

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

ASX Announcement  
13 October 2025  
(12 pages)

## PROJECTS UPDATE

### PRODUCT MARKETING

- AI/data centres and power-semiconductors remain the strongest demand points
- Alpha's novel capability to deliver zero U/Th content a major demand driver
- Internal model indicated +8,000t HPA thermal filler demand for semis by 2030
- Three new LOI's signed in the semiconductor sector
- New LOI's include a global leading CMP OEM and a thermal interface supplier
- Test and sales orders growing strongly with >430 orders since FID (May 2024)
- Nano-alumina slurry development for CMP now close to finalisation

### HPA FIRST PROJECT STAGE 2

- Major concrete works progressed for tanks farm, reagents and SX areas
- Ongoing strong progress on offsite fabrication and long-lead equipment
- Successful QA/QC equipment vendor audits for long-lead equipment
- Tender documentation issued for SMP package 1

### HPA FIRST PROJECT STAGE 1

- CY26 Contracts under negotiation for ~80% of ATH and HPA capacity
- Engineering advanced to expand Stage 1 production to meet CY26-27 demand
- Continued HPA tablet production for Alpha Sapphire and external customers

### ALPHA SAPPHIRE

- Further wafer sales orders a part of ongoing semiconductor qualification
- Remaining sapphire production for CY25 committed to sapphire optics customer

The Board of Alpha HPA Limited (**Alpha** or **the Company**) is pleased to provide an update on activities for the **HPA First** and **Alpha Sapphire Projects**, each representing the commercialisation of the Company's proprietary, exclusively licensed solvent extraction and HPA refining technology and production of critical high purity aluminium products into high technology markets. Alpha's ultra-high purity product capability includes:

- High purity aluminas (**HPA**)
- High purity alumina hydroxides (**ATH**)
- High purity aluminium nitrate precursors (**Al-Nitrate**), and;
- High purity synthetic sapphire glass

Alpha is in continuous production at its HPA First Project Stage 1, Precursor Production Facility (**Stage 1**) across the Company's full range of high purity aluminium materials and in construction of **Stage 2** of the HPA First Project. Stage 2 of the HPA First Project will be the world's largest, single site facility for the manufacture of high purity aluminium materials.

In addition, the Company is in study phase for the **Alpha Polaris Project**, being the next large scale commercial deployment of the Company's process technology.

# HPA FIRST PROJECT

## PRODUCT MARKETING

### Overview

Alpha maintains a continuous global product marketing effort to secure the highest value end-user commitments to support each of its projects. The Company maintains a global network of marketing agents and an in-house sales and technical team. Product marketing is supported by test sample delivery and small-scale commercial sales from the Brisbane product development centre and the Stage 1 PPF facility in Gladstone.

Alpha's marketing effort is focused on new demand for new technology trends which match the Company's novel process capability including:

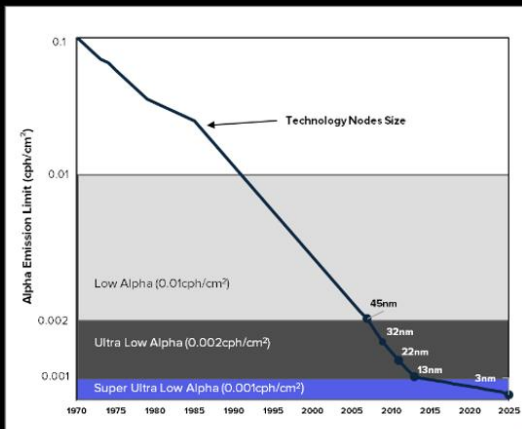
- HPA and ATH for the manufacture of spherical thermal interface materials (fillers) for parallel processing semiconductors (Data Centres & Artificial Intelligence (**AI**))
- HPA for CMP polishing of Silicon-Carbide (**SiC**) semiconductor substrates and hard-carbon packaging for High Bandwidth Memory (**HBM**) chips
- ATH for direct lithium extraction (**DLE**) sorbents
- Al-Nitrates for battery coatings and solid state electrolytes

