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Beowulf Mining plc

("Beowulf" or the "Company")

Kallak Products – Market Leading Potential

Beowulf (AIM: BEM; Spotlight: BEO), the mineral exploration and development company, announces the findings of an expert market assessment by Dr. Bo Arvidson, which investigated the market potential of future products from the Kallak North ("Kallak") deposit, based on the results of laboratory and pilot plant testwork conducted to date.

Highlights:

- Testwork on Kallak ore has produced an exceptionally high-grade magnetite concentrate at 71.5 per cent iron ("Fe") content with minimal detrimental components.
- This would make Kallak the market leading high-grade product among known current and planned future producers.
- The next best magnetite product is LKAB's (the state-owned Swedish iron ore company), which produces magnetite fines ("MAF") with a target specification of 70.7 per cent Fe and is regarded as unique, until now, due to its exceptionally high iron content.
- Kallak magnetite concentrate would reduce the carbon footprint of traditional steel manufacturing, improve energy efficiency in any downstream process and reduce waste. Magnetite has inherent energy content, which ultimately results in lower energy demand for steel manufacturing when compared to current common practice.
- Globally, the feedstock for steelmaking is 80 per cent hematite and 20 per cent magnetite. The demand for high-quality feedstock and therefore magnetite should increase as producers look to protect the environment by improving energy efficiency, minimizing waste and the impact of waste disposal.

Kurt Budge, Chief Executive Officer of Beowulf, commented:

"The Kallak deposit is unique considering the quality of the magnetite concentrate it can produce. Beowulf has been stating this since 2015 and, with Dr. Arvidson's latest assessment, significant knowledge of the iron ore market and the testwork completed on Kallak ore, he has validated Kallak concentrate's market leading attributes."

"Sweden wants to be a leader in sustainable mining and a Green Transition. When considering Kallak's magnetite concentrate, you have a product that 'ticks all the boxes', that can increase energy efficiency, reduce the carbon footprint of traditional steel manufacturing, minimise waste and the impact of waste disposal."

“Recently, the Swedish Prime Minister Stefan Löfven, together with Isabella Lövin, Minister for Environment and Climate and Deputy Prime Minister, started up the HYBRIT plant. HYBRIT is a joint initiative between the steel manufacturer SSAB, the mining company LKAB and the energy company Vattenfall. The purpose of the collaboration is to develop the world's first fossil-free ore-based steelmaking process.

“The Prime Minister spoke of the historic opportunity to do things that provide jobs here and now – but also hasten the climate transition that everyone realises is necessary.

“Sweden’s ambition is for fossil-free steel production and to do that you need high-quality feedstock. It is potentially an important tool in the Swedish Government's ambition to make Green Transition part of its efforts to restart the Swedish economy after the COVID-19 crisis. That’s where Beowulf believes Kallak fits into the ‘big picture’, bringing much need investment and hundreds of jobs to Jokkmokk and Norrbotten.

“Benchmark iron ore prices climbed to around \$130 a dry metric tonne in late August, the highest level since 2014, and with prices set to remain strong for the remainder of the year, now is the time for the Swedish Government to give Kallak the ‘green light’.”

2015 - Metallurgical testwork

The impetus for the 2015 programme was the belief that even higher grade magnetite concentrate could be produced through the application of reverse flotation, and that the results would prove the suitability of the Kallak North magnetite concentrate for use in Direct Reduction Iron ("DRI") facilities and as chemical grade raw material.

Kallak North has three main ore types, classified as follows:

1. 'Blue' ore - magnetite rich;
2. 'Green' ore - magnetite rich with hematite; and
3. 'Red' ore - hematite rich.

The work at GTK applied reverse flotation on two of the three ore types, Blue and Green. Flotation of the magnetite portion of the Red ore type will be done at a later stage.

Head assays for the samples used were performed using X-Ray Fluorescence ("XRF") analysis for Green, Blue and Red samples. The main elements of interest are shown below:

Element	Green	Blue	Red
Fe %	31.9	36.5	37.9
SiO ₂ %	47.7	40.6	40.8
Al ₂ O ₃ %	2.92	2.41	1.84
CaO %	1.2	2.51	1.05
MgO %	2.37	2.58	2.59
P ₂ O ₅ %	0.068	0.096	0.081
MnO %	0.229	0.51	0.296

This assay work was carried out by Labtium, who have a geo-analytical laboratory in Outokumpu City and are accredited according to ISO/IEC 17025 by FINAS (Finnish accreditation service).

