Alpha HPA
ABN 79 106 879 690

ASX: **A4N**
ASX Announcement
31 August 2021

(5 pages)

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

HPA FIRST PROJECT UPDATE
DRIVING DE-CARBONISATION

PRODUCT MARKETING

- **Product pricing and volume bids placed for multiple forward contracts**
- **Several additional product orders received from Japan and Germany**
- **Increase in orders from the semiconductor industry**
- **Successful development of spherical powder products**

STAGE 1 - PPF

- **First equipment orders placed**
- **Remaining equipment bid evaluations underway**
- **Risk assessments complete**
- **Site geotechnical and survey work complete**
- **Earthworks issued for RFQ**

STAGE 2 – FULL SCALE PROJECT

- **Worley FEED study progressed**
- **Execution of Definitive Orica Agreements**
- **MCU amendment lodged**
- **Project financing process advanced**

The Board of Alpha HPA Limited ('Alpha' or 'the Company') is pleased to provide an update on project activities for its HPA First Project, representing the commercialisation and production of critical high purity aluminium products driving de-carbonisation.

Alpha is fully funded to commercial production at its Stage 1, Precursor Production Facility (PPF) which is scheduled to commence commercial production in Gladstone, QLD, for the Company's high purity Aluminium Precursors from August 2022. The Company is concurrently satisfying the remaining conditions precedent to the full-scale Project Final Investment Decision, with a focus on product sales and offtakes and Project financing.

Managing Director, Rimas Kairaitis commented *"A number of key HPA First Project milestones achieved in recent weeks. The global theme of de-carbonisation and the rapid expansion of critical material supply chains continues to favour our market outreach and product marketing."*

PRODUCT MARKETING

Alpha maintains an active product marketing program, with a number of engagements now maturing to the commercial stage. In addition, Alpha continues to outreach to new markets and jurisdictions, as well as continuing to receive inbound product test orders.

Key themes

A number of dominant themes have emerged from Alpha's market outreach and product marketing, which are considered highly constructive to securing product sales and offtake agreements. These include:

- Critical material supply chains are being re-organised in response to covid-supply shocks, geo-political tensions, and a greater end-user focus on ethical and low-carbon supply.
- Alpha's products have been recognised by a number of end-users as the highest purity tested.
- Re-shoring of critical manufacturing, particularly electronics, semiconductors and lithium-ion battery manufacturing to the European Union and the USA.

Product pricing and/or volume bids placed for multiple forward contracts

Following product evaluation and product qualification, the Company is pleased to note that:

- Alpha's sintered HPA pellets are qualified for high quality sapphire glass production by ALOX Technology (USA).
- One of Alpha's speciality HPA powders is qualified for a German based LED phosphor manufacturer. First commercial sales of this product were reported to the ASX on 28 May 2021.
- Another of Alpha's speciality HPA powders is now qualified with a Netherlands based LED phosphor manufacturer.
- Alpha's aluminium precursor product specification has been accepted by two global chemical companies.

With these technical milestones achieved, Alpha has now submitted volume and/or pricing bids for a series of significant product supply contracts including:

- Supply of speciality HPA powders to the Netherlands based LED phosphor manufacturer.
- Supply of aluminium precursor to a German based global chemical company.
- Supply of aluminium precursor to USA based global chemical company.
- Supply of HPA powder to a Japan based separator manufacturer.
- Supply of high purity alumina powder for semiconductor wafer polishing.

Additional Product Orders

In the last weeks, Alpha has continued to service a range of new product orders through either direct market outreach or via its global marketing network.

Eight product orders were serviced by Alpha in the last two weeks include:

- HPA powder sample to a Japanese ceramic business.
- Ultra fine HPA powder product delivered to a Japanese manufacturer of CMP Slurries.
- 5 separate product orders, including HPA and aluminium precursors, to a very large, global materials company based in Japan for application including glass additives and CMP Slurries.
- Al-precursor sample to a German business unit of a global, USA based chemical company.

CMP slurries for the semiconductor industry

Alpha has noted an increase in inbound product enquiries for its high purity aluminium products in the application for CMP slurries. CMP (Chemical Mechanical Planarization) is the technique applied for the polishing step of various semiconductor substrates. The CMP slurry polishing process utilises a number of ultrafine materials as abrasives, including high purity aluminas. CMP slurries and pads represent approximately 7% (or US$2.3B) of the global semiconductor wafer fabrication industry (*Source: Semiconductor Industry Association, April 2021*).

The recent increase of product enquiry for CMP slurries appears connected to the wider concern around critical semiconductor supply shortages and the re-shoring of semiconductor manufacturing, particularly to Japan and the USA.

STAGE 1 - PPF

The Company has made strong recent progress on the PPF component of the HPA First Project, as detailed below:

First equipment orders placed

Following completion of final design and RFQ's, technical and commercial bid evaluations for key process equipment are being progressively assessed. Equipment orders have now been placed for:

- Cooling tower package.
- Feedstock bag unloader package.
- Demin water package.
- Centrifuge.
- Lab analytical equipment.

Bid evaluations of the following equipment areas are underway, with orders expected to be placed shortly:

- Screw conveyors.
- Agitators.
- Scrubbers.
- Pressure filters.
- Air compressors.
- Process building.
- Positive pressure heating, ventilation and air conditioning (HVAC) system.