In respect of thermal fillers, the key alumina purity requirement for thermal fillers used in advanced packaging of the most powerful semiconductors is the **ability to deliver zero-alpha radiation materials**. A number of Alpha's customers and end-users qualifying the Company's materials have now confirmed the Company's product is consistently the lowest alpha-radiation material that is available in the market – see graphic below:

### WORLD LEADING 'LOW-ALPHA' ALUMINA MATERIALS



- As semiconductor nodes continue to reduce, 'low-alpha' emission alumina materials are becoming critical
- Increasingly adopted for thermal fillers and for 'wafer adjacent' ceramic parts in manufacturing equipment
- Emission of alpha radiation particles cause 'bit-flips' and soft errors
- Unique purification process removes all detectable levels of Uranium and Thorium
- **Alpha's customers have confirmed that Alpha HPA is the only supplier to meet non-detect levels of alpha-radiation**
- Alpha HPA is uniquely positioned to meet rapid growth in low-alpha alumina demand. With >1,000tpa under LOI



Source: Honeywell Advanced Materials

Alpha HPA provides the lowest level alpha radiation in alumina materials (non-detect) globally

## Emerging Market Thematics

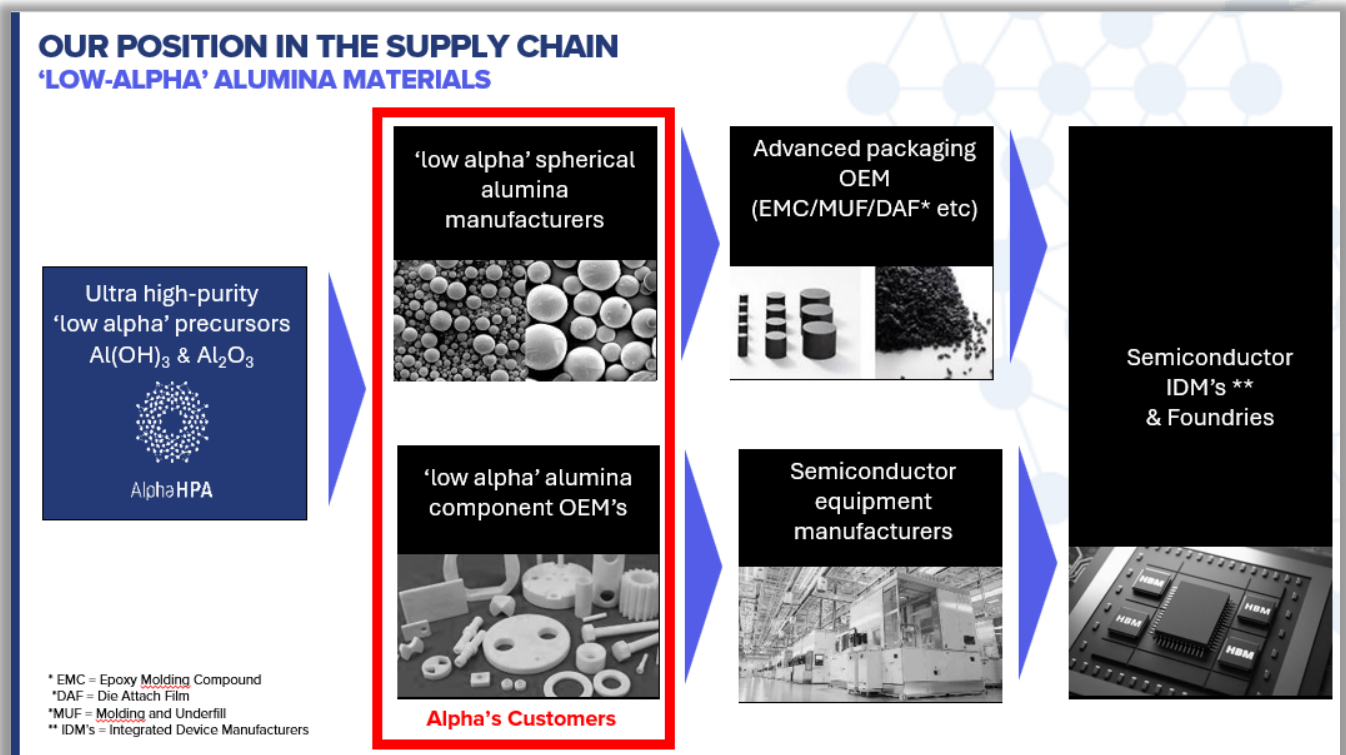
Alpha's end users have confirmed the downstream end-use of our materials are the thermal packaging for both AI processors and advanced HBM semiconductors. End-users have confirmed that the end-user demand for this application has been difficult to quantify over the last 6 months. However demand certainty is now consolidating into a very strong forward demand profile as the end-users build confidence that a secure, high volume supply of zero-alpha emission alumina is available in a tier #1 jurisdiction.

