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LEADING EDGE MATERIALS ANNOUNCES POSITIVE PRELIMINARY ECONOMIC ASSESSMENT RESULTS FOR ITS NORRA KARR REE PROJECT WITH US$1,026M PRE-TAX NPV (10%) AND 30.8% PRE-TAX IRR

Vancouver, July 22, 2021 – Leading Edge Materials Corp. ("**Leading Edge Materials**" or the "**Company**") (**TSXV: LEM**) (**Nasdaq First North: LEMSE**) (**OTCQB: LEMIF**) is pleased to announce the results of a Preliminary Economic Assessment study ("PEA" or the "Report") for the development of its 100%-owned Norra Karr REE project located in Sweden ("Norra Karr" or the "Project"). The PEA was prepared by SRK (UK) Ltd. ("SRK") and all figures in the PEA are US dollars unless otherwise specified.

As previously announced, the Company commissioned SRK to re-evaluate the Project at PEA level with the objective to improve resource utilization, project sustainability and substantially minimize environmental footprint of the Project compared to the design in the pre-feasibility study which was released in 2015[1] (the "2015 PFS") and formed the basis for the current mining lease permitting process.

Main PEA Highlights (In comparison to the 2015 PFS)

- Significant increase in resource utilization by proposing recovery of nepheline syenite (NS) industrial mineral, zirconium oxide (Zr) and niobium oxide (Nb) products in addition to the rare earth oxide ("REO") products. In the PEA more than 50% of total mined material is planned to be sold as products compared with previously less than 1% in the 2015 PFS. The PEA also identifies future opportunities to valorize the residual mined material which could potentially result in all mineralized material mined to be treated as potential commercial products.
- Introducing a revised Project flowsheet to minimize the environmental footprint at the Norra Karr site:
    - The Norra Karr site will only include mining and comminution methods consisting of crushing, milling and magnetic separation, eliminating all chemical processing from Norra Karr and associated waste vs the 2015 PFS study. In the PEA following physical separation resulting material streams either are shipped as products or as concentrates for further processing at other locations and a single waste stream to be stored at the Norra Karr site.

[1] See National Instrument 43-101 report entitled "Amended & Restated Prefeasibility Study - NI-101 - Technical report for the Norra Karr Rare Earth Element Deposit" prepared for Tasman Metals Ltd. with effective date January 13, 2015 and issue date July 10, 2015. See Tasman Metals Ltd. SEDAR profile on www.sedar.ca for report and more information.

    - The rare earth, zirconium and niobium bearing concentrate will be transported to a dedicated off-site location for chemical processing and further recovery.
- The combination of the above, results in a single waste stream at the Norra Karr site consisting of the mineral aegirine which can be dry stacked in a lined impoundment together with waste rock from mining, eliminating the need for a wet tailings storage facility. This new design substantially reduces land area usage of the Project by approximately 80% (see Figure 1) and results in no chemical process tailing dams being required at Norra Karr. These changes considerably reduce the environment risk profile of the Project at Norra Karr.
- In addition, the removal of chemical processing and wet tailings at Norra Karr delivers an overall predicted 51% reduction in water requirements over the life of mine vs the 2015 PFS study. Use of mine dewatering for processing can reduce additional water requirements by almost 100% and the elimination of discharge requirements to local water bodies compared with the 2015 PFS design.
- The PEA introduces the design of an off-site chemical recovery plant located close to reagent supplies within an existing brownfield development area where mixed REO (MREO), Zr and Nb products are planned to be recovered. Residual process waste at the off-site facility consists of neutralized leach residue and gypsum disposed of in geomembrane lined dry stack impoundments. The Report identifies the future potential to further process the gypsum waste into a gypsum product for construction material markets.

The PEA is preliminary in nature, it includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized.

Filip Kozlowski, CEO of Leading Edge Materials states "*I am very excited to share these important PEA results, having more than met the strategic goals we set out to achieve. Norra Karr is a globally recognized significant rare earth project, and the re-evaluated design strengthens the sustainability, economics and resiliency of the project. By moving chemical processing off-site, and significantly improving resource utilization we have shown the opportunity to eliminate the need for a wet tailings storage. Adding further revenue streams improves the resiliency and cost competitiveness of the project relative to current dominant supply of rare earths from China. Norra Karr offers a rare opportunity for the European Commission's ambitions to develop a sustainable and secure EU based value chain for rare earths and permanent magnets and we now have a much better path ahead of us.*"

Figure 1 – Graphical illustration of Norra Karr On-site open pit, waste rock facility and physical beneficiation plant in comparison to 2015 PFS infrastructure and tailings dam (in red)

Project Financial Highlights

- Pre- and post-tax Net Present Value (NPV) of $1,026M and $762M using a 10% discount rate
- Pre- and Post-tax Internal Rate of Return (IRR) of 30.8% and 26.3%
- Accumulated LoM project revenues of $9,962M
- Average annual EBITDA of $206M
- Initial Capital Expenditures (CAPEX) of $487M
- Pre-tax Payback Period from first production of 5.1 years
- Life of mine average gross basket price per kg of separated mixed REO product at $53
- Operating cost per kg of separated mixed REO product at $33 including toll separation charges
- By-product revenue per kg of separated mixed REO product $19

Operational Highlights

- Life of Mine (LOM) is 26 years
- LOM average annual
    - Mining rate of 1,150,000 tonnes
    - strip ratio of 0.32
    - TREO 5,341 tonnes
    - Main magnet rare earth oxides (“MagREO”) (Nd, Pr, Dy, Tb) 1,005 tonnes
        - Dy_2O_3: 248 tonnes
        - Tb_2O_3: 36 tonnes
        - Nd_2O_3: 578 tonnes
        - Pr_2O_3: 143 tonnes
    - Nepheline Syenite co-product 732,885 tonnes
    - Zirconium dioxide co-product 10,200 tonnes
    - Niobium oxide co-product 525 tonnes

Location and Infrastructure

On-site – Mining and comminution

The Norra Karr mine site is in the south central of the Kingdom of Sweden approximately 1.5 km from the eastern shore of Lake Vattern with the lake and the deposit separated by the E4 highway. Advantageously situated close to both Swedish coasts, approximately 240km south-west of Stockholm and 160km east of Gothenburg. The nearest urban settlement is Granna, 11km south by sealed road.

Regional road access from all major cities and ports to the project site is via the sealed dual carriageway E4 highway and further local access is by all-weather sealed and unsealed roads. Access to the national railway is approximately 30km east from the site with a number of freight terminals in the regional area.

Currently the site is undeveloped within the perimeter and the area still maintains natural vegetation, forestry plantations, cultivated farmlands and farmhouses. The PEA outlines the buildings and installations required to support mining, physical comminution, waste storage, materials handling and product logistics.

Off-site – Chemical leaching and recovery

The ultimate location for the off-site process facility is subject to detailed localization studies between greenfield and brownfield options. For the purpose of the PEA an existing brownfield location has been conceptually chosen to demonstrate the new process flow design of the project. The chosen site is an existing brownfield industrial area within easy reach of rail and port facilities located in the city of Lulea, Norrbotten County in the north of Sweden, approximately 1200 km north of the Norra Karr site along the E4 highway. Lulea has the seventh largest all-year round harbour in Sweden for shipping goods from several mining districts, major chemical producers and a well-established steel industry. The PEA outlines the buildings and installations required to support chemical processing, waste storage, materials handling and product logistics.

