



Alpha **HPA**
ABN 79 106 879 690

INVESTOR PRESENTATION HPA FIRST PROJECT

HIGH PURITY ALUMINA FOR THE **LOW CARBON**
LITHIUM-ION BATTERY (LIB) & LED MARKETS

JULY 2020



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

The DFS referred to in 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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Corporate Snapshot



Alpha HPA

TRADING INFORMATION

ASX CODE	A4N
Share Price (15-07-20)	22.5c
52 week trading range	8.6c – 27.5c
Issued Shares	680.4M

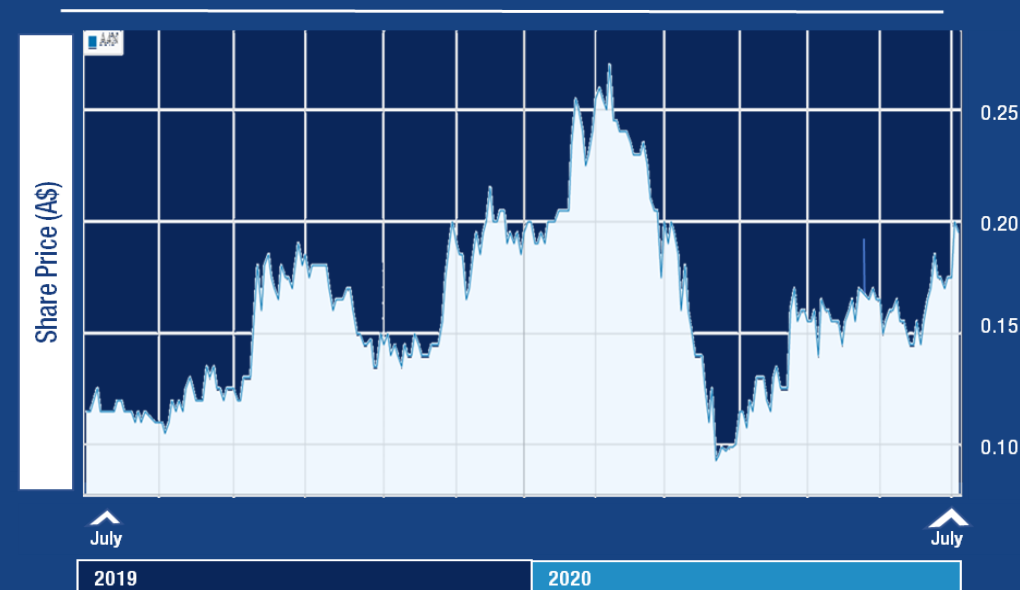
CAPITAL STRUCTURE

Issued Shares	680.4M
Unlisted options (@15c)	12.0M (expire 31 October 2020)
Unlisted options (@20c)	5.0M (expire 30 June 2021)
Unlisted options (@20c)*	10.0M (expire 31 July 2022)
Unlisted options (@30c)	39.0M (expire 31 July 2022)

Market Cap	\$153.1M
Est Cash (04-06-20)	\$8.0M
Enterprise Value	\$145.1M

* Licensor Options

SHARE PRICE PERFORMANCE – 12 MONTHS



SHAREHOLDERS

TOP 20 SHAREHOLDERS

Warrell Holdings	59.7%
Budworth Capital	5.4%
Permgold Pty Ltd (N. Seckold)	5.9%
Regal Funds Management	9.9%
	13.8%

Recent Project Milestones



Alpha HPA

- The HPA First Project has been rapidly advanced over the last 12 months

PFS Nov '18 – Feb '19: Pre Feasibility Study



July '19 – current: HPA First Pilot Plant - 600+hrs operation, > 40kg HPA Production



Nov- Dec '19: Market Outreach - HPA samples despatched to the LIB supply chain



Mar '20: Chemical Counterparty Agreement with Orica – Gladstone Project Location

DFS

Mar '20 Definitive Feasibility Study – completed March 2020



April '20: Commencement of Project Permitting and Financing



May '20: Market Outreach - Large HPA sample orders received from sapphire glass/LED supply chain



June '20: First-stage testing approval by US-based Li-B separator manufacturer. First test order received from Taiwan based sapphire glass manufacturer.