In addition to the adoption of 'low-alpha' alumina materials for thermal fillers, Alpha has now received multiple sample requests to sample our low-alpha aluminas for use in alumina ceramic parts used in semiconductor manufacturing equipment, such as electrostatic chucks. Although early, this appears to represent a new area of potentially significant demand and is consistent with the sensitivity of most advanced semiconductors to trace levels of alpha-radiation, even during the manufacturing process.

Recent marketing activity includes:

- Multiple end-user visits to Japan in September
- SEMICON WEST and attendant US customer visits in October
- Consolidation of strong demand signals and end-user qualification from the semiconductor sector
- Continued strong build up in qualification test orders, now at >430 since May 2024
- Steady and continued build in sales and forward sales orders

Alpha's position in the supply chain of ultra high-purity, 'low-alpha' alumina materials is shown below:



## Demand modelling for HPA thermal fillers

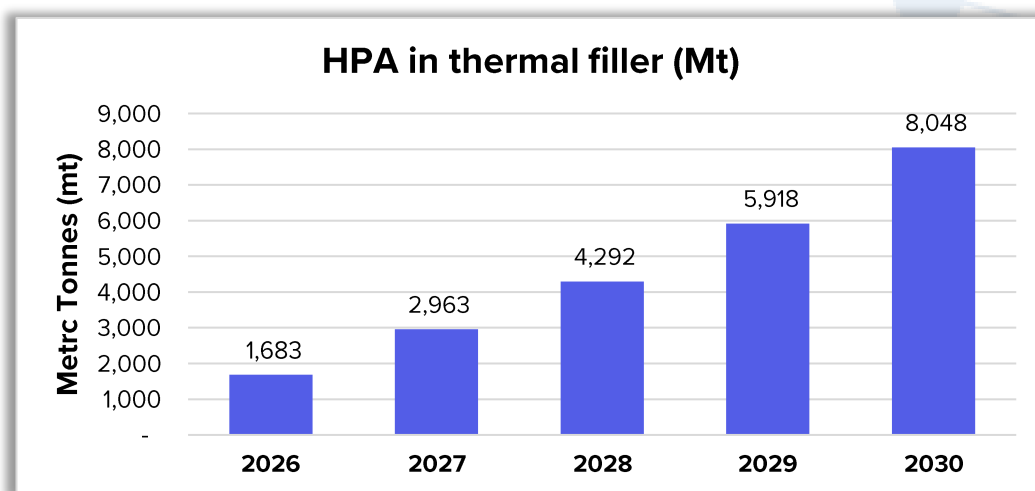
Alpha has completed an internal demand model for the adoption of low-alpha, high purity alumina for use in AI data centres. The model has been built from first principles, adopting:

- Alpha's internal market intelligence on the application and specifications from direct customer interface, which assumes the continued switch from silica to 100% high purity alumina for thermal fillers
- Published data on AI GPU configurations, including:
  - No. of AI GPU's per DGX server unit
  - No. of HBM chips stacks per GPU
  - Die sizes
  - Back-end packaging volumes

