

Alpha HPA

# HPA FIRST PROJECT



**ULTRA PURE – SUSTAINABLE  
ALUMINIUM MATERIALS**

**ASX: A4N**

## CAUTIONARY STATEMENT

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.

## FORWARD LOOKING STATEMENTS

This presentation contains certain forward-looking statements with respect to the financial condition, results of operations, and 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 DFS in light of those disclosures.

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# ALPHA HPA: INTRODUCTION

We are a technology/industrial chemical company

We make **ultra-high purity aluminium products** with a worlds first process which are:

**CRITICAL RAW MATERIALS FOR DE-CARBONISATION**

**Our proprietary process delivers us the competitive edge**

**HIGH PURITY/LOW CAPEX/LOW OPEX/LOW CARBON**

we are commercialising in 2 Stages as the

**HPA FIRST PROJECT**

**STAGE 1 – IN PRODUCTION**

**EXPANDING WITH A\$15.5M CMDP GRANT**

**STAGE 2 – MOVING TO F.I.D**



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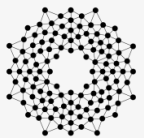
# HPA MARKET

HIGH PURITY ALUMINA

>99.99% (4N) PURE  $Al_2O_3$

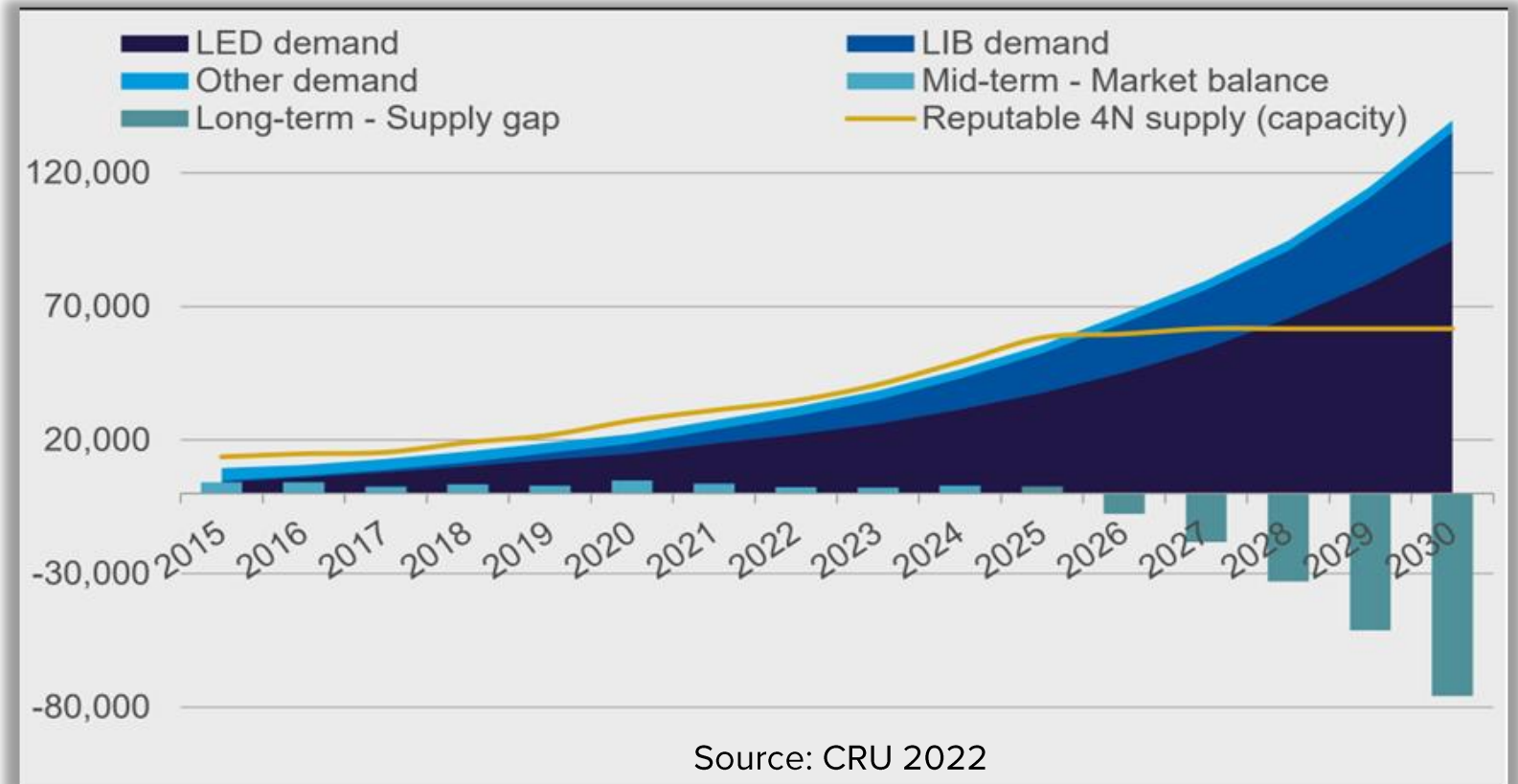
AND 4N+ PURITY HYDROXIDES

HPA DEMAND



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- LEDs (sapphire glass) appear to be the most price-inelastic consumer, making up the primary source of demand in CRU's 'base case' market balance, followed by Li-B CCS for its use in producing exceptionally high performing battery materials.
- LED demand is forecast to grow at a 14% CAGR between 2018 and 2028, driven by growth in the signage and automotive sectors.
- Lithium-ion battery (Li-B) demand the emerging HPA demand driver
- Major supply gap emerging



