

THE TECH PROJECT – PATH TO PRODUCTION

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ABSTRACT

Queensland Pacific Metals (QPM) is developing the Townsville Energy Chemicals Hub (TECH) project in Townsville. The project will be located in the newly established Lansdown Eco-Industrial Precinct, intended to be Northern Australia's first environmentally sustainable advanced manufacturing, processing and technology hub. Key regulatory approvals are well advanced.

Processing high grade limonite and transition zone ore imported from New Caledonia, the TECH Project will produce nickel sulfate, cobalt sulfate, high purity alumina (HPA) and other by-products – leaving, for the first time ever in the world, almost zero waste products. The Project will also have a low CO₂ emissions intensity for nickel sulphate production.

The project is being driven by low capex and opex and strong fundamentals for battery chemicals, supported by a new high growth market for electric vehicle and storage batteries. QPM has entered binding investment and offtake deals with battery maker LG Energy Solution (LGES) and Korean battery chemicals and steel producer, POSCO. These two companies invested a combined USD 15 million in QPM through a subscription of ordinary shares. This resulted in LGES and POSCO owning a combined 10.7% interest in QPM. In addition, the companies have committed to offtake 10,000 tpa of the TECH Project's 16,000 tpa nickel production and 1,000 tpa of the planned 1,800 tpa cobalt production (both in the form of high purity sulfates).

A definitive feasibility study (DFS), scheduled for completion in Q1 2022, is aimed at delivering a project that will treat 1.5 million wet tonnes per annum (wtpa) of nickel laterite ore (increased from the 0.6 million wtpa capacity in the January 2020 PFS). The project uses a proprietary nitric acid flowsheet, the DN_i Process™. Two continuous pilot plant campaigns were undertaken with ALS Global in Perth, Western Australia with the learnings from this work providing key inputs to the DFS process design. Ongoing testwork continues to augment scale-up, de-risking and design data. The TECH Project flowsheet has some steps that have not been previously commercialised in metallurgical processing applications but which are analogous with well-proven processes in other industries. Design expertise for these processes has been secured through early vendor engagement.

The TECH Project will employ Australian developed technology to deliver value-added battery chemical production from a safe jurisdiction with a world-leading environmental footprint.

This paper discusses the key project drivers, sustainability, advantages of the DN_i Process™, the project timeline and outlines post-PFS process development in some key flowsheet areas such as iron hydrolysis, precipitation, thermal decomposition and nitric acid recycle, as well as vendor package initiatives.

Keywords): TECH Project, Technology Hub, DN_i Process™, Laterite, Limonite, Nickel Sulphate, Cobalt Sulphate, Battery chemicals, High Purity Alumina.