



CriticalMetals

Critical Metals for Europe

www.criticalmetals.eu

Critical Metals – Introduction

- Aiming to supply high purity critical metals into Europe including lithium, cobalt, vanadium, nickel, copper, manganese and alumina.
- Focussed on the rapidly growing EU rechargeable battery market principally Lithium Ion Batteries (LiB) and Vanadium REDOX Flow Batteries.
- Aiming to establish a LiB recycling plant in Sweden and thereafter produce battery chemicals for supply to precursor manufacturers or cell manufacturers in Europe.
- Advancing a diversified portfolio of battery metals mining projects in the Nordic region to control battery metals feedstock for our own battery chemical production facility.

Critical Metals – Northern Sweden & Finland



- Skellefteå – home to proposed Northvolt Giga factory, Boliden recycling facility / refinery and proposed Critical Metals LiB recycling facility.
- Luleå – home to Facebook’s European servers.
- Malå – home to Critical Metals.
- White Boxes – Critical Metals Project Pipeline.

European Union & Critical Metals – Macro Theme

- The European Union (EU) needs between 10 and 20 Lithium Ion Battery (LiB) Giga factories.
 - €20 Bn is required to fund this growth.
 - 1st Giga factory expected to be built in northern Sweden, by Northvolt.
- EU faces intense global competition for critical metals to supply the Giga factories.
 - Substantially more critical metals need to be sourced from within the EU.
 - LiBs are powering electric vehicles (EVs) and stationary storage devices.
 - EU member countries are now legislating the changeover to EVs
 - Forecast growth of EVs is massive.
 - Waste generated from end-of-life LiBs will be large and must be recycled.
- Nordic region already has high EV penetration and advanced waste collection system.

Critical Metals – Our Strategy

- Recycling end-of-life lithium ion batteries to recover lithium, cobalt, nickel, copper and manganese (**Urban Mining**).
- Mining economic mineral deposits to recover copper, gold, vanadium, nickel, platinum group elements and iron (**Traditional Mining**)

Critical Metals – Recycling LiBs to Produce Battery Chemicals

- Investigating two process flow sheets to economically recycle lithium ion batteries.*
- Process seeking to recover cobalt, lithium, nickel and manganese from off-specification and end-of-life LiBs sourced from within Sweden, Norway, Denmark and Finland.
- Recovered metals will be converted to chemicals for sale to precursor chemical manufacturers and or electrode / cell manufacturers.
- Final investment decision mid 2019 on third party flow sheet.
- Plant expected to be built in Skelleftea, Sweden.
- Production of battery grade chemicals from recycled LiBs planned from 2022.**

* Critical Metals Ltd is party to multiple confidentiality agreements restricting any more information being shared on these projects at this point in time

** Subject to outcome of studies, funding, licensing and feedstock

LiB Recycling – Key Risks

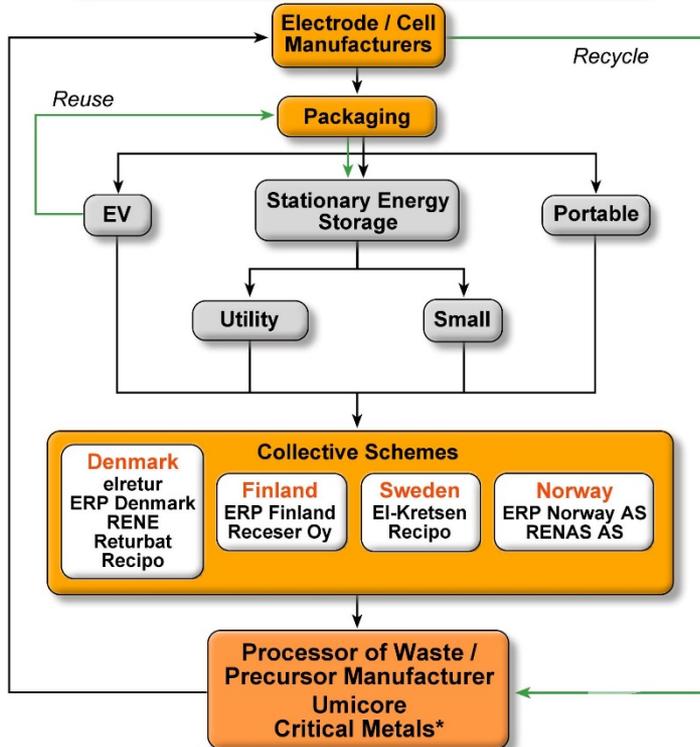
- Safe disassembly of end-of-life LiBs. (Low)
- Obtaining permits to recycle waste battery feed stock and manage residual waste from recycling process. (Low)
- Processing end-of-life batteries. (Low)
- Sourcing sufficient end-of-life LiBs to create an economic business case. (High)