Source: CRU 2022

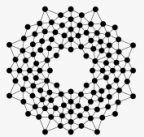
# HPA MARKET

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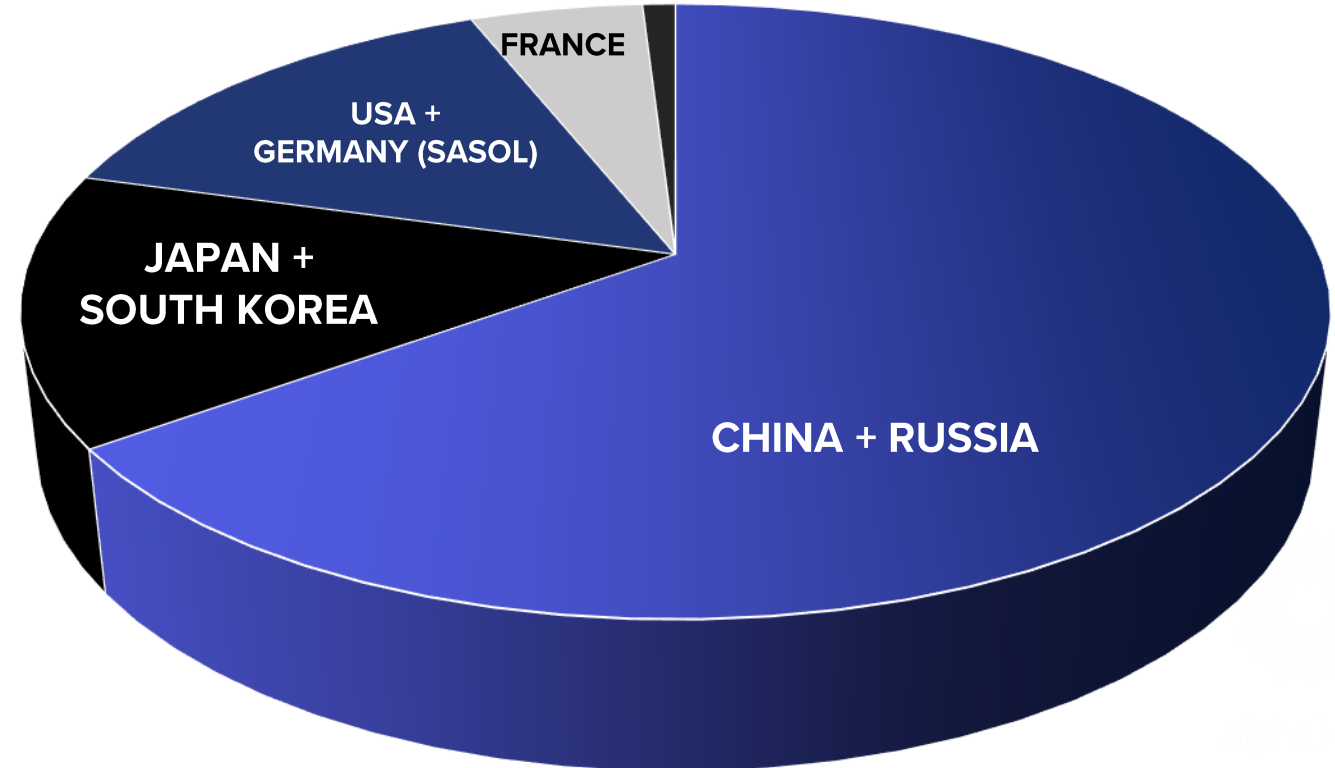
HPA SUPPLY



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- Highlight concentrated HPA supply in China (dominant) and Russia (lesser)
- Existing ex-China producers limited by high cost, high CO2 production process (alkoxide process which used aluminium metal feedstock)

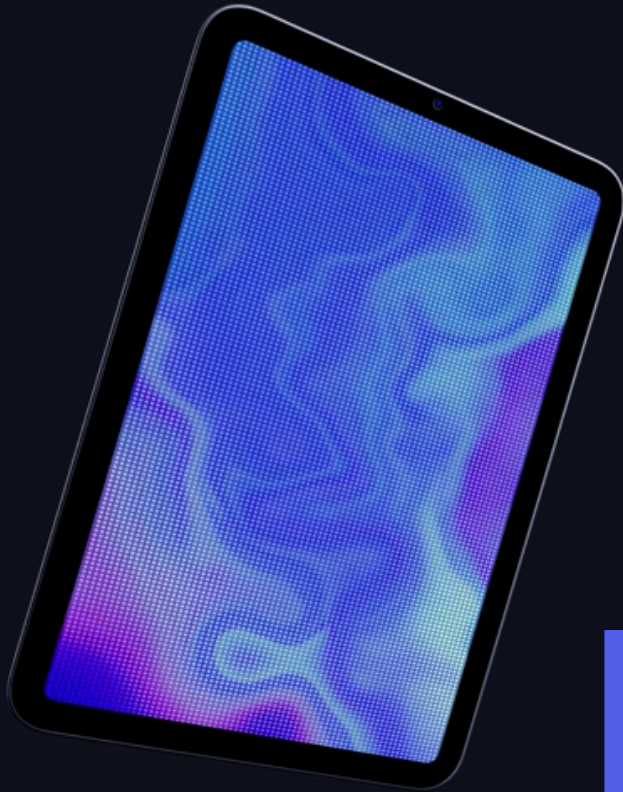
4N+ HPA PRODUCTION  
BY JURISDICTION (2019 DATA)



Source: CRU 2022

# LED-LIGHTING

## The current technology driver of de-carbonisation



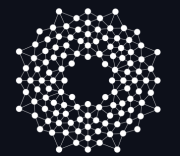
**A COMPLETE SWITCH TO LED LIGHTING WORLD WIDE, WOULD PREVENT 1,400,000,000 TONNES OF CO<sub>2</sub> EMISSIONS**

