13
Al
Aluminium
26.982

Alpha HPA






HIGH PURITY ALUMINIUM MATERIALS FOR HIGH TECHNOLOGY GROWTH SECTORS

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 Alpha. 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 DFS, financial condition, results of operations, and business of the Company and certain plans and objectives of the management of the Company that are based on the Company's assumptions, expectations, estimates and projections as of the date on which the statements were made. Generally, forward-looking statements can be identified by the use of forward-looking terminology such as 'outlook', 'anticipate', 'project', 'target', 'likely',' believe', 'estimate', 'expect', 'intend', 'may', 'would', 'could', 'should', 'scheduled', 'will', 'plan', 'forecast', 'evolve' and similar expressions. 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. Although the Company attempts and has attempted to identify factors that would cause actual actions, events or results to differ materially from those disclosed in forward looking statements, there may be other factors that could cause actual results, performance, achievements or events not to be as anticipated, estimated or intended, and many events are beyond the reasonable control of the Company. Investors should consider the forward looking statements light of those disclosures and are cautioned not to place undue reliance on forward looking statements. The Company disclaims any intent or obligations to or revise any forward-looking statements whether as a result of new information, estimates, or options, future events or results or otherwise, unless required to do so by law.





ALPHA HPA: INTRODUCTION

We are a technology led, speciality chemicals company

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

CRITICAL RAW MATERIALS FOR HIGH-TECHNOLOGY GROWTH SECTORS

HIGH PURITY - HIGH MARGIN – HIGH VALUE

Commercialising in 2 Stages as the

HPA FIRST PROJECT

STAGE 1 – IN PRODUCTION

STAGE 2 – IN CONSTRUCTION

Alpha HPA

- **STAGE 1: IN PRODUCTION**
- **STAGE 2: IN CONSTRUCTION**

HPA First Project Site
Gladstone State Development Area
100% RENEWABLE ENERGY

HPA FIRST PROJECT: GLADSTONE QLD

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STAGE 1 : IN PRODUCTION

Alpha HPA

STAGE 1 : IN PRODUCTION

Alpha HPA

PROJECT LAYOUT:

STAGE 1:
IN PRODUCTION
+350tpa – ALL PRODUCTS

STAGE 2: FULL-SCALE FACILITY
IN CONSTRUCTION
FIRST PRODUCTION AT 2026
+10,000tpa – ALL PRODUCTS

DFS CAPEX
$553M

$320M Loan facility
+
$80M cost overrun facility
(NAIF + EFA)

$175M Equity Capital
(May-June 2024)

$21.7M
IPP Grant
(QLD Govt)

$45M
MMI-C Grant
(Aust Govt)

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Stage 2 Bulk Earthworks – December 2024

STAGE 2 : CONSTRUCTION UNDERWAY

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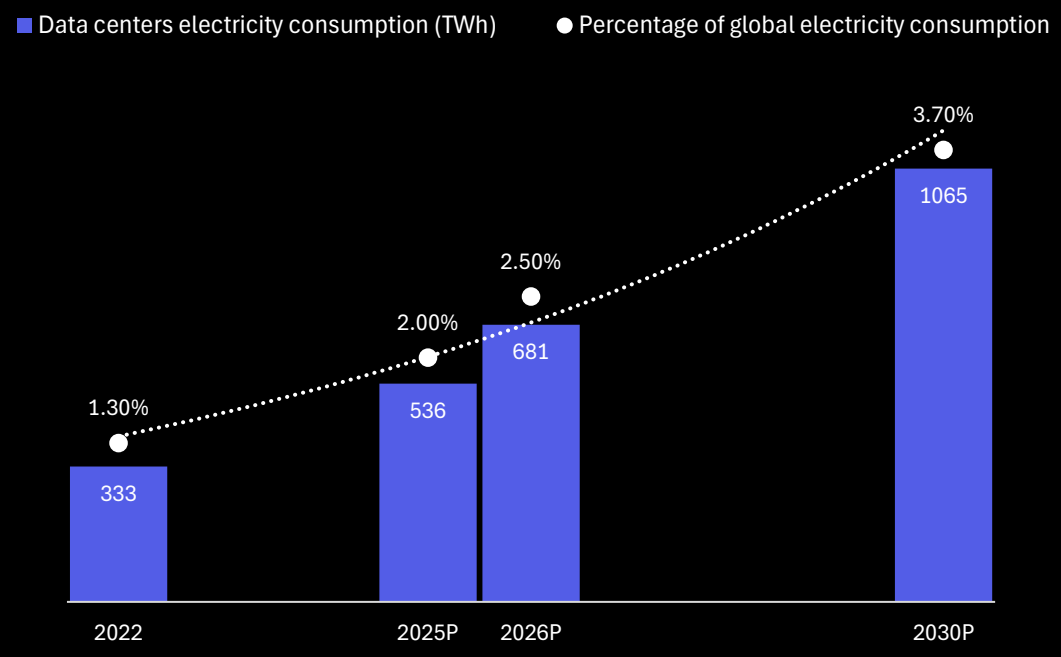
THERMAL MANAGEMENT FOR AI DATA CENTRES

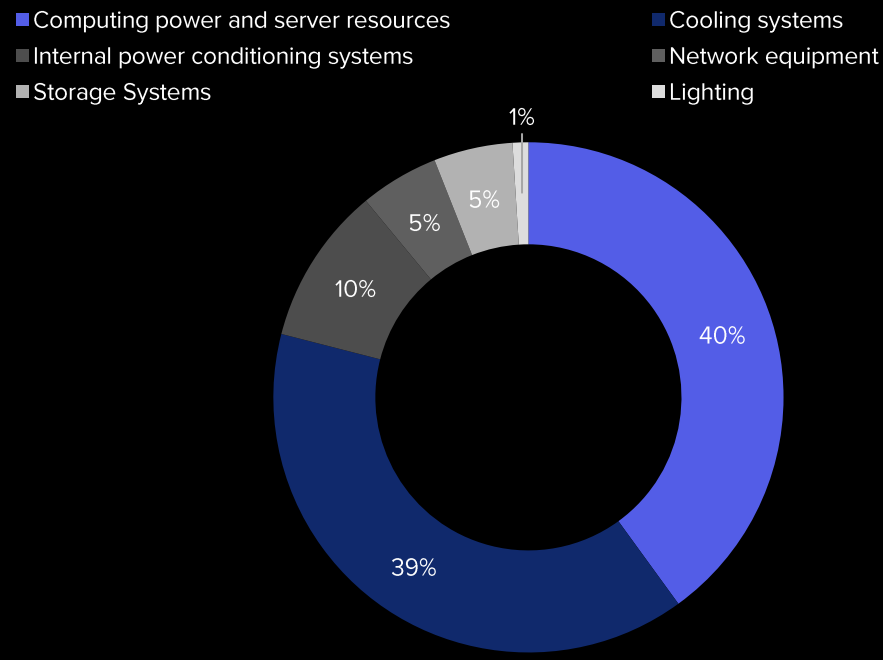
- Electricity demand for AI data centres is surging, with ***40% of electricity for cooling***
- ***Placing intensive focus on thermal management***

Data centers' electricity consumption set to surge through 2030, globally, largely driven by power-intensive AI models - specifically gen AI