HPA First Project



Alpha HPA

- Alpha HPA is dedicated to the commercialisation of its proprietary solvent extraction (SX) and refining process for the manufacture of **high purity alumina (HPA) – The HPA First Project**

Alpha HPA is targeting key growth markets linked to the de-carbonisation mega-trend

LED lighting & lithium-ion batteries (e-mobility)

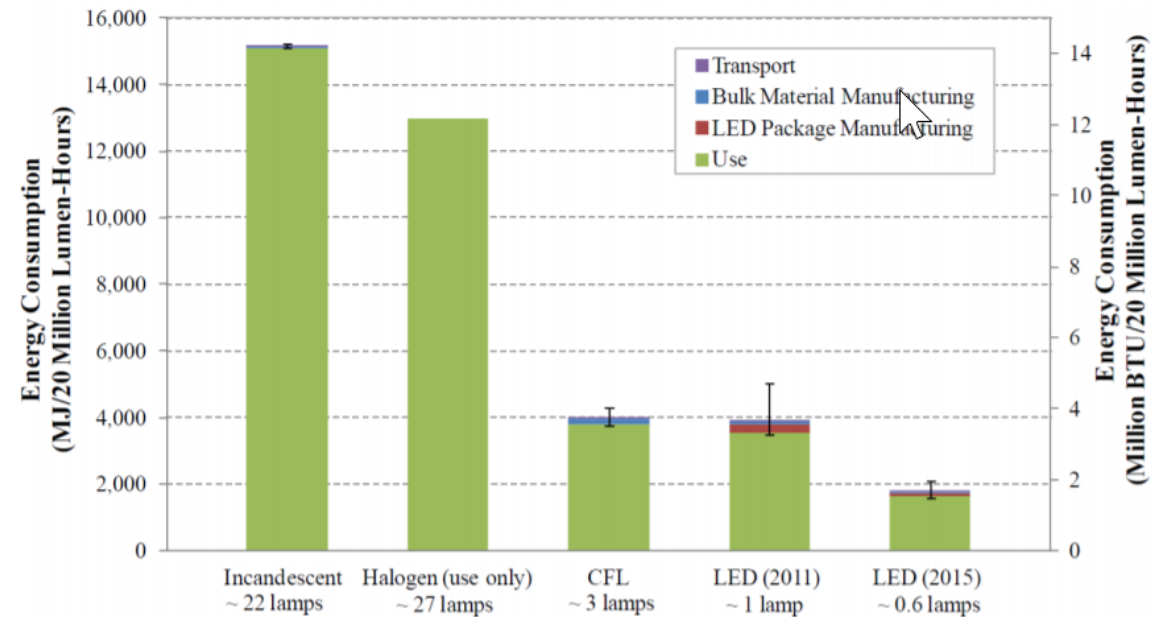
- Alpha's HPA First process is disruptive to both existing and proposed HPA production processes:
 - **Low operational risks:** Front-end atmospheric temperatures and pressures
 - **Low production costs:** DFS OpEx estimates <US\$6,000/tonne HPA
 - **Purity:** Pilot Plant purity reaching 99.998% purity
- HPA demand set to grow at a CAGR of 17.6%* based on **LED lighting** and **Lithium-ion Battery** demand

The LED Lighting Market – a major player in de-carbonisation



Alpha HPA

- Alpha HPA is targeting the sapphire glass >> LED lighting market
- LED lights are 50-70% more efficient than incandescent globes
- Lighting is responsible for 6% of global CO₂ emissions*. A complete switch to LED lighting world wide, would prevent 1,400 millions tons of CO₂ being emitted and reduce the number of new power stations by 1,250
- The use of LEDs to illuminate buildings and outdoor spaces reduced the total carbon dioxide (CO₂) emissions of lighting by an estimated 570 million tons in 2017.