- AI data centre CAGR of 36% (Macquarie Research), and published Hyper-scale AI data-centre commitments, including:
  - Stargate (US)
  - Microsoft AI (Global)
  - Oxagon (KSA)
  - Vantage Frontier (US)
- Average 2-year AI chip replenishment cycle

**The demand model shows a robust demand for ‘low-alpha’ HPA as ceramic thermal fillers reaching +8,000 metric tonnes by 2030.**

**Note:** This is modelled demand for use in AI centres alone and assumed 100% HPA is used for managing heat transfer for AI chips. It does not include data centres for cloud storage or power semiconductors, both of which are expected to be additive to this demand model.



Alpha notes that the other significant source of HPA demand from the semiconductor sector, being CMP, has not yet been modelled by the Company. Alpha notes it has currently secured >4,000tpa under LOI for CMP applications, and believes to date we have likely accessed 10-15% of the CMP user demand.

### Letters of Intent (LOI's)

Alpha has continued strong progress through product qualification & execution of LOI's with key customers, driven by Alpha's technology advantage in the semiconductor sector. Letters of Intent (LOI's) are typically executed after at least 12-18 months of detailed qualification test work, and in the final stages of supply negotiation.

Reflecting strong technical performance through qualification, Alpha has completed a further 3 LOI's within the last two months, all in the semiconductor sector. Each of the LOI's are structured with placeholder volumes pending final demand signal from the downstream end-user (semiconductor foundries and Integrated Device Manufacturers (**IDM's**) per graphic above). Pricing of the Alpha material is trending higher than the 2024 Definitive Feasibility Study (**DFS**) 2024 Alpha discovery pricing due to price agnostic semi customers seek technical outperformance of material, notably the Aluminium Trihydrate.

New LOI counterparties include:

- A leading, US based, global OEM for Chemical Mechanical Polishing (CMP) slurries
- A leading, South Korean based OEM for alumina fillers in advanced semiconductor packaging
- A NE Asian CMP OEM

In addition to the existing customer LOI's in place, Alpha is in active negotiation, with;

- A further 4 end-user LOI's under draft and;
- A significant volume demand expansion for 3 existing LOI's related to thermal fillers for AI/Data centre semiconductors and CMP



## Nano alumina slurry development close to final development

Alpha has completed a number of further generations of its nano alumina slurry product (nano dispersion), which represents an approximate 2x downstream value-add to the Company's novel, alpha phase alumina particle. This product development is expected to complete by December 2025, with high volume manufacturing (HVM) of the alumina dispersion due to commence in March 2026.

