

GLENCORE

Glencore Sudbury INO Recycling

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13 June 2023

SUDBURY
INTEGRATED NICKEL
OPERATIONS



Painting of Glencore's Sudbury Smelter by Hans Matthews, a local Aboriginal Anishinabek Nation artist and geologist from the Wahnapiatae First Nation, Ontario, Canada. Hans is the recipient of the 2020 PDAC Skookum Jim Award.

Who we are

At a glance

As one of the world's largest natural resource companies, we have been transforming the global commodities industry for nearly half a century, acquiring industrial assets with histories going back even further.

One of the world's largest
natural resource companies

c.150
sites

35
countries

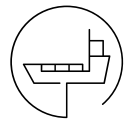
>60
mining, metallurgical and oil
production assets

c.140,000
employees and contractors

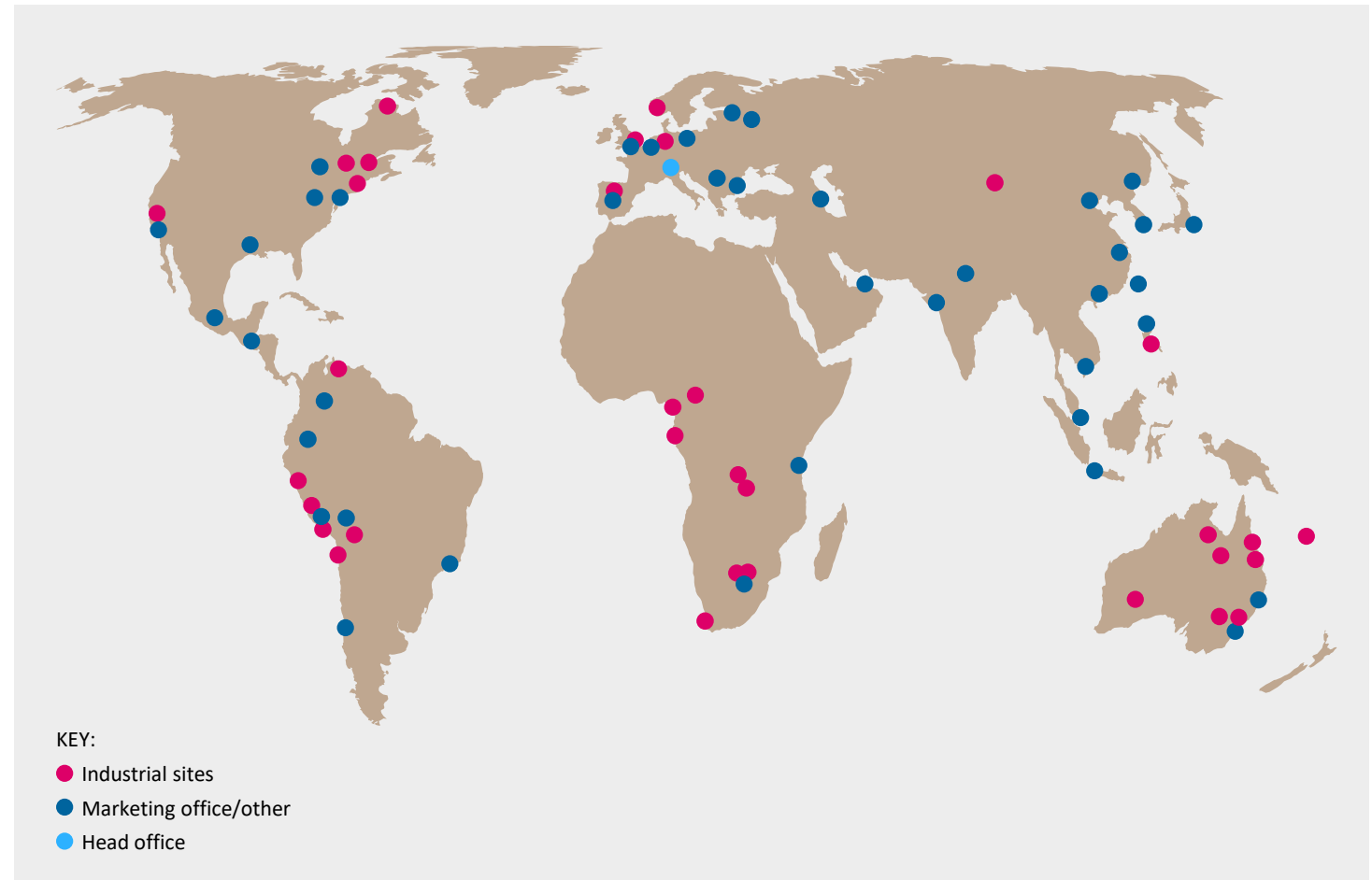