Source: US Dept of Energy

*The Climate Group

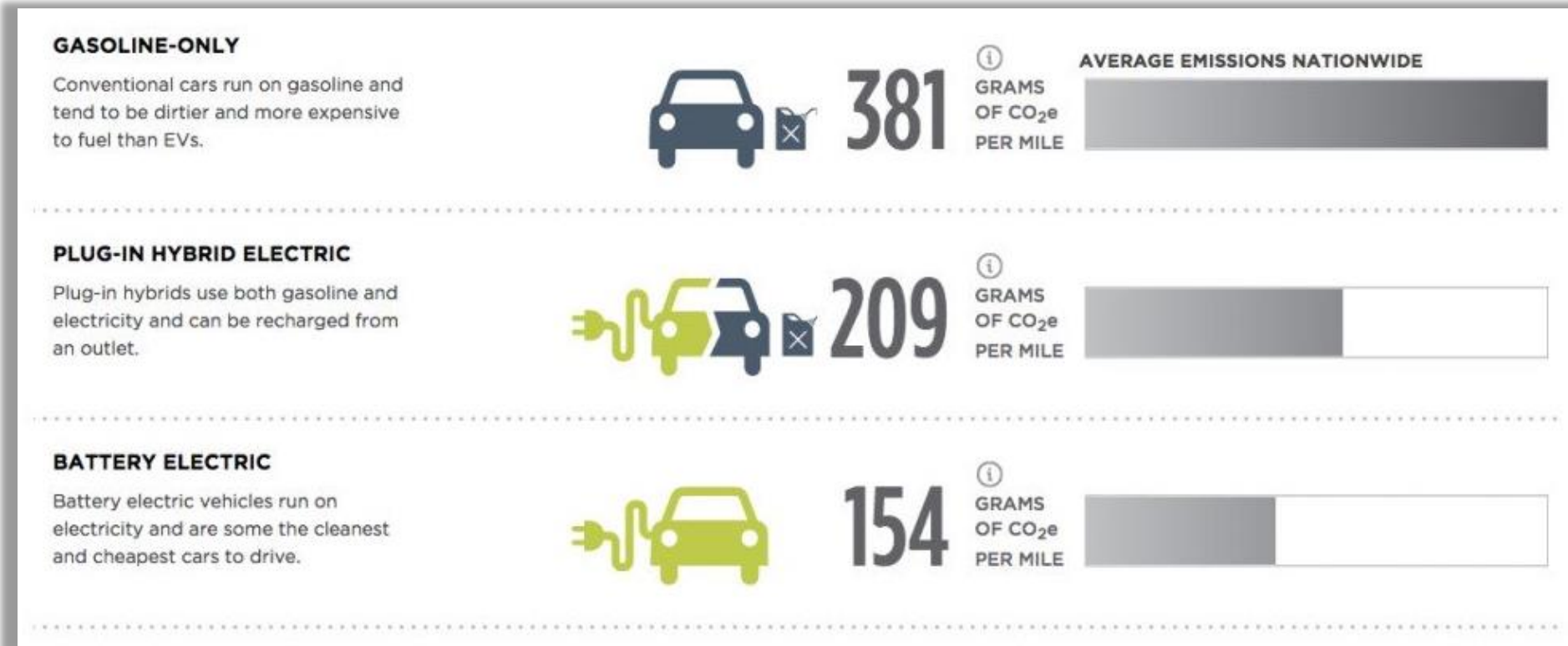
** HIS Markit (NASDAQ: INFO)