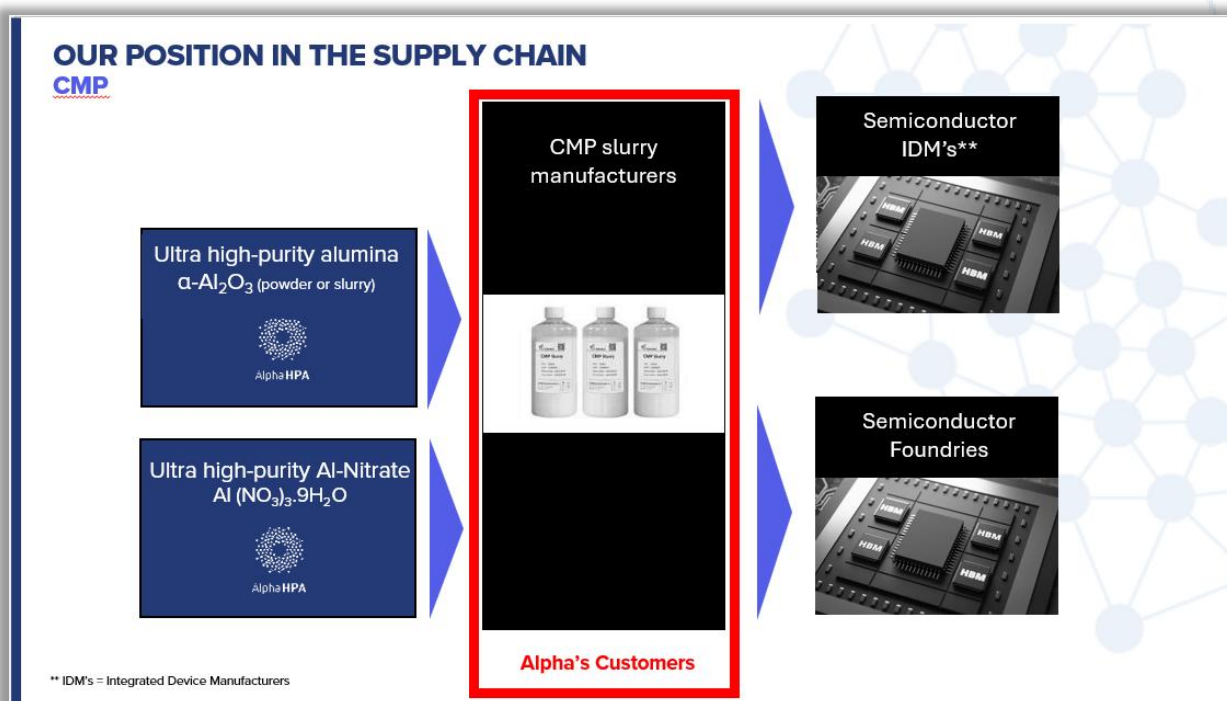
Nano alumina dispersion are the dominant input materials for CMP slurries using alumina abrasive.

**Final development stage nano-slurries are now being tested across 10 separate CMP OEM's dominated by Japan and US based end-users.**

Demand for alumina abrasives in CMP is being driven by the emergence of a number of hard substrates, requiring the adoption of alumina as the dominant CMP abrasive. These include:

- Silicon carbide substrates for power semiconductors (driven by electronic vehicles, 5G and solar/wind farm installations), and;
- Amorphous hard-carbon substrates – as increasingly adopted in High Bandwidth Memory (HBM) chips

Alpha's position in the CMP supply chain is shown below:



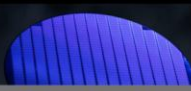
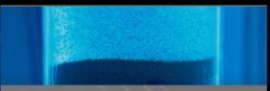
## Pricing Discovery

Pricing of the Alpha material is trending higher than DFS 2024 Alpha discovery pricing due to relatively price agnostic semi-sector customers focused on technical outperformance, most notable is the improvement in pricing for high purity alumina tri-hydrate (ATH) – see updated table below.

| Product                         | Alpha HPA Market Discovery Pricing |                      |
|---------------------------------|------------------------------------|----------------------|
|                                 | DFS (May 2024)                     | Updated (Sept. 2025) |
| 5N Purity Aluminium Nitrate     | 18.5                               | 18.0                 |
| 4N5+ Purity Alpha Phase Alumina | 32.0                               | 32.0                 |
| 4N5+ Purity Alumina for pucks   | 25.0                               | 25.0                 |
| 4N5+ Purity Gamma Phase Alumina | 20.3                               | 25.0                 |
| 4N5+ Purity Alumina Trihydrate  | 15.0                               | 23.0                 |
| 4N5+ Purity Nano-Alumina        | 43.0                               | 48.0                 |
| Average Price - All Products    | 25.6                               | 28.5                 |