Source: Deloitte Analysis

Computing power and cooling systems drive much of the energy consumption in AI data centers

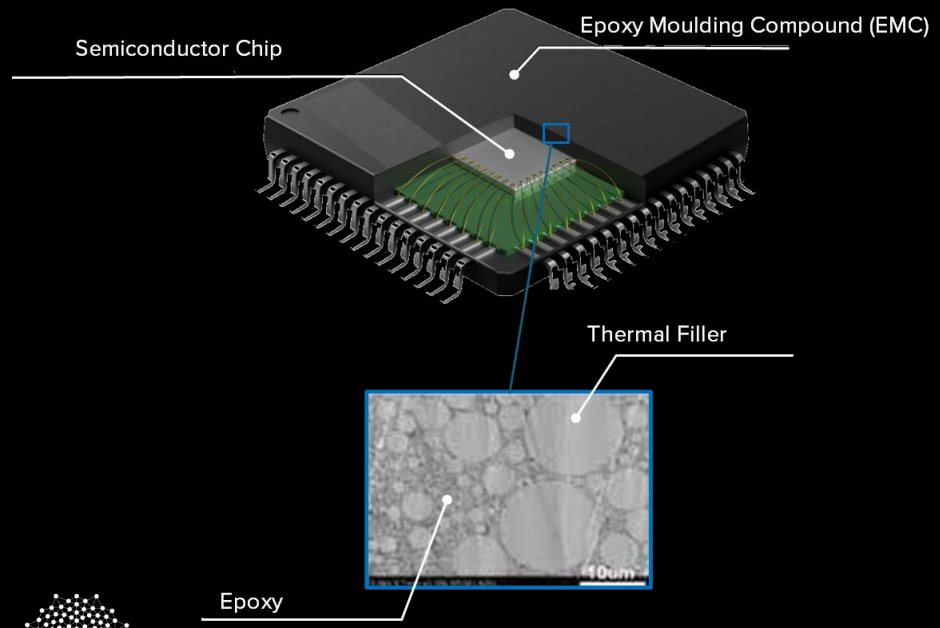


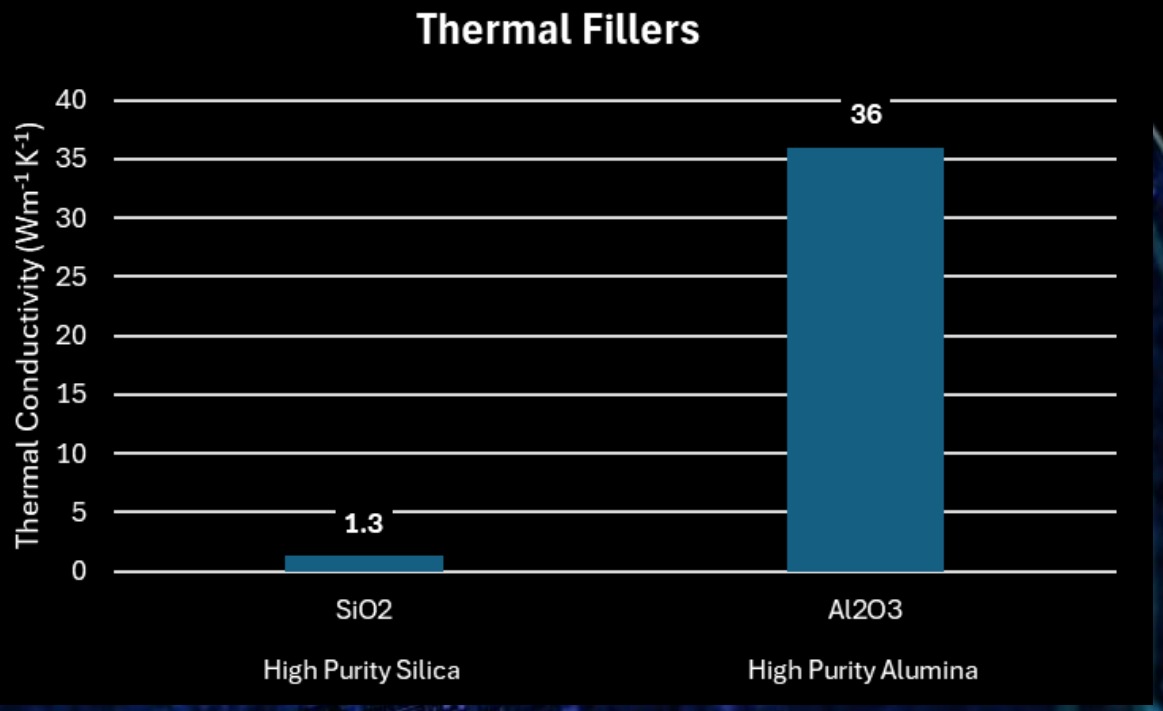
Source: Deloitte Analysis

AlphaHPA

WE MAKE SEMICONDUCTORS COOLER & FASTER

- **COOLER –** *Thermal Filler* as Alpha's products make high power semiconductors and AI chips more efficient through better thermal conductivity
- **FASTER -** Alpha's Smart SX technology produces ***non-detect levels of U and Th*** and therefore less computational errors on the chip (faster)
- ***Confirmed as best in class low α -radiation HPA***

