



Alpha **HPA**

ABN 79 106 879 690

The Manager Companies - ASX Limited  
20 Bridge Street  
Sydney NSW 2000

ASX: **A4N**  
ASX Announcement  
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(4 pages by email)

## COMPANY ACTIVITIES UPDATE

- **USA based HPA milling operations now fully commissioned**
- **Pilot Plant Campaign #3 underway to meet HPA end-user demand**
- **1<sup>st</sup> stage of Campaign #3 (3A) already complete, with 250kg of Al-salt produced**
- **Rotary calciner commissioned – commencing HPA production runs**
- **Land and Govt support discussions advanced with QLD and WA Govt Agencies**
- **Negotiation with strategic counterparties**
- **EV market research identifies two new key HPA growth markets**
- **Definitive Feasibility Study advanced**

Alpha HPA Limited ('Alpha' or 'the Company') is pleased to provide an update on its HPA First Project, representing the evaluation and intended commercialisation of the production of ~10,000tpa of high purity alumina (HPA) using the Company's proprietary licenced solvent extraction and HPA refining technology.

### **USA based HPA Milling Operations Fully Commissioned**

The Company's dedicated jet mill has been successfully installed and commissioned this month within a battery lab in Binghamton, New York, USA. Commissioning included multiple milling runs using both sacrificial HPA and also Alpha's Pilot Plant HPA to confirm operating conditions to deliver the desired Particle Size Distribution (PSD) at near zero measurable contamination. The mill operating conditions are now finalised and mill production runs for end-user sample distribution are underway and due for completion this week.

### **Pilot Plant Production Run (Campaign 3) underway to meet end-user demand**

A 3<sup>rd</sup> Pilot Plant production run (Campaign 3) was commenced in the second week of November, with the 1<sup>st</sup> stage (Campaign 3A), being the Solvent Extraction (SX) operation and the production of aluminium salt, already complete. Robustness, selectivity and longevity of the SX organic has been confirmed, with all organics from previous campaigns recycled for Campaign 3, operating for over 600 hours.

Campaign 3 has been undertaken principally to meet additional volume demand from end-users for HPA test samples.

Campaign 3A produced around 250kg of very high-purity intermediate aluminium salt, which will be partly processed into HPA in campaign 3B commencing 9 December 2019. The SX component of Campaign 3A included the switching between feedstocks sourced from both WA and QLD to assess process performance between the two most likely feedstocks once the final project location is determined. Both feedstocks performed equally robustly, with no discernible variation in process conditions, extraction percentage or salt purity.

## Large capacity, rotary calcining unit commissioned

The larger scale rotary calciner has now been successfully commissioned, with assay and XRD data all confirming the calciner can generate alpha-form alumina within impurity tolerance limits. This calciner will now be employed to calcine HPA on remaining precursor from Pilot Campaign 2B as well as HPA precursor generated from Pilot Campaign 3B

## Land and Government support discussions advanced with QLD and WA Government Agencies

The Company has advanced a number of discussions with both QLD and WA government agencies with a view to finalising land parcel options and understanding the various investment attraction frameworks within each jurisdiction.

- The Company has extended its reservation over a suitable land parcel within the Gladstone State Development Area until DFS Completion.
- The Company has narrowed its potential site locations in Kwinana WA with the assistance of Development WA (formerly Landcorp).
- The Company has lodged expressions of Interest (EOI) for a number of government linked investment attraction incentives.

In addition, the Company is also working with its permitting consultants, AECOM, on the preferred permitting pathway for each of the project sites under consideration.

## Negotiation with strategic counterparties

Alpha continues to advance discussion with chemical and potential HPA off-take counterparties. The chemical counterparty discussions are directed at reaching agreement on terms for the supply of key process reagents and the offtake of the process by-product.

In the case of the HPA end-users, most counterparties are standing-by ahead of receipt of HPA test samples. However, the Company has commenced a technical testwork project with a Japanese based battery separator manufacturer, with a view to delivering their specific product specification using the Alpha HPA First process.

## EV market research identifies two new key HPA growth markets

Alpha has now completed the first stage of a research project with a highly regarded German based battery research group. The research has identified two exciting new applications for high purity alumina inside the lithium-ion battery cell. In each case, the new applications have absolute (>4N) purity requirements, and the potential for large volume demand.

Alpha has now commissioned the second phase of the project, including testwork validating the suitability of Alpha's HPA in these new applications which can be presented to potential HPA end-users in these markets.