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



**WE SUPPLY**

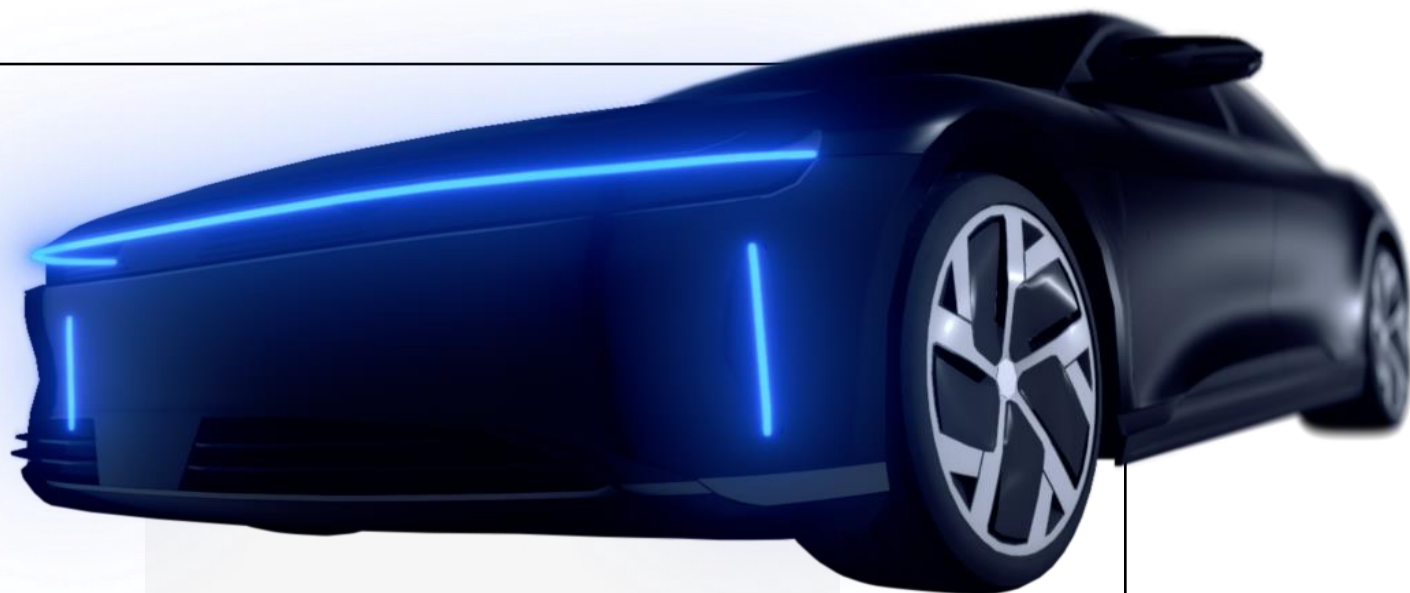
- ✓ HPA for LED sapphire substrates
- ✓ HPA for LED phosphors
- ✓ Synthetic sapphire glass



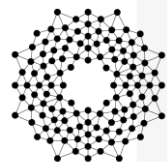
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# E-MOBILITY

**The next major driver of  
de-carbonisation**



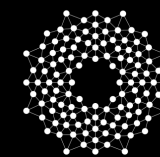
**GLOBAL EV SALES TO REACH  
50M UNITS BY 2030  
(SOURCE UBS)**



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## WE SUPPLY

- ✓ HPA for Li-B separators
- ✓ HPA for Li-B cathode
- ✓ HP precursors for Li-B anodes



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# SEMI-CONDUCTORS

## Global Supply Chains Re-Shoring/Friend-Shoring



CHEMICAL MECHANICAL POLISHING (CMP) IS A KEY STEP IN SEMI-CONDUCTOR WAFER PREPARATION

CMP IS AN ESTIMATED **7%** OF THE TOTAL FRONT END SEMI-CONDUCTOR SECTOR BY VALUE\*

# THE USA CHIPS ACT

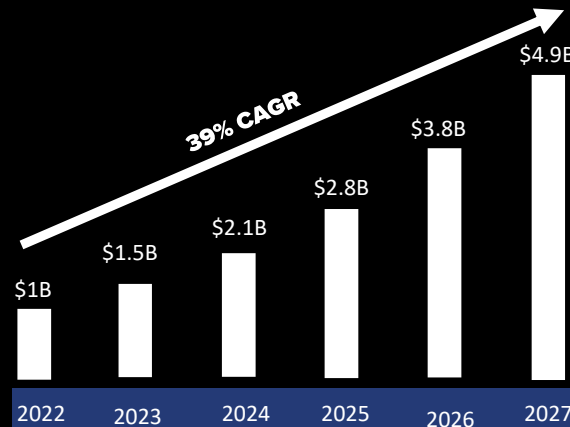
WILL INJECT

# USD\$130B

 in

the next **5** years to re-shore US capability

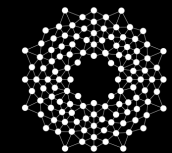
Value of SiC Semiconductors in EV's (US\$M)



Source: Wolfspeed

## WE SUPPLY

- ✓ Boehmites for CMP slurry
- ✓ Al-Nitrates for CMP slurry
- ✓ Nano HPA for CMP slurry (for SiC chips)