Two business
segments



Industrial



Marketing



Glencore Nickel

Major producer, marketer and recycler of nickel

3



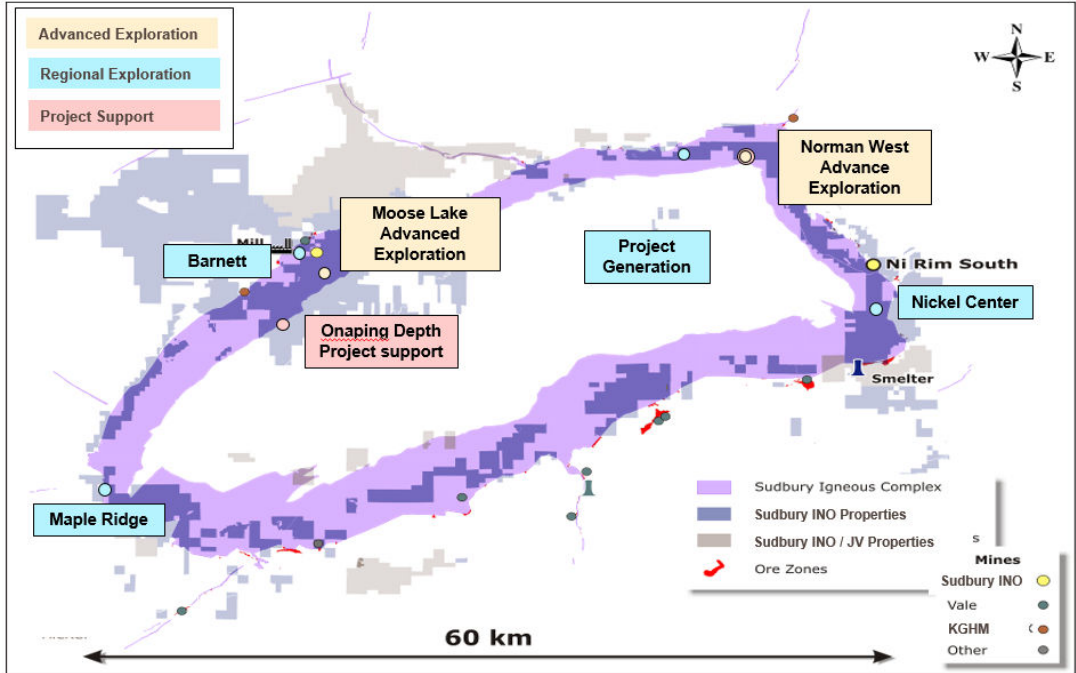
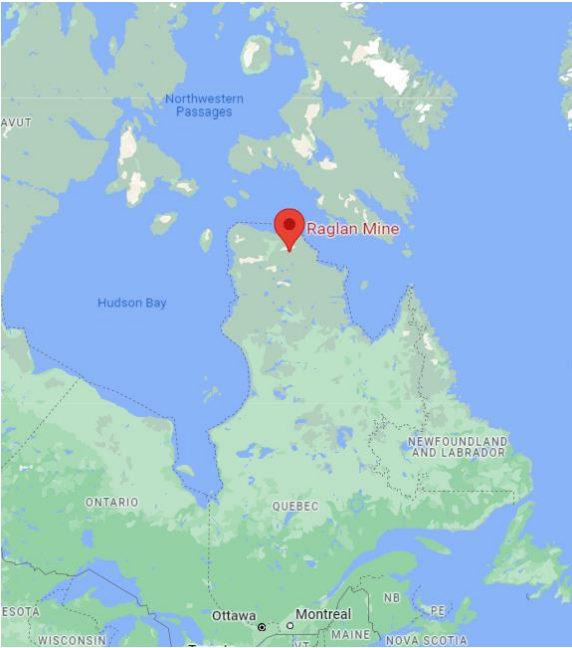
Production of 147.7 kt nickel in 2022 (including third party feed)

A unique suite of sulphide and laterite properties, and operations covering the full technical spectrum (HPAL, chlorine leach, pyro-metallurgical)

One of the world's largest recyclers and processors of nickel and cobalt bearing materials (ca. 50-60kt per year)

Effective price risk and credit risk management tools embedded in our trading business ensuring our commercial business 'hedged' and counterparty risk proactively managed

Glencore Nickel Operations in Canada



Our materials are sent to our port facilities in Quebec City, and to final destination at Glencore’s Nikkelverk refinery in Norway.

