



# AGM PRESENTATION



Alpha **HPA**

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The Definitive Feasibility Study (DFS) referred to in this presentation has been undertaken to assess the technical and financial viability of the HPA First project. The DFS 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 outcomes indicated by this DFS will be achieved. To achieve the range of outcomes indicated in the DFS, additional funding will 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 HPA First project. If it does, this could materially reduce the Company's proportionate ownership of the HPA First project. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the DFS.

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# WE SUPPLY E-MOBILITY

The next major driver of  
de-carbonisation



Gasoline Only



Average Emissions

**380**

Grams of CO<sub>2</sub>e per mile

Plug-in Hybrid Electric



**209**

Grams of CO<sub>2</sub>e per mile

Battery Electric



**154**

Grams of CO<sub>2</sub>e per mile

Source: Inside EV's ([www.insideevs.com](http://www.insideevs.com))

## CO<sub>2</sub> Emissions

50%



Per mile travelled

## WE SUPPLY

- ✓ HPA for separators
- ✓ Al-precursors for cathode
- ✓ Al-precursors for anode



Alpha HPA

# WE SUPPLY LED-LIGHTING

## The current technology driver of de-carbonisation



Mini-LEDs and Micro LEDs set to drive next wave of LED growth



LEDs reduced CO<sub>2</sub>e by an est. 570m tons in 2017



Reducing new power stations by 1,250

IN 2017, THE USE OF LEDS TO ILLUMINATE BUILDINGS AND OUTDOOR SPACES REDUCED CO<sub>2</sub> EMISSIONS BY NEARLY

570  
MILLION  
TONNES



LED lights are 50-70% more efficient than incandescent



**A COMPLETE SWITCH TO LED LIGHTING WORLD WIDE, WOULD PREVENT 1,400,000,000 TONNES OF CO<sub>2</sub> EMISSIONS**

75%



PROJECTED ENERGY SAVINGS IN US LIGHT ENERGY CONSUMPTION BY 2035

ANNUAL CO<sub>2</sub> EMISSIONS SAVINGS FROM GLOBAL LED ADOPTION BY 2035



EQUIVALENT TO 200 MILLION CARS



OR 200 NEW COAL FIRED POWER STATIONS

WE SUPPLY

- ✓ HPA for LED sapphire substrates
- ✓ HPA for LED phosphors
- ✓ Al-precursors for LED phosphors



Alpha HPA

Sources: US Dept of Energy, [www.microled-info.com](http://www.microled-info.com) & IHS Markits



# 2021: Major Steps Forward

- Multi-faceted MOU with Global Materials Company Saint Gobain
- Development of world leading purity aluminum precursors
- Multiple Products qualified for:
  - Sapphire Glass Production – for LED's and Optics
  - LED Phosphor Production
  - Lithium-ion battery separator coatings
  - Lithium-ion battery electrode coatings
- MOU with CleanCo to supply 100% Renewable Energy
- Definitive Binding Agreements with Orica Australia
- QLD State Government Project Approval
- Launch of the Stage 1 – Precursor Production Facility (PPF)
- Successful \$50M capital raising to fund PPF
- Strategic Assessment Approval for NAIF lending
- Extended global outreach to over 50 potential customers with 8 supply contracts submitted
- Project site secured