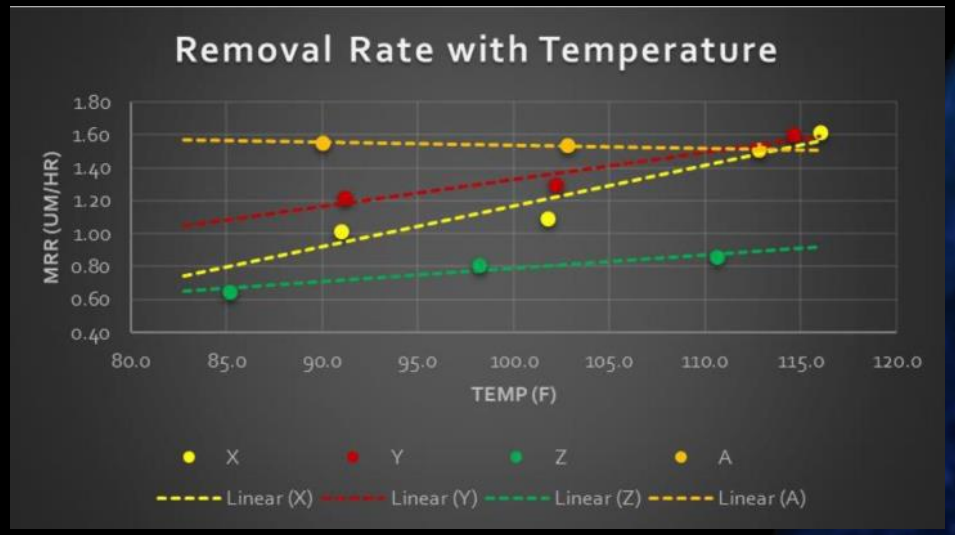




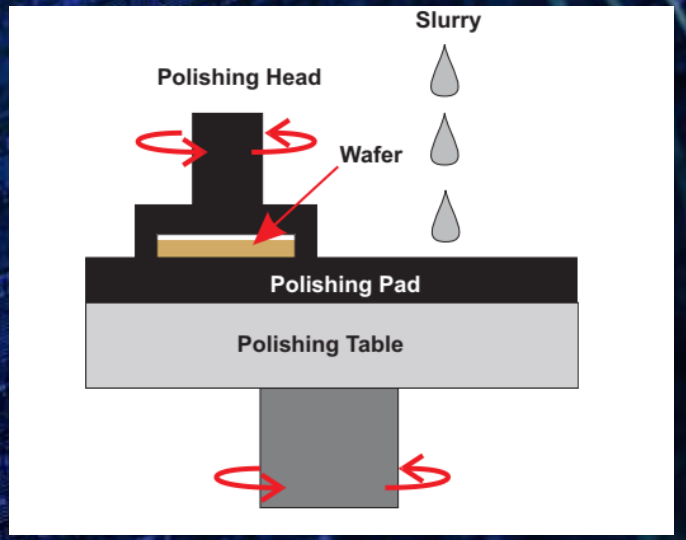
AlphaHPA

OUR HPA IS MORE EFFICIENT IN CMP POLISHING

- Semiconductor substrates and stacked circuit layers are polished with a process referred to as *Chemical Mechanical Planarisation (CMP)* .
- **EFFICIENT** - Alpha's aluminas provide a *+ 50% removal rate improvement in* wafer polishing at lower operating temperatures
- The rapid growth of power semi-conductors is leading to demand for HPA as the preferred CMP abrasive hard surface substrates, such as:
  - Silicon Carbide (SiC)
  - Gallium Nitride (GaN) and
  - Sapphire (Al_2O_3)
- **Alpha's unique HPA crystal morphology** is delivering improved performance in CMP applications
- Alpha has commenced small scale commercial sales to leading CMP end-users in the US and Asia and is in advanced qualification with end-users in Japan, China and the US including a recent Letter of Intent for up to 4,000 metric tpa



Alpha's HPA (Linear A) outperforms incumbents CMP slurries on SiC substrates.
Source: Innovation Impact



CMP Process
(source 3M)

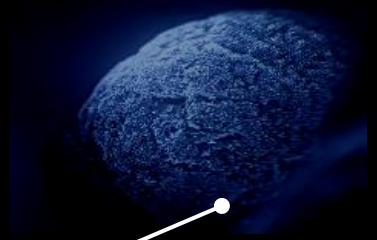
Alpha HPA

WE MAKE BATTERIES SAFER

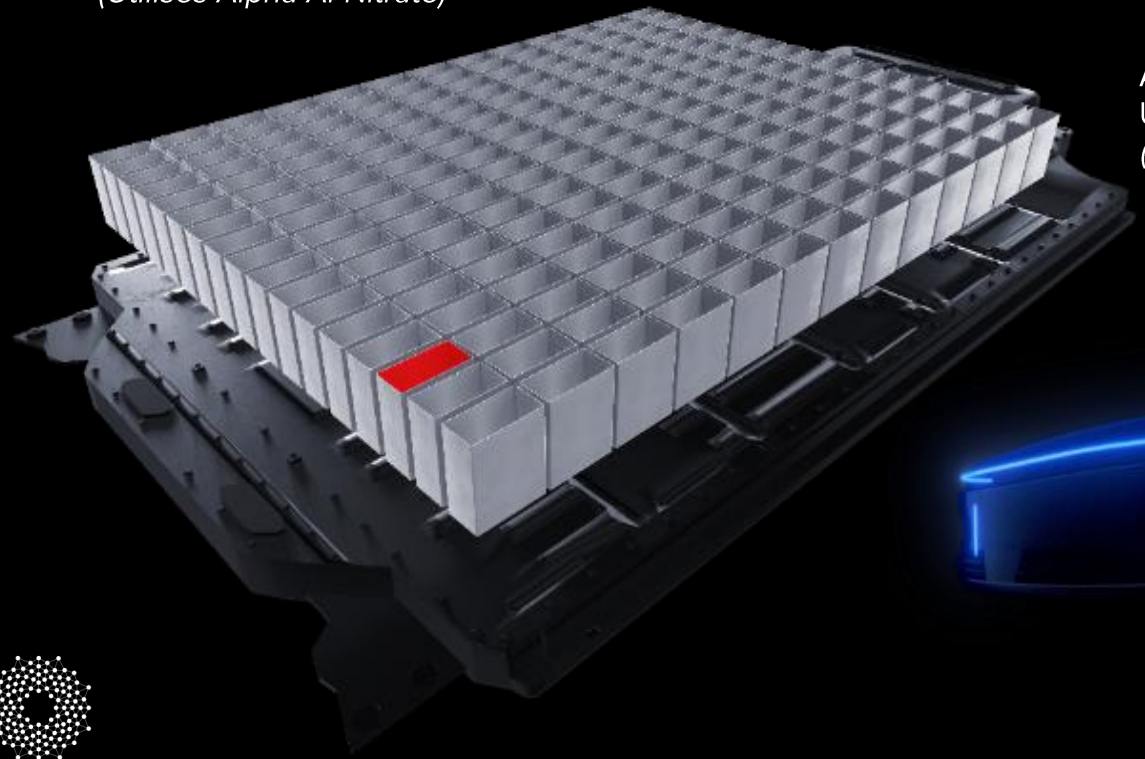
ALPHA'S HIGH PURITY MATERIALS UNLOCK KEY ANODE Li-ION BATTERY SAFETY TECHNOLOGY

Technical APPROVAL from a GLOBAL Li-B anode OEM after 18months test work

CELL COATING - *Alpha UltraCoat*
Zero propagation from battery pack with high purity (Al-O-OH) boehmite coated cell casings
(Utilises Alpha Al-Nitrate)



ANODE COATING
Up to 100% reduction in thermal runaway with Alpha coating on graphite anode materials
(Utilises Alpha Al-Nitrate and high purity alumina hydrates)