Custom Feed Secondary Material – A Global Market

2023 marked **Glencore Nickel's 33rd** year of processing secondary feed including end-of-life materials, production scrap and waste streams, sourced from all over the world.



Plating Sludges & Battery Material



Superalloy / Aerospace Scrap



Glencore treat the majority of North American Co-containing battery scrap materials and is also active in European and Asian scrap markets processing material through its Canadian, Norwegian and Australian facilities.



Metal Ingots & Shot



Turnings Grindings



Battery Recycling Opportunity

By 2034 North American battery scrap is forecast to be 144kta containing 25kta Ni and 3kta Co

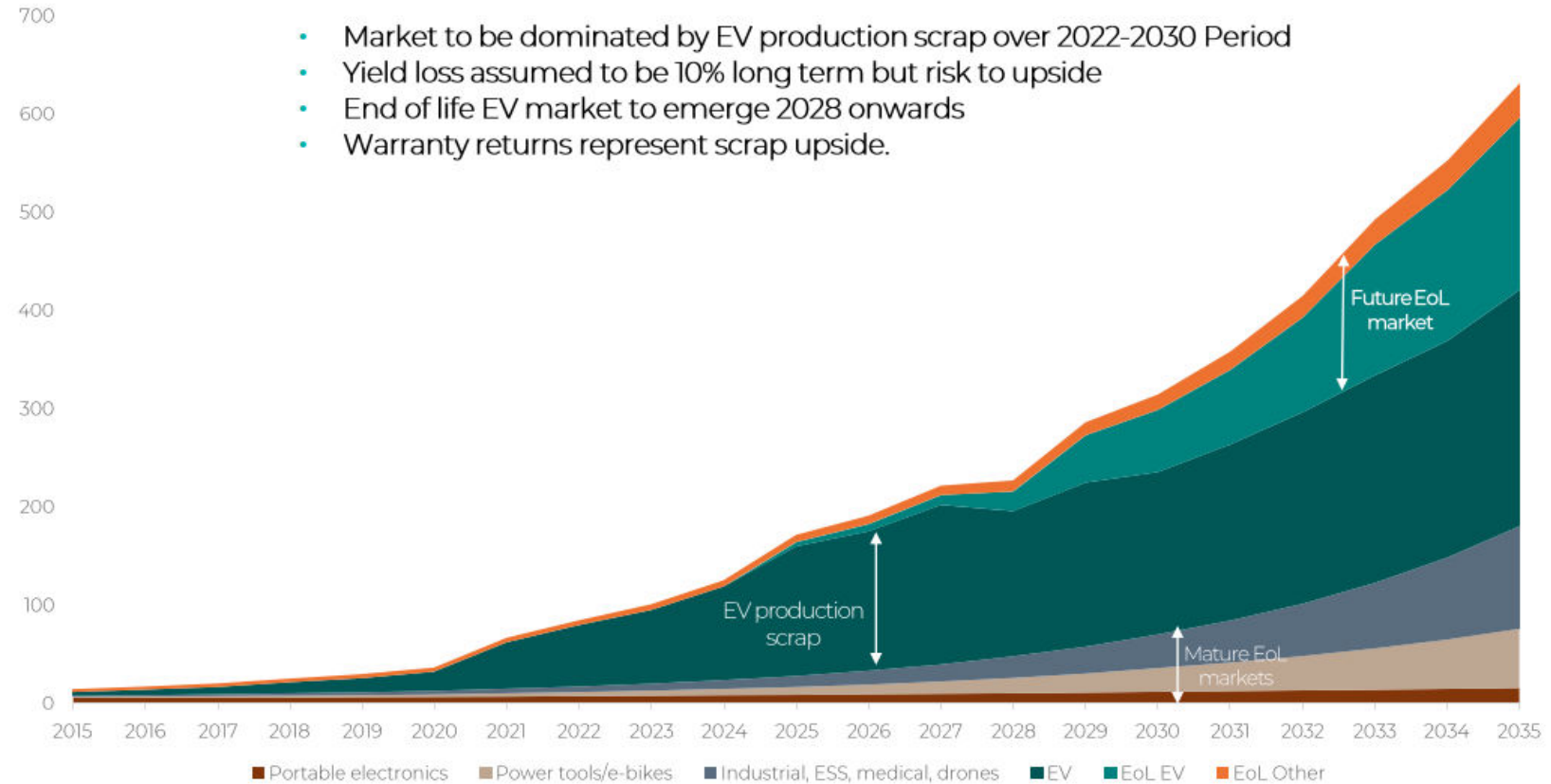
Over the next several years production scrap is the dominant source

