

Sulphuric Acid from Mine Waste

Helen Degeling

*Critical Minerals Trailblazer Showcase
Townsville, Sept 2024*

ASX: COB



Disclaimer

Information contained in this confidential document ("Presentation") has been prepared by Cobalt Blue Holdings (the "Company"). It has not been fully verified and is subject to material updating, revision and further amendment.

While the information contained herein has been prepared in good faith, neither the Company nor any of its shareholders, directors, officers, agents, employees or advisers give, have given or have the authority to give, any representations or warranties (express or implied) as to, or in relation to, the accuracy, reliability or completeness of the information in this Presentation, or any revision thereof, or of any other written or oral information made or to be made available to any interested party or its advisers (all such information being referred to as "Information") and liability therefore

is expressly disclaimed. Accordingly, neither the Company nor any of its shareholders, directors, officers, agents, employees or advisers take any responsibility for, or will accept any liability whether direct or indirect, express or implied, contractual, tortious, statutory or otherwise, in respect of, the accuracy or completeness of the information or for any of the opinions contained herein or for any errors, omissions or misstatements or for any loss, howsoever arising, from the use of this Presentation.

Neither the issue of this Presentation nor any part of its contents is to be taken as any form of commitment on the part of the Company to proceed with any transaction and the right is reserved to terminate any discussions or negotiations with any prospective investors. In no circumstances will the Company be responsible for any costs, losses or expenses incurred in connection with any appraisal or investigation of the Company. In furnishing this Presentation, the Company does not undertake or agree to any obligation to provide the recipient with access to any additional information or to update this Presentation or to correct any inaccuracies in, or omissions from, this Presentation which may become apparent.

This Presentation should not be considered as the giving of investment advice by the Company or any of its shareholders, directors, officers, agents, employees or advisers. Each party to whom this Presentation is made available must make its own independent assessment of the Company after making such investigations and taking such advice as may be deemed necessary. In particular, any estimates or projections or opinions contained herein necessarily involve significant elements of subjective judgement, analysis and assumptions and each recipient should satisfy itself in relation to such matters.

Neither this presentation nor any copy of it may be (a) taken or transmitted into the United Kingdom, Canada, Japan or the United States of America, their territories or possessions; (b) distributed to any U.S. person (as defined in Regulation S under the United States Securities Act of 1933 (as amended)) or (c) distributed to any individual outside Australia, Canada or Japan who is a resident thereof in any such case for the purpose of offer for sale or solicitation or invitation to buy or subscribe any securities or in the context where its distribution may be construed as such offer, solicitation or invitation, in any case except in compliance with any applicable exemption. The distribution of this document in or to persons subject to other jurisdictions may be restricted by law and persons into whose possession this document comes should inform themselves about, and observe, any such restrictions. Any failure to comply with these restrictions may constitute a violation of the laws of the relevant jurisdiction.