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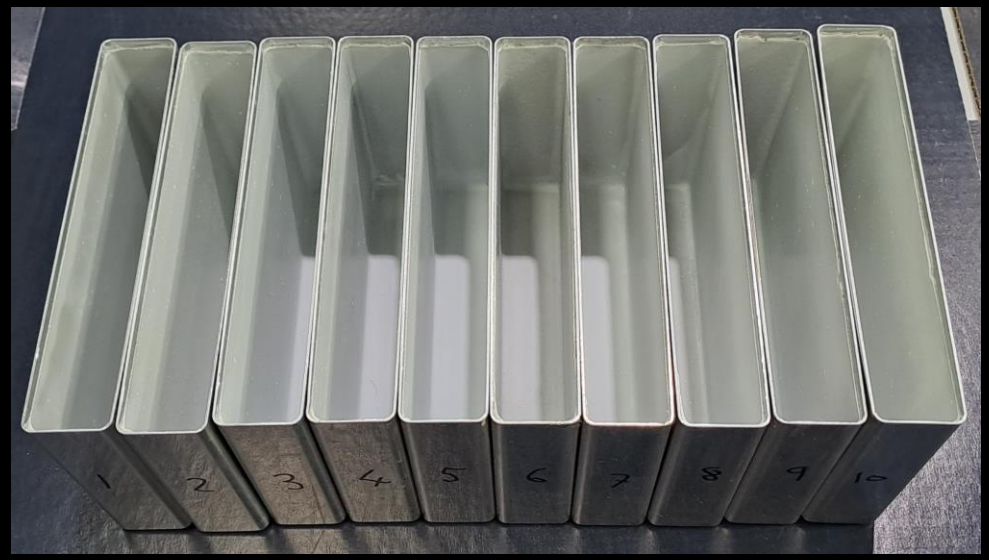
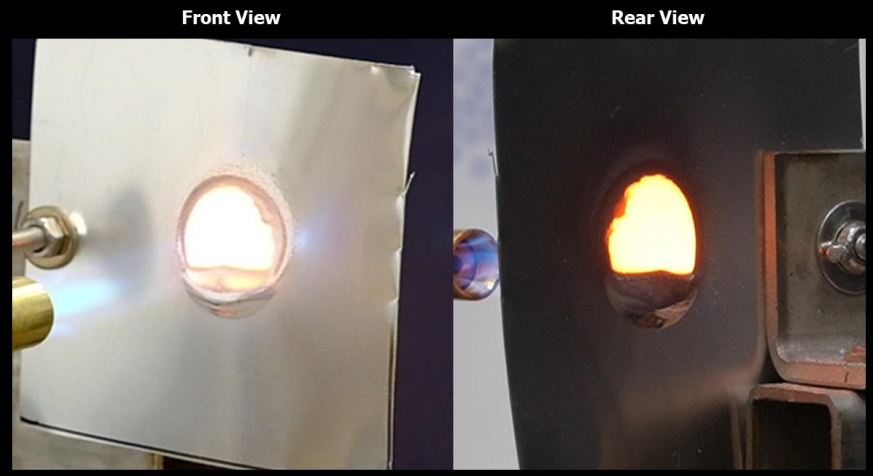
BATTERY CELL CASE COATINGS



- Alpha *UltraCoat* – Test work underway with Global Automotive OEM
- Independent modeling* shows neutral cost impact for UltraCoat adoption

** Modeling by P3 Group, Germany. Cost impact modeled at US$/kWh at cell pack level*

Alpha *UltraCoat* - thermal runaway propagation control
Coated vs Uncoated cell casings



UNCOATED ALUMINIUM
15 seconds under butane flame

ULTRA-COATED ALUMINIUM
Layer integrity intact after 9 minutes under butane flame

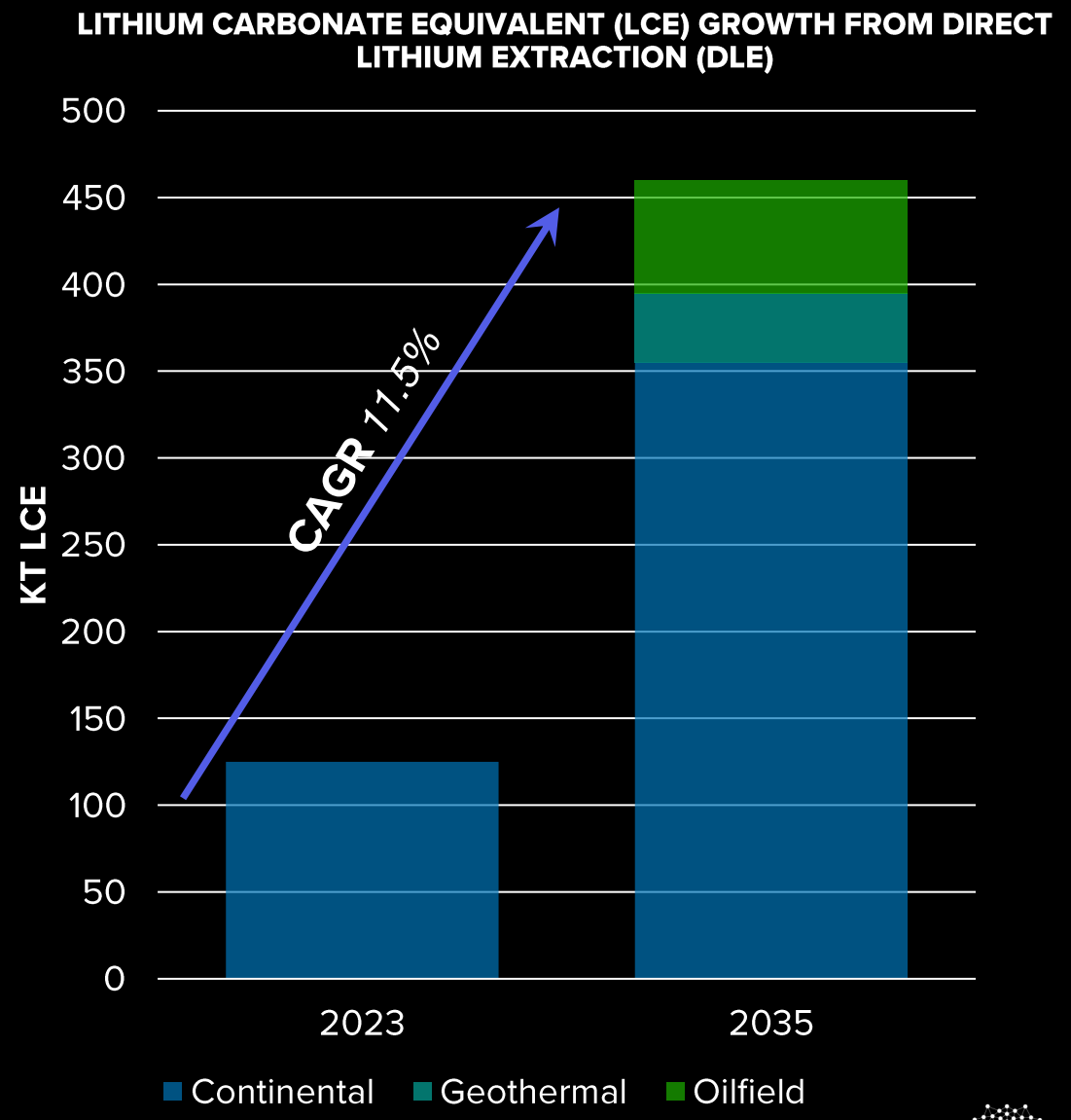
Alpha HPA

WE MAKE BETTER PERFORMING DLE SORBENTS

STRONG NEW DEMAND FOR DIRECT LITHIUM EXTRACTION (DLE) SORBENTS

- DLE sorbents increasingly made from high-purity alumina-hydrate ($Al(OH)_3$ or 'ATH')
- Test-work and commercial demand growing rapidly with entry of Petroleum majors
- Now expanded to over 14 counterparties
- Alpha's unique ability to manufacture high purity ATH as 100% amorphous gives

  best-in-class sorbent performance
  - **>1.5x longer lifespan**
  - **Up to 2x higher extraction rates**

