches and raised beach terraces. · *No sample compositing has been applied to the raw drillhole samples.*
Orientation of data in relation to geological structure	· *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* · *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	· *Sedimentary deposit with no relevant structural features.* · *Mineralisation is sedimentary hosted, at surface and near horizontal so no perceived bias in the sample orientation has been introduced.*
Sample security	· *The measures taken to ensure sample security.*	· *All samples weighed and bagged by external consultants with all samples being shipped back to Nuuk for storage and onward dispatch to the laboratory. Contracted personnel arranged shipment.*
Audits or reviews	· *The results of any audits or reviews of sampling techniques and data.*	· *All protocols discussed and observed by IHC Robbins personnel.*

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	· *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* · *The security of the tenure held at the time of reporting along with any*	· *Exploration licence MEL 2017/29, 100% ownership of Alba Mineral Resources. 52km^2.*

	known impediments to obtaining a licence to operate in the area.	
Exploration done by other parties	· *Acknowledgment and appraisal of exploration by other parties.*	· *Historical exploration of the Steensby Land ilmenite province completed predominantly by GEUS, the Geological Survey of Denmark and Greenland. Exploration covered hard rock and sedimentary ilmenite bearing sills, dykes and beach deposits. Raised beach terraces were first discovered in the area in 1971* · *North-West Greenland was mapped by the former Geological Survey of Greenland (GGU) between 1971 and 1980, mainly by shoreline investigations with limited helicopter traversing inland. Steensby Land and areas around Pituffik, exposing large tracts of Thule Basin deposits, were mapped at 1:100 000; other areas, composed mainly of shield rocks are available at 1:200 000 (Dawes 1988).*
Geology	· *Deposit type, geological setting and style of mineralisation.*	· *The intracratonic Thule Basin is one of several Proterozoic epocentres on the northern rim of the North American craton with comparable development histories: thick sandstone and basalt units in lower levels, often with red beds, are succeeded by carbonate/shale dominated sequences.* · *The Thule Basin developed on the peneplaned surface of the Precambrian shield. It is represented by the 6-8 km thick Thule Supergroup, a multicoloured, continental, littoral to shallow marine sedimentary succession with one main interval of basaltic volcanic rocks. Basic sills are common at several levels. The strata are little deformed occurring as shallow-dipping packages in fault blocks. The study area exposes the south-eastern part of the basin where four groups are recognised (Dawes 1997). The lower three groups are Mesoproterozoic in age; the age of the upper strata (Narssârssuk Group) is uncertain. The Dundas Group is responsible for the ilmenite bearing sands within the licence. This is a dark-weathering succession conformably overlying the previous group*

			along a gradational contact. Its upper limit is marked by Quaternary deposits and the present erosion surface, the c. 2 km thick sequence comprises fine-grained sandstones, siltstones and shales with some carbonate units. Dark shales can contain stratiform pyrite. Deposition was in an overall deltaic to offshore environment. Sills and dykes of mainly tholeiitic composition and unusually rich in titanium are common, and the so-called 'Steensby Land sill complex' (Dawes 1997) contains about fifteen master sills of probable Neoproterozoic age. The thickest of these is over 100 m with sill rock composing 30-40% of the stratigraphic section. Sediment/sill and sediment/dyke contacts are characterised by rusty weathering caused by pyrite, and minor chalcopyrite, galena and sphalerite may occur in thin quartz-calcite veins, lenses and pods in both sediments and dolerites. The Neoproterozoic sills and dykes are the source of placer ilmenite on the south coast of Steensby Land (Cooke 1978, 1984; Dawes 1989, 2006). · *Drilling and mapping of the licence area shows that the raised terrace material predominantly consists of an in-situ weathered sill, being the source of the ilmenite in the Alba licence and is a common feature of the dominant Dundas Formation. High grade active beach material occurs at various locations along the coast with the material in the active beach / wave zones being accumulations of run-off material from the raised terraces. The wave action has resulted in a natural sorting of the sand material resulting in high grade concentration of heavy mineral.* · *The ilmenite bearing sill material is exposed along the length of the Alba licence area and the drilling and mapping completed shows more intense weathering in the near surface material with a decrease in weathering at depth and a general coarsening of material grain size. Ilmenite remains present with increasing depth although the depth of the*