EU Priority – Maximise Recycling

- Producers of batteries are responsible for waste batteries
 - Producers must either sign up to a collective collection system or create their own collection system
- Producers are responsible for Waste Electric and Electronic Equipment (WEEE)
 - Producers of household WEEE must join a collective whereas Producers of professional WEEE must take-back but are not obliged to join a collective
- Nordic countries have advanced and fully integrated waste collection system
 - Well positioned to collect the required volume of end-of-life LiBs to create an economic business case for recycling

LiB Recycling – Waste Collection in the Nordic Region

Lithium Ion Battery Lifecycle Flowchart



Sources of End-of-Life LiBs include:

- Waste and off-specification product from Electrode / Cell Manufacturers.
- End-of-Life (EOL) LiBs returned to the producer/distributor under take-back programs.
- EOL consumer electronic devices (with built-in LiBs) and LiBs from collective schemes.

* Critical Metals aims to enter this market

Critical Metals – Mining Projects Pipeline

- Pahtohavare Copper-Gold Project – exploitation concession application (ECA) to be lodged December 2018
 - Discovery Zone Copper-Gold Project – ECA to be lodged 2019
 - Soidinvaara Vanadium Project – re-sampling / re-assaying in progress, metallurgical studies December 2018, geophysical survey January 2019, resource drilling and vanadium chemical flowsheet development 2019
 - Varuträsk Lithium Project – 3D modelling January 2019, geochemical survey April 2019, exploration drilling 2019
 - Lapland Cu-Ni-PGE / Fe-V-Ti / IOCG exploration project – geophysical survey 2019
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- Paljasjärvi Iron Project – resource drilling 2019
 - Rakkuri Iron Project – ECA to be lodged late 2019
 - Vathanavaara and Masugnsbyn Iron Projects – preparation of material to support ECA during 2019



Vanadium – Introduction

- Our aim is to assess whether ore from Soidinvaara can be used to economically produce a vanadium chemical for use in Vanadium REDOX Flow Batteries.
- The Soidinvaara exploration reservation (24km²) was granted to CMS in June 2018 over a historic vanadium resource; the project is located outside of Natura 2000 conservation areas, national parks and nature reserves. No modern exploration has been completed at Soidinvaara since the 1970's.
- Soidinvaara is located 20km southwest of the historic Mustavaara vanadium mine (not owned by CMS). Mustavaara was the largest producer of vanadium pentoxide (V₂O₅) in Western Europe and accounted for some 10% of the global supply of vanadium during the 1970-80's.
- Field trip completed, stakeholder meetings held, historic drill core re-logged / re-sampled and re-assaying in progress, proof of concept metallurgical test work being planned, detailed ground magnetic survey planned for January 2019 to optimise future drill hole targeting, detailed metallurgical test work to enable vanadium chemical flowsheet development will follow.



Lithium – Introduction

MAJOR PROJECT
STATUS

- Our aim is to assess whether Varuträsk and its immediate surrounds contains another economic lithium deposit.
- Varuträsk is located ~15km from Europe's 1st Giga factory, currently being built by Northvolt, 10km from Skellefteå, 20km from existing mine processing facilities and 50km from a base metals refinery. It was last mined in the 1940's by Boliden, to maximum depth of 30m.
- Varuträsk is Sweden's only historic lithium mine.
- CMS has completed preliminary metallurgical testwork on ore sourced from the historic mine (2016) and a diamond drilling campaign (2017) to test for repetitions beneath the mined out pegmatite lenses.
- CMS is modelling of all historic and modern drilling is in progress to help model the dip and plunge of the historic orebody, with a view to optimising future drill hole targeting. A geochemical sampling program will be completed after the modelling (and after winter) to assess the effectiveness of using geochemistry to model the pegmatite lenses and identify the source granite.