RioTinto



**HPA First Project Site**  
**Gladstone State Development Area,**  
**North Queensland**

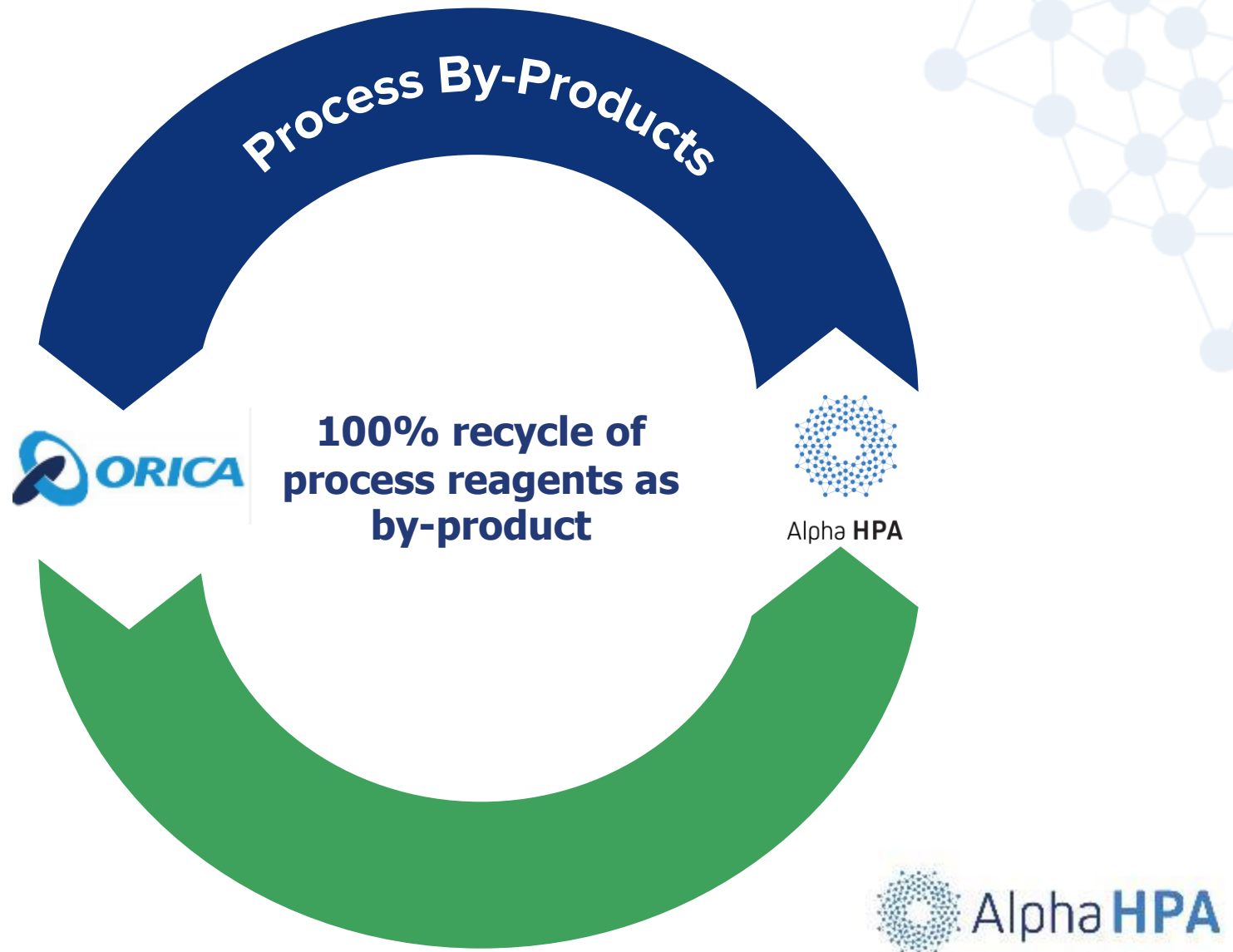
- 10ha project site secured
- Adjacent to Orica Australia to allow for Project Interface
- Term Sheet with Rio Tinto for feed supply

## HPA First Project: Location



# Alpha HPA & Orica: Project Synergy

- Project partnership with ASX 100 Company Orica (ASX:ORI)
- Binding agreements in place
- Project integration with 100% recycle of process reagents as by-product.