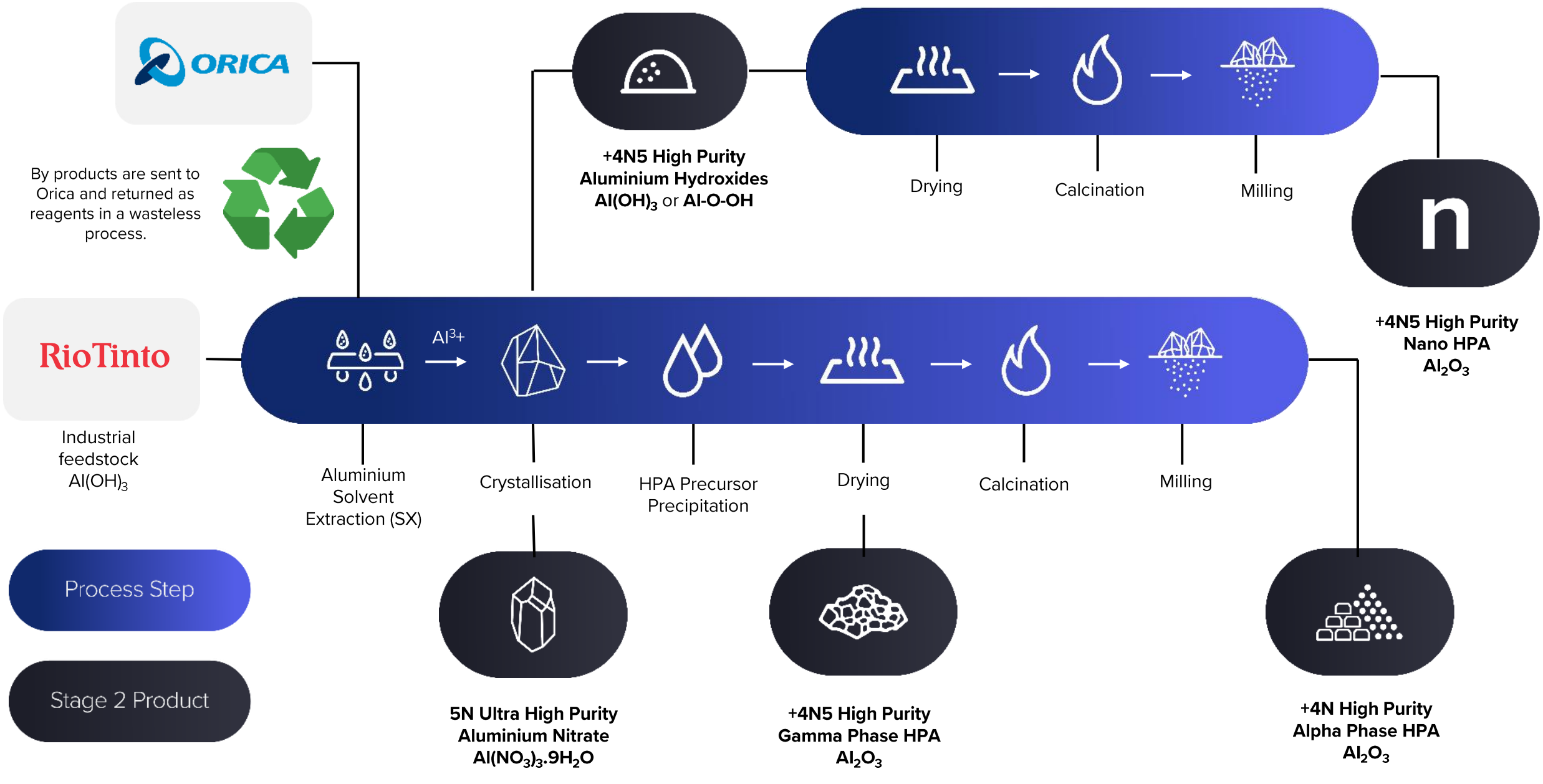


Source: Benchmark Minerals

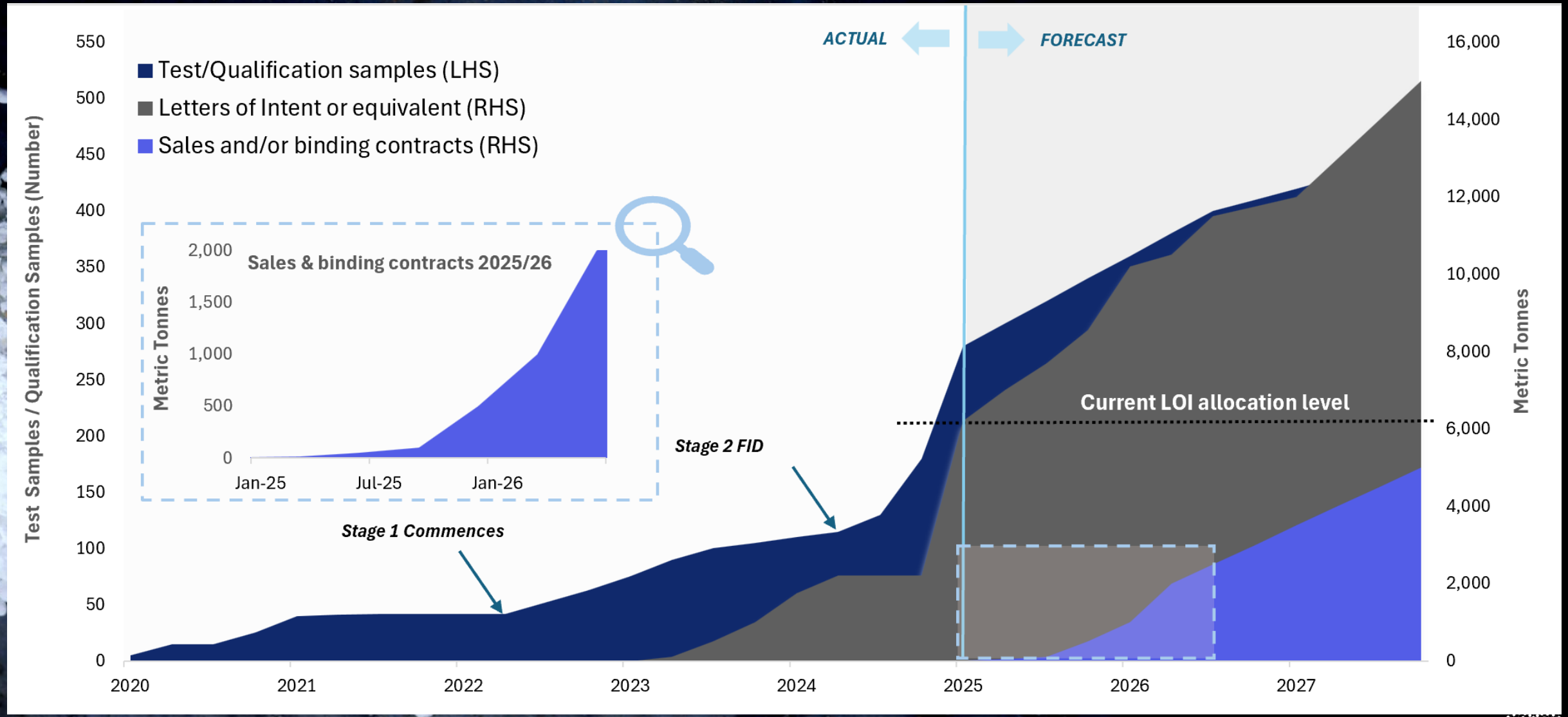
AlphaHPA

HOW WE DO IT: OUR PROCESS AND TECHNOLOGY

Novel, low energy, low –carbon process



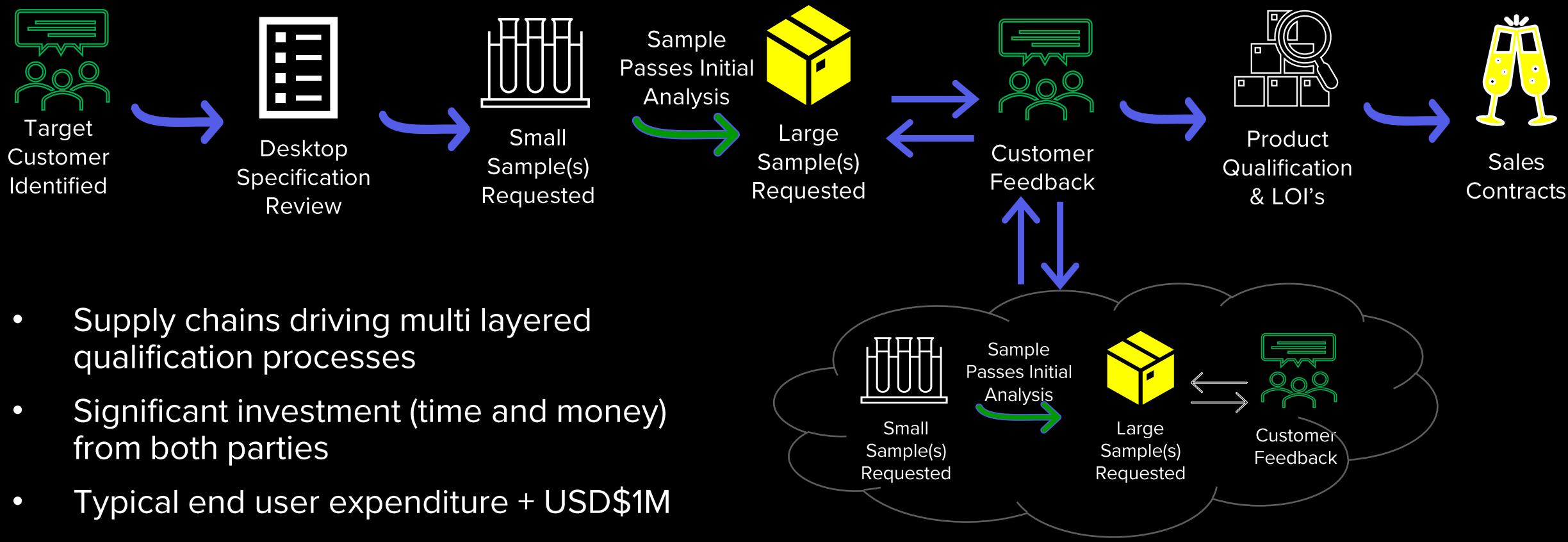
PRODUCT MARKETING PROGRESSION



Alpha's product marketing has matured, focusing on applications where our process can deliver technical performance that other suppliers cannot

Alpha HPA

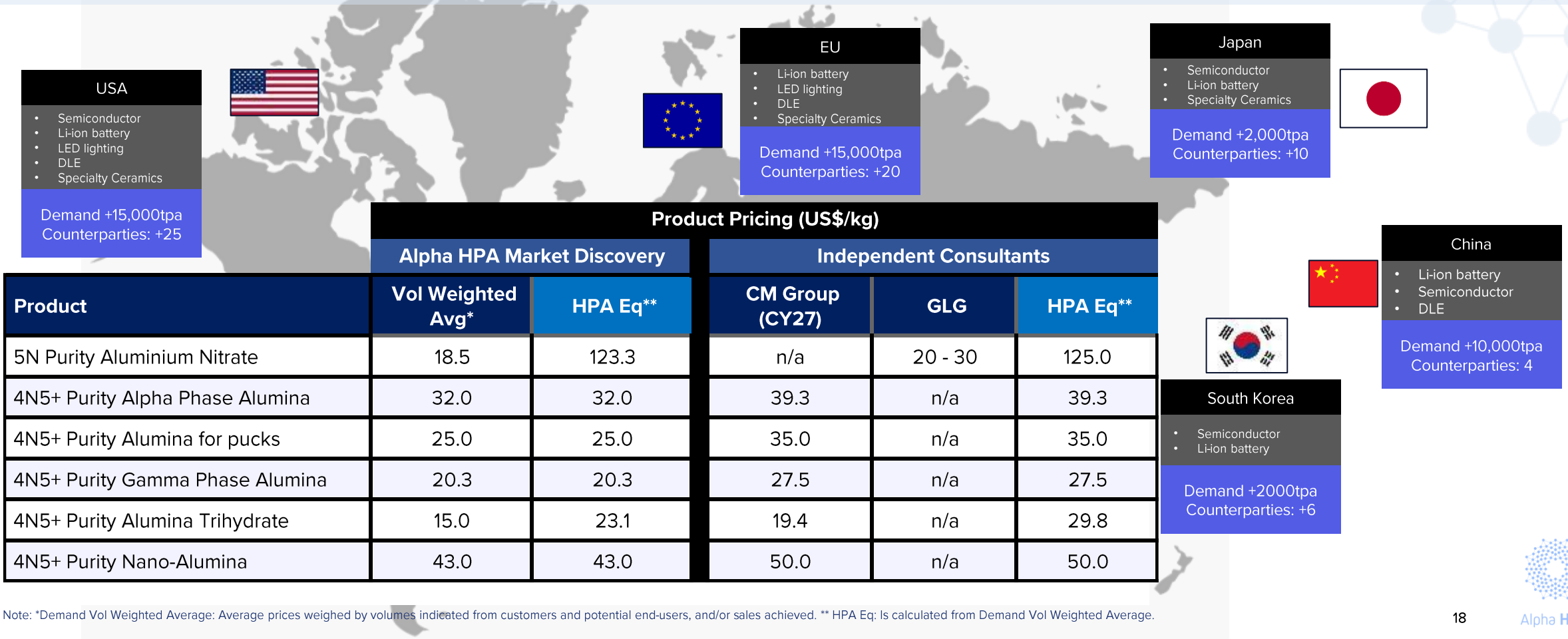
DETAILED TECHNICAL QUALIFICATION



- Supply chains driving multi layered qualification processes
- Significant investment (time and money) from both parties
- Typical end user expenditure + USD$1M
- Qualification leads to B2B contracts, premium pricing with no volatility

MARKET OUTREACH AND PRICING

- Extensive 4+ year global market outreach
- Detailed, technically driven understanding of market and applications
- Pricing obtained by interviews, sales, refined quotations and customer LOIs
- Comprehensive database of pricing available for Alpha's materials
- Alpha in product qualification testing for **>40,000tpa** product demand
- **B2B pricing protected from any index volatility**
- **Pre-commercial sales orders building since FID, +5,000kg @ ~ US$25/kg**