Geology and Mineral Resource Estimate

Geologically, Norra Karr is a zoned agpaitic, peralkaline, nepheline syenite complex. The alkaline intrusive REE-enriched body underwent compressive deformation and folding during the Sveconorwegian shearing episodes.

The mineralization is relatively simple with nearly all the REE mineralization is hosted in the zircono-silicate mineral eudialyte, which in itself is a complex mineral. The eudialyte has been found to be relatively rich in REE's, containing a high proportion of heavy rare earth elements (HREE's). The mineralized intrusive is an elongated body orientated in an NNE-SSW direction, shallow dipping angles of 35°- 40° with an approximate strike length of 1,300 m and 450 m in width. The Norra Karr deposit has the advantage that average concentrations of uranium and thorium based on 9987 samples, U 11.4 ppm and Th 10.9 ppm, are extremely low compared with other REE deposits.

Norra Karr was discovered as early as 1906 by SGU (Geological Survey of Sweden), followed by trench bulk sampling work conducted by Boliden throughout the 1940's and 1970's. The first drilling campaigns took place under Tasman Metals between 2009-2012, completing a total of 119 diamond drillholes for a total length of 20,420 m.

All of the mineral resource estimates are disclosed in accordance with the NI43-101 Standards of Disclosure for Mineral Projects and the classification of levels of confidence are considered appropriate on the basis of drillhole spacing, sample interval, geological interpretation, and all currently available assay data. Data obtained from the drilling undertaken over the exploration permit was verified by WAI for the 2015 PFS and reviewed by SRK for purpose of the mineral resource estimate in the PEA.

The Mineral Resource classification for the Norra Karr REE deposit is in accordance with the guidelines of the CIM Definition Standards for Mineral Resources & Mineral Reserves (CIM, 2014).

For the purpose of reporting the REE grades in the Mineral Resource block model were converted to rare earth oxides using the conversion factors in Table 1.

Table 1 - Rare Earth (+zirconium and niobium) oxide conversion factors

Element	Conversion	Oxide	Element	Conversion	Oxide
Ce	1.171	Ce_2O_3	Nd	1.166	Nd_2O_3
Dy	1.147	Dy_2O_3	Pr	1.17	Pr_2O_3
Er	1.143	Er_2O_3	Sm	1.159	Sm_2O_3
Eu	1.157	Eu_2O_3	Tb	1.151	Tb_2O_3
Gd	1.152	Gd_2O_3	Tm	1.142	Tm_2O_3
Ho	1.145	Ho_2O_3	Y	1.269	Y_2O_3
La	1.172	La_2O_3	Yb	1.138	Yb_2O_3
Lu	1.137	Lu_2O_3	Nb	1.431	Nb_2O_5
Zr	1.35	ZrO_2			

Table 2 - Norra Karr Mineral Resource Statement (SRK, 2021)*

Mineral Resource Classification	Tonnes (Mt)	TREO (%)	HREO (%)	ZrO_2 (%)	Nb_2O_5 (%)	Nepheline Syenite (%)
Inferred	110	0.5	0.27	1.7	0.05	65

1. *Effective date 20 July 2021.*
2. *Qualified Person Mr Martin Pittuck*
3. *Mineral resources that are not mineral reserves do not have demonstrated economic viability. Mineral Resources are not Mineral Reserves until they have Indicated or Measured confidence and they have modifying factors applied and they have demonstrated economic viability based on a Feasibility Study or Prefeasibility Study.*
4. *The Mineral Resources reported have been constrained using an open pit shell assuming the deposit will be mined using open pit bulk mining methods, above a cut-off grade of USD150/t., including a 30% premium on projected commodity prices and unconstrained by commodity production rates and the 260m highway buffer zone.*
5. *The Mineral Resources reported represent estimated contained metal in the ground and has not been adjusted for metallurgical recovery.*
6. *Total Rare Earth Oxides (TREO) includes: La_2O_3, Ce_2O_3, Pr_2O_3, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_2O_3, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Lu_2O_3, Y_2O_3.*
7. *Heavy Rare Earth Oxides (HREO) include: Eu_2O_3, Gd_2O_3, Tb_2O_3, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Lu_2O_3, Y_2O_3.*
8. *HREO is 54% of TREO*

The PEA is preliminary in nature, it includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized. The rationale for re-evaluation of the Project at the PEA level is justified for the following reasons; Recognition of potentially economic commodities in the mineralization not evaluated in the 2015 PFS, namely nepheline syenite, niobium and zircon, recognition of the need to reduce the project footprint and assess alternatives to a large tailing's facility at the mine site, and the need to minimize waste on the project and have greater utilization of the extracted materials. The Company does not expect the mineral resource estimates contained in the PEA to be materially affected by metallurgical, environmental, permitting, legal, taxation, socio-economic, political, and marketing or other relevant issues.

Mining

The mine planning work for the PEA was carried out using a mining model, which was generated from the mineral resource model. An optimal pit shell was chosen based on the highest average discounted cashflow assuming a production rate of 1.15 Mtpa of plant feed and a discount rate of 10%. The generated extraction schedule and pit design also sought to maximize the potential for waste backfill quantities which results in a four staged approach which provides a 25 year LOM, a total of 29.3 Mt of run-of-mine (ROM) and a total of 9.4 Mt of waste for an average strip ratio of 0.32. The staged approach commences with the planned 1.15mtpa crusher feed target, which is expected to be met starting in Year 1 due to the limited waste stripping requirements. The mine schedule sequence starts in Stage 1, with Stage 2 commencing in Year 2. Stage 3 begins in Year 3, while Stage 4 is delayed until Year 16 to maximize backfill options. The total production averages 1,625 ktpa from Year 3 to 9, after which the total material movement decreases as the strip ratio in Stage 3 decreases. Waste stripping requirements increase starting in Year 16 as Stage 4 begins, averaging 1.8 Mtpa until Year 20. The delay of Stage 4 allows for 1.9 Mt or 21% of total waste to be backfilled in the pit void.

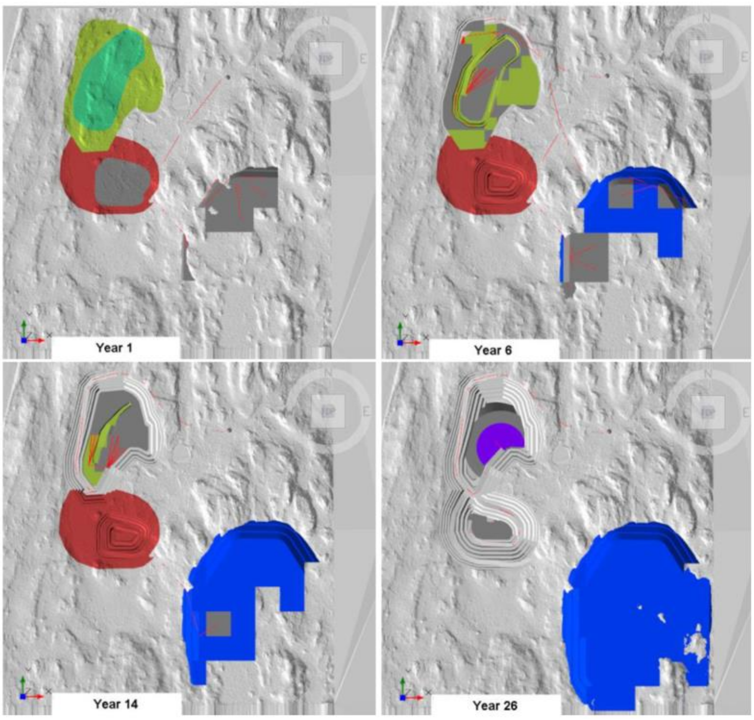

Figure 2 – Open pit and waste rock facility through the different stages

Mining equipment includes two 5.5 m^3 excavators with up to six 46.8 t payload haul trucks and in addition a stockpile loader and two 110 mm drills. Although there was no readily available electric mining equipment to consider for the purpose of the PEA this option was noted as a future opportunity to further increase the sustainability merits of the Project.