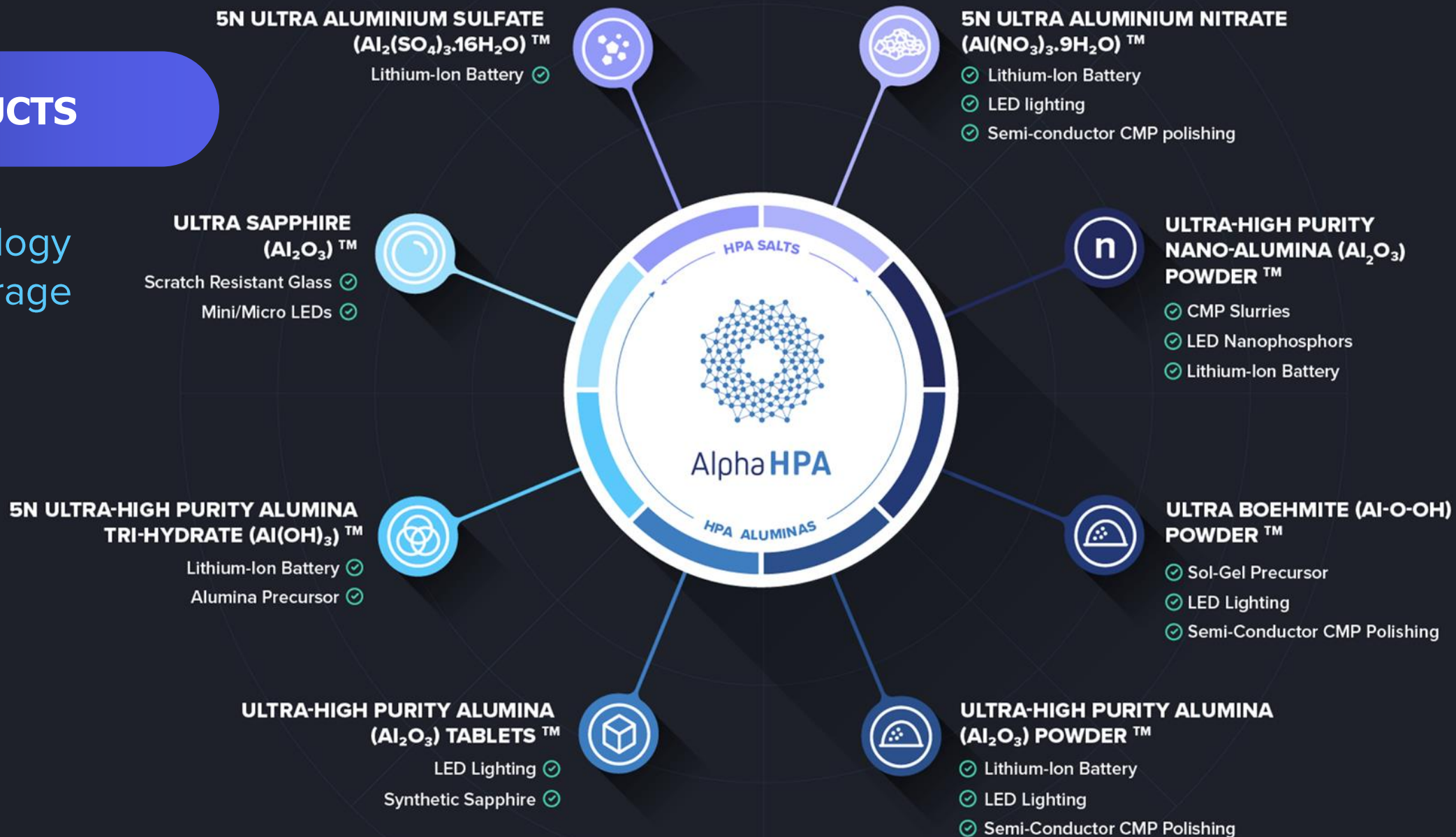


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# OUR PRODUCTS

high technology  
sector coverage



**STAGE 1 - PPF**  
**HPA FIRST PROJECT**  
**GLADSTONE, QLD**

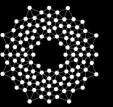


- Alpha ownership of 10ha project site
- Stage 1 - IN PRODUCTION
- Adjacent to Orica Australia to allow for Project Interface



**HPA First Project Site  
Gladstone State Development Area  
Central Queensland**

# **HPA FIRST PROJECT: STAGE 1 – IN PRODUCTION**

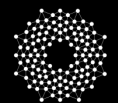




# STAGE 1: IN PRODUCTION



# STAGE 1: IN PRODUCTION



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# STAGE 1: EXPANDING WITH \$15.5M CMDP GRANT





- A committed team of 43 people in Gladstone (**46% female**)

## **STAGE 1: PROUDLY DIVERSE**

# ALPHA HPA LTD (GROUP)

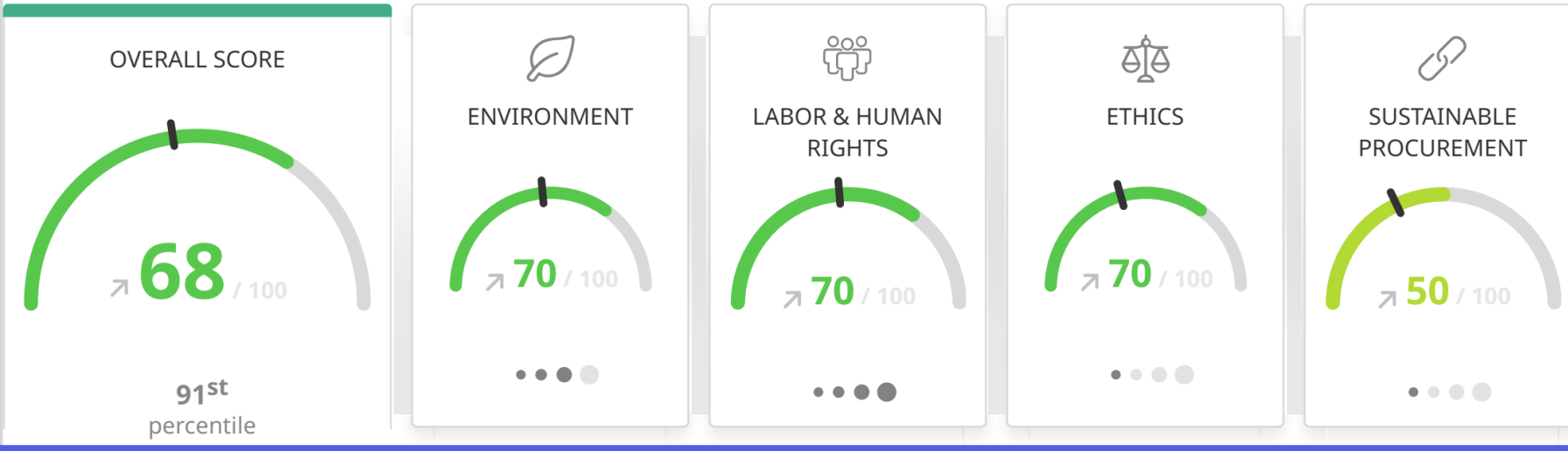
SYDNEY - Australia | Manufacture of other non-metallic mineral products n.e.c



Publication date: 18 Jul 2023

Insufficient Partial Good Advanced Outstanding

Average industry score



- EcoVadis is an independent sustainability ratings agency – and a pre-condition for supplier onboarding with a number of Global end-users

**SUSTAINABILITY RATING : ECOVADIS – 91<sup>ST</sup> PERCENTILE**



# A LOWER CARBON HPA

~70% lower total emissions in feedstock and production process combined compared to the incumbent process