## HPA FIRST PROJECT DEFINITIVE FEASIBILITY STUDY (DFS)

The HPA First Project DFS is being finalised by lead engineers Prudentia Process Consulting. Engineering and costing activities on the HPA First DFS have intensified over the last month with >10 engineers and consultants engaged on the project. Key activities include:

- DFS engineering complete with information from Pilot Program
- DFS procurement complete
- Layouts finalised for material take-offs
- Operating cost being finalised
- Capital cost build-up started
- Project delivery schedule being prepared
- Finalising infrastructure tie-ins
- DFS report progressing

Managing Director, Rimas Kairaitis, commented; *"The Company continues to make excellent progress toward commercialisation of the HPA First Project. We look forward to shortly completing the next set of key project milestones."*

For further information, please contact:

Rimas Kairaitis  
Managing Director  
[rkairaitis@alphaHPA.com.au](mailto:rkairaitis@alphaHPA.com.au)  
+61 (0) 408 414 474

Cameron Peacock  
Investor Relations & Business Development  
[cpeacock@alphaHPA.com.au](mailto:cpeacock@alphaHPA.com.au)  
+61 (0) 439 908 732

### About the HPA First Project

The Company's HPA First Project represents the evaluation and intended commercialisation of the production of ~10,000tpa of high purity alumina (HPA) using the Company's proprietary licenced solvent extraction and HPA refining technology. The technology provides for the extraction and purification of aluminium from an industrial feedstock to produce 4N (>99.99% purity) alumina for the intended use within the lithium ion battery and LED lighting industry. Following a successful testwork programme and Pre-Feasibility Study (PFS), updated in March 2019, Alpha HPA is now completing a pilot plant program at its dedicated laboratory facility in Brisbane, as part of a full definitive Feasibility Study (DFS) due for delivery in CY2019.

**Key highlights of the PFS (ASX: 7 March 2019):**

- Unit production costs of **US\$5,123** per tonne of HPA (after by-product credits)
- Annual Free Cash Flow (FCF) at full production rate, of **US\$199 million** (assuming US\$25,000/t HPA)
- Capital Expenditure of US\$149 million

## **Competent Persons Statement (Process Development Testwork)**

Information in this announcement that relates to metallurgical results is based on information compiled by or under the supervision of Dr Stuart Leary, an Independent Consultant trading as Delta Consulting Group. Dr Leary is a Member of The Australasian Institute of Mining and Metallurgy (AusIMM). Dr Leary has sufficient experience to the activity which he is undertaking to qualify as a Competent Persons under the 2012 Edition of the 'Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Leary consents to the inclusion of the technical data in the form and context in which it appears.

For further information on testwork results and processes see ASX announcements dated 10 October 2019, 23 September 2019, 28 August 2019, 5 August 2019, 25 July 2019, 2 July 2019, 3 June 2019, 17 April 2019, 7 March 2019, 4 December 2018, 20 November 2018, 6 September 2018, 31 August 2018, 9 July 2018, 30 April 2018, 26 April 2018, 21 March 2018, 6 March 2018, 21 February 2018, 8 December 2017, 30 November 2017, 29 November 2017, 24 November 2017 and 13 November 2017.

## **Cautionary Statement**

The Pre-Feasibility Study (PFS) referred to in this announcement has been undertaken to assess the technical and financial viability of the HPA First Project. Further evaluation work including a Definitive Feasibility Study (DFS) is required before the Company will be in a position to provide any assurance of an economic development case. The PFS is based on the material assumptions about the availability of funding and the pricing received for HPA. While the Company considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by this PFS will be achieved. To achieve the range of outcomes indicated in the PFS, Pre-Production Capital in the order of \$198 million plus working capital will likely be required. Investors should note that there is no certainty that the Company will be able to raise the amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of the Company's existing shares. It is also possible that the Company could pursue other "value realisation" strategies such as a sale, partial sale or joint venture of the project. If it does, this could materially reduce the Company's proportionate ownership of the project. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the PFS.

## **Forward Looking Statements**

This PFS contains certain forward-looking statements with respect to the financial condition, results of operations, business of the Company and certain plans and objectives of the management of the Company. These forward-looking statements involve known and unknown risks, uncertainties and other factors which are subject to change without notice and may involve significant elements of subjective judgement and assumptions as to future events which may or may not occur. Forward-looking statements are provided as a general guide only and there can be no assurance that actual outcomes will not differ materially from these statements. Neither the Company nor any other person give any representation, warranty, assurance or guarantee that the occurrence of the events expressed or implied in any forward-looking statement will actually occur. In particular, those forward-looking statements are subject to significant uncertainties and contingencies, many of which are outside the control of the Company. A number of important factors could cause actual results or performance to differ materially from the forward looking statements. Investors should consider the forward looking statements contained in this PFS in light of those disclosures.

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