## Alpha technology advantage

Alpha's product development and marketing continues to consolidate what the previous 4+ years has clarified as the four discrete applications where Alpha's process technology holds a clear advantage over competing manufacturing technologies and/or competing suppliers. This is summarised in the graphic below:

| WHERE ALPHA HOLDS A CLEAR TECHNICAL ADVANTAGE |                                                                                                                                                  |                                                                                                                                           |                                                                                                      |                                                                                                                                    |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| SECTOR                                        | SEMICONDUCTOR                                                                                                                                    |                                                                                                                                           | DLE                                                                                                  | LITHIUM-ION BATTERY                                                                                                                |
| USE                                           |                                                                 |                                                          |                    |                                                 |
|                                               | THERMAL FILLERS                                                                                                                                  | CMP                                                                                                                                       | DLE SORBENTS                                                                                         | COATINGS                                                                                                                           |
| PRODUCTS                                      | Alumina and ATH materials as spherical 'heat sinks' to manage temperature in high performance parallel processors                                | Alumina abrasives for polishing silicon carbide substrates (Si-C) and package polishing<br>5N Al-Nitrate additive                         | ATH (Al(OH) <sub>3</sub> ) as a precursor to make DLE sorbents for extracting lithium from brines    | High purity Al-Nitrate as coating precursor to apply Al-based coating on anode materials                                           |
| A4N ADVANTAGE                                 | End-users have noted Alpha is the only global supplier capable of providing <1ppb U and Th materials for 'low-alpha' thermal interface fillers   | Novel process delivers ultra low alkali metals impurities (Na & K) and morphology driving out-performance as a CMP abrasive               | Novel process delivers unique amorphous ATH crystal structure = ultra-high performance               | Alpha HPA is the first company globally to manufacture 5N purity aluminum nitrate<br><b>MAJOR SAFETY BENEFIT</b>                   |
| ALLOCATION                                    | 1,100tpa under LOI (2 OEM's)<br>2 x LOI's in draft<br>Qualifying with 6 x other<br>Premium pricing ~ US\$25 – 35/kg<br>Est. unmet demand: +5ktpa | 4,000tpa under LOI<br>Small scale sales commenced<br>Qualifying for 10 x other<br>Strong pricing ~US\$20-30/kg<br>Est. unmet demand: 10kt | LOI in draft<br>Qualifying with 14 x counterparties<br>Moderate pricing<br>Est unmet demand: +25ktpa | Qualified with a sector leader<br>2 x LOI + quotation in draft<br>Moderate pricing (strong in HPA Eq)<br>Est unmet demand: +10ktpa |

## HPA FIRST PROJECT STAGE 2

### Major Civil Works Progress

The major civil works (concrete construction) has been progressing on a number of fronts with initial focus on the by-product tank farm, evaporators, Orica reagent storage and the SX areas. These areas comprise some of the largest tanks in the build with substantial foundations being poured.

The civil contractor is working in conjunction with engineering to improve the constructability of the design to optimise the schedule and delivery of the Issued for Construction (IFC) drawings in the coming months.



*By-Product and Evaporator foundations in construction*



*Orica Reagent Storage and SX foundation steel work*

### Engineering and Fabrication

The critical path for the project continues to run through engineering, specifically on structural steel and piping with electrical and instrumentation running in parallel. The Project team is working through an Early Contractor Involvement (ECI) process for the SMP installation contract to assist the engineering design to be optimised in sequence with construction. Tender documents for the first SMP installation contract have been issued with the intent to mobilise in November to commence major site tank, SX equipment installation as it arrives on site in December and the Orica by-product evaporator due to arrive early in 2026. Offsite fabrication of long lead equipment continues to progress steadily, particular for the key solvent extraction (SX) circuit (*refer images below*).

Offsite fabrication of the major tanks package is well advanced with the first by-product and Orica reagent storage tanks due to start arriving later this year for installation.

Project procurement has continued to advance with the steady issuance of the remaining plant equipment orders.