## EMISSIONS REDUCTIONS



WE DO NOT USE AL METAL AS FEEDSTOCK



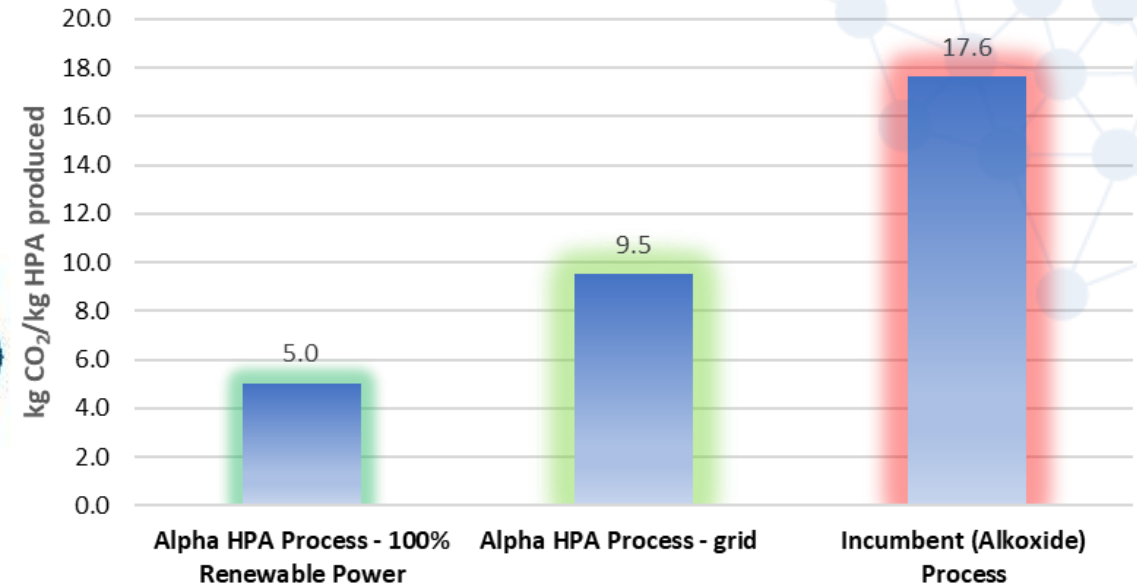
WE RECYCLE OUR REAGENTS



WE USE 100% RENEWABLE ENERGY

# ~70% LOWER TOTAL CO<sub>2</sub> EMISSIONS

HPA Production: CO<sub>2</sub> Emissions Comparison



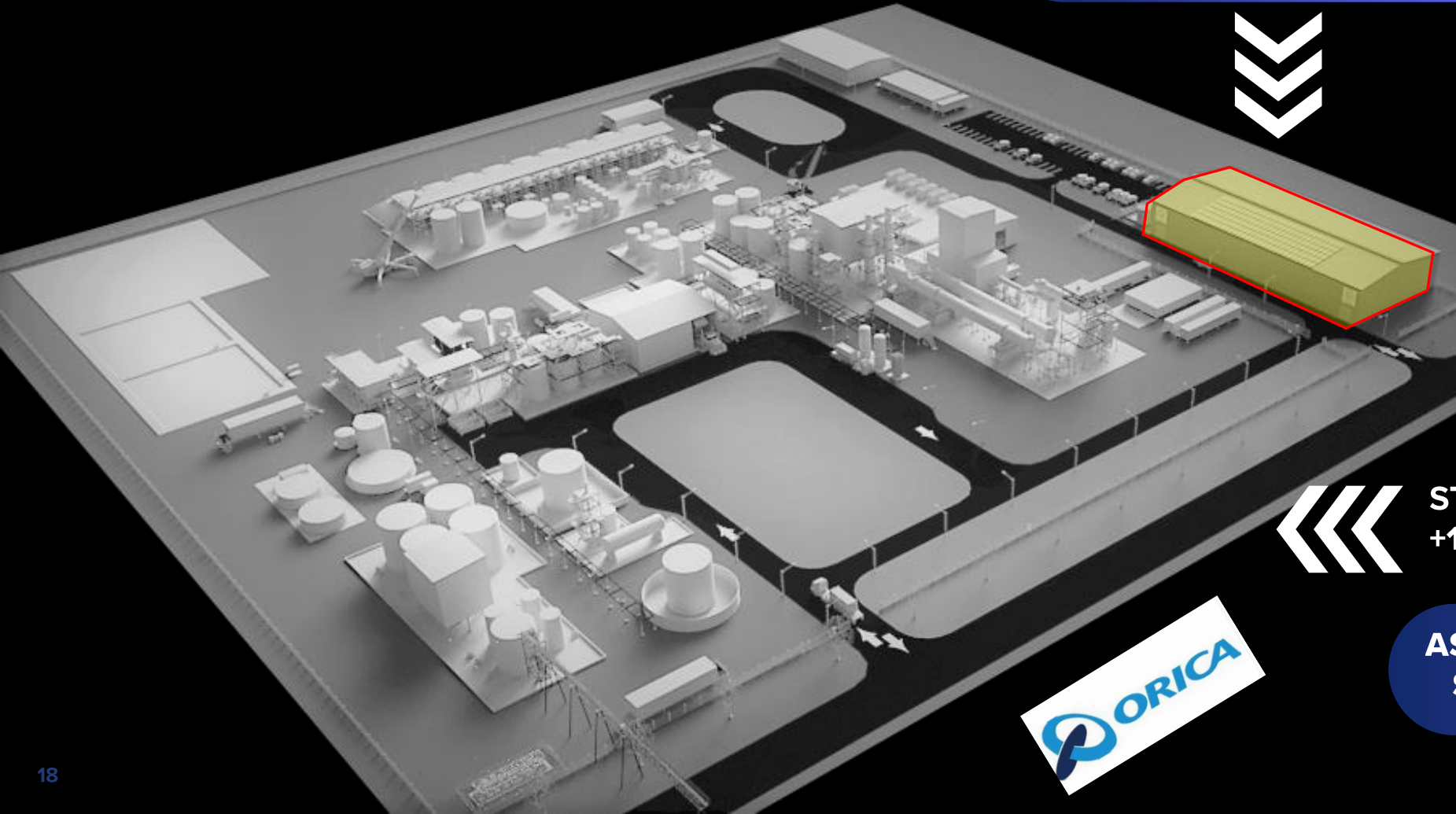
PATHWAY TO ZERO EMISSIONS VIA FUTURE ADOPTION OF H<sub>2</sub> DRYING AND CALCINATION