End of life battery market emerging 2028 and beyond

Recycling involves pre-processing

- Wet / Dry Shredding
- Material separation
- Thermal treatment

'Black Mass' catch all term describing pre-processed battery scrap



Sources of Ni and Co

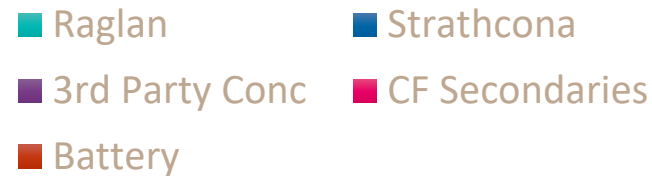
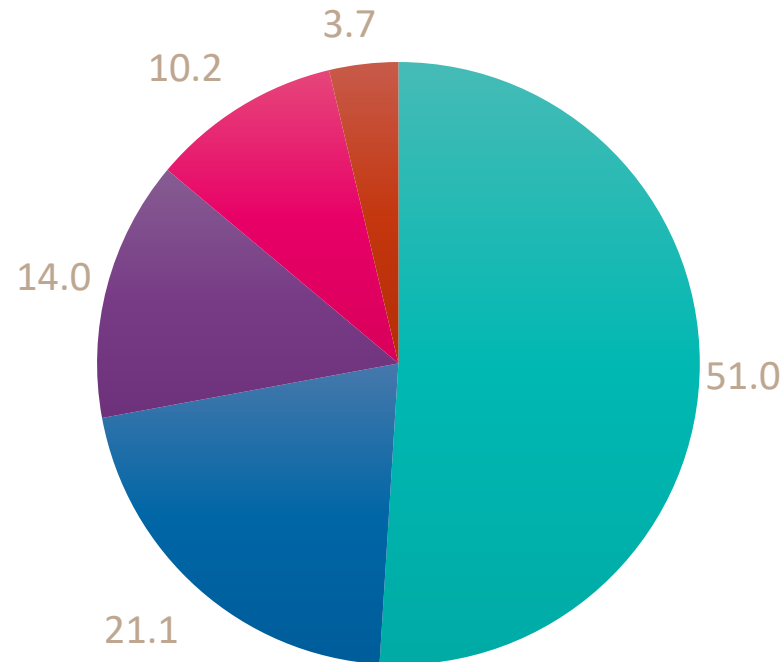
Percentage of contributed metal in matte

Total Feed to the Smelter:

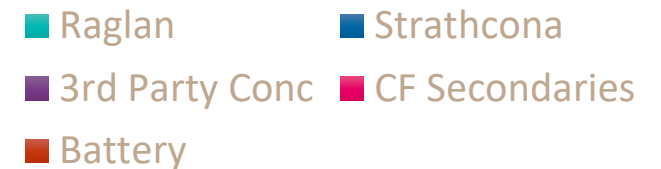
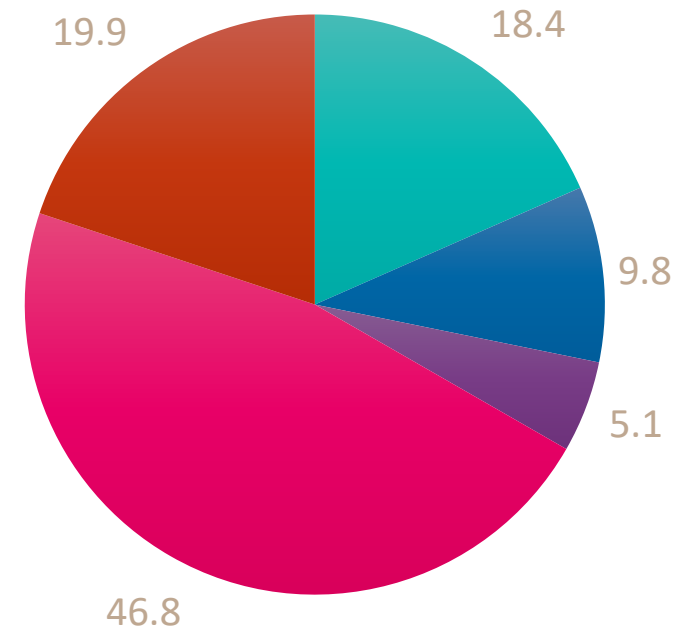
- 530,000 dmt per year

Recycled materials and non concentrate materials contribute significantly to Ni and make up the majority of Co Production.