The waste rock storage plan is designed to minimise the waste footprint by pit backfill in the northern part of the pit once that area has been mined as well as an external waste dump. The external waste dump design has a capacity of 8.8M loose cubic meters. The backfill waste dump design has a capacity of 1.35 m loose cubic meters. It is also expected that some of the waste mined in the earlier years of the operation will be used for construction purposes as required.

Processing Overview

In the 2015 PFS, chemical processing for leaching and recovery of REO was envisioned to occur on site. This required a large tailings storage facility and comprehensive water treatment to ensure environmental protection. Even with this, considerable risk was perceived to the processing operation and waste storage in local proximity to a number of designated natural protection areas.

In order to reduce any risk of potentially hazardous substances away from the environmentally sensitive areas the PEA re-evaluation proposes to move the chemical processing to a more suitable off-site location. The on-site mine site will only include physical comminution and magnetic separation, eliminating chemically leached waste streams and the need for toxic reagents at site.

The PEA demonstrates the potential to produce a eudialyte concentrate at site through crushing, milling and a two-stage magnetic separation. This concentrate is shipped to an off-site chemical processing facility elsewhere in Sweden, close to a well-established chemical industry allowing reagents to be readily supplied, reducing the carbon footprint of the reagents and any transport risks and costs associated. Availability of cost competitive and low carbon footprint hydropower electricity in the region for the off-site facility offers a reduction in operating costs and climate impact for the energy intensive process. The proposed conceptual flowsheet is provided in Figure 3.

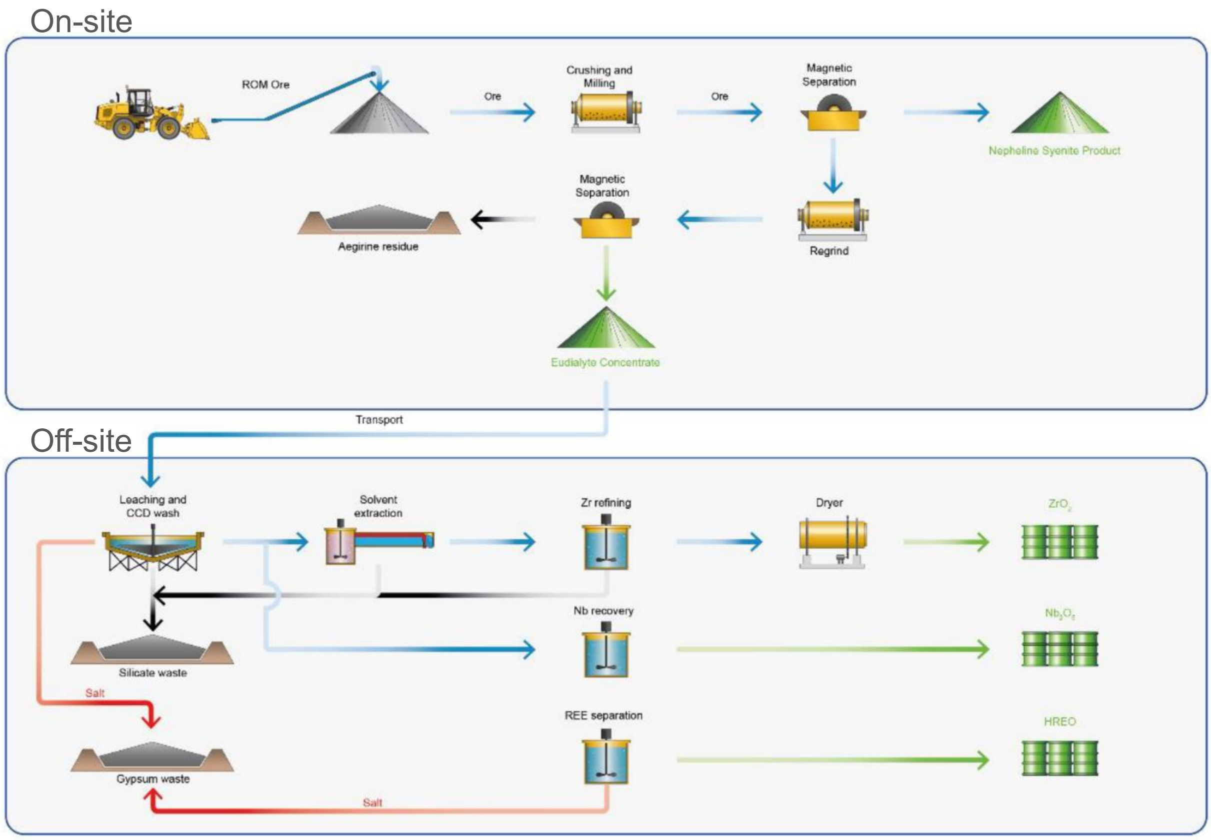

Figure 3 – On-site and Off-site high-level flow sheets as used in the PEA

For the PEA, SRK has relied on past testwork, both prior and subsequent to the 2015 PFS and industry accepted practices as a basis for the redesigned flowsheet. The process design criteria in Table 3 and Table 4 formed the operational basis for the process flowsheet design.

Table 3 - Process design criteria

Description	Magnitude	Unit
On site process plant throughput	1150	000 t/a
ROM TREO grade	0.56	%
ROM Zr grade	1.86	%
ROM Nb grade	0.06	%
Contained TREO	6,946	t/a
Contained Zr	21,394	t/a
Contained Nb	657	t/a
Process plant operation	24/7/365	-
Crushing mechanical availability	80	%
Griding and beneficiation availability	91	%
Hydrometallurgy plant availability	91	%

Table 4 - Overall Process Recovery

Mass Balance	Overall MS*	Leach Recovery	Intermediate Separation from Leach Solution	Overall Recovery
Ce_2O_3	93%	91%	99%	84.1%
Dy_2O_3	93%	91%	99%	84.1%
Er_2O_3	93%	91%	99%	84.1%
Eu_2O_3	93%	91%	99%	84.1%
Gd_2O_3	93%	91%	99%	84.1%
Ho_2O_3	93%	91%	99%	84.1%
La_2O_3	93%	91%	99%	84.1%
Lu_2O_3	93%	91%	99%	84.1%
Nd_2O_3	93%	91%	99%	84.1%
Pr_2O_3	93%	91%	99%	84.1%
Sm_2O_3	93%	91%	99%	84.1%
Tb_2O_3	93%	91%	99%	84.1%
Tm_2O_3	93%	91%	99%	84.1%
Y_2O_3	93%	91%	99%	84.1%
Yb_2O_3	93%	91%	99%	84.1%
ZrO_2	86%	65%	87%	48.6%
HfO_2	86%	65%	87%	48.6%
Nb_2O_5	93%	91%	96%	81.6%

* MS = magnetic separation

On-site Processing

Comminution and beneficiation

The beneficiation process starts with Run of Mine (ROM) material being fed into several stages of screening, crushing and classification, transferred via conveyors. The material discharge is then put through stages of grinding, milling and two stages of magnetic separation, resulting in a final output of separated concentrates of eudialyte (main REE bearing mineral), aegirine and nepheline syenite. In detail the ore will be crushed and milled to 212 µm followed by magnetic separation to remove nepheline syenite. The resulting magnetic concentrate is then milled to 125 µm and then separated at high intensity to collect finer eudialyte and separate from aegirine.