USA
- Semiconductor
- Li-ion battery
- LED lighting
- DLE
- Specialty Ceramics

Demand +15,000tpa
Counterparties: +25

EU
- Li-ion battery
- LED lighting
- DLE
- Specialty Ceramics

Demand +15,000tpa
Counterparties: +20

Japan
- Semiconductor
- Li-ion battery
- Specialty Ceramics

Demand +2,000tpa
Counterparties: +10

China
- Li-ion battery
- Semiconductor
- DLE

Demand +10,000tpa
Counterparties: 4

South Korea
- Semiconductor
- Li-ion battery

Demand +2000tpa
Counterparties: +6

	Product Pricing (US$/kg)				
	Alpha HPA Market Discovery		Independent Consultants		
Product	**Vol Weighted Avg***	**HPA Eq****	**CM Group (CY27)**	**GLG**	**HPA Eq****
5N Purity Aluminium Nitrate	18.5	123.3	n/a	20 - 30	125.0
4N5+ Purity Alpha Phase Alumina	32.0	32.0	39.3	n/a	39.3
4N5+ Purity Alumina for pucks	25.0	25.0	35.0	n/a	35.0
4N5+ Purity Gamma Phase Alumina	20.3	20.3	27.5	n/a	27.5
4N5+ Purity Alumina Trihydrate	15.0	23.1	19.4	n/a	29.8
4N5+ Purity Nano-Alumina	43.0	43.0	50.0	n/a	50.0

Note: *Demand Vol Weighted Average: Average prices weighed by volumes indicated from customers and potential end-users, and/or sales achieved. ** HPA Eq: Is calculated from Demand Vol Weighted Average.

Alpha HPA

STAGE 2 DFS: STRONG FINANCIAL METRICS

Compelling HPA First Project Stage 2 financial metrics, ramping up to 87% throughput by FY28 and steady-state production in FY30

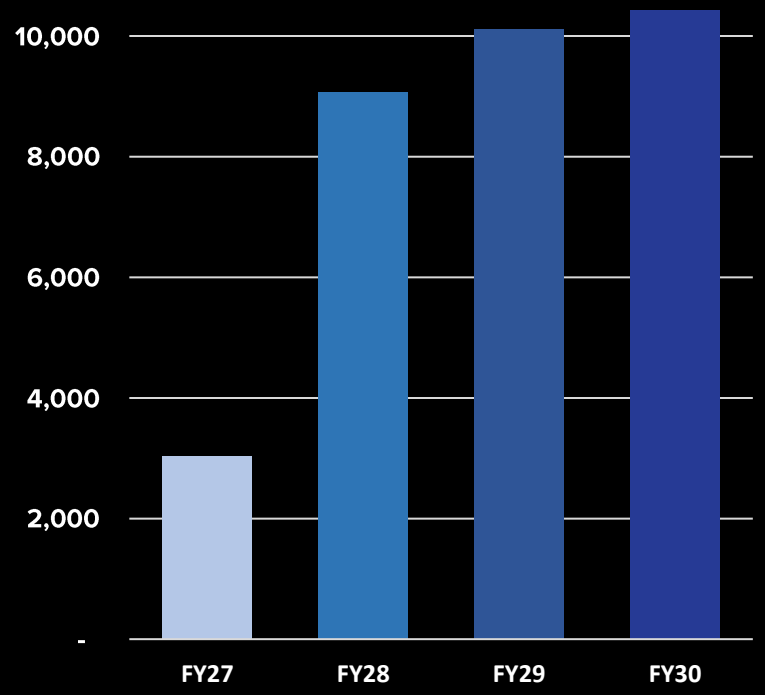
HPA First Project Stage 2 Steady-state Financials

(does not include Alpha Sapphire)

Steady state (FY30)[1]	Units	Alpha HPA Price Discovery Case	Mid Case	Independent Pricing Case
CapEx (includes $79M contingency)	A$	$553M	$553M	$553M
Production volume	**tpa**	**10,430**	**10,430**	**10,430**
Weighted average product price	A$/kg	$34.44	$42.34	$48.77
Revenue	**A$**	**$359M**	**$442M**	**$509M**
Unit cash costs (after by-product credits)[2]	A$/kg	$9.58	$9.58	$9.58
EBITDA	**A$**	**$255M**	**$336M**	**$403M**
Pre-tax free cash flows	**A$**	**$251M**	**$333M**	**$399M**
HPAeq volume	tpa	6,850	6,850	6,850
HPAeq price[3]	A$/kg	$52.44	$64.47	$74.26

First Project Stage 2

Production volume ramp up (tpa)



A$359M – A$509M

Annual Revenue

~71% - 79%

EBITDA Margin

A$251M – A$399

Pre-tax free cash flows

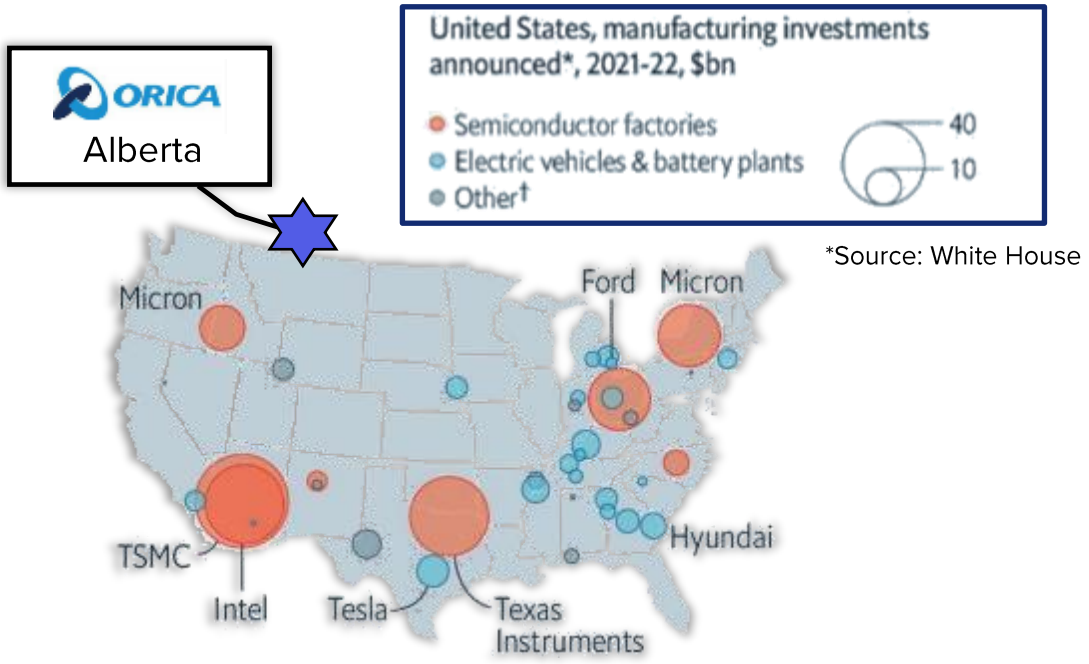
Note: 1: Revenue grows to A$359m – A$509m and EBITDA grows to A$255m – A$403m by FY30 reflecting 100% utilisation. EBITDA assumed to be post Payroll tax and royalties. Range based on the Product Pricing Scenarios Alpha HPA Price Discovery Case and Independent Pricing Case as disclosed in the HPA First Project Stage 2 Commercialisation announcement on 20 May 2024. 2. Operating Cost estimate does not include any potential impact of the Budget measures relating to critical minerals tax credits delivered as part of the Federal Budget on Tuesday 14 May 2024. 3. The sale of Al-Nitrates (high purity aluminium salt), which have lower aluminium content than high purity aluminas but a close to equivalent sales value by unit weight, provides a lift in HPAeq price received versus the HPA weighted average product price.