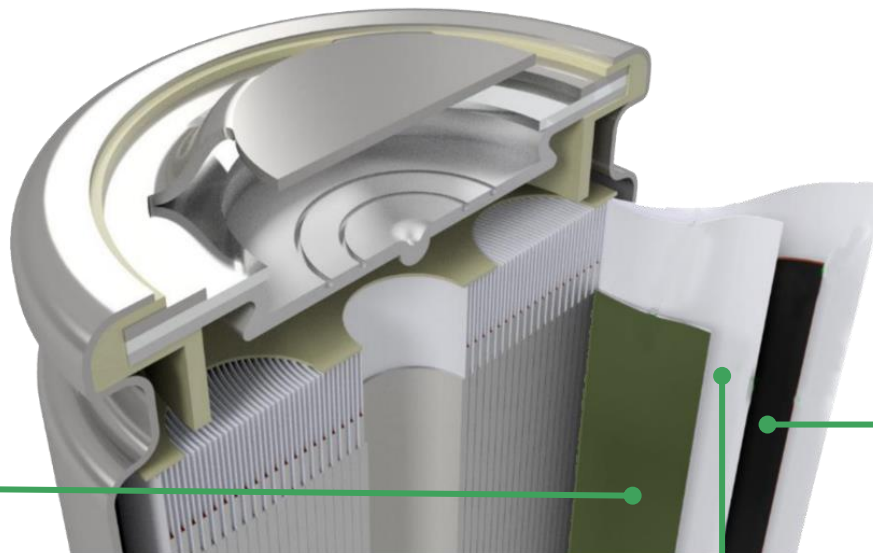


# Our products for the lithium-ion cell

## CATHODE

Cathode pre-cursors for  
NCA & NCMA and  
alumina coating

**5N Al-Nitrate**  
+  
**5N Al-Sulfate**



## ANODE

Pre-cursors for coating  
graphite and silicon  
anode

**5N Al-Nitrate**

## SEPARATOR

Ceramic coating for  
thermal management

**HPA**  
&  
**High Purity**  
**Boehmite**

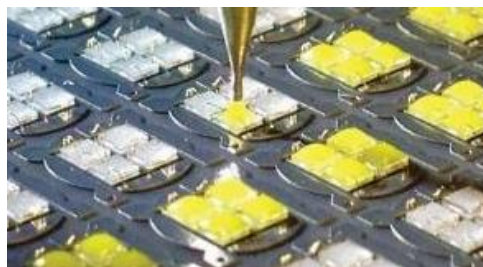


# Our products for LED lights

## LED PHOSPHORS

Synthesis of Aluminate (YAG) Phosphors for white LEDs

**HPA**  
+  
**5N Al-Nitrate**

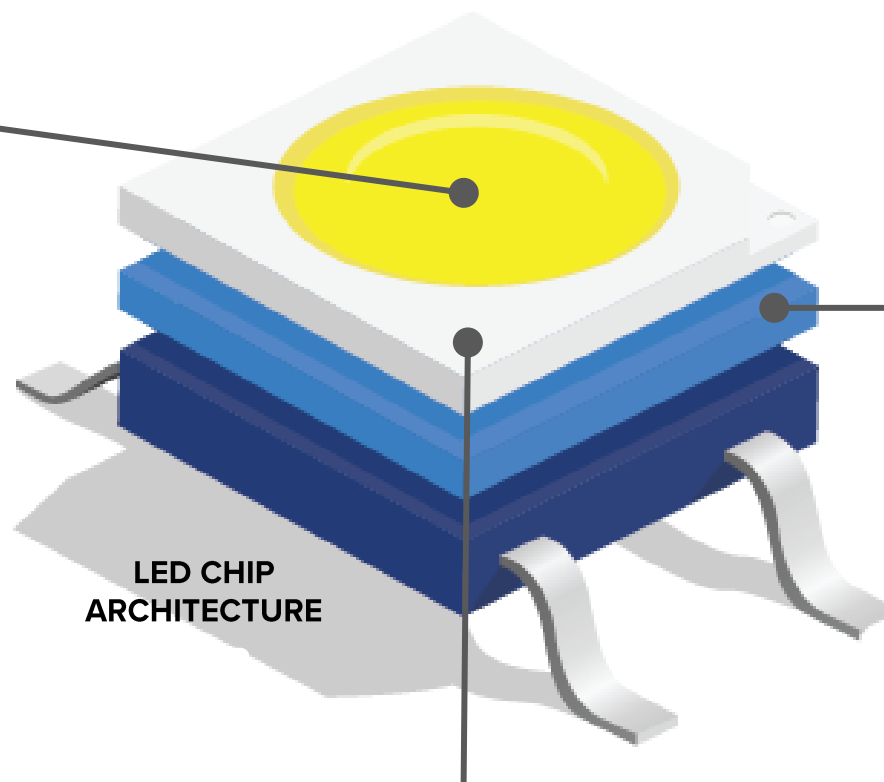


Addition of YAG phosphors to LED lighting circuits