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Copper, Nickel, Gold, Vanadium – Introduction

MAJOR PROJECT
STATUS

- Our aim is to assess whether Lapland has the potential to host a major polymetallic orebody.
- Lapland project is a highly prospective, unexplored and potential new mineral province, with the exploration targets having high ore potential; project is located outside of Natura 2000 conservation areas.
- Economic mineralisation could potentially include: massive to disseminated Cu-Ni-PGE, stratiform Cr, reef style PGE, Fe-Ti-V deposits, hydrothermal Au-Cu, IOCG mineralisation and REE mineralisation within pegmatites.
- Critical Metals holds the most promising land position in this exciting province. The project covers a significant portion of a very large positive gravity anomaly. Geophysical interpretation by independent consultants suggests the gravity feature is related to a major deep-seated mafic intrusive complex that has never been drill tested.



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Copper & Gold – Introduction

MAJOR PROJECT
STATUS

- Our aim is to own part of a profitable long-life sustainable mining centre that is environmentally and socially acceptable to stakeholders – via processing copper-gold ore on site or via toll treatment.
- An exploitation concession application (ECA) for the oxide deposit at Pahtohavare will be lodged by joint venture partner Lovisagruvan AB in December 2018 – high potential sulphide targets remain to be tested. Critical Metals is free-carried (to 30%) by joint venture partner Lovisagruvan AB, to decision to mine.
- Pahtohavare is located ~8km from Kiruna and the JORC resource is 2.3Mt @ 1.74% Cu, 0.6 g/t Au with significant upside beneath existing shallow oxide deposit and beneath lowest mined levels (150m) of two historic underground copper mines – business case scenario based on Kylylahti mine in Finland.
- An ECA for the Discovery Zone will be lodged in 2019. Critical Metals owns 100% of this deposit.
- Discovery Zone is located approximately 6km from Kiruna and the JORC resource is 9Mt @ 0.8% Cu and 0.19 g/t Au.



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Iron – Introduction

Project	Location	Size Potential	JORC	Geology	Tonnes / Grade	Metallurgy	Status	Comment
<u>Paljasjärvi</u>	Norrbottn, Sweden	Very Large	No	Magnetite skarn	TBD	Upgrades to +69% Fe concentrate	Drilling planned to establish maiden JORC resource	Size potential to supplement, or replace the depleting Kiruna mine, 2nd most intense magnetic feature in northern Sweden behind Kiirunavaara
<u>Rakkurijoki</u>	Norrbottn, Sweden	Medium	2012	Magnetite skarn	75Mt @ 37% Fe	Upgrades to +69% Fe concentrate (beneficiation required to reduce sulphur level)	Midway through preparation of ECA	4km from the depleting Kiruna mine owned by LKAB, 500m from heavy gauge rail connected to two deep water iron ore ports, 250m from main road
<u>Rakkurijarvi</u>	Norrbottn, Sweden	Medium	2012	Magnetite skarn	55Mt @ 28% Fe	Upgrades to +69% Fe concentrate	Drilling planned to establish Indicated resource	Located adjacent to Rakkurijoki
<u>Masugnsbyn</u>	Norrbottn, Sweden	Medium	2004	Magnetite skarn	112Mt @ 29% Fe	Upgrades to +69% Fe concentrate	Material to be prepared for inclusion in ECA 2019	60kms from Svappavaara iron mine owned by LKAB and 90km from Kaunisvaara iron mine owned by Kaunis Iron
<u>Vathanavaara</u>	Norrbottn, Sweden	Medium	2004	Magnetite skarn	51Mt @ 36% Fe	TBD	Material to be prepared for inclusion in ECA 2019	Two more deposits in close proximity to Vathanavaara increase the resource tonnes

- Our aim is to own part of a profitable long-life sustainable mining centre that is environmentally and socially acceptable to stakeholders – via processing iron ore on site or via toll treatment. The iron projects may be developed internally, joint ventured or vended into an existing iron ore company.

Board of Directors

Jonathan Murray – Independent Non-Executive Chairman

Resides in Perth, Australia

20 years experience as a corporate lawyer; Senior Partner of Steinepreis Paganin. Principal legal practice areas include equity capital markets, takeovers, project acquisitions and divestments, corporate governance, commercial law and strategy.

Kris Gram – Non-Executive Director

Resides in Oslo, Norway

5 years Management Consultant and 10 years Investment Banking experience. Currently CEO of family investment company.

Amanda Scott – Technical Director of Subsidiary Companies

Resides in Malå, Sweden

Geologist with 15 years experience (7.5 yrs in Sweden). Extensive experience in Western Australia and northern Scandinavia generating new projects and exploring for lithium, gold, copper, nickel, PGEs, iron and manganese.