E-Mobility– a major player in de-carbonisation



Alpha HPA

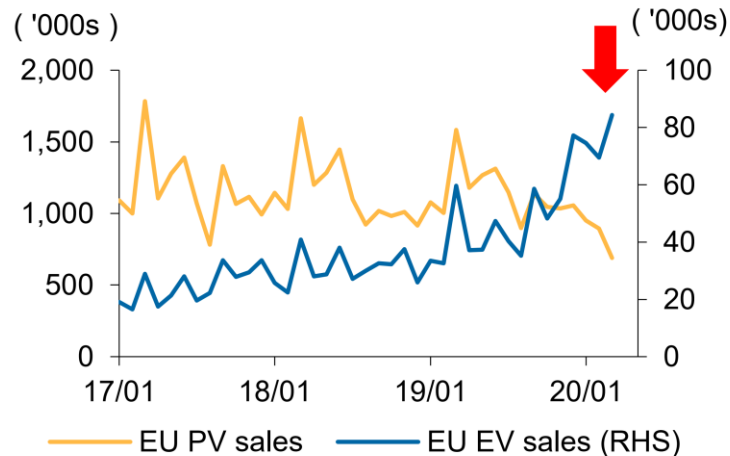
- Alpha HPA is targeting the Lithium-ion battery separator market feeding the e-mobility revolution
- Pure battery EV's (BEV's) are estimated to reduce CO2 emissions by >50% per mile travelled



E-Mobility – a major player in de-carbonisation

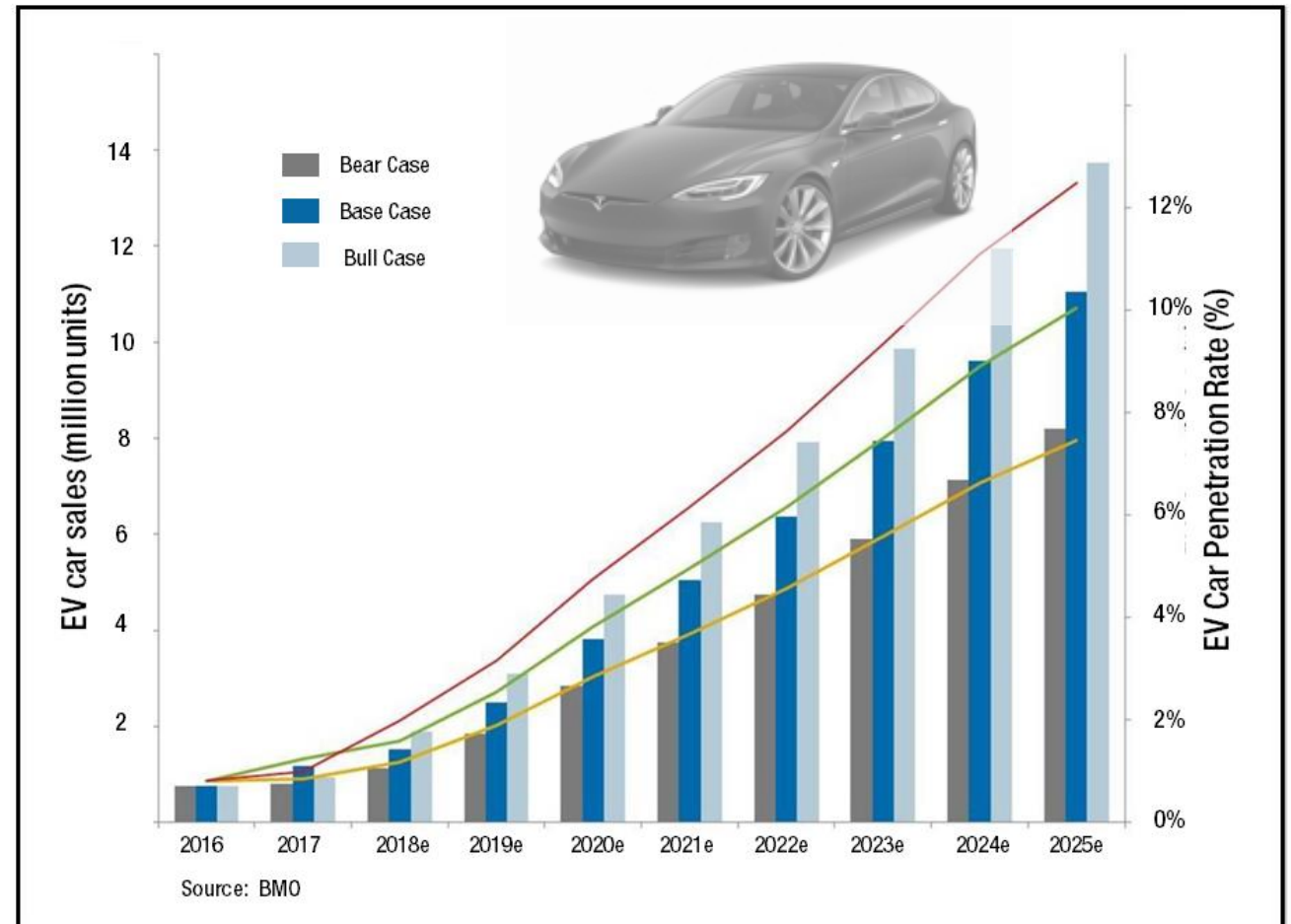
- EV penetration rate forecasts vary, but bullish
- All forecasts >8% CAGR
- Pandemic disruption is seen as constructive by Macquarie for EV take-up (refer below) powered by 'green tinged' China and EU stimulus

1Q20 EV sales in EU rose by 82% YoY, while conventional car sales dropped by 31%YoY



Source: EAMA, Macquarie Research, June 2020

Dramatic EV penetration rates – driven by Govt Regulation



HPA First Pilot Plant



Alpha HPA

- During 2019 the HPA First Pilot Plant recorded over 600hrs operation producing > 40kg HPA Production
- Production process validated, purity trends improving to 99.998% purity
- Pilot Plant upgrading to 'demonstration' scale to meet end-user test demand



Pilot Plant – Solvent Extraction Circuit



Pilot Plant – HPA Pre-cursor Circuit



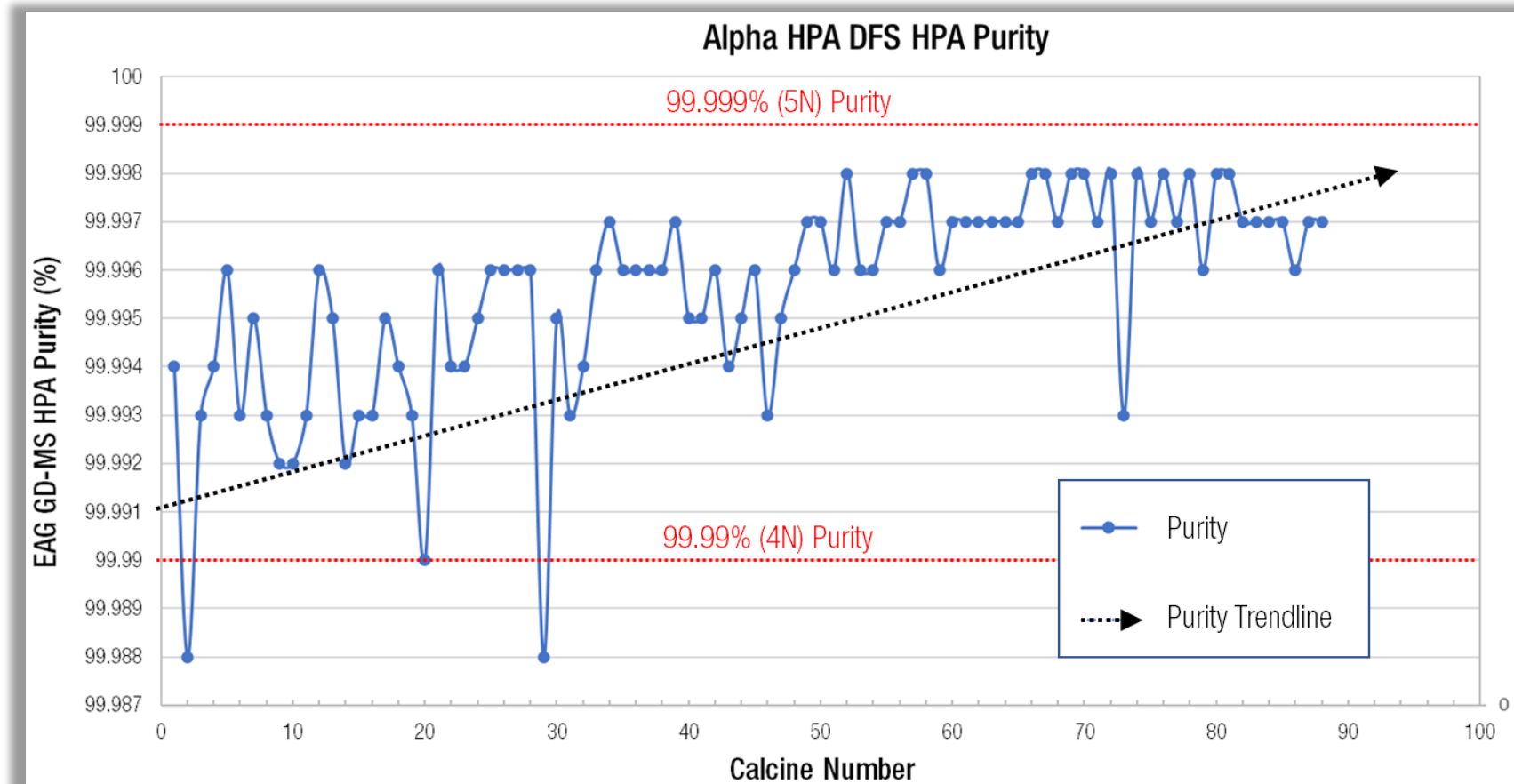
HPA Powder

HPA First Pilot Plant



Alpha HPA

- **HPA First Pilot Plant** – Continuous HPA purity improvement – reaching **99.998%** purity
- Purity trend to improve on larger volumes and commercial plant

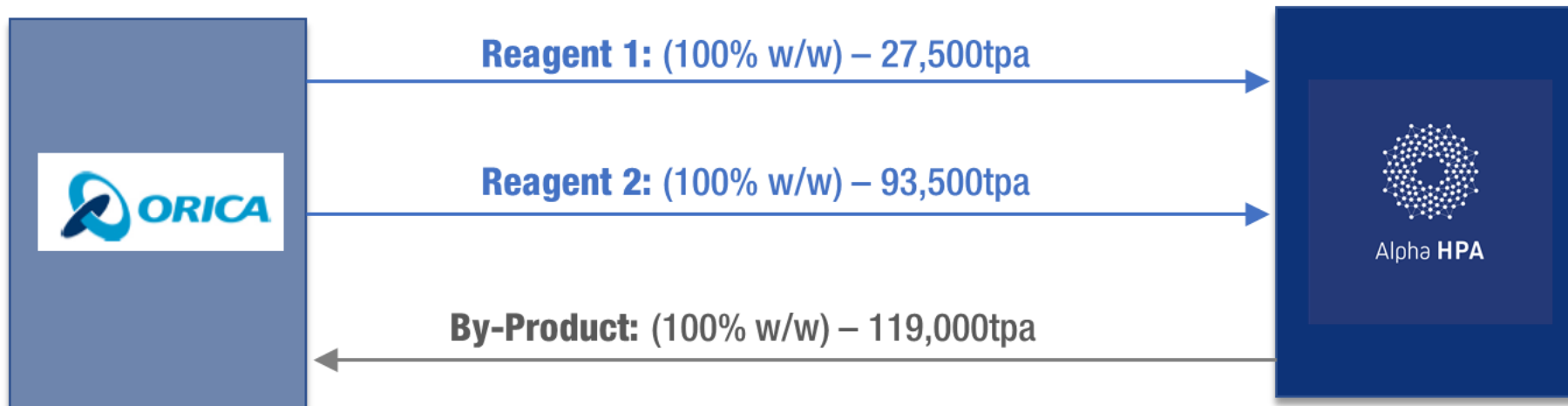


Orica Agreement



Alpha HPA

- The HPA First Project requires the supply of two key chemical reagents, which are recycled inside the HPA production process as a by-product for sale back to the reagent supplier.
- Alpha HPA concluded a **Chemical Counterparty Agreement** (MOU) with Orica in March 2020 for reagent supply and by-product offtake by pipeline.
- MOU sets out a pricing mechanism for both key reagents as well as the by-product over an indicative 20-year term.
- The Orica MOU represents a key Project validation step.



Project Location



Alpha HPA

- The Orica MOU has been negotiated on the basis of reagents supply and by-product offtake delivered from/to Orica's facility in Yarwun, QLD, within the Gladstone State Development Area ('GSDA').
- On this basis, Alpha HPA has executed a land contract with Economic Development Queensland ('EDQ') on a suitable 10ha land parcel within the GSDA, being Lot 12/SP239343.
- Project Permitting has commenced under guidance from AECOM Consultants



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

Definitive Feasibility Study – March 2020



Alpha HPA

- Comprehensive technical and financial validation of the Company's HPA First Project
 - **Production rate of 10,000tpa HPA**
 - **Annual free cashflow increased to A\$280M****
 - **Strong Project cashflows under all modelled price scenarios (US\$15/20/25kg HPA)**
 - **Unit cash costs of A\$8,730 (US\$5,940)/t HPA after by-product credits**
 - **Project CapEx of A\$308M (US\$209M)**
 - **Capital intensity of A\$30,800 (US\$20,900)/tpa HPA**
 - **Financially robust project with high profitability at HPA prices as low as US\$10,000/t**

Key Project Parameters	HPA Pricing Scenarios					
	USD \$25/kg		USD \$20/kg		USD \$15/kg	
	AUD	USD	AUD	USD	AUD	USD
Annual Revenue @ 10,000tpa	\$368 million	\$250 million	\$294 million	\$200 million	\$221 million	\$150 million
Annual Pre-Tax Cashflow	\$280 million	\$191 million	\$207 million	\$141 million	\$133 million	\$91 million
Payback	< 2 years		<3 years		<4 years	

*HPA price of US\$25/kg and USD/AUD = 0.68

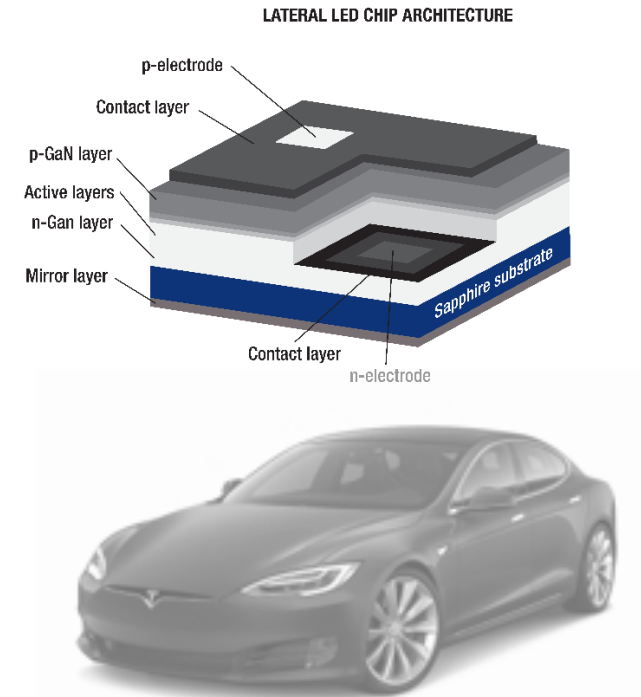
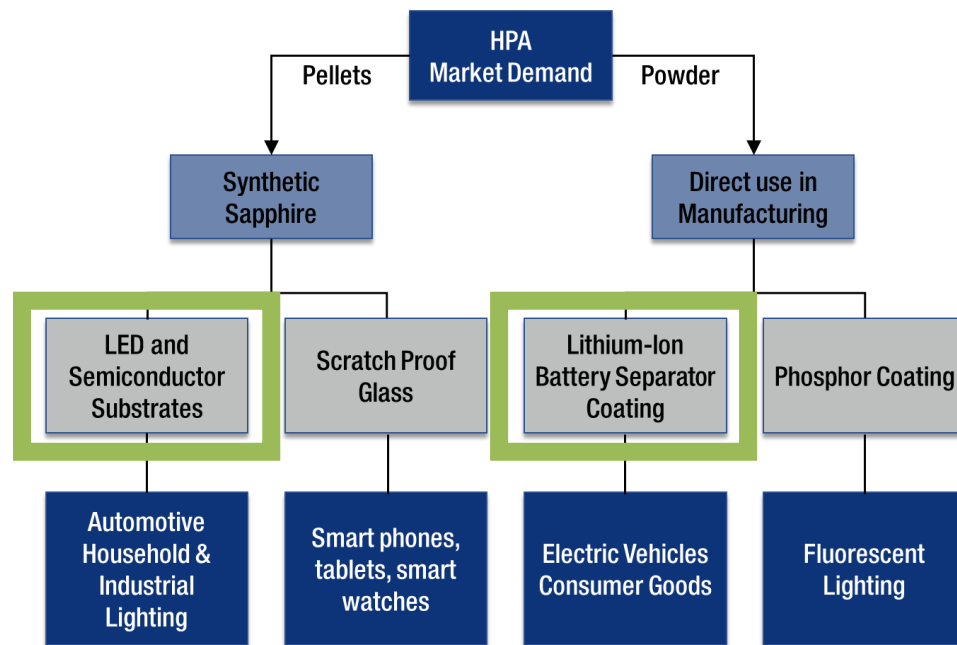
**Relative to March 2019 PFS = A\$265M

High Purity Alumina – Market Overview



Alpha HPA

- High Purity Alumina (HPA) is the very pure form of aluminium oxide – Al_2O_3
- HPA's value derives from its physical properties of extreme hardness, high thermal conductivity, and being electrically and chemically inert (in alpha phase)
- Price and performance of HPA varies upon product density, crystal structure, particle size and distribution and degree of purity
- Alpha HPA is targeting the dominant applications for HPA usage being the established sapphire glass market/LED market and the growth application of coatings inside lithium-ion batteries (LIBs)



Targeting **Low Carbon** LEDs and Lithium-ion Battery Markets



Alpha **HPA**

- LEDs and LIBs both represent high-growth demand markets for HPA



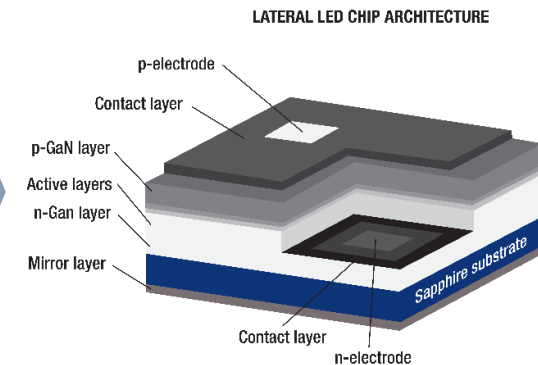
HPA Beads/Pellets



Sapphire glass boule



Sapphire ingots & wafers



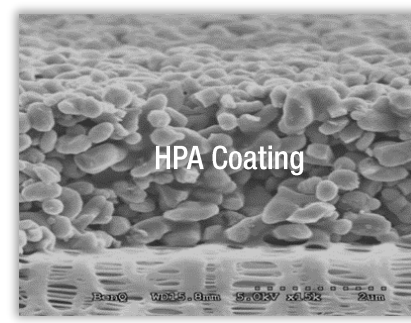
LED architecture