## SAPPHIRE GLASS WAFERS

Sapphire crystal growth cut to sapphire wafer

**HPA Pellets**



LED CHIP  
ARCHITECTURE

Ga-N circuit & Active Layers

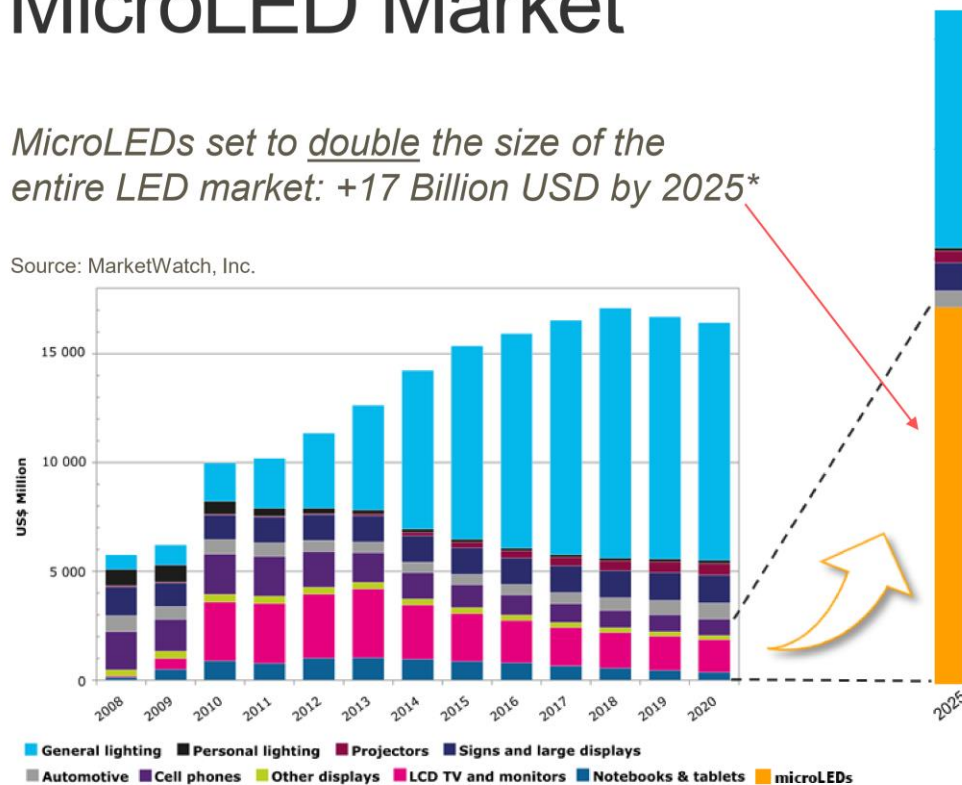
# 5N Aluminium-Nitrate: Micro-LED's

- Adoption of micro-LED's has the potential to double existing LED market
- Micro LED's require nano-size phosphors
- Nano-size phosphors increasingly require 'wet process' synthesis >> using Al-nitrate

## MicroLED Market

*MicroLEDs set to double the size of the entire LED market: +17 Billion USD by 2025\**

Source: MarketWatch, Inc.





# Near term production: Precursor Production Facility (PPF)

- **Fully funded PPF construction underway** to fast-track production of 5N Al-precursors at ~200 tpa

