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LITHIUM & BATTERY TECHNOLOGY KEYNOTE PRESENTATION

VALUE ADDING OPPORTUNITIES FOR AUSTRALIAN BATTERY CRITICAL MINERALS

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Abstract

Critical minerals, metals and materials cover a highly diverse range of materials which share some commonality in geopolitical and mineral economic constraints, but no commonality with regards to processing, metallurgy or even markets. Even within the same market, such as energy storage, there is very little overlap with regards to chemistry, or processing. For energy and battery-related critical minerals there are however some common constraints that have to be considered during value addition such as ESG drivers (particularly around decarbonisation, ethical sourcing), ultra-high product purity, and the focus on material properties beyond chemical purity (in comparison to the conventional mineral processing industries). Ultimately, we need to remove the criticality of Critical Metals & Minerals though sustainable, diversified supply chains where redundancy is baked into the supply chains from raw materials to final products, without single countries or jurisdictions exerting near-complete control over the supply chains.

Within the Australian context, some progress has been made with regards to refining of concentrates to battery chemicals, most notably lithium hydroxide and nickel sulphate which are now produced at an industrial scale. Yet, the level of innovation has been fairly low, and production has been pretty much according to standard processing pathways used elsewhere. The stock markets remain sceptical about new technologies and process innovation is implicitly discouraged when finance is sought. Conversely, juniors and mid-tiers (and even some Tier-1 producers) have over-hyped project potential and severely underestimated the timelines to market, further reinforcing the market scepticism. Market valuations of companies involved in battery metals and materials refining reflects that the industry as a whole has fallen victim to the Dunning-Kruger effect with realism setting in after a period of initial hype followed by disillusionment.

Nonetheless, there are significant opportunities for process intensification during value addition that should be considered. The drive to decarbonise value chains is particularly important and is being supported by battery producers and governments. Furthermore, given the relative scarcity of some of the battery critical metals, such as nickel, lithium and cobalt and vanadium, process development to utilise lower grade materials, whether lower grade concentrates, tailings, or scrap is essential to ensure sustainable future supply of these metals.

This presentation will touch upon some of the opportunities to add value to our battery critical metals while intensifying our processes for refining, improving ESG credentials, and broadening the resource and reserve base.

Keywords: Critical Metals, Battery Metals, Lithium, Nickel, Cobalt, Processing, Decarbonisation, ESG