Olof Forslund – Non-Executive Director

Resides in Malå, Sweden

Geophysicist with extensive international experience in the mineral exploration industry. Founder of Malå Geoscience. Commenced with Geological Survey of Sweden (SGU) in 1966 and during the period 2003 – 2007 was Regional Manager of the Mineral Resources Information Office in Mala, Sweden.

Markus Bachmann – Non-Executive Director

Resides in Johannesburg, South Africa

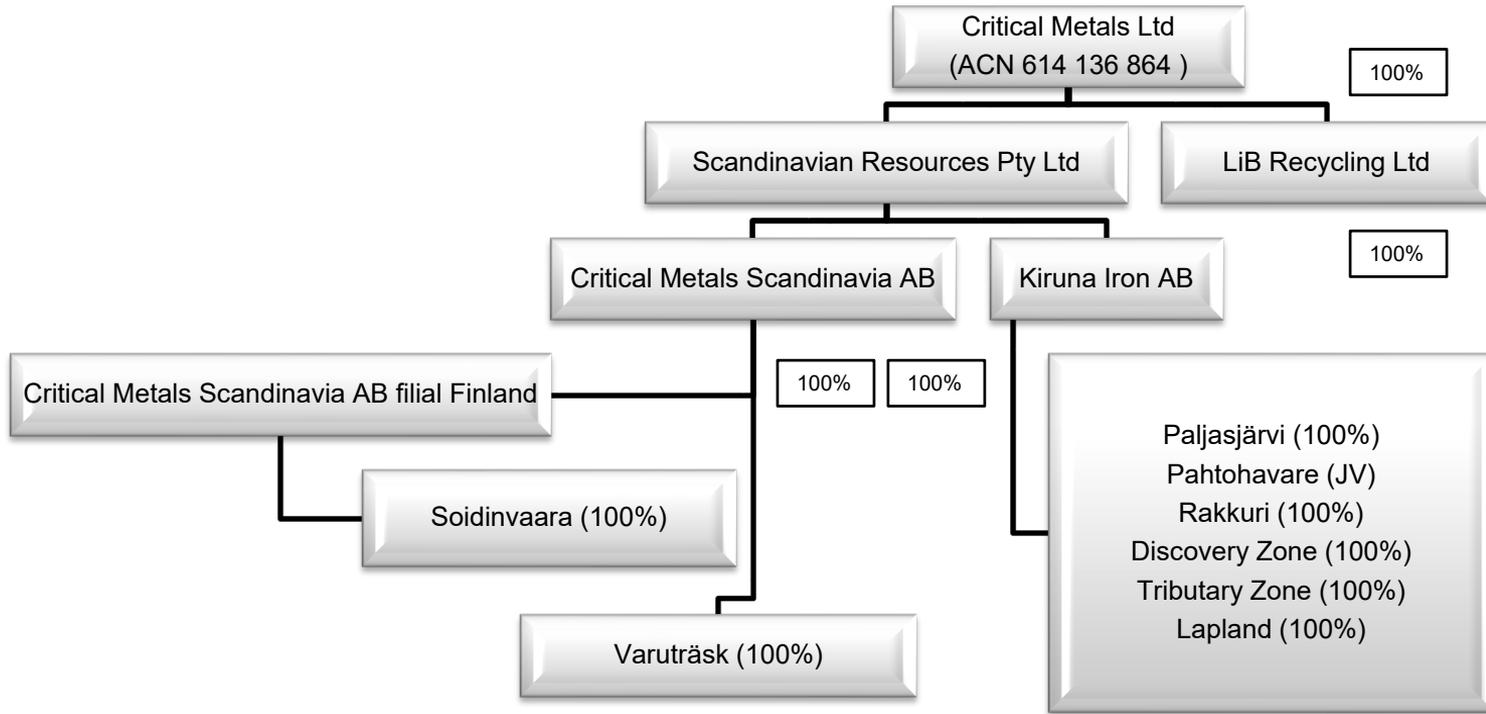
Corporate finance professional with 20 years experience. Founder of Craton Capital. Craton Capital awarded Fund Manager of the Year at the Mining Journal's "Outstanding Achievement Awards" during December 2010.

Damian Hicks – Executive Director

Resides in Perth, Australia

15 years experience as Founder of resources companies in Western Australia (since 2002) and Sweden (since 2007). Financial, legal and compliance qualifications with principal responsibilities including strategy formulation, team development, deal origination & execution and capital raising.

Corporate Structure



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