Strategic Priorities

ReMine+

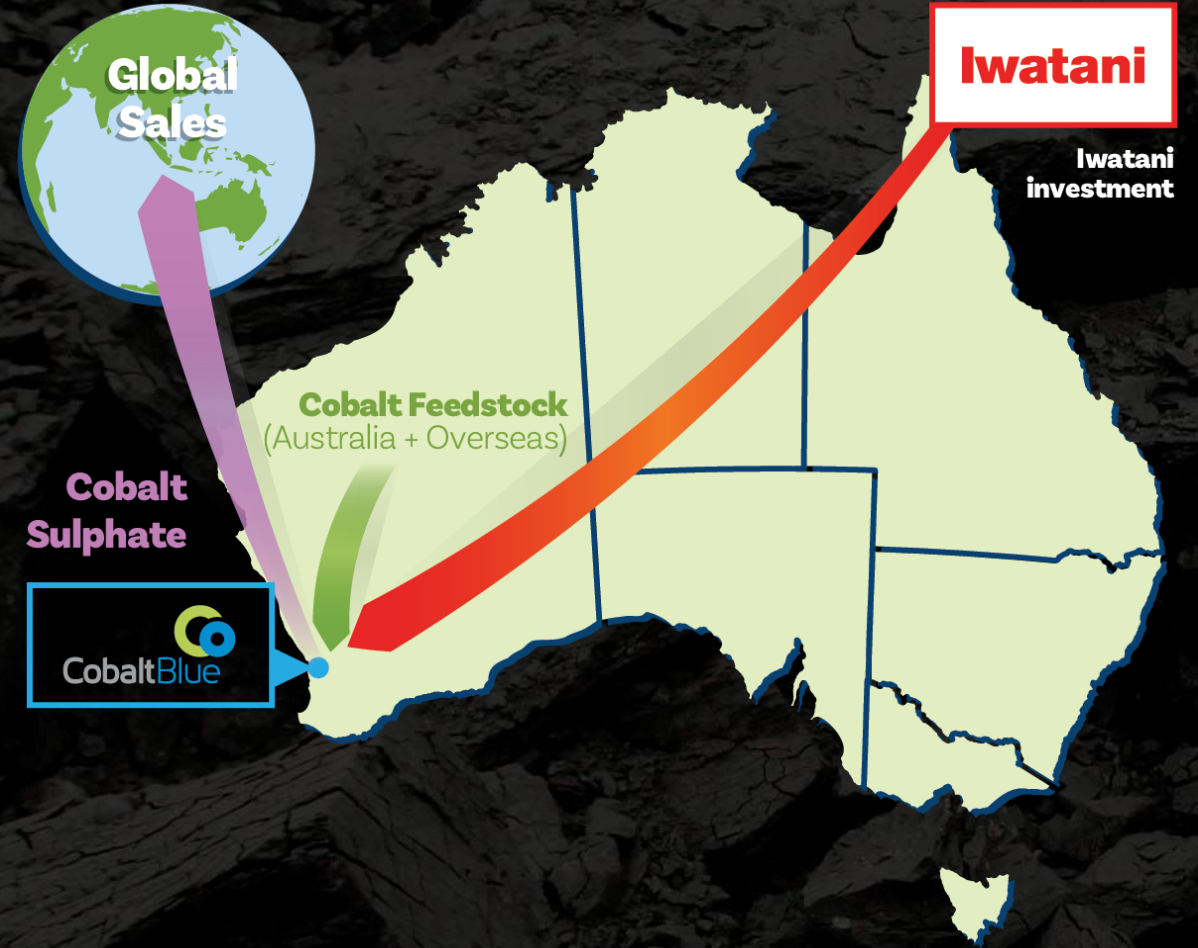
Global
*Unlocking Value
and Positive Impact
from Mine Waste*