Alpha HPA

ORICA STRATEGIC INVESTMENT

2018	Aug-21	Nov-22	Nov-23	May-24
Commence Technical Diligence	Definitive Commercial Agreements	5% Strategic Investment & North American MoU	Supported Alpha Sapphire Raising A$40M	Supported FID Stage 2 Raising A$180M

NORTH AMERICA INVESTMENT LANDSCAPE



*Source: White House

TECHNICAL AND COMMERCIAL VALIDATION VIA ORICA DUE DILIGENCE AND INVESTMENT

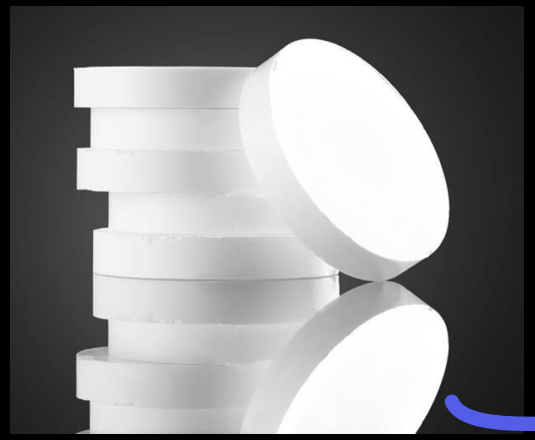
- ASX 100 Company Orica Ltd (ASX: ORI) acquired a 5% strategic interest in Alpha HPA in November 2022
- Orica and Alpha have worked together on the HPA First Project since 2018
- The investment builds upon binding arrangements to supply chemical reagents and offtake by-products at the HPA First Project, Gladstone
- Represents significant external endorsement of the capability, safety and operability of the process
- MoU signed to assess high purity aluminium products plant in North America (Alpha Polaris); Concept study commenced.

ALPHA SAPPHIRE: ADDING DOWNSTREAM VALUE TO HPA

Conversion of Alpha HPA to synthetic sapphire using next-generation Ebner-Fametec new sapphire growth technology

Demand Pull:	**Supply Crunch:**
Major new demand from GaN-on-Sapphire semiconductors	End-user desire to de-link from Russia-China production

Alpha SAPPHIRE



Alpha HPA Ultra Pucks

Alpha's Ebner-Fametec Sapphire Growers

Complete Sapphire Boule

Sapphire Wafer

- Qualification Underway: "8" sapphire wafer for new GaN-on-Sapphire semi demand
- Sapphire optics sales commenced
- $30M QIC funding to secure sapphire business for QLD - June 2025

Alpha HPA

CORPORATE SNAPSHOT

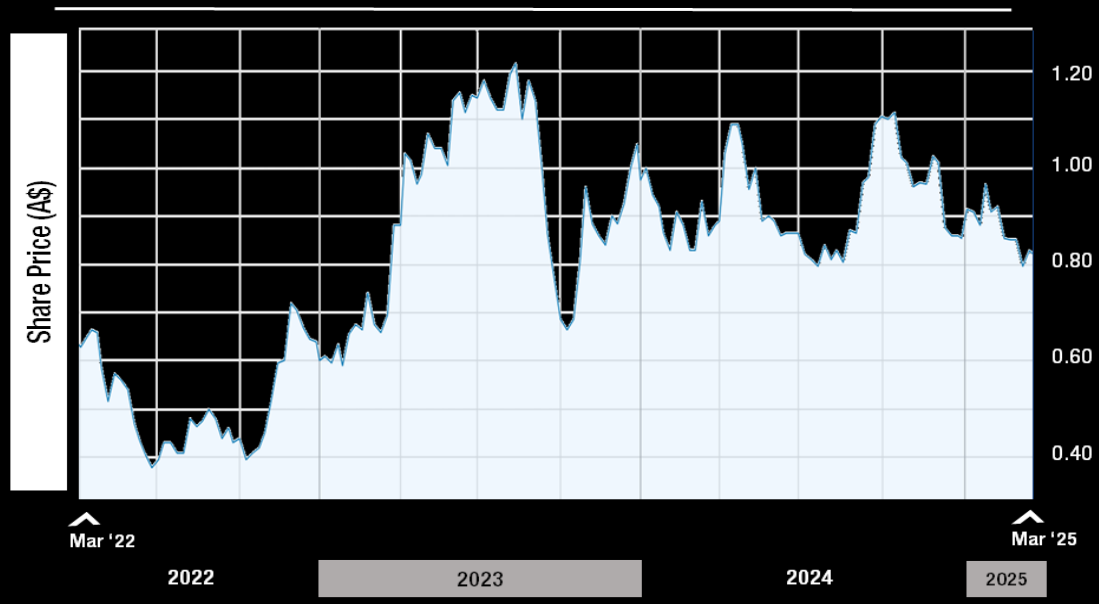
TRADING INFORMATION

ASX CODE	A4N
Share Price (24/03/2025)	~$0.815c
52-week trading range	$0.77 – $1.18
Issued Shares	1,136M

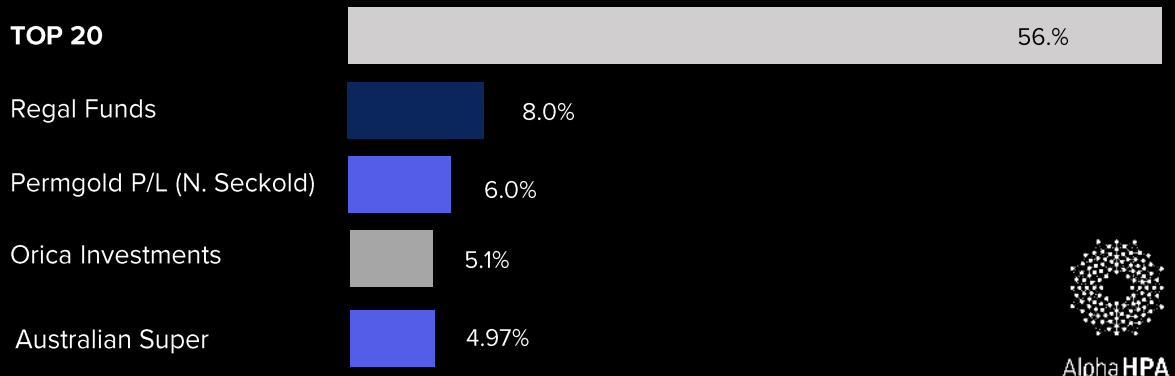
CAPITAL STRUCTURE

Issued Shares	1,136M
Unlisted options (@90c)	8.8M (expire 30 April 2025)
Unlisted options (@90c)	3M (expire 31 Aug 2025)
Performance Rights	9.77M
Market Cap	~$925M
Est Cash (20/03/2025)	~$123M
Enterprise Value	$803M

SHARE PRICE PERFORMANCE – 3 YEARS



SHAREHOLDERS



Alpha HPA

THANK YOU

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