Other PPF Activities

Other activities as part of the PPF delivery include:

- Completion of PPF risk assessment.
- Partial completion of Project HAZOP.
- Final design of PPF Process building.
- Structural design and update of 3D Model.

Site geotechnical and survey work complete

The site based geotechnical survey on the PPF foundations has been completed (see image below). Site survey work has also been completed to validate land boundaries.

Earthworks design is completed and has been issued to contractors as a Request for Quotation (RFQ).

Geotechnical drilling – HPA First Project Site Gladstone

STAGE 2 – FULL SCALE PROJECT

In parallel with the PPF, the Company maintains a number of workstreams directed at completing the remaining conditions precedent to the full-scale HPA First Project FID:

Worley FEED study progressed

Worley have substantially progressed the Front End Engineering and Design (FEED) process for the full-scale HPA First Project, with completed tasks including:

- Material Take Off's (MTO's) progressed for earthworks, concrete and steel.
- Technical review of by-product concentrator complete.
- Technical review of Orica interface design basis.
- Inspection of overseas vendor manufacturing sites.
- Completed project electrical load list.
- Issued market enquiry packages for pricing across earthworks, piping, structural steel and electrical.

Execution of definitive Orica agreements

As per the ASX announcement of 18 August 2021, Alpha and Orica Australia Pty Ltd ('Orica') have executed binding, definitive agreements in respect of Alpha's HPA First Project which describe the commercial terms and technical obligations of both Orica and Alpha for the supply of process reagents and the offtake of process by-product to/from Alpha's HPA First Project and Orica's Yarwun manufacturing facility within the Gladstone State Development Area in North Queensland.

MCU amendment

The State Government Approval for the HPA First Project (MCU Approval) was received in February 2021. The MCU amendment incorporating the PPF has been lodged with the QLD Office of the Coordinator-General. Approval for the amended MCU is expected this half. The application for the Environmental Authority (EA) the HPA First Project was submitted in May 2021, with EA approval also expected this half.

Operational Works permit applications are also being finalised for the PPF with a pre-lodgement meeting being sought in September with the Gladstone Regional Council.

Project Financing process advanced

Working with the Brisbane based KPMG Debt Advisory Team, Alpha has progressed a number of key elements of the full-scale HPA First Project financing.

These activities include:

- Facilitation of RPM Advisory Services (RPM) through the second stage of the Independent Technical Expert (ITE) process.
- Responding to detailed technical and commercial requests for information (RFI's) from both Government and commercial lenders.
- Establishing business systems to align with lender requirements, including the adoption of science based carbon emission reduction targets.
- Providing secure data room access to a select group of potential strategic investors.

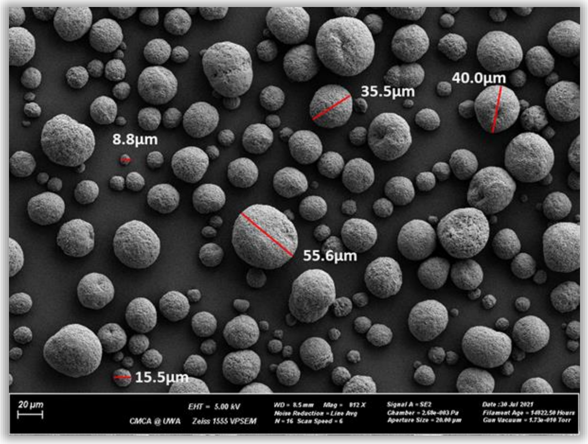
PRODUCT DEVELOPMENT

Alpha continues to receive inbound end-user requests for new product development. Alpha's process flexibility, and continued operation of the Brisbane demonstration facility, provides the opportunity to rapidly adjust process conditions to deliver new product specifications.

Alpha is very selective on new product development requests and is careful to allocate product development resources only in circumstances where there is a clear commercial benefit on a successful outcome.

Low surface area aluminas and boehmites

Alpha has now successfully developed low surface area (spherical) ultra high purity boehmites following a high volume inbound enquiry from a large European manufacturing business (see image below). Alpha is now translating this process to high purity alpha aluminas.



Scanning Electron Microscope (SEM) image of spheric, low surface area boehmite powder

Other ongoing product development work includes:

- Speciality boehmites for lithium-ion battery coatings.
- High density (>3.6 t/m^3) high purity alumina pellets.

For further information, please contact:

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

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

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About the HPA First Project

The Company's HPA First Project represents the commercialisation of the production of ~10,000tpa equivalent of high purity alumina (HPA) and related products 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. Alpha completed a Definitive Feasibility Study in March 2020 following a successful pilot plant campaign in 2019. Alpha has since upscaled its Brisbane facility to demonstration scale and has now recorded over 2,000 operating hours delivering an expanded range of high purity product to over 50 end-users globally.

Alpha is fully funded to the commercial production at its Precursor Production Facility which is scheduled to commence commercial production for the Company's high purity Aluminium Precursors from August 2022.

The Company is now in the mature phases of project permitting, market outreach and project financing processes with respect to the full scale HPA First Project, with the expectation of positioning the HPA First Project to Final investment Decision.