



ASX RELEASE
6 November 2019

High Purity Alumina Produced at Laboratory Scale Demonstrates Co-Product Potential for TECH Project

Highlights

- **4N High Purity Alumina (HPA) produced in testwork**
- **Potential high value transformation for a co-product**

Pure Minerals Limited (ASX:PM1) ("**PM1**" or "the **Company**") is pleased to provide the following update on its wholly owned subsidiary, Queensland Pacific Metals Pty Ltd ("**QPM**") and the Townsville Energy Chemicals Hub ("**TECH Project**").

QPM is focussed on developing the TECH Project as a modern refinery processing imported laterite ores to produce battery grade nickel and cobalt sulphate for the emerging EV industry. In addition to the nickel and cobalt sulphate, the TECH project will produce co-products of hematite, magnesia and aluminium hydroxide.

QPM's strategy is to progress the project with its core products and seek value enhancement options with these co-products. HPA is integral to this strategy and potentially represents a complementary product and revenue stream with applications including battery separator coatings in EV's and synthetic sapphire.

QPM engaged The Simulus Group ("**Simulus**"), a leading hydrometallurgy and mineral processing services group that has been involved with a number of HPA projects, including the bankable feasibility study on Altech Chemicals' Malaysian HPA plant. Simulus was tasked with undertaking a series of laboratory tests to assess the potential to upgrade TECH's aluminium hydroxide product stream and refine it into HPA.

Simulus prepared a synthetic liquor based on the aluminium hydroxide specification generated from QPM's Metsim model for the TECH Project. This synthetic liquor reflects releasing the aluminium hydroxide in hydrochloric acid. From this synthetic liquor, Simulus undertook amenability testwork and successfully produced HPA of 99.99% (4N) purity utilising four stages of aluminium chloride hexahydrate (ACH) precipitation followed by calcination to HPA.

A simplified version of the flowsheet used by Simulus is as follows.

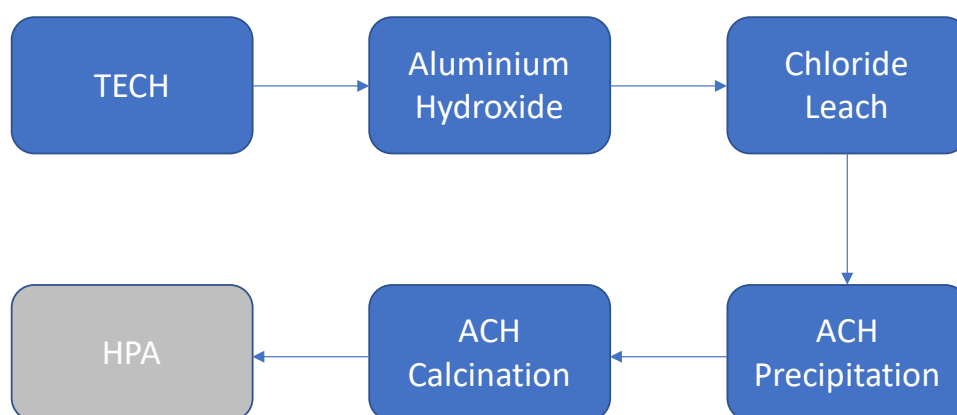


Figure 1: HPA Flowsheet

The potential for QPM to produce HPA as a co-product would add significant value to the TECH Project. 4N HPA is the most widely used product in the HPA market and currently commands between US\$20,000/t and US\$30,000/t.

QPM recognises that whilst demand growth for HPA is predicted to be significant, there are a number of companies that are seeking to supply the market. QPM's competitive advantage would be in producing HPA from a lower value complementary product, improving and diversifying revenue streams.

QPM plans to commence a Scoping Study for the production of HPA using the aluminium hydroxide generated from the TECH Project.

Managing Director John Downie commented,

"We are excited at this development with respect to the potential to generate further value from our suite of TECH Project co-products. Whilst our focus remains on nickel and cobalt sulphate, the potential for QPM to produce HPA should not be underestimated. Modest volume, emerging commodities and chemicals often face significant volatility in their underlying spot price."

This raises the risk profile significantly for any projects leveraged to a single commodity, such as those proposed for the HPA sector. We look forward to progressing studies to confirm the economic potential of HPA for the TECH Project."

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About Pure Minerals

Pure Minerals (ASX: PM1), through its wholly owned subsidiary Queensland Pacific Metals Pty Ltd (QPM), is focused on developing a modern battery metals refinery in northern Queensland.

The Townsville Energy Chemicals Hub or TECH, will process imported, high grade Ni-Co laterite ore from New Caledonia to produce nickel sulphate, cobalt sulphate and other valuable co-products.

Pure Minerals' senior management has combined experience of more than 60 years in nickel refinery operations and is well versed in dealing with nickel and cobalt buyers around the world.

With established infrastructure, a well-developed labour pool and a long history of processing imported laterite ore, Townsville is the ideal location for the project.