		weathering is unclear at present and deeper drilling, penetrating the permafrost is required to determine the depth extent of the freely liberating heavy minerals.
Drill hole Information	· *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* o *easting and northing of the drill hole collar* o *elevation or RL (Reduced Level - elevation above sea level in metres) of the drill hole collar* o *dip and azimuth of the hole* o *down hole length and interception depth* o *hole length.* · *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	· *All drill data has been compiled in to the "TBS_Statsdata_May2019" excel spreadsheet. This includes:* o *Assay location points (GPS X and Y - Z pressed to GEUS topography file)* o *MSA assay data (Oversize >2mm, Total Heavy Mineral >2.93g/cc, floats <2.93g/cc, clay <53µm, length and sample weight* o *Tonnages were estimated as an assumed dry basis. A bulk density algorithm was prepared using first principles techniques coupled with industry experience that is exclusive to IHC Robbins. We believe the bulk density formula to be appropriate and fit for purpose at this level of confidence for the Mineral Resource estimates.*
Data aggregation methods	· *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* · *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* · *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	· *No data aggregation or top-cutting has been applied*
Relationship between mineralisation widths and intercept lengths	· *These relationships are particularly important in the reporting of Exploration Results.* · *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* · *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	· *Near horizontal sedimentary deposit with vertical drillholes being appropriate for the type of deposit.*

Diagrams	· *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	· *Diagrams included in accompanying database spreadsheet detailing the Mineral Resource Estimation and results*
Balanced reporting	· *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	· *Handheld auger drillholes also completed have been removed from the estimation database due to a bias observed.* · *All exploration results have been reported and utilised in the Mineral Resource Estimate*
Other substantive exploration data	· *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples - size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	· *High resolution aerial photography was completed and used by GEUS in the generation of a topographic surface and orthophoto. The orthophoto has been used to demonstrate the extent of the sedimentary units and THM bearing sands. Due to the mineralisation being present from surface, this is a valuable tool in demonstrating the extents to the mineralisation.*
Further work	· *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* · *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	· *Sonic drilling, trenching and further mapping is planned to increase the confidence in the maiden Mineral Resource Estimate and test the depth extent to the mineralisation and weathering.*

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	· *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* · *Data validation procedures used.*	· *MSA assay data received as excel spreadsheet that was directly imported into the TBS_Database and geological software. No editing of numerical data has taken place.* · *All drill collar GPS coordinates typed in to excel and imported into geological software. All collar locations are accurate and within the sampling limits / licence.*
Site visits	· *Comment on any site visits undertaken by the Competent Person and the*	· *Site visit undertaken by Greg Jones of IHC Robbins. Greg was*

	outcome of those visits. · *If no site visits have been undertaken indicate why this is the case.*	*on site for approximately 2 weeks of the programme.*
Geological interpretation	· *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* · *Nature of the data used and of any assumptions made.* · *The effect, if any, of alternative interpretations on Mineral Resource estimation.* · *The use of geology in guiding and controlling Mineral Resource estimation.* · *The factors affecting continuity both of grade and geology.*	· *Drilling has shown that the predominant raised terraces consist of weathered sill material that is rich in ilmenite. The controlling sills are dipping gently at ~5 degrees towards the coast with runoff creating areas of high-grade coastal deposition. The weathered depth of raised terraces themselves, which would control the depth of the freely liberated ilmenite is currently unknown and uncertainty exists in this regard. Drilling has been limited by the depth of the permafrost and deeper drilling using a method which could penetrate the permafrost is required to test the depth extent of the soft, weathered material.* · *The geological interpretation and model created is based on the deepest drillhole in the six key areas drilled with the base of the zone being restricted to the deepest drillhole in this area. The six areas modelled are restricted to the following depths:* · *Southeast Active modelled depth 1.8m* · *Southeast 1 modelled depth 1.8m* · *Southeast 2 modelled depth 0.6m* · *Southeast 3 modelled depth 1.4m* · *Central modelled depth 1.7m* · *Northwest modelled depth 1m* · *The shape of the raised terraces, shown by the topographic surface developed, in places, indicates depths of up to ~25m vertically (assuming a flat base) from surface although the exact depth of the basement is unknown and the weathering extent of the sills will impact on the recoverable quantities of freely liberating ilmenite.*