Cobalt-Nickel
Refinery

Kwinana, WA
*Metal Processing
for the Battery
Supply Chain*

Broken Hill
Cobalt Project

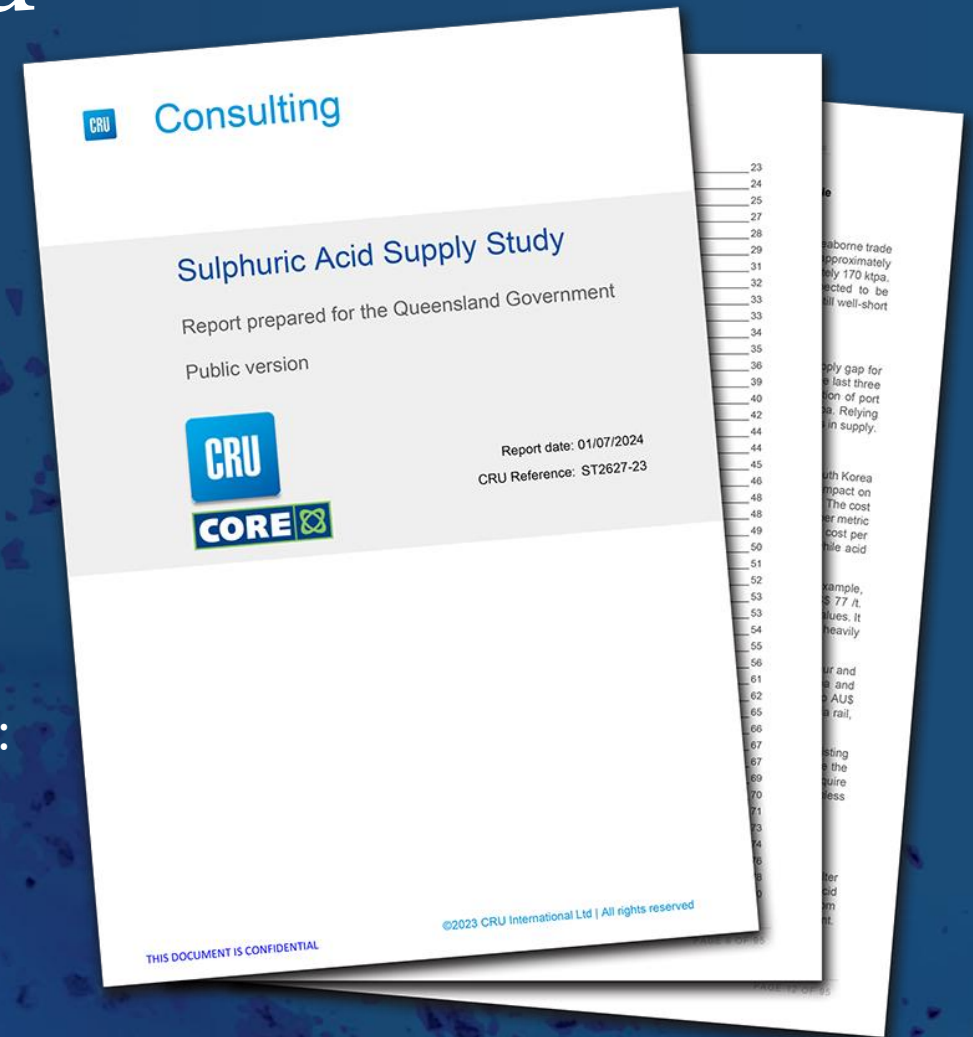
Broken Hill, NSW
*Responsibly
Sourced Cobalt*



Sulphuric Acid in NW Qld

- Mt Isa Copper smelter closing ~2030
- Smelter supplies sulphur gas to Incitec Pivot acid plant
- Sulphuric acid required by
 - IPL's Phosphate Hill operation
 - Cu heap leach operations
 - Julia Creek vanadium operations
 - And more...
- Significant economic impacts related to acid supply
- DSD commissioned Sulphuric Acid Supply Study in 2023:

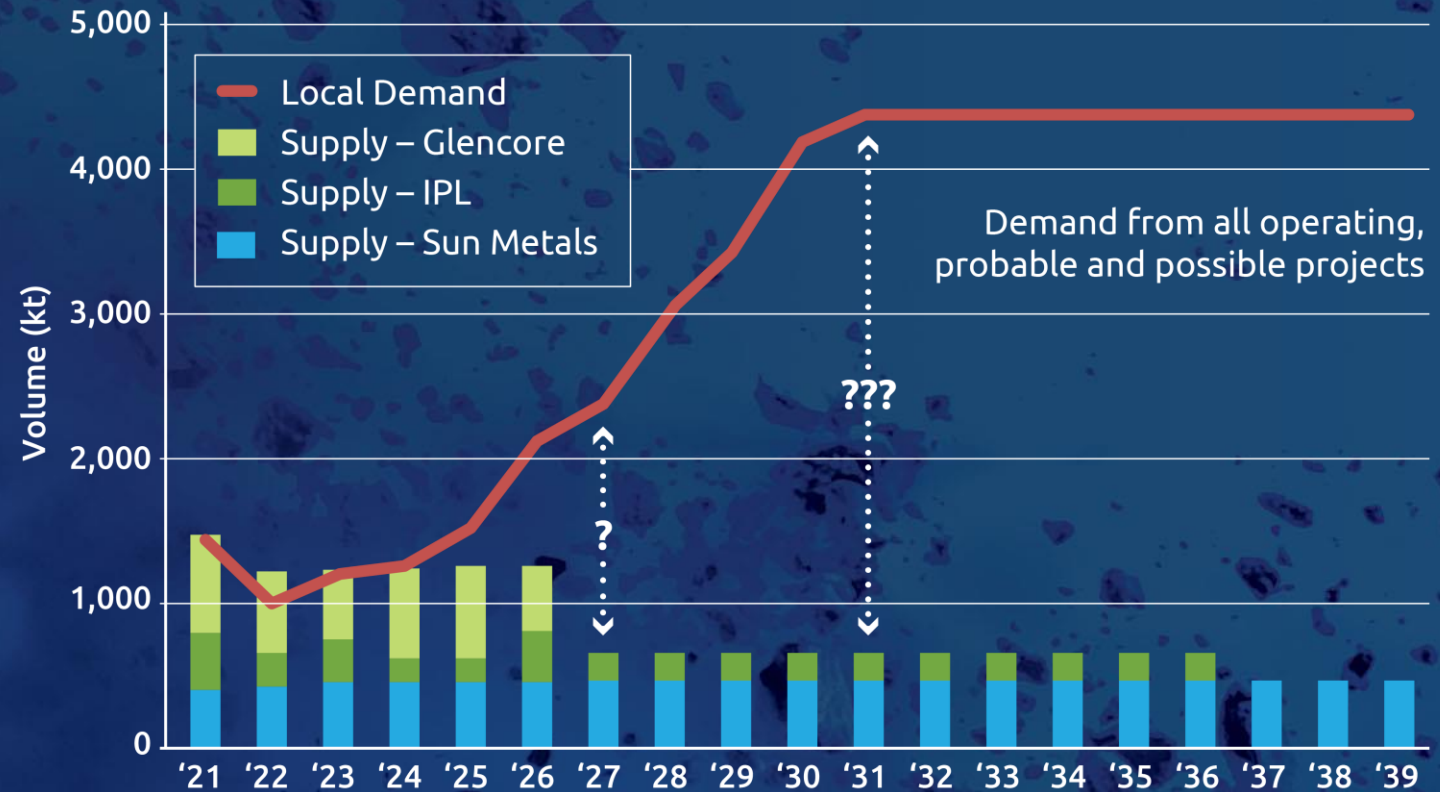
<https://www.statedevelopment.qld.gov.au/regions/regional-priorities/a-strong-and-prosperous-north-west-queensland/achievements-and-deliverables>



Current/Future Acid Demand – NW Qld



Local supply and demand of sulphuric acid



Adapted from CRU presentation; Sulphuric Acid Supply Study, 1st August 2024



Possible Solutions: Imports or Local Source

- **Import Sulphuric Acid or Sulphur**
 - By-passes local supply issues
 - Large infrastructure upgrades required to port facilities
 - Unit cost of acid/sulphur exceeded by transport costs
- **Local Source – Reprocess pyrite-rich mine tailings**
 - Sufficient pyrite to meet demand
 - Environmental benefit from removing pyrite from tailings/waste stockpiles
 - No port or long-distance transport upgrades required
 - Not affected by global price cycles