# PROJECT LAYOUT:

**STAGE 1: IN PRODUCTION**  
**+350tpa – ALL PRODUCTS**

**A\$15.5M Critical Minerals Grant**  
**Under Deployment**



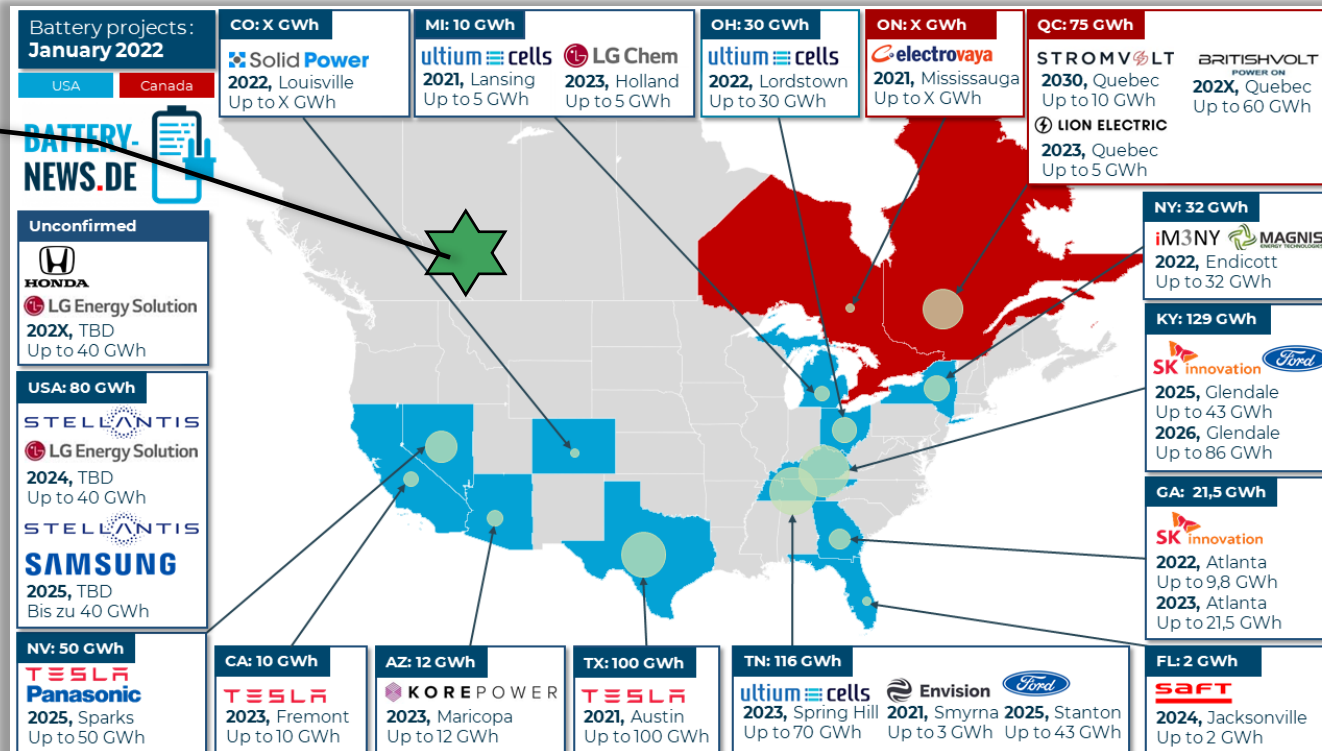
**STAGE 2: FULL-SCALE FACILITY**  
**+10,000tpa – ALL PRODUCTS**