Nickel (%)



Cobalt (%)



Sudbury Smelter

Treatment plans are dictated by:

- Physical Characteristics
- Chemical Make-up
- Optimal Recovery

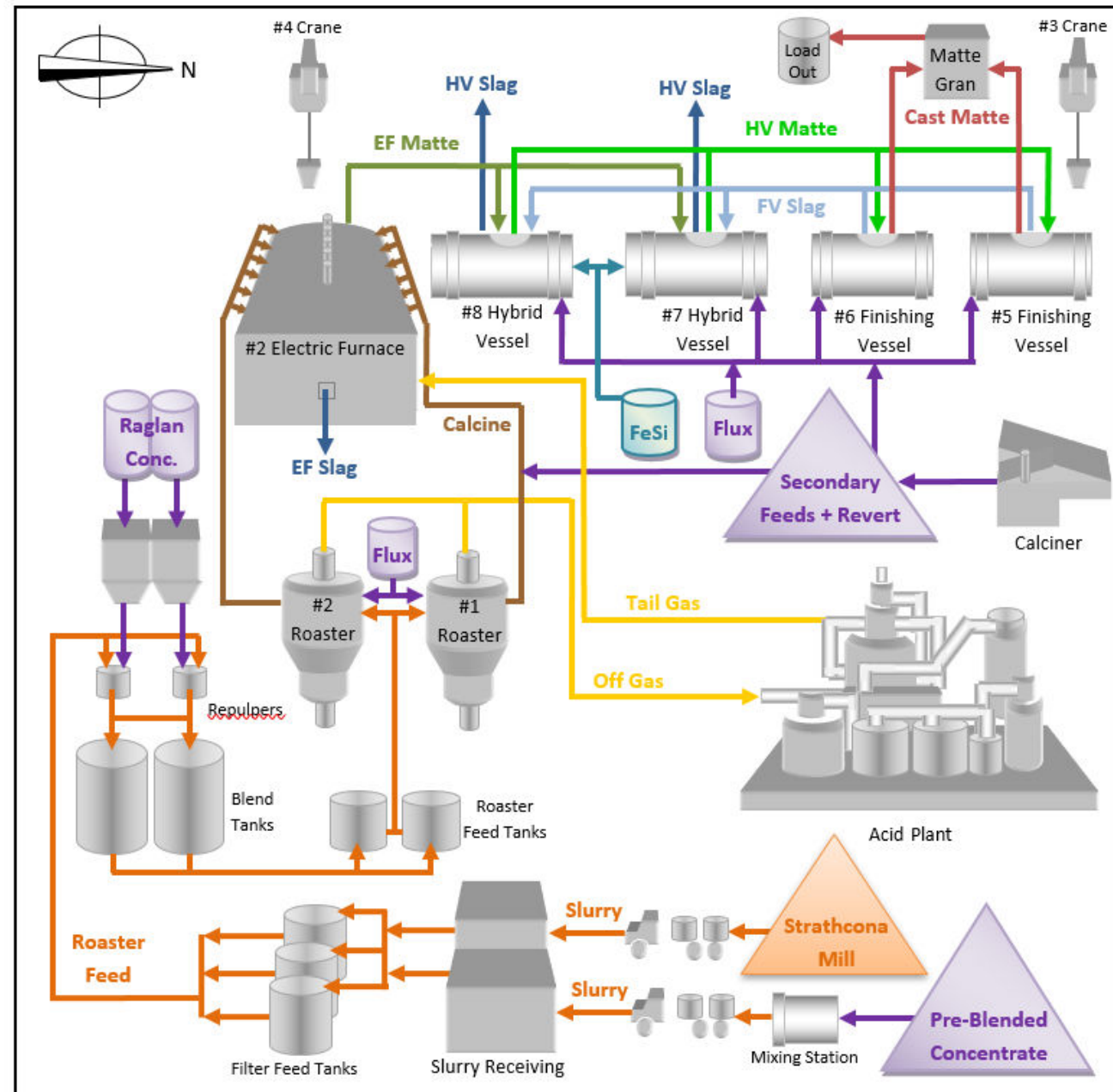
Battery Materials have multiple entry points