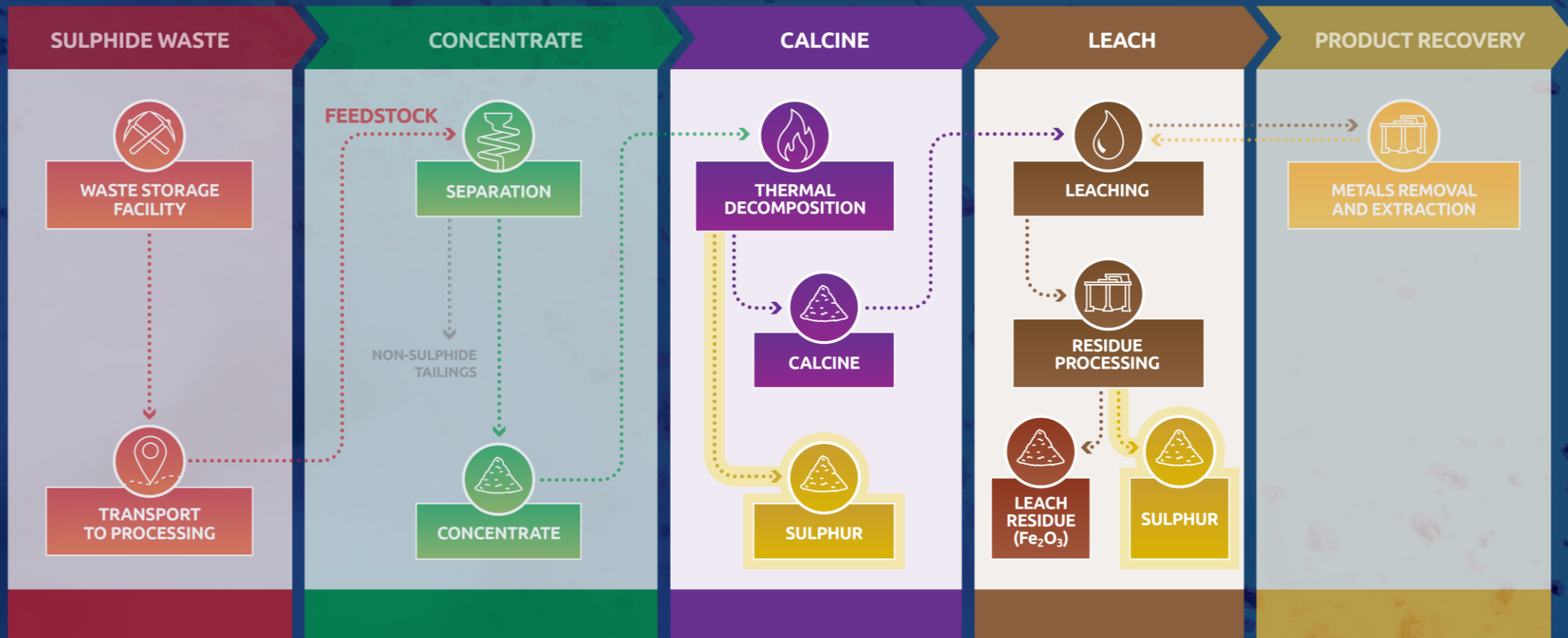


Possible Solutions: Local Source

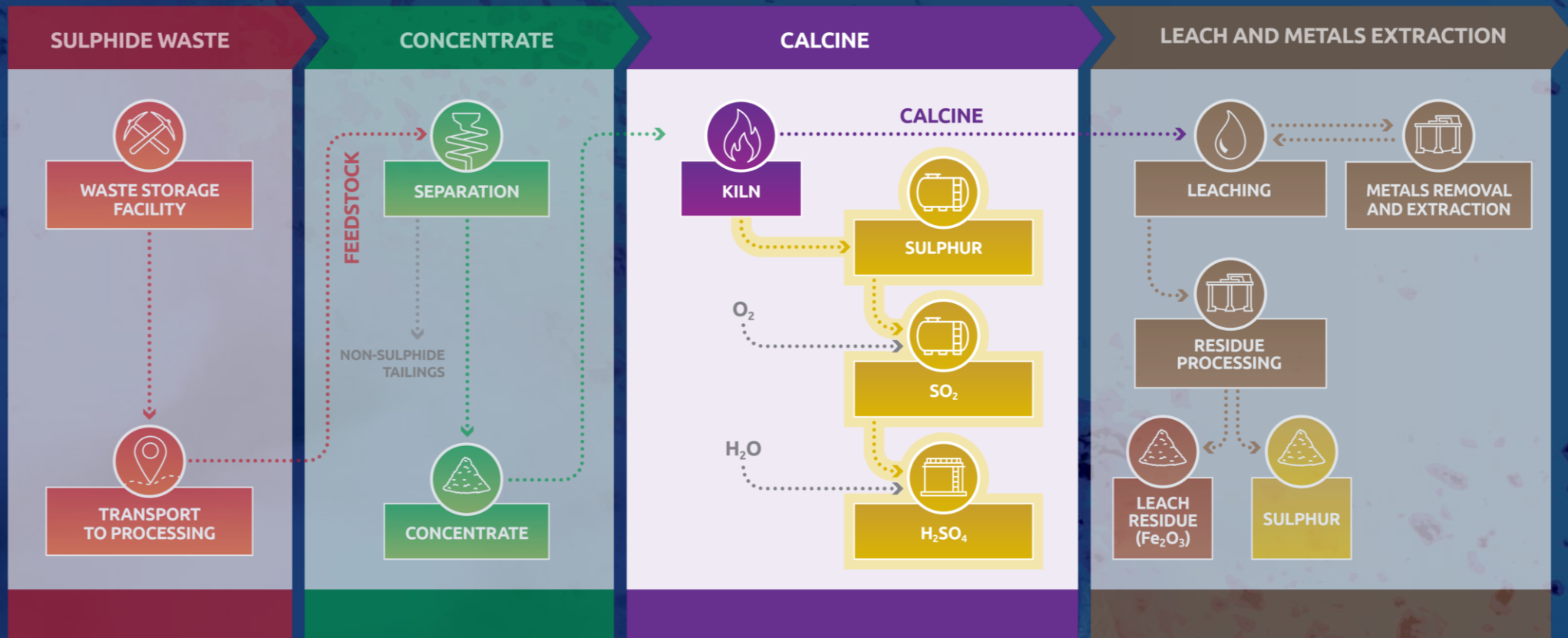
- Roaster + Acid Plant to make Sulphuric Acid:
 - Conventional route – known technology
 - Produces S off-gas for acid plant
 - Metals can be extracted from roaster calcine
 - High toxic emissions (e.g. Pb, As)
 - High capital cost
- **Cobalt Blue process:**
 - No toxic emissions
 - Flexible process – makes sulphur or sulphuric acid plus metals
 - Proven at demonstration scale – risk of unknowns during upscale?
 - Unknown costs... we can answer these questions! (hint: less than a roaster)



The Cobalt Blue flow sheet – sulphur prill



The Cobalt Blue flow sheet – sulphuric acid



Flin Flon Tailings Project

Site: Flin Flon TSF

Location: Manitoba, Canada

Commodities: Zn-Cu-Ag

Status: initial testwork completed.
Confirms >90% conversion of pyrite to pyrrhotite from tailings sample, with capture/removal of elemental sulphur



Estimated >100 million tonnes contained in tailings dam at Flin Flon. Tailings contains Zn, Cu, Ag and Au.

HUDBAY

Cobalt Blue and Hubbay Minerals collaborating to apply Cobalt Blue's processing technology to the Flin Flon tailings facility, Manitoba.

Testwork results to date have achieved >90% conversion of pyrite to pyrrhotite + sulphur.

An overall flowsheet is now being designed for the final step of testwork.