**A\$45M MMI-C Grant (Aust Govt)**  
**\$21.7M IPP Grant (QLD Govt)**

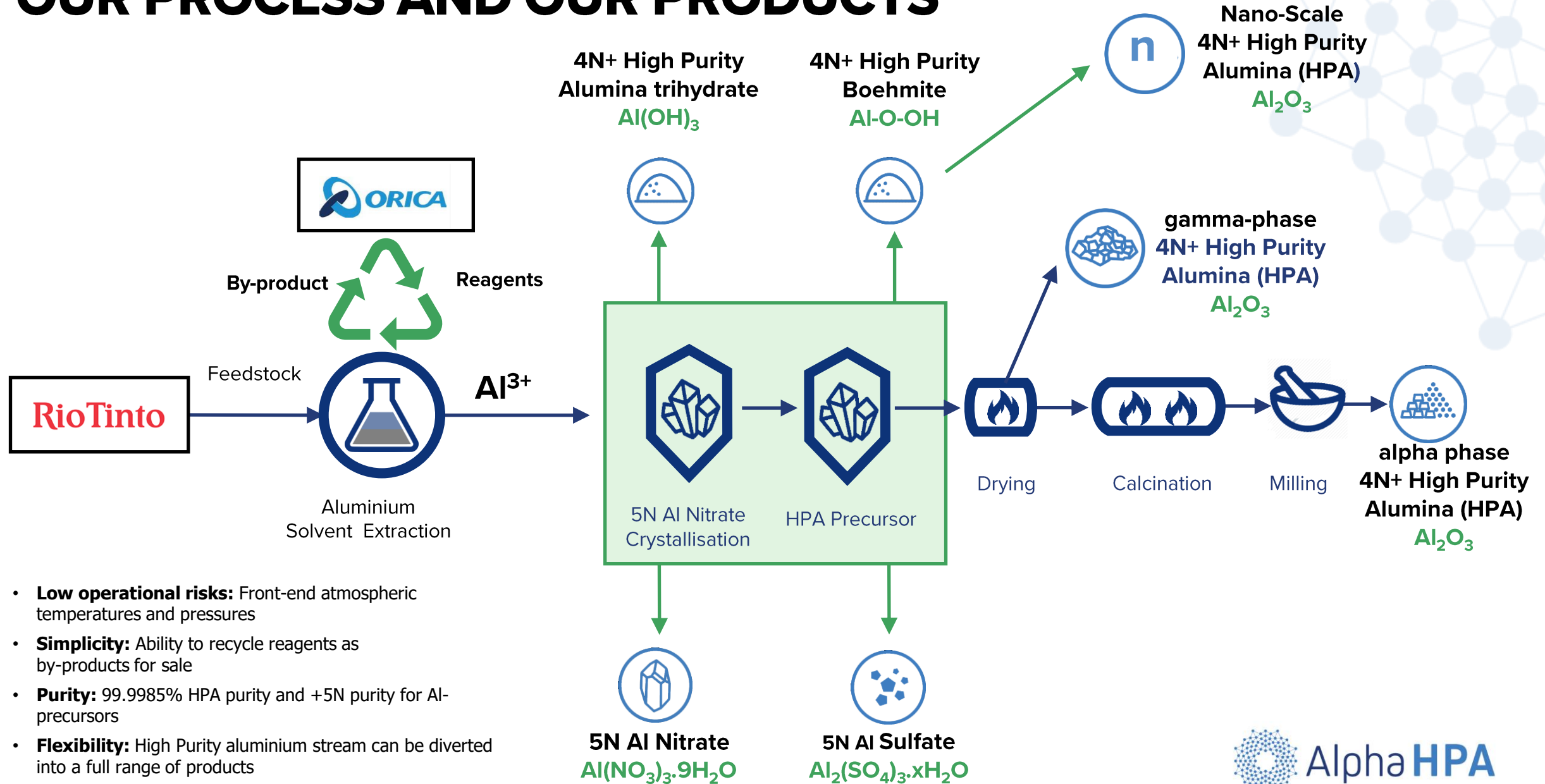


# ORICA STRATEGIC INVESTMENT:

- ASX 100 Company Orica Ltd (ASX: ORI) acquired a 5% strategic interest in Alpha HPA (Nov 2022)
- Orica and Alpha have worked together on the HPA First Project since 2019
- The investment builds upon binding arrangements to supply chemical reagents and offtake by-products at the HPA First Project, Gladstone
- Significant external endorsement of the capability, safety and operability of the process
- MoU signed to assess high purity aluminium products plant in North America (Alberta)



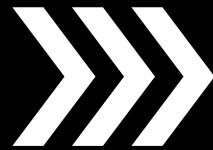
# OUR PROCESS AND OUR PRODUCTS



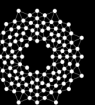
- **Low operational risks:** Front-end atmospheric temperatures and pressures
- **Simplicity:** Ability to recycle reagents as by-products for sale
- **Purity:** 99.9985% HPA purity and +5N purity for Al-precursors
- **Flexibility:** High Purity aluminium stream can be diverted into a full range of products



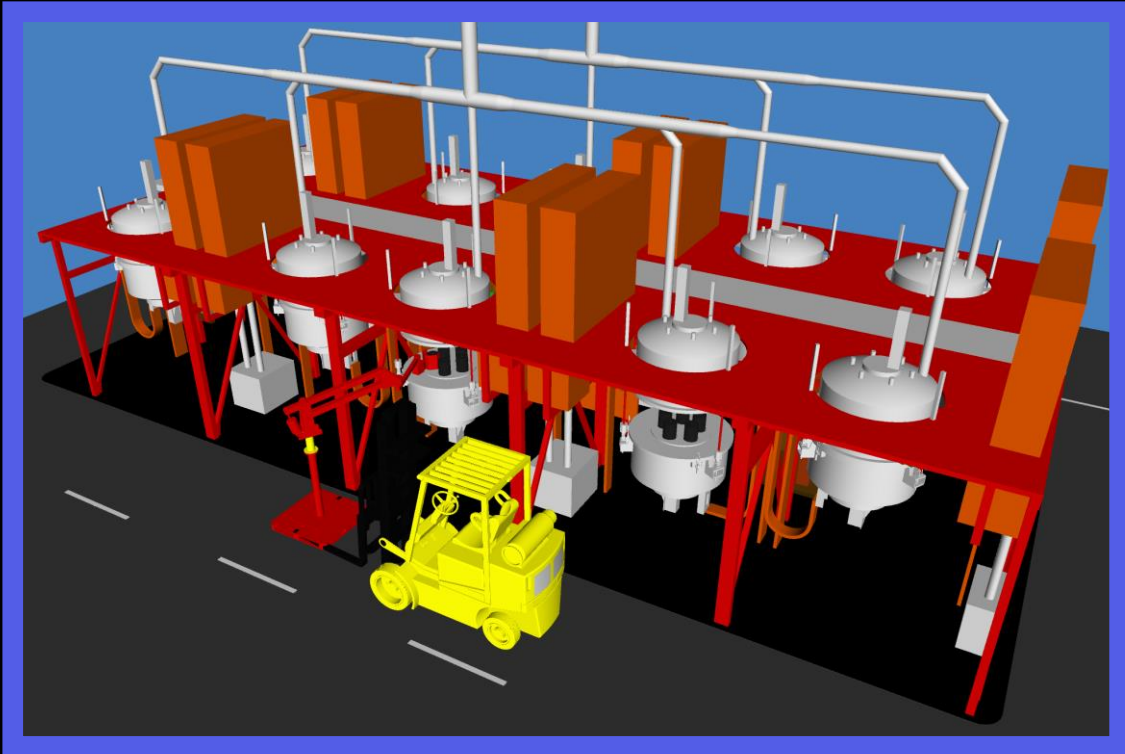
# ALPHA SAPPHIRE: ADDING DOWNSTREAM VALUE TO HPA



- **March 2023:** Agreements with Ebner-Fametec for staged entry into sapphire glass production
- **June 2023:** Expanded agreements for up to 1,000 growth units
- Unique supply/demand dynamics, favourable to new market entry
- estimated **10x net revenue uplift** per alumina unit.