*Solvent Extraction Plant Factory Acceptance Test*

### **Operations Readiness**

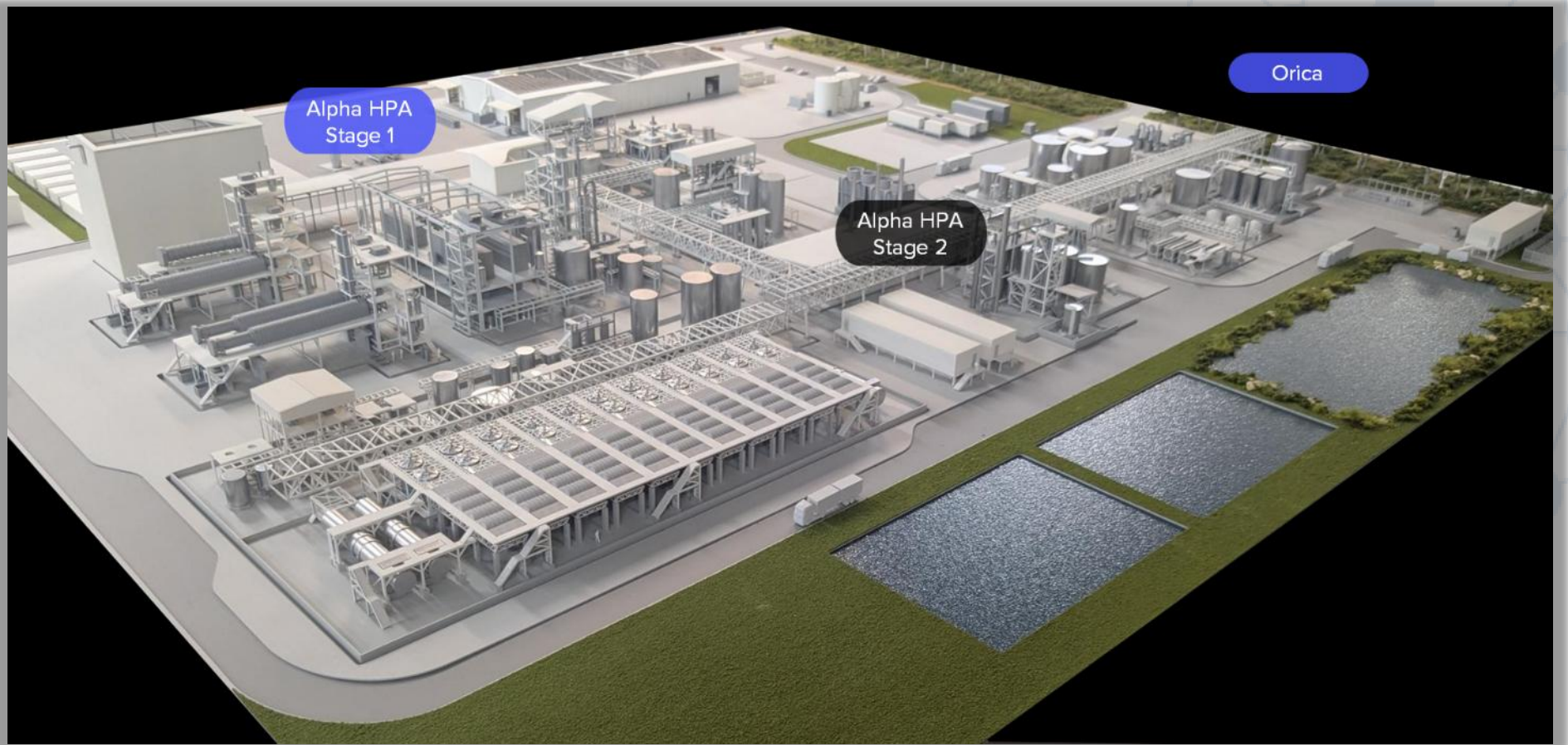
The operations readiness team continues implementation of supporting plant systems that will support both start up and ongoing operations. The safety management system is now in place and being utilised in stage 1 and for construction while the maintenance management system is still being implemented. A decision on the commissioning and handover system for start up is still under review by the team.





*HPA First Project site looking west, showing completed earthworks and concrete works underway  
Orica Yarwun in midground and Rio Tinto Yarwun alumina in far ground*





*3D Model of final engineered layout of the HPA First Project*

## HPA FIRST PROJECT - STAGE 1

### Product Orders and Sales

Product sales continue to build from the Stage 1 PPF as Alpha consolidates its position as a reliable, high-quality supplier to the semiconductor sector.