- Roaster
- Furnace
- Converter Aisle

Metals are recovered

- Ni, Co, Cu

Carbon units used in process chemistry



Battery Material Processing

2022 and Beyond

2022 Treatment Rate Battery Material

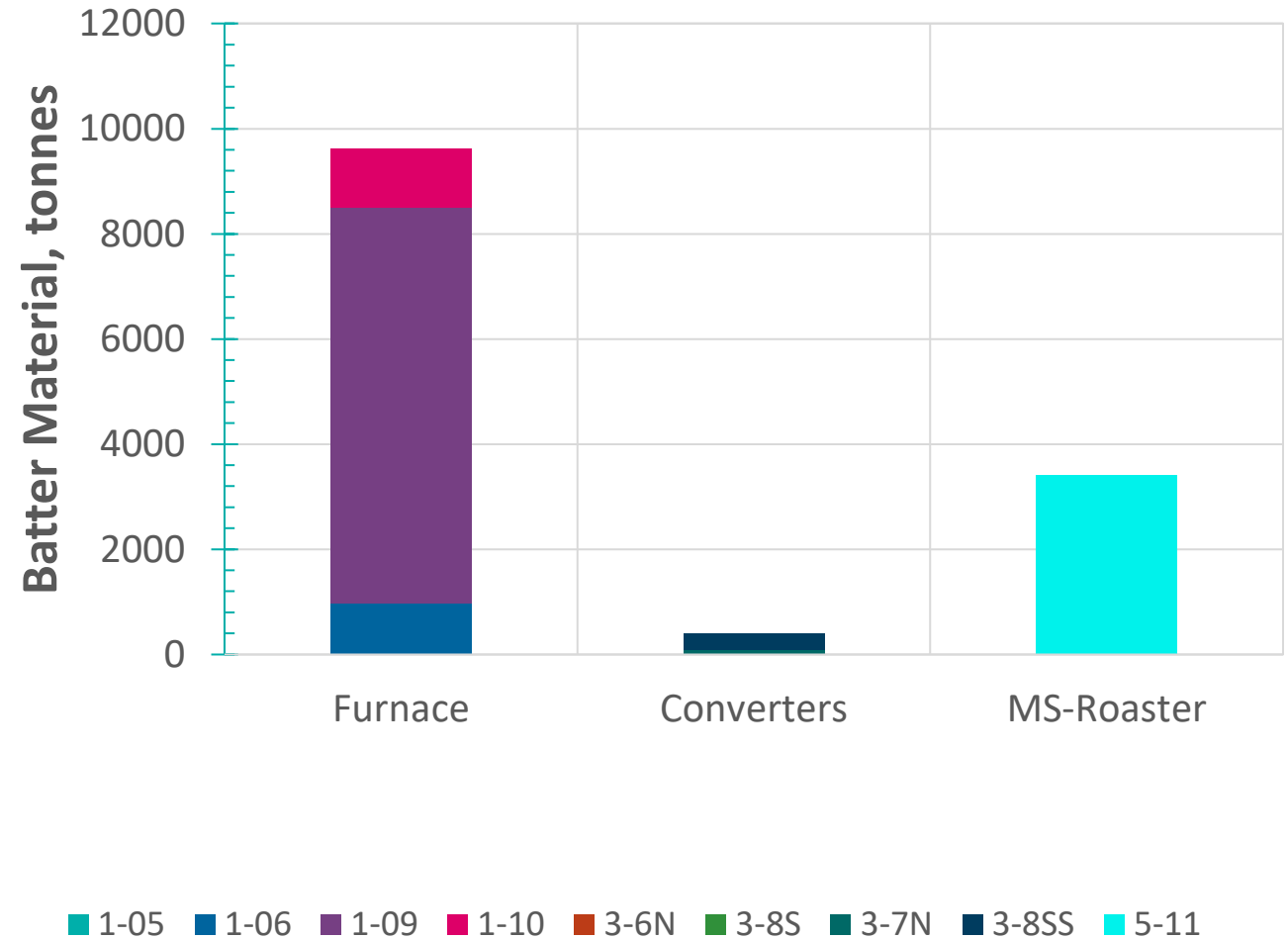
- 13,000 dmt

Testing capability of each operating unit requiring minimal further investment

- Est. 30,000 dmt

Future capacity would require capital investment for pretreatment requirements and handling constraints.

Battery Material Tonnes by Process and Feed Point



Thank you

For further information, visit:

www.glencore.com

www.glencore.ca/sudburyino