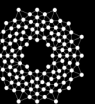
# ALPHA SAPPHIRE: UNIQUE SECTOR OPPORTUNITY



- **Technology Disruption:** Access to new Ebner-Fametec Technology
- **Supply Crunch:** End-user desire to de-link from Russia-China production
- **Demand Pull:** Major new demand from micro-LED adoption



Alpha **SAPHIRE**



Alpha **HPA**

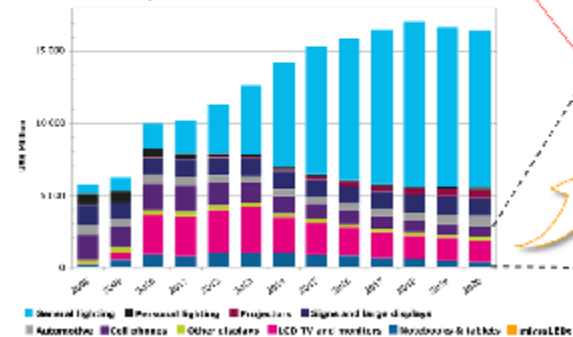
# Micro LEDs: THE LED MARKET MULTIPLIER

- Market analysts have forecast the adoption of micro-LEDs since 2015
- The recent confirmation that Apple is now making the move is considered highly significant, with the potential to double existing LED market
- <https://appleinsider.com/articles/23/01/15/apple-plans-microled-displays-in-everything-after-2024-apple-watch-ultra-update>
- <https://www.bloomberg.com/news/articles/2023-01-11/apple-to-begin-making-in-house-screens-in-2024-in-shift-away-from-samsung?sref=mNNF3hqD>
- <https://www.electrooptics.com/analysis-opinion/microleds-prepare-take-flight>

## MicroLED Market

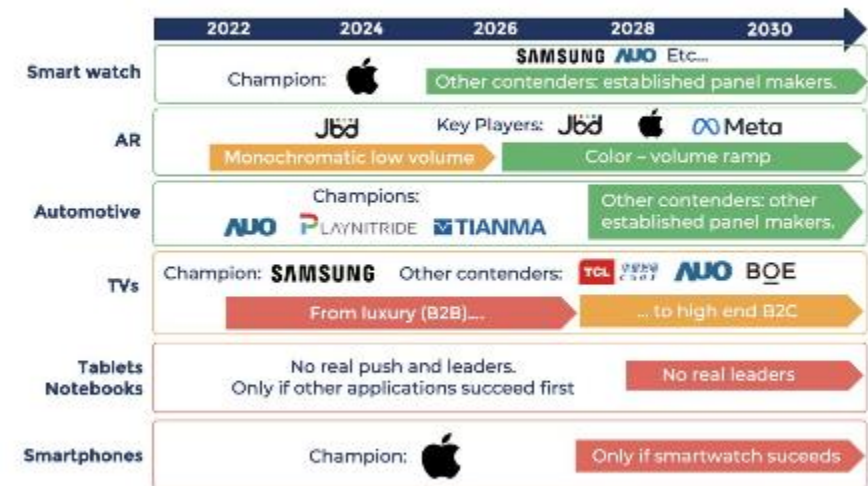
MicroLEDs set to double the size of the entire LED market: +17 Billion USD by 2025\*

Source: MarketWatch, Inc.




## 2022-2030 MICROLED APPLICATION ROADMAP

Source: Are MicroLEDs Reaching Escape Velocity? – Photonic West 2023 presentation, Yole Intelligence, 2023



www.yolegroup.com ©Yole Intelligence 2023



# OUR CUSTOMERS AND PARTNERS:

- Existing customers, marketing agents and key business partnerships





# CORPORATE SNAPSHOT

## TRADING INFORMATION

ASX CODE	A4N
Share Price (20/07/2023)	~\$1.14c
52-week trading range	37.5c – 1.20c

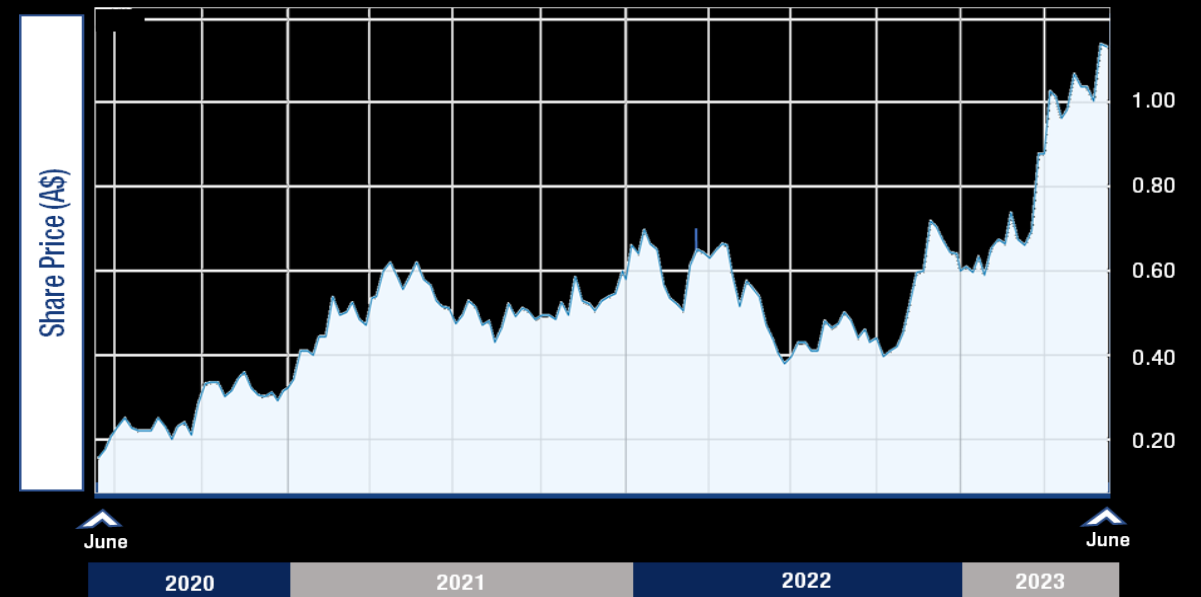
## CAPITAL STRUCTURE

Issued Shares	857.8M
Unlisted options (@35c)*	5.0M (expire 30 Sept 2023)
Unlisted options (@35c)	24.8M (expire 31 July 2023)
Unlisted options (@90c)	9.1M (expire 30 April 2025)
Unlisted options (@90c)	3M (expire 31 Aug 2025)

Market Cap	~\$978M
Est Cash (30/06/2023)	~\$20M – No Debt
Enterprise Value	\$958M

\* Licensor Options

## SHARE PRICE PERFORMANCE – 3 YEARS



## SHAREHOLDERS

### TOP 20

		55%
Regal Funds	8.27%	
Permgold P/L (N. Seckold)	7.85%	
Orica Investments	5.25%	

# Contacts

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