		· *Host shale units within the regional Dundas formation may also exist overlying the weathered sills. No shales were intersected during the drilling, but these may be present at depth.* · *Intrusive sills / dykes are observed along the coastline and the geological model created abuts against the intrusives where observed and the areas modelled have been truncated at the boundaries of the observed outcropping sills.* · *Continuity is assumed from surface to the depth of deepest drillhole in the area modelled. This was undertaken due to permafrost restricting the depth of the drillholes rather than a change in the geology and it is considered likely that the weathered sills are present to the depth of the deepest drillholes completed in each sub area.* · *The use of the aerial photography has guided the extents of portions of the geological model and resource estimate.*
Dimensions	· *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	· *The mineral resource is split in to 3 main areas with the southeast zone split into 4 subdivisions due to the drill spacing and material type. From SE to NW, area 1 is approximately 8km in strike length and up to 800m in width. The depth of the inferred classified material ranges from 0.6m to 1.8m. Area 2 has a maximum strike length of 2500m and a maximum width of 850m. The depth of the inferred classified material 1.7m. Area 3 has a maximum strike length of 2500m and a maximum width of 400m. The depth of the inferred classified material 1m.*
Estimation and modelling techniques	· *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of*	· *The estimate reported is the maiden mineral resource estimate for the licence area. As such, no production records or historic estimates exist for the project.* · *Modelling was based on single domains across the 6 modelled areas with a block model being created between the*

		computer software and parameters used. · *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* · *The assumptions made regarding recovery of by-products.* · *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* · *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* · *Any assumptions behind modelling of selective mining units.* · *Any assumptions about correlation between variables.* · *Description of how the geological interpretation was used to control the resource estimates.* · *Discussion of basis for using or not using grade cutting or capping.* · *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	*topographic surface and a base set at the depth of the deepest drillhole from the topographic surface (by projecting the topography to this depth to create a base).* · *The geological modelling was created in Leapfrog Geo software with the block model being created in Datamine Studio RM. A block size of 50m X by 50m Y by 1m Z was created with sub-cells to 10m X by 10m Y by 0.2m Z.* · *Sampling is on a grid predominantly 250m x 100m.* · *Each modelled area was estimated independently using only those samples that fall within the model perimeter.* · *Grades of THM, Oversize and Clay were estimated in to the model using Datamine Studio RM.* · *A search ellipse with a dip of 2 degrees was used. The ellipse was visually validated to ensure that adequate samples were being captured.* · *No grade cutting was applied due to a reasonably near normal population and limited elevated grades that are considered real and associated with active beach samples.* · *Grades of THM, Oversize and Clay have been estimated using an inverse distance squared algorithm using a search ellipse that is elongated in the strike of the coastline (150m x 75m x 2m). Estimation uses a minimum of 2 samples and a maximum of 4 samples with a limited vertical ellipse size preventing grade smearing in the vertical direction to honour the grade observations from the sample data.* · *Average grades were applied to Southeast Active and Southeast 2 due to the limited sampling in these areas.* · *The estimated grade was visually and statistically validated with the input grades being a reasonable reflection of the output block model grades.*

		· *Mineral assemblage data from composite samples have been used to apply an ilmenite percentage of the THM and a calculated in-situ ilmenite percent. Ilmenite is the only economic mineral hosted within the material sampled to date.*
Moisture	· *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	· *Tonnages were estimated as an assumed dry basis. A bulk density algorithm was prepared using first principles techniques coupled with industry experience that is exclusive to IHC Robbins. We believe the bulk density formula to be appropriate and fit for purpose at this level of confidence for the Mineral Resource estimates.*
Cut-off parameters	· *The basis of the adopted cut-off grade(s) or quality parameters applied.*	· *No cut off grade has been adopted due to the high-grade nature of the project with all material being over 9% THM.*
Mining factors or assumptions	· *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	· *Mining would be through conventional open pit methods with a zero strip ratio.*
Metallurgical factors or assumptions	· *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	· *The assaying process shows that a heavy mineral concentrate can be developed from gravity methods. Further testwork is required to determine the optimal process route to generate an ilmenite concentrate.*
Environmental factors or assumptions	· *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the*	· *Waste / tailings would consist of an inert sand. Further testwork is required to determine the appropriate waste disposal route.*

	potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	
Bulk density	· *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* · *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* · *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	· *Tonnages were estimated as an assumed dry basis. A bulk density algorithm was prepared using first principles techniques coupled with industry experience that is exclusive to IHC Robbins. We believe the bulk density formula to be appropriate and fit for purpose at this level of confidence for the Mineral Resource estimates.*
Classification	· *The basis for the classification of the Mineral Resources into varying confidence categories.* · *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* · *Whether the result appropriately reflects the Competent Person's view of the deposit.*	· *All material has been classified as Inferred except for area Southeast 2 that has been excluded from the resource statement due to the limited data available. This area represents upside potential due the presence of ilmenite bearing sands identified through limited drilling.* · *The TBS coastline is dominated by multiple active beach zones where high grade ilmenite bearing heavy mineral sands have been identified, sampled and assayed. Traversing inland, mineralised sedimentary raised terraces are observed, of apparent variable thickness, with varying quantities of oversize material. Mineralisation of the raised terraces is controlled by in-situ weathering of the sills.* · *Surficial heavy mineral sands are evident across the areas of the licence drilled and the aerial photography completed clearly highlights the sedimentary features that have been sampled and assayed, verifying the correlation between observed geology and*

			material / grade. The risk associated with the geological complexity is considered reasonably low within the resource area although coastal sills have been identified and the depth extent of the mineralised sedimentary unit is unknown at present. The risk associated with the depth extent to mineralisation is mitigated to a certain degree by the nature of the sampling providing a profile upwards through the raised terraces and the detailed topographic surface obtained from the aerial photography. · *In certain areas, inland lakes occur that have not been explored although it assumed that ilmenite bearing sands exist in these areas due to the natural run off from the raised terraces observed.* · *All samples have been collected through appropriate drilling with the depth of the sample being restricted by permafrost and oversize, when present.* · *In total, 163 samples have been utilised in the estimation of grade with all samples showing a heavy mineral content and all samples correlating with active beaches or raised terraces.* · *All samples collected have been assayed for THM, Oversize and Clay at MS Analytical laboratories in Canada.* · *Mineralogy data was generated by SGS Canada using auger samples collected in a previous field season. The auger holes have not been used in the grade estimation.* · *Tonnages were estimated as an assumed dry basis. A bulk density algorithm was prepared using first principles techniques coupled with industry experience that is exclusive to IHC Robbins. We believe the bulk density formula to be appropriate and fit for purpose at this level of confidence for the Mineral Resource estimates.* · *Grades of THM, Oversize and Clay have been estimated using*

		an inverse distance squared algorithm using a search ellipse that is elongated in the strike of the coastline (150m x 75m x 2m). Estimation uses a minimum of 2 samples and a maximum of 4 samples with a limited vertical ellipse size preventing grade smearing in the vertical direction to honour the grade observations from the sample data. · *The grade estimate has been visually and statistically validated with the output block grades being a reasonable representation of the input sample grades.* · *The estimated grades depict the nature of the deposit with a general trend showing grade decreasing from the active beaches to the top of the raised terraces.*
Audits or reviews	· *The results of any audits or reviews of Mineral Resource estimates.*	· *No audit has been carried out.*
Discussion of relative accuracy/ confidence	· *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* · *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* · *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	· *The relative accuracy of the estimate could be affected by the drilling method in rocky areas or where oversize material has been "pushed" away from the drill bit. More appropriate drill methods will be used in future exploration programmes where the depth extent of the weathering will be tested.* · *The depth extent of the mineralised or weathered units, to bedrock is also unknown at present although the topographic surface generated suggests potential depths of more than 20m in places. This is however unlikely to be the average depth of the deposit with shallower occurrences towards the active shoreline.* · *Extrapolation of grade is however considered limited due to the depth extent of the modelled areas.*

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