The two-stage magnetic separation starts with the undersize material from the mill screen being fed to a first stage low intensity magnetic separator to remove any residual grinding media, before reporting to a wet high gradient magnetic separator. During this first stage magnetic separation, a mixed eudialyte-aegirine product would be concentrated. The non-magnetic material will report to the nepheline syenite circuit for additional processing prior to packing and sale. In total approximately 65% of the total mined mineralized material will be available as a potential nepheline syenite by-product.

The aegirine dominated concentrate then undergoes a second re-grind stage which is immediately followed by the second stage of magnetic separation resulting in eudialyte being separated from the aegirine. The aegirine waste then reports to a designated lined impoundment within the waste rock storage facility on site.

In order to preserve and recirculate water within the closed circuit, each concentrate will report to their respective thickeners for water recovery. Thickeners from the non-magnetic stage reports to the tailings discharge and process water tanks, whereas the thickeners from the magnetic concentrate stage reports to the leach conditioning tank and back to magnetic separator.

Recovered eudialyte concentrate of approximately 104,650 tpa would then be shipped to the off-site chemical facility for leaching and recovery.

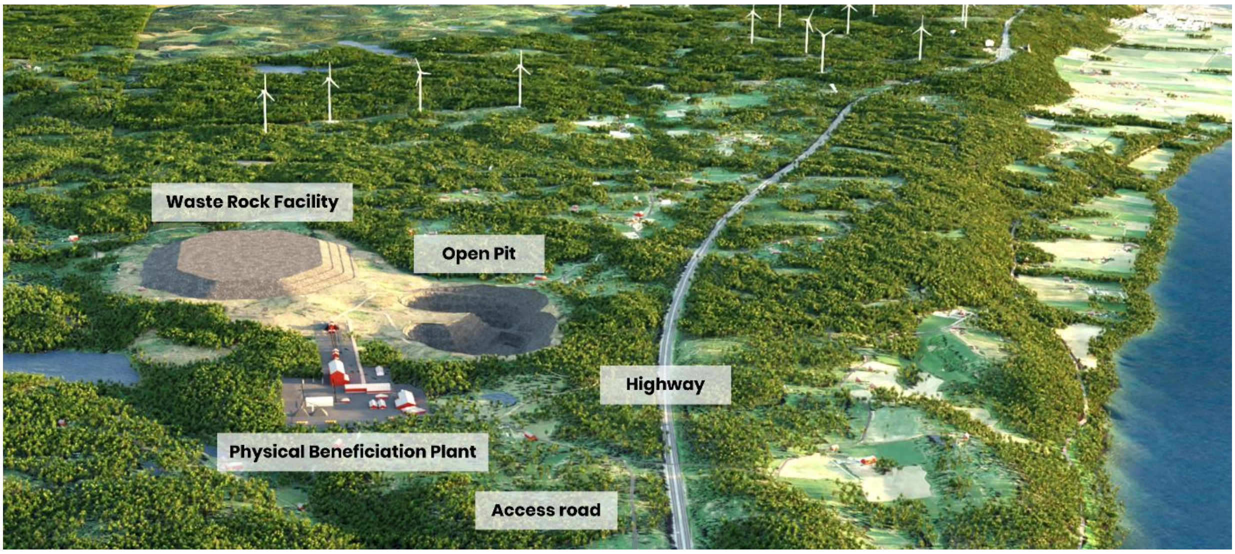

Figure 4 – Main features of the Norra Karr On-site project layout

Off-site Processing

Chemical leaching and recovery

At the off-site process facility, the eudialyte concentrate is planned to undergo a two stage acid extraction, one concentrated and the other a diluted leach.

During this process sulfuric acid is added to the concentrate in multiple stages at elevated temperatures to leach metals which is then followed by diluted leaching of the treated concentrate at ambient temperatures. After leaching, impurities are precipitated through the addition of lime and discharged to a filter cake that reports to the leached residue waste stream. The resulting pregnant leach solution ("PLS") then reports to multiple solvent extraction stages for recovery and stripping of REO, Zr and Nb.

The result is a REE-rich mixed oxide or Rare Earth Oxide (REO) product, a niobium oxide product and a zirconium oxide product

The most significant changes to the process are multiple stages of sulfuric acid leaching to maximise on metal leaching and improve extraction efficiency. By controlling conditions in the SX circuit the impact of silica gel can be reduced and recycling of sulfuric acid from the solvent plant will allow for more efficient use of reagents. Additional leaching steps allow the leaching of Zr and Nb to leached recovery above 98%.

The final mixed REO product will be cooled, packed, and prepared for dispatch to a refinery for individual REO separation.

Market overview and price assumptions

The REE pricing outlook utilized in the PEA relies on the Company's internal knowledge about rare earth markets combined with information from the report “Rare Earth Magnet Market Outlook to 2030” published in 2020 and updated in 2021, by Adamas Intelligence (Adamas).

In addition, the Company has relied on the following sources for the other relevant markets for the by-product revenue streams:

- “Norra Karr Nepheline Syenite – General Market Summary report” published in 2021, by IMMC;
- “Summary of the potential for a new source of Zr chemicals from Sweden” published in 2021, by MinChem Ltd and
- “Niobium Industry Annual Report 2020 and historical price series” published in 2020 and updated in 2021, by Asian Metal Ltd.

REO (Rare Earth Oxides)

Rare earth elements are fairly abundant in the Earth’s crust, however, due to their geochemical properties they are typically dispersed and as such what is ‘rare’ is to find them sufficiently concentrated in a deposit that they are potentially economically viable to exploit.

The principal forecast demand driver for rare earth elements is their critical use in permanent magnets. Neodymium-iron-boron (NdFeB) magnets provide the advantage of magnetic strength vs volume making these magnets the preferred choice in many growth technologies such as electric motors for electromobility and generators for wind turbines.

Permanent magnets utilize neodymium, praseodymium, dysprosium and terbium (“magREO”) in various proportions. In 2019 demand for permanent magnets represented 38% of REO by volume, but by value this number increased to 91% according to Adamas Intelligence. Thus, marketing studies for this report has been focused on the magREO products.

For REOs China is the dominant source of mine supply and downstream processing within the permanent magnet value chain. In 2020 there was no magREO mine supply in Europe, meaning the import reliance is 100%. In addition to mine supply there is secondary supply of magREO from recycled magnet production waste. The world combined mine and secondary magREO supply is estimated to grow from 65,900 tonnes in 2020 to 130,949 tonnes by 2030 at a CAGR of 7.1%.

The world magREO demand in 2020 is estimated at 59,195 tonnes and expected to grow to 148,847 tonnes by 2030 at a total CAGR of 9.7%. Higher growth rates are expected for the HREOs until 2030 due to the expected strong demand growth for higher-performance NdFeB magnets that contain elevated concentrations of dysprosium and terbium. China is the main destination for magREO due to China’s dominance of downstream processes from metal, alloys and powders to NdFeB magnet production.

The pricing forecast by Adamas Intelligence provided three alternative pricing scenarios (high, medium and low). It was decided for the PEA to use the "Low price scenario" using forecasted prices for each year from 2025 until 2030 for the first 5 years of production and then using the 2030 forecasted price for the remainder of the life of the project.