For the September 2025 quarter to date, Alpha has received and partly serviced:

- 67 separate sales or product orders across our full product offering from,
- 28 separate end-users and customers

End-applications serviced include:

- **Semiconductor Sector**
  - CMP polishing
  - Thermal interface/thermal filler applications
  - Technical ceramics for semiconductor equipment components
  - Thermal/plasma sprays applications
- **Battery Sector**
  - Mesoporous aluminas for LiB anode coating
  - Al-Nitrates for LiB anode coating
  - Al-Nitrates for solid state electrolyte formulation
- **Other**
  - Alumina for hydrogen production
  - Gamma alumina for protein collection (pharmaceutical)
  - Technical ceramics
  - Amorphous ATH for Direct Lithium Extraction (DLE)

Stage 1 ATH and HPA production continues to be fully utilised for customer and end-user qualification orders.

### CY26 Contracts

Alpha is negotiating a number of sales contracts for FY26 which would see approximately ~80% of the Stage 1 capacity allocated. Each of these is with an LOI counterparty with significant Stage 2 demand.

### Stage 1 Expansion Options

In response to strong product demand and likely Stage 1 production capacity constraints in FY 26 and FY27, the Company has advanced number of additional low-cost expansion options for Stage 1 to increase production rates of selected materials to meet higher customer demand before larger volumes are available from Stage 2 production.



## ALPHA SAPPHIRE



Alpha Sapphire is a wholly owned subsidiary of Alpha that has invested in an initial two, next-generation sapphire glass growth units (**Phase A**) as qualification units prior to decision on the commercial scale deployment of synthetic sapphire growth (**Phase B & Phase C**).

The Phase A units are currently running multiple sapphire growth runs using the Company's in-house high-purity alumina feedstock to provide synthetic sapphire for sales and end-user qualification.

### Sapphire Marketing Update

Alpha Sapphire has been engaging with the synthetic sapphire end-use market since establishing maiden sapphire growth in May 2024.

Marketing has been focused on the following end-use markets:

- **Optics:** Being sapphire glass utilisation in medical devices, watches and consumer electronics. As noted in the quarter to June 2025;
  - Alpha Sapphire continued sales of sapphire boules to a counterparty in the production of ESG credentialled sapphire for their premium watch face customers.
  - Alpha Sapphire reached conditional agreement on the sale of a further 2 metric tonnes of sapphire boules over the remainder of calendar 2025.
- **Semiconductors:** Alpha Sapphire is responding to a number of inbound enquiries of new sector demand from a number of large semiconductor counterparties developing next generation Gallium-Nitride (GaN) -on-sapphire semiconductor platforms. GaN-on-sapphire, is an emerging semiconductor technology for high power and high-frequency devices. GaN-on-sapphire semiconductors are grown on wider format (8") C-plane sapphire wafers and are considered an excellent match to the capabilities of Alpha Sapphire's sapphire growth units which are optimised for wide-format C-axis sapphire growth.

Following the successful delivery of an initial set of 200mm sapphire wafers to a major global semiconductor OEM for GaN-on-sapphire qualification, Alpha Sapphire is pleased to have reached second round qualification and is now processing a follow-up delivery of a further 60 x 200mm sapphire wafers. Results are expected in the December quarter.

For further information, please contact:

**Robert Williamson**  
Managing Director  
[rwilliamson@alphaHPA.com.au](mailto:rwilliamson@alphaHPA.com.au)  
+61 (0) 407 125 175

**Robert Lord**  
Head of Corporate Development  
[rlord@alphaHPA.com.au](mailto:rlord@alphaHPA.com.au)  
+61(0) 400 008 553

**Rimas Kairaitis**  
Exec. Director & Chief Commercial Officer  
[rkairaitis@alphaHPA.com.au](mailto:rkairaitis@alphaHPA.com.au)  
+61 (0) 408 414 474