Concentrate product results:

The table below shows detailed product specifications for concentrates produced in 2015, and in italics the results from the previous, initial, programme in 2014:

	Fe %	SiO ₂ %	S %	CaO %	MgO %	Al ₂ O ₃ %	TiO ₂ %	Na ₂ O %	K ₂ O %	P ₂ O ₅ %	MnO %
Magnetite (SGS certified, 2015)	71.5	0.62	<0.01	0.03	0.03	0.10	<0.01	<0.01	0.01	<0.01	0.48
<i>Magnetite (GTK, 2014)</i>	<i>69+</i>	<i>3.9</i>	<i>0.003</i>	<i>0.109</i>	<i>0.11</i>	<i>0.24</i>	<i>0.010</i>	<i>0.03</i>	<i>0.19</i>	<i>0.009</i>	<i>0.444</i>
Hematite (GTK, 2015)	68.3	2.03	0.005	0.15	0.25	0.20	0.26	0.02	0.019	0.04	0.023
<i>Hematite (GTK, 2014)</i>	<i>65.8</i>	<i>4.1</i>	<i>0.018</i>	<i>0.54</i>	<i>0.50</i>	<i>0.43</i>	<i>0.449</i>	<i>0.05</i>	<i>0.03</i>	<i>0.093</i>	<i>0.183</i>

Key: Fe - Iron, SiO₂ - Silica, S - Sulphur, CaO - Calcium Oxide, Al₂O₃ - Alumina, TiO₂ - Titanium Dioxide, K₂O - Potassium Oxide, P₂O₅ - Phosphate, MnO - Manganese Oxide.

About Kallak

The Kallak iron ore deposit is located approximately 40 kilometres ("km") west of Jokkmokk in the County of Norrbotten, Northern Sweden, 80 km southwest of the major iron ore mining centre of Malmberget, and approximately 120 km to the southwest of LKAB's Kiruna iron ore mine.

The first Exploration Licence for Kallak was awarded by the Mining Inspectorate of Sweden in 2006. A Mineral Resource Estimate for Kallak North and South, based on 27,895 m of drilling conducted between 2010-2014, 131 drillholes, was finalised on 28 November 2014. Following the guidelines of the JORC Code, 2012 edition, an Indicated Resource of 118.5 Mt at 27.5 per cent iron content ("Fe") and an Inferred Resource of 33.8 Mt at 26.2 per cent Fe was defined. In addition, there is an exploration target of 90-100 Mt at 22-30 per cent Fe.

Testwork on Kallak ore has shown that an exceptionally high-grade magnetite concentrate can be produced, yielding over 71 per cent iron content, with low levels of deleterious elements, including phosphorous and sulphur, lending itself to pelletisation and consumption in Direct Reduction Iron ("DRI") facilities in Europe and the Middle East, and attracting a potential price premium.

In April 2013, the Company applied for an Exploitation Concession for Kallak North (the "Concession") and in October 2015, the Mining Inspectorate recommended to the Swedish Government that the Concession be awarded. The Company is still waiting on the Swedish Government to take a decision.

Kallak - 'Big Picture'

- In 2017, Copenhagen Economics produced a 'Big Picture' study for Kallak ("the Study" or "the Kallak Study"):

https://beowulfmining.com/wp-content/uploads/2018/10/Copenhagen-Economics_Presentation_SEP17_Swedish.pdf

- The Study built on the work carried out by the Company and others, including the 2015 independent socio-economic study initiated by Jokkmokks Kommun, completed by consultants Ramböll, which in its findings concluded that a mining development at Kallak would create direct and indirect jobs, increase tax revenues and slow down population decline, and the 2010 study by the Economics Unit of Luleå University of Technology, 'Mining Investment and Regional Development: A Scenario-based Assessment for Northern Sweden'.
- Copenhagen Economics had previously reviewed the attractiveness of the Swedish mining sector on a number of parameters, including licensing and regulation, commissioned by the Swedish Agency for Growth Policy Analysis, part of the Government of Sweden.
- The Kallak Study demonstrated that the economic effect of Kallak is 'not just about a mine'. A mining project would economically transform Jokkmokk and support other major capital expenditure and economic activity e.g. Inlandsbanan, Luleå Hamn, Vattenfall etc, spreading the benefits, through Norrbotten and beyond.
- When it comes to Kallak's economic effect on Jokkmokk, the Study highlights were as follows:
 - A mining operation at Kallak has the potential to create 250 direct jobs and over 300 indirect jobs in Jokkmokk, over the period that a mine is in operation.
 - These jobs could be sustained over a period of 25 years or more, if the Kallak South deposit is mined after the Kallak North deposit, and further deposits at Parkijaure can be defined.
 - The Company will seek to establish a 'Task Force' with Jokkmokks Kommun and local employment agencies, so that between now and the start of operations, plans are developed and implemented to make sure as many as possible jobs are available to people living in Jokkmokk.
 - Kallak has the potential to generate SEK 1 billion in tax revenues, considering the case where 70 per cent of the mine's workforce are based locally, with annual tax revenues of SEK 40 million over a 25 years mine life.
 - These tax revenues would help to develop and sustain public services and infrastructure in Jokkmokk, which are at risk due to a lack of new investment and job creation in the community, a declining population, and an ageing population.

Qualified Person Review:

Dr. Arvidson, MSc Mining/Mineral Processing, PhD Mineral Processing (equivalent), both read at the Royal Institute of Technology, Stockholm, has reviewed and approved the technical information contained within this announcement in his capacity as a qualified person, as required under the AIM rules. Dr. Arvidson has over 50 years relevant experience in the minerals industry, and has developed over 80 new applications within the industrial minerals and iron ore areas. Dr. Arvidson has visited the Kallak site and supervised laboratory and pilot plant testing of samples extracted from trenches on the site.

References:

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Waldon, D. (2015). CERTIFICATE OF ANALYSIS. Lakefield, Ontario, Canada: SGS Canada Inc.

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