The table below displays the applied average weighted individual REO prices resulting in an average basket price of $53/kg over the life of mine:

Table 5 – LoM average REO prices applied for the economic analysis of the PEA

REO	Ce	Dy	Eu	Gd	La	Lu	Nd	Pr	Sm	Tb	Y
USD/kg	2.25	486.33	54.2	39.66	3.19	800	103.36	108.38	2.71	1215.8	6.75

Nepheline syenite

Nepheline syenite (NS) is an aluminium silicate consisting of the minerals nepheline, microcline and albite. The NS chemical properties, high alumina content, quartz-free and a low melting point makes the material attractive for several modern industrial functions. These characteristics increase strength, density, brightness, gloss and abrasiveness in end-uses such as flux in glassware, coatings, pigment filler in paints, ceramics, functional fillers and cement fillers.

Currently the global NS supply is dominated by Sibelco's two main operations in Canada and Norway producing NS as their primary products. Nepheline syenite products are often incorrectly classified as Feldspar due to similar chemical properties, undermining the greater performance benefits of a higher quality NS with a higher market price than Feldspar. Therefore, the PEA report is planned to target the well-established and traditional feldspar market by introducing the compositionally superior and non-toxic NS products as a replacement option for feldspar products. There is concern in the EU about the toxicity of respirable crystalline silica (quartz) towards workers in mining and manufacturing industries which are strictly regulated by EU directives and regulations.

On a global scale, the world market for feldspar in 2018 had grown to 28.4 Mt and worth €2,000 million reported by the European Commission. An annual study by USGS showed the global growth for feldspar focusing on ceramics and glassware was already estimated to see 5% compounded annually through to 2027. The global pricing of feldspar is relatively low but stable and seems to have flat-lined at approximately $60 per tonne over the last 15 years as the traditional markets have not changed.

Within the EU, studies by the European Commission indicated the EU consumption of feldspar in 2018 reached 10.9Mt with the import reliance of feldspar as high as 53%. The EU demand from 2010 to 2018 experienced constant growth and has increased by approximately 93%. The average pricing for feldspar seen in the EU over the last decade ranged from €30-200 per tonne depending on feldspar type and content. In contrast nepheline syenite saw an upward trend ranging from €105-135 per tonne.

Three different NS products are planned to be produced from the Norra Karr project with forecast prices ranging from $12 to $65 per tonne assumed for this PEA assessment provided by IMMC.

It needs to be noted that according to a report provided by IMMC, if NS products are not used as a replacement of feldspar, but instead utilised as its own bespoke product harnessing its superior attributes, the higher end pricing of $220-227 per tonne may be reached, although this is part of the market that will be studied further in next stage of the Project development.

Nepheline syenite produced at the Norra Karr project would be a by-product utilised from the mine waste material additionally increasing resource efficiency and a reduced footprint on-site. This provides a unique advantage for the EU-based project to strategically supply a quartz-free non-toxic replacement, as the EU currently depends on around 90% imports of NS.

Zirconia (Zirconium dioxide)

Zirconium (Zr) is a metallic element with various compound forms consisting of several physical, mechanical and nuclear properties, such as very high hardness, high melting point, chemical stability at high temperatures, high oxide ion-conductivity and abrasion & corrosion resistivity. These characteristics make it attractive for a variety of industrial, commercial and scientific applications such as ceramics, chemicals, refractories, foundry, fuel cells and solid-state batteries. Zirconia (zirconium dioxide) is mainly produced synthetically through various production routes. Approximately 97% of Zr compounds and metal is produced using zircon recovered from heavy-mineral sands deposits as a feedstock. A non-exhaustive list of Zr chemicals that are currently being produced are Zirconium Chlorides (ZOC), Zirconium Sulphates (ZOS/ZBS), Zirconium Carbonates (ZBC/AZC/KZC), Zirconium Acetate (ZAC), Zirconium Phosphate (ZP), Zirconium Hydroxide (ZOH), Chemical Zirconia, Fused or Thermal Zirconia, Stabilized Zirconia and Zirconium Metal (with/without hafnium).

Minchem reports that China has become the world's main supplier of ZOC and other Zr chemical compounds in some cases representing over 90-95% of the world supply with prices ranging between $7-8 per kg. As for the product Chemical Zirconia, China exported 20,000 tonnes in 2020 with significant varying prices according to grades, between $4-50 per kg. The Chinese dominance of supply is an increasing concern to industries with factors such as; environmental and waste management neglect, production supply deficits from intense water and power usages, depleting low U/Th content feedstocks forcing the shift over to higher U/Th feedstocks, supply disruptions due to Covid-19 and lastly increasing shipping costs driving global buyers to search for alternative Zr chemicals outside of China. An EU focused study by the European Commission, indicates that there are currently no registered production sites for Zr ore within the EU, meaning the reliance of imports is 100%. The main Zr chemical suppliers feeding 97% of the EU demand comes from Africa, Australia and Asia, with 88% of Zr Metal products sourced from the US, Asia and UK.

The Company would potentially be capable of producing an EU sourced high-purity Chemical Zirconia that could be further processed to any of the various Zr chemical compounds. The added Swedish-based advantage is access to low carbon footprint electricity opposed to current sources. At this early stage of assessment, the PEA has taken a conservative price of $4 per kg for Chemical Zirconia.

Niobium pentoxide

Niobium (Nb) is a relatively hard, paramagnetic, refractory transition metal. It has a very high melting point, highly resistant to chemical attack and behaves as a superconductor at very low temperature. The main end-use market representing 90% of demand for Nb is when added as ferro-niobium (FeNb) to High Strength Low Alloy Steels (HSLA). While future potential end-uses of Nb in high-performance and fast charging electric vehicle batteries are currently being developed.

Almost all of the world's supply of Nb is produced by three operating mines, with CBMM's Araxa mine in Brazil, CMOC in Brazil (Chinese owned) and the Niobec mine in Canada. These three mines represent 99% of the market with the Araxa mine representing more than 80% of annual sales. The production has historically been associated with spare capacity but CBMM in 2019 announced an expansion from 100ktpa of FeNb to 150ktpa by the end of 2020 to meet future demand.

Studies by the European Commission highlights, between 2012 and 2016 the EU consumption of FeNb was 12.2k tonnes predominantly feeding the construction industry. While imports during the same period into the EU, mainly from Brazil were 13.9k tonnes.

The product proposed to be produced from this Project is niobium pentoxide. Although the historic market for this product has been small, CBMM recently communicated it is expecting to increase sales of Nb oxides from 100tpa to 45,000tpa by 2030. The main driver behind this increase in production is the potential use in high-performance and fast charging electric vehicle batteries.

A 2021 annual report provided by Asian Metal, indicates the Chinese niobium oxide production output for 2020 was 3,014t, which is a 41.77% year-on-year increase. This supports the notion for the growing demand from the downstream steel industry and special alloys leaning towards the output in 2021 increasing even further as global economies pick up and overseas consumers remain active in purchasing.

According to Asian Metal, the production capacity of Chinese niobium oxide producers in late 2020 was 5,920t, an increase of 16.31% year-on-year. Niobium Pentoxide prices for at end of June 2021 showed $42-43/kg for Niobium Pentoxide 99.99%min FOB China and $34-35/kg for Niobium Pentoxide 99.5%min FOB China.

Nb is designated as a critical raw material by the European Union with the region being 100% reliant on imports. With the significant increase in announced battery production within the EU, and several leading Nb battery start-ups located in the region, this market is expected to grow significantly. For the purpose of this PEA re-evaluation of the Project, a forecast price of USD35/kg Niobium Pentoxide has been assumed.