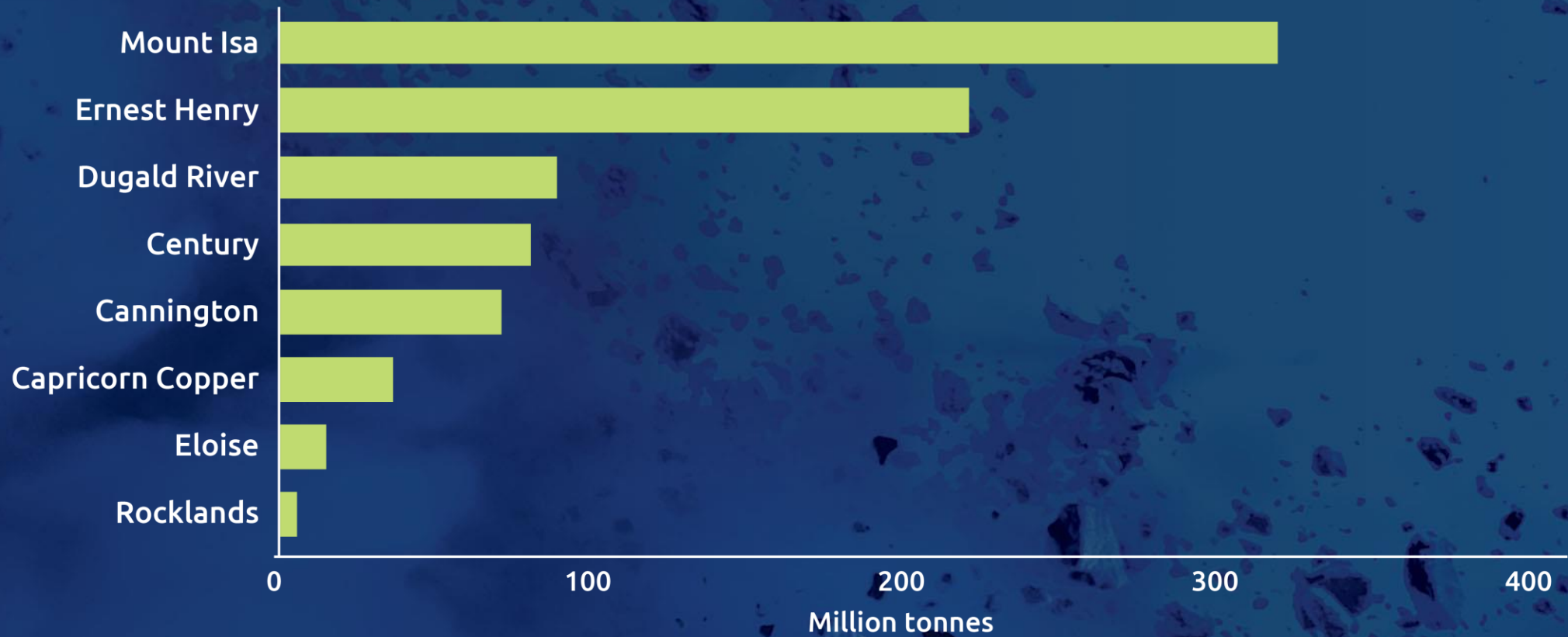
Pyrite Feedstocks

- Multiple pyrite sources available:
 - Mount Isa
 - Ernest Henry
 - Osborne
 - Capricorn Copper
 - Rocklands
 - Eloise
 - Cannington
 - Century



Pyrite Feedstocks

Estimated tailings size comparison



Regulatory environment

Two streams to consider:

Sites currently under a mining lease (a company holds the site)

Company-owned sites:

- (Almost) all permits in place
- May need to expand mining lease footprint and approvals to accommodate new infrastructure
- Existing lease-holder owns the liability
- Existing lease-holder has land access and native title agreements in place

Abandoned sites administered by the state government

Abandoned sites:

- No permits in place
 - Environmental
 - Mine plan
 - Native title
 - Land access
- Recommercialisation entity will have to take on liability (or negotiate with govt)
- Different states have different approaches to imposing/forgiving historical liabilities





ReMine+
Positive impact
from mine waste

Contact us



Dr Helen Degeling
Manager, ReMine+

E: helen.Degeling@cobaltblueholdings.com

Ph: +61 429 001 310

W: www.cobaltblueholdings.com/projects/remine-plus