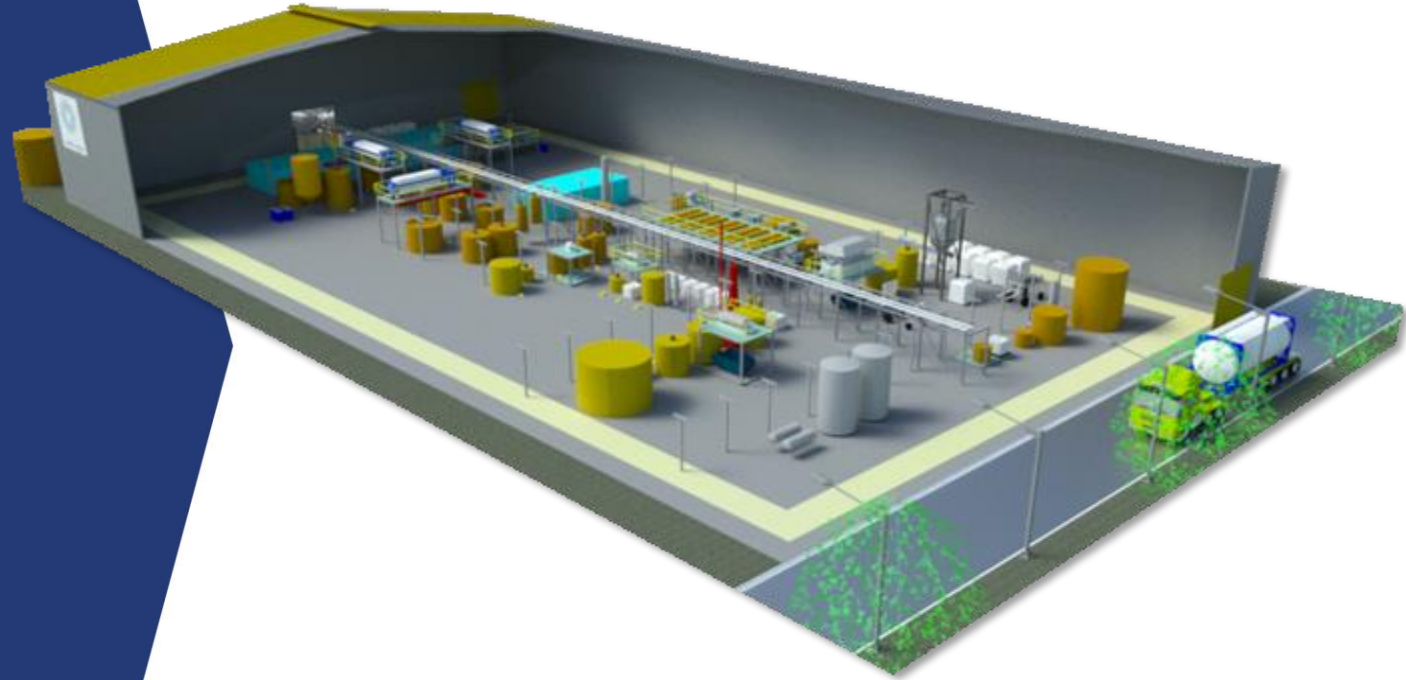
- Also delivering bespoke volumes of HPA and boehmite (1-5 tonnes per annum)