Project Economics, Capital and Operating costs

LoM Project Economics

Parameter	Value
Pre-Tax NPV(10%)	$1,026M
Post-Tax NPV(10%)	$762M
Pre-Tax IRR	30.8%
Post-Tax IRR	26.3%
Accumulated Project Revenues	$9,962M
Accumulated Project Operating Profit	$5,344M
Initial Capital Expenditures (CAPEX)	$487M
Average Annual Gross Revenue	$383M
Average Annual Operating Expenditures including toll separation (OPEX)	$178M
Average Annual EBITDA	$206M
Pre-Tax Payback Period from first production	5.1 years
Post-Tax Payback Period from first production	5.6 years
USD$/SEK conversion rate	8.33
USD$/EUR conversion rate	0.83

Gross Revenue Split	**Units**	**LoM**	**Av Annual**	**REO %**
Ce_2O_3	(USDk)	64,127	2,466	0.9%
Dy_2O_3	(USDk)	3,130,566	120,406	42.5%
Er_2O_3	(USDk)	-	-	0.0%
Eu_2O_3	(USDk)	27,841	1,071	0.4%
Gd_2O_3	(USDk)	183,706	7,066	2.5%
Ho_2O_3	(USDk)	-	-	0.0%
La_2O_3	(USDk)	40,374	1,553	0.5%
Lu_2O_3	(USDk)	460,084	17,696	6.2%
Nd_2O_3	(USDk)	1,554,191	59,777	21.1%
Pr_2O_3	(USDk)	404,200	15,546	5.5%
Sm_2O_3	(USDk)	11,261	433	0.2%
Tb_2O_3	(USDk)	1,146,951	44,113	15.6%
Tm_2O_3	(USDk)	-	-	0.0%
Y_2O_3	(USDk)	343,662	13,218	4.7%
Yb_2O_3	(USDk)	-	-	0.0%
Total	(USDk)	**7,366,963**	**283,345**	**100.0%**
TREO basket price	(USD/kg)	**53.05**		

Project main revenue drivers are the magREO (Dy, Nd, Tb and Pr) representing approximately 85% of LoM total REO revenues with a favorable LoM average TREO basket price of $53.05.

Pre-tax and Post-tax sensitivities

Discount rate	6%	8%	**10%**	12%	14%
Pre-tax NPV	$1,815M	$1,358M	**$1,026M**	$781M	$595M
Post-tax NPV	$1,397M	$1,029M	**$762M**	$564M	$415M

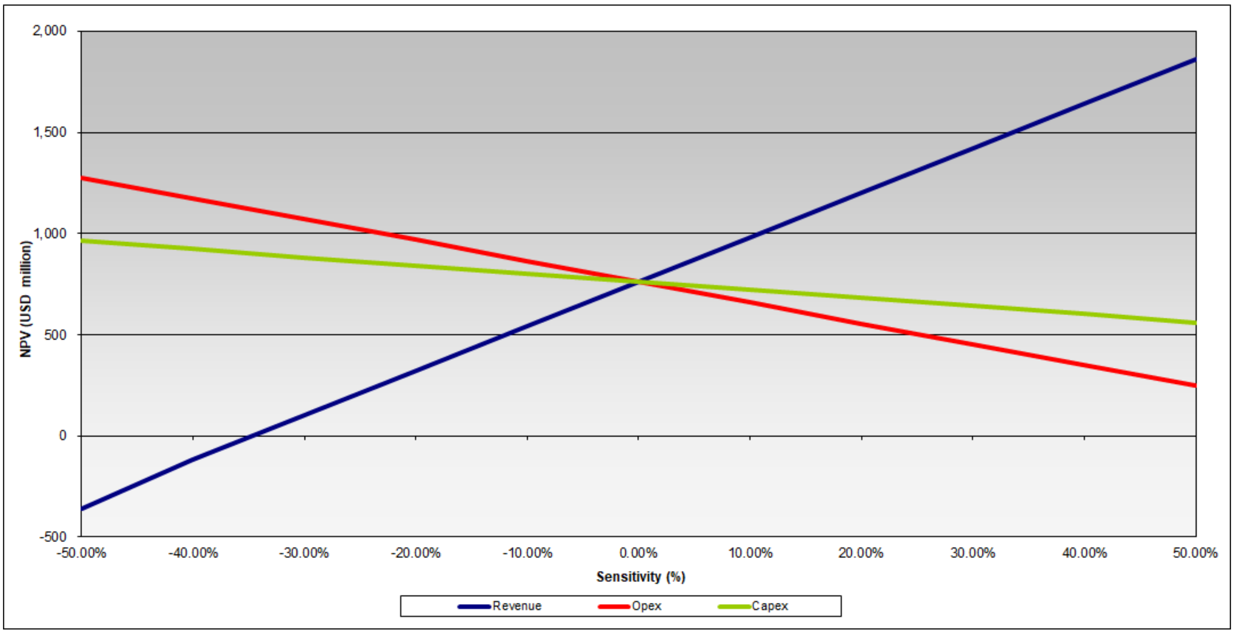

Figure 5 – Post-tax single parameter sensitivity analysis

Initial Capital Expenditures

Project Capital Cost Summary	Units	Project	On-site	Off-site
Mining	(USDk)	12,748	12,748	-
Processing	(USDk)	261,220	65,305	195,915
Water Supply	(USDk)	1,007	1,007	-
TSF/Waste Management	(USDk)	8,168	3,607	4,561
Transport/Handling	(USDk)	8,352	8,352	-
Infrastructure/Utilities	(USDk)	43,980	19,920	24,060
Owners/General	(USDk)	15,000	7,500	7,500
Sub-total Direct	(USDk)	**350,475**	**118,439**	**232,036**
EPCM	(USDk)	31,543	10,659	20,883
Indirect	(USDk)	35,047	11,844	23,204
Contingency	(USDk)	70,095	23,688	46,407
Sub-total Indirect	(USDk)	**136,685**	**46,191**	**90,494**
Total	(USDk)	**487,160**	**164,630**	**322,530**

The capital cost estimates are considered overall to have a achieved a Scoping Study / PEA level of accuracy of ±40-50%. Costs are taken from SRK in-house databases and recent budget quotes or benchmarks. The capital cost estimate includes direct and indirect costs and a 20% contingency.

In addition to initial capital expenditures a general allowance of $84.2M for sustaining capital and $35M for closure costs have been included over the LoM.

Operating Cost Summary

Operating Cost Summary	Units	LoM	Av Annual	USD/t ore	USD/kg REO
Mining	(USDk)	164,960	6,345	5.63	1.19
Processing – On-site	(USDk)	525,617	20,216	17.93	3.79
Processing – Off-site	(USDk)	975,599	37,523	33.28	7.03
G&A	(USDk)	146,577	5,638	5.00	1.06
Transport	(USDk)	144,544	5,559	4.93	1.04
Royalty	(USDk)	21,898	842	0.75	0.16
Sales	(USDk)	2,638,378	101,476	90.00	19.00
Total	**(USDk)**	**4,617,572**	**177,599**	**157.51**	**33.25**
Co-product credit					-18.68
Total after co-product credit					**14.57**

The operating cost estimate is considered overall to have a achieved a Scoping Study / PEA level of accuracy of ±40-50%. Costs are taken from SRK in-house databases and recent budget quotes or benchmarks.

Figure 6 illustrates the Project yields an average LoM net operating margin of USD38.46/kg REO after taking into account credit from by-product revenue.

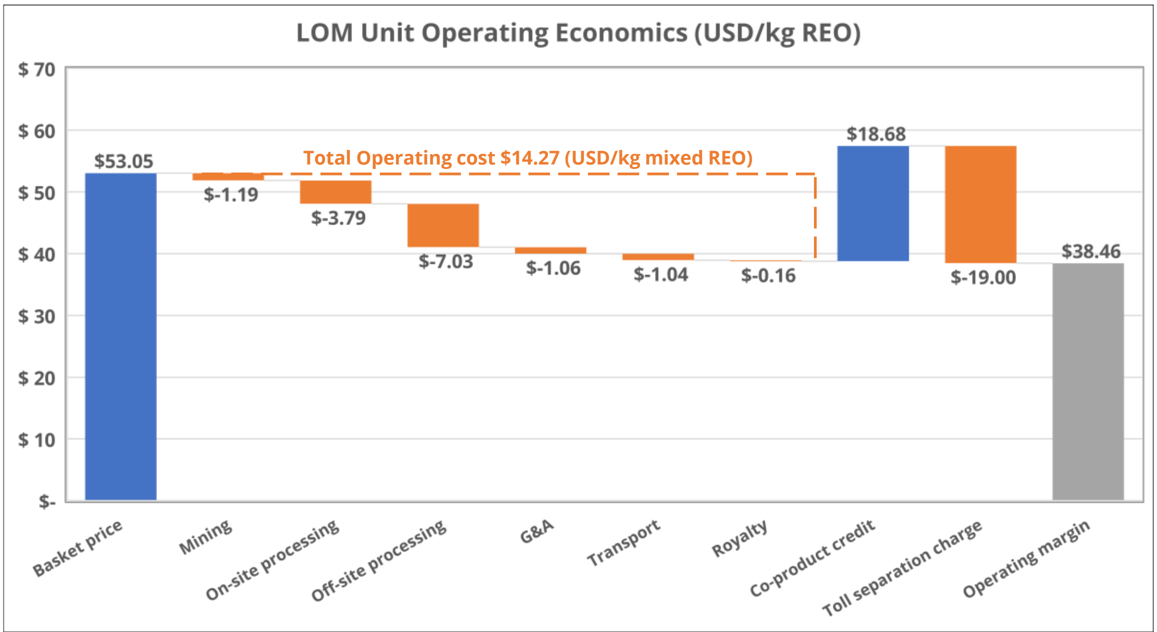

Figure 6 – Unit Operating Economics over life of mine per kg of REO

ESG and permits

Compared with past proposed project and metallurgical process designs the new design outlined in the PEA maximises the resource utilization by converting waste material into saleable by-products, while also reducing further footprints by reduced waste storage facilities and pit backfill.

The on-site operation is approximately 300 km south-west of Stockholm. It is located 1.5 km east of Lake Vattern - one of the largest lakes in Sweden and a Natura 2000 site, a nature protection ecologically sensitive area designated at European level to safeguard Europe's major habitat types and endangered species. There are two other Natura 2000 protected sites on the shores of Lake Vattern – Holkaberg and Narback. The Project site and the surrounding area is characterised by alternating agricultural land, scattered homesteads and forests. The main north-south E4 highway runs approximately 500 m to the west of the project area with the site itself accessed by rural roads.

The Project site itself does not overlap any European designated nature protection sites or Swedish National Parks but there are several protected sites in the immediate vicinity. Lake Vattern has a variety of different environmental designations. The entire lake is protected under the European Habitats Directive and the north-eastern portion is also designated as a Special Protection Area, a European protection designation specific to birds under Directive 2009/147/EC, referred to as the Birds Directive. The water protection zone extends up various streams draining into the lake; these are separate from the Natura 2000 protected areas but are connected.

The Company recognizes the sensitive nature of the Project, and therefore is taking the stance to go above and beyond compliance in all elements of ESG in order to progress to an EU-based sustainable operating mine. In the coming stages of the project the following is recommended: Life Cycle Assessment (LCA), community-stakeholder engagement with project awareness (covering positive and negative aspects), Environmental and Social Impact Assessments (ESIA's), detailed waste generation and storage studies (on-site and off-site), detailed biodiversity mitigation & management, and detailed water management studies.

On-site waste

The planned flow design utilises the waste through magnetic separation to produce a nepheline syenite product and to separate the remaining material into an aegirine residue potentially for future markets, which is currently being investigated. Aegirine residue will be stored on-site, the nepheline syenite by-product is expected to be sold at the mine gate and the REE mineral concentrate will be transported off-site to Lulea, eliminating the need for a tailings storage facility.

The aegirine residue waste (297,850 tpa or 7.6Mt over the LoM) will be stacked as 'dry' crushed, granular material in engineered waste 'dry stacks'. The design of the dry stacks is perimeter bunded and lined which aims to safely store the required volume of material, while minimising the contamination risk, facility footprint area, final surface area for rehabilitation, the closure time and closure cost.

Off-site waste

The waste produced at the Lulea facility is silicate waste (average 86,537tpa or 2.2Mt over the LoM) and gypsum waste (average 91,916tpa or 2.4Mt over the LoM) which would also be stacked as 'dry' crushed, granular material in separated engineered waste 'dry stacks' in the same cautious design as on-site. Potential for the future markets of gypsum is currently being investigated to optimise waste efficiency.

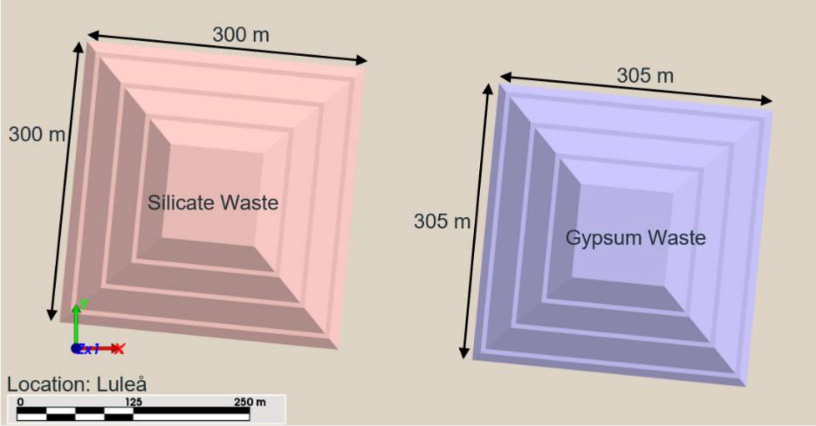

Figure 7 – Conceptual design of the 'dry stack' waste storage facilities at the off-site location

Radionuclide content

The Norra Karr deposit average concentration of uranium and thorium based on 9987 samples are extremely low (U 11.4 ppm and Th 10.9 ppm), especially compared with other REE deposits. The various material streams from the new design of the Project have not been tested for radionuclide content. However previous testwork, on both material and waste streams conclude that amounts of uranium and thorium, activity concentrations and indexes would likely fall below thresholds of radioactivity as per the definition of a radioactive substance by the International Atomic Energy Agency (IAEA) and EU guidelines ANSTO, 2014).

SRK has conducted a hazardous waste assessment through HazWasteOnlineTM to determine whether the waste materials contain any hazardous properties. The assessment uses the multi-element assays for the composites and average assays per material type for the 65 waste rock samples plus calculated weighted averages. Based on the project geochemistry the waste rock is classified as non-hazardous, non-inert by the Swedish Waste Ordinance (SFS 2020:614).

Water use

In comparison to earlier water usage concerns, the project PEA has resulted in a reduced project footprint with no large-scale slurry tailings facility required. This consolidation places all the infrastructure at Norra Karr within a single watershed draining to the northwest. The highway to the west of the project area is a high point within the local topography and as such forms a watershed for the sub catchment in which the project area lies.

The management of water at the mine site is important both to meet make-up requirements, which include the wet magnetic separation process, dust control, wash down of plant, domestic use, to limit the potentially adverse effects of run-off, groundwater flow, elevated pore pressures in the pit and its environs on the day-to-day operations of the mine.

The pit dewatering schedule for the 26 year LOM has been developed and outlined in the PEA, it mentions pit water discharge where possible be used in the process to limit fresh make-up water from external sources and that discharges to settling ponds and ultimately the stream should be regulated so that there is minimal disruption to normal stream flow patterns. The inflow of water into the pit is unfortunately not a reliable supply and therefore the ideal situation would be to retrieve Lake Vattern water supply by pumping a maximum of 13 L/s sufficient for the wet magnetic separation process on-site. More detailed hydrological studies will be performed in the next stage.

Permits

Mining lease (exploitation concession): A 25-year mining lease (exploitation concession) was granted to the Company's Swedish subsidiary Tasman Metals AB, recently renamed to GREENNA Mineral AB, covering Norra Karr in 2013. In 2014 the Government of Sweden upheld the granting of the mining lease after an appeal. In 2016, following an appeal to the Supreme Administrative Court (SAC) in Sweden regarding the decision-making process of the Bergsstaten under the Minerals Act, the Norra Karr mining lease reverted from granted to application status. On May 5, 2021, The Mining Inspectorate of Sweden ("Bergsstaten") rejected the mining lease application with the motivation that since the Company had not acquired a Natura 2000 permit for the Project, they were not able to rule on the mining lease application. The Company has subsequently appealed this decision to the Government of Sweden.

The Company subsequently lodged an appeal to the Government to cancel Bergsstaten's rejection of the mining lease application and continue the evaluation of the application once the SAC has ruled whether a Natura 2000 permit should be a pre-condition for the granting of a mining lease or not. This is based on the fact that this is not an isolated incident and similar case outcomes are still pending for other mining companies in Sweden too.

Most importantly, the Company is looking to use the redesigned scope of the Project from the PEA to form the basis for additional environmental and hydrological studies as a basis for an amended or new mining lease application.

Exploration permit: In June 2020, the Company received confirmation that the exploration permit (Norra Karr No.1) underlying the mining lease application was granted an extension to August 31, 2024. Subsequently the Swedish parliament passed legislation to mitigate the impacts of COVID-19 by giving exploration companies an additional year to carry out their work which extends the Norra Karr exploration license to August 31, 2025. The extension of the exploration license was appealed, and the administrative court of Lulea rejected the appeal in March 2021, upon which the case has been appealed to the next instance which is pending decision to grant leave of appeal. The extension of the exploration license remains in force until a final ruling in the case has been made, and remains in force until a final ruling has been made on the mining lease application.

Social

The PEA has highlighted the importance and need for local and national multi-stakeholder consultation for purposes such as; awareness, dealing with misinformation, and grievances. A more detailed strategy will be outlined for community project updates and transparent dialogues based on the new plans for the Project. The new on-site layout from a significantly reduced project footprint and therefore the number of houses directly or indirectly impacted should reduce. A more detailed assessment will be provided in the full PEA report.

Qualified Person

This release has been reviewed and is approved for the scientific, technical and economic information contained in this news release by Dr. Rob Bowell of SRK Consulting (UK) Ltd, a chartered chemist of the Royal Society of Chemistry, a chartered geologist of the Geological Society of London, and a Fellow of the Institute of Mining, Metallurgy and Materials, who is an independent Qualified Person under the terms of NI 43-101 for REE deposits. Dr. Bowell has verified the data disclosed in this news release. A site visit for purpose of QP sign off and examination of the mineralization, core and field area was undertaken from June 28 to July 3, 2021 by Dr Bowell.

Mr Martin Pittuck MSc of SRK Consulting (UK) Ltd is a chartered engineer and member of the Institute of Mining, Metallurgy and Materials, who is an independent Qualified Person under the terms of NI 43-101 for REE deposits. He has reviewed the data disclosed for the estimation of resources and has estimated an updated PEA resource that covers REE, Zr, Nb and Nepheline Syenite.

SRK Qualified Persons are all independent as defined by NI 43-101, and have contributed to their corresponding sections of the PEA, and have reviewed and approved the scientific, technical and economic information contained in this news release.

The full details of the PEA will be available in a NI43-101 (Canadian National Instrument 43-101 - Standards of Disclosure for Mineral Projects) compliant technical report, filed and available on the Company's website and SEDAR profile within 45 days of this release.

On behalf of the Board of Directors,
Leading Edge Materials Corp.

Filip Kozlowski, CEO

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About Leading Edge Materials

Leading Edge Materials is a Canadian public company focused on developing a portfolio of critical raw material projects located in the European Union. Critical raw materials are determined as such by the European Union based on their economic importance and supply risk. They are directly linked to high growth technologies such as batteries for electromobility and energy storage and permanent magnets for electric motors and wind power that underpin the clean energy transition towards climate neutrality. The portfolio of projects includes the 100% owned Woxna Graphite mine (Sweden), Norra Karr HREE project (Sweden) and the 51% owned Bihor Sud Nickel Cobalt exploration alliance (Romania).

Additional Information

This information is information that Leading Edge Materials Corp. (publ). is obliged to make public pursuant to the EU Market Abuse Regulation. The information was submitted for publication through the agency of the contact person set out above, on July 22, 2021 at 3:50 pm Vancouver time.

Leading Edge Materials is listed on the TSXV under the symbol "LEM", OTCQB under the symbol "LEMIF" and Nasdaq First North Stockholm under the symbol "LEMSE". Mangold Fondkommission AB is the Company's Certified Adviser on Nasdaq First North and may be contacted via email CA@mangold.se or by phone +46 (0) 8 5030 1550.

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The words "may", "would", "could", "will", "intend", "plan", "anticipate", "believe", "estimate", "expect" and similar expressions, as they relate to the Company, or its management, are intended to identify such forward-looking information. Investors are cautioned that any such forward-looking information is not a guarantee of future business activities and involves risks and uncertainties, and that the Company's future business activities may differ materially from those in the forward-looking information as a result of various factors, including, but not limited to, success of the appeals process; fluctuations in market prices; successes of the operations of the Company; continued availability of capital and financing; changes in planned work resulting from weather, logistical, technical or other factors; the possibility that results of work will not fulfil expectations and realize the perceived potential of the Project; changes in project parameters as plans continue to be refined; risk of accidents, equipment breakdowns and labour disputes or other unanticipated difficulties or interruptions; the possibility of cost overruns or unanticipated expenses; the risk of environmental contamination or damage resulting from the Company's operations and other risks and uncertainties; the failure of contracted parties to perform; other risks of the mining industry; delays in obtaining governmental approvals or financing or in the completion of exploration and general economic, market or business conditions, as well as those factors disclosed in the Company's publicly filed documents. Although the Company has attempted to identify important factors *that could cause actual actions, events or results to differ materially from those described in forward-looking information, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended. There can be no assurances that such information will prove accurate and, therefore, readers are advised to rely on their own evaluation of such uncertainties. The Company does not assume any obligation to publicly update or revise any forward-looking information except as required under the applicable securities laws.*

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