- To be constructed within Alpha's existing HPA First Project site at Gladstone

- Fully vendor quoted CapEx ~A\$27.6M

- **Construction Commenced**

- Targeting August 2022 Production



3D Schematic  
HPA First Project  
Precursor Production Facility

# Stage 1: Precursor Production Facility (PPF)



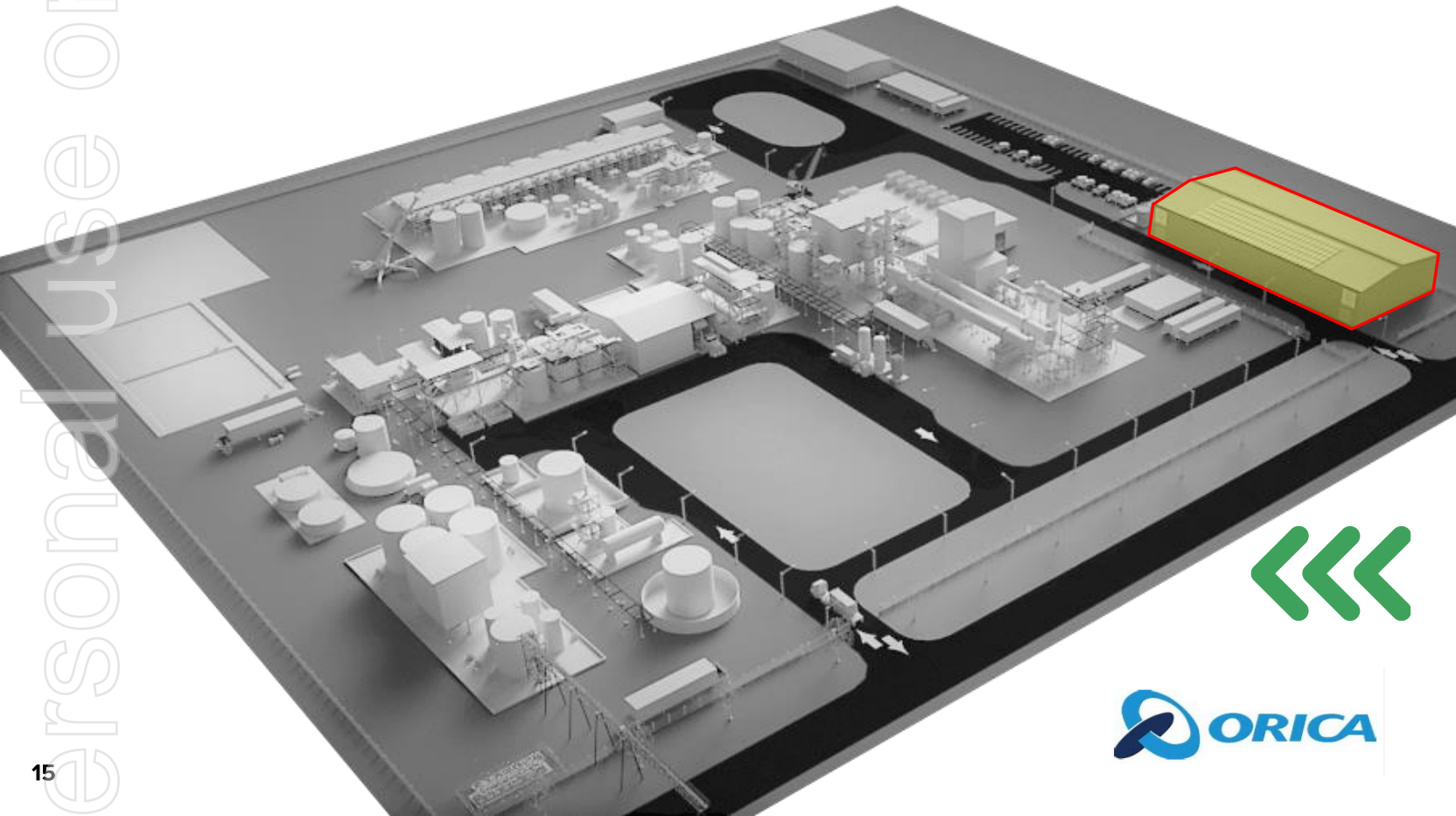
PPF: September 2022





# Project Layout: PPF and Full Scale Facility

- The PPF to be constructed within the HPA First Project Footprint
- To be incorporated into the Full Scale HPA First Plant as a dedicated unit for 5N Al-Sulfate.
- [alphahpa.com.au/our-projects](http://alphahpa.com.au/our-projects)



PPF to be constructed within the HPA First Project footprint, and then incorporated into the full-scale commercial plant.



Orica to supply reagents and offtake by-product for both the PPF and the full-scale facility



# HPA First Project: Brisbane Plant >>>



Crystalliser



Pre-Cursor Room



Pelleting Room



Solvent Extraction

- Continuously operating facility, with over 3,500 operating hours
- Aluminium nitrate production to date >5,100kg
- Servicing specialty sales and continued product test orders



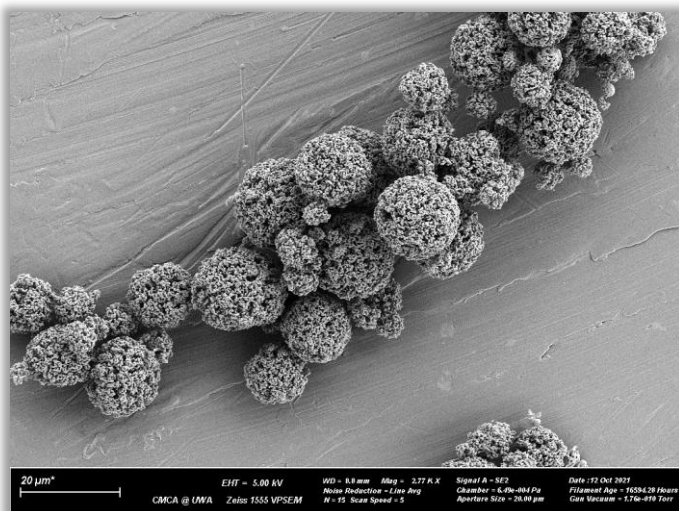
# HPA First Project: Global Product Marketing

- Global Marketing Network established
- >80 product samples now distributed globally to >40 end users
- Products qualified for sapphire glass, LED phosphors and separator coatings
- Al-nitrate and HPA sales commenced
- **Sept 2021:** Multiple (8) bids submitted for high value supply contracts

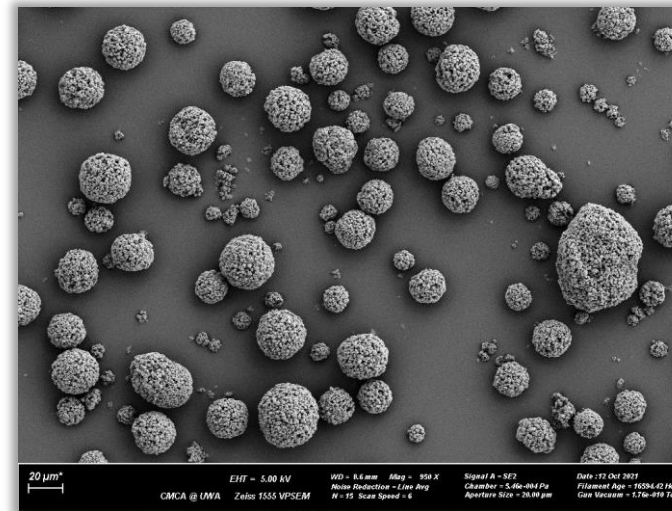


# Product Marketing: Understanding our Customers

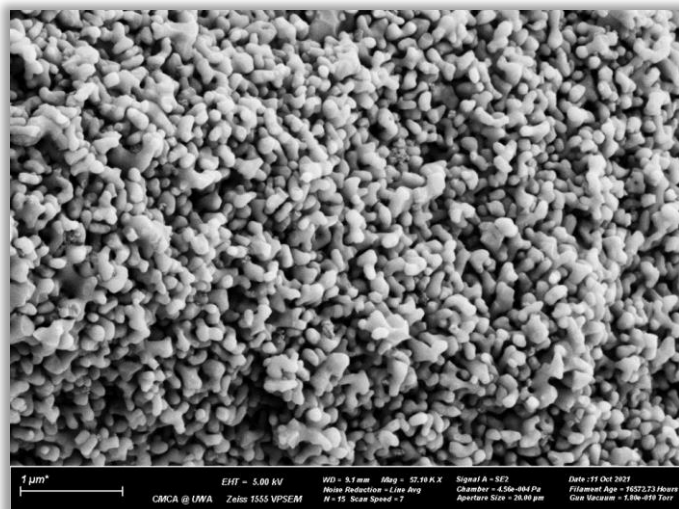
- Detailed technical interaction allows us to deliver to our customers requirements



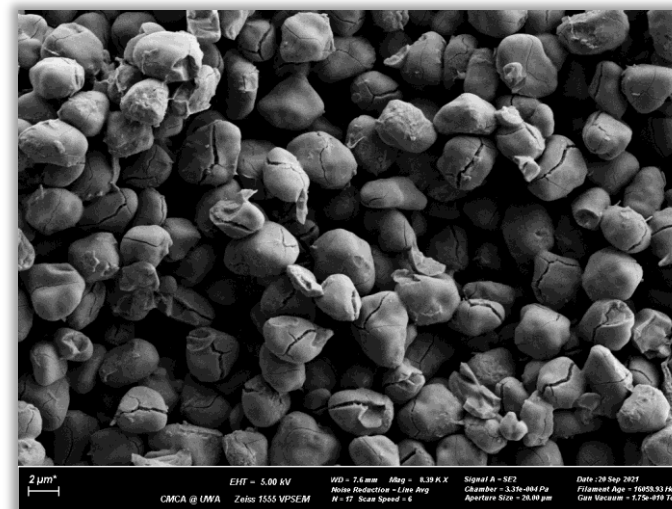
HPA spheres for Japanese electronics OEM



Dispersible boehmites for US ceramics OEM



Sub micron HPA for German based LED phosphor OEM



HPA coated Li-B anodes for EU anode OEM

AlphaHPA



# Corporate Snapshot

## TRADING INFORMATION

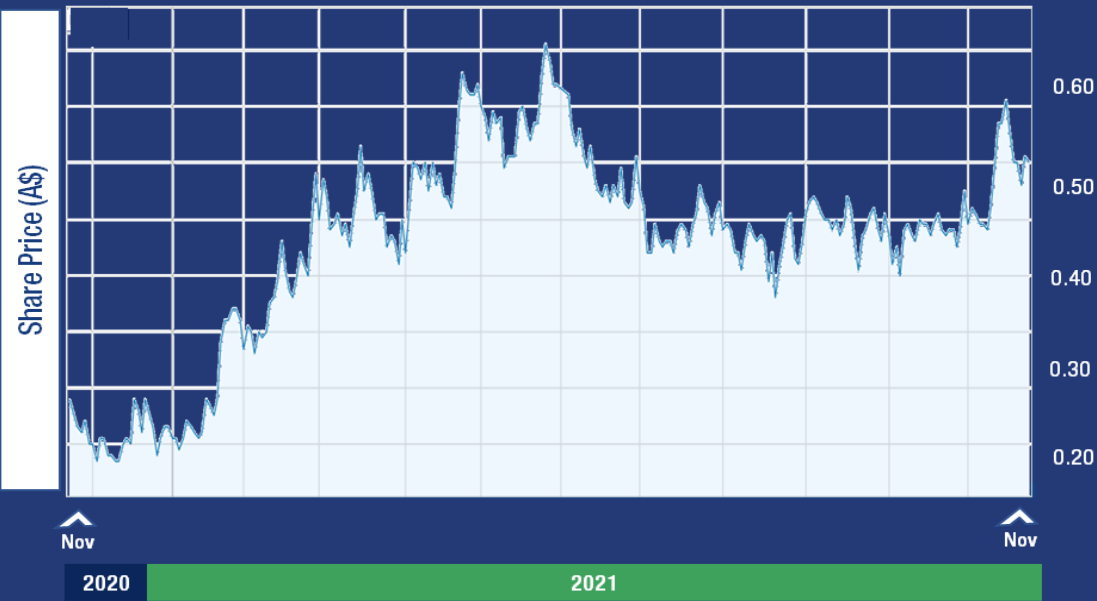
ASX CODE	A4N
Share Price (23/11/2021)	~52.5c
52-week trading range	14c – 67.5c
Issued Shares	793.3M

## CAPITAL STRUCTURE

Issued Shares	793.3M
Unlisted options (@20c)*	10.0M (expire 31 July 2022)
Unlisted options (@30c)	34.0M (expire 31 July 2022)
Unlisted options (@35c)*	5.0M (expire 30 Sept 2023)
Unlisted options (@35c)	26.0M (expire 31 July 2023)
Market Cap	\$416.5M
Est Cash (30-09-2021)	~\$40M – No Debt
Enterprise Value	\$376.5M

\* Licensor Options

## SHARE PRICE PERFORMANCE – 12 MONTHS



## SHAREHOLDERS

### TOP 20

Regal Funds

Permgold P/L (N. Seckold)





# THANK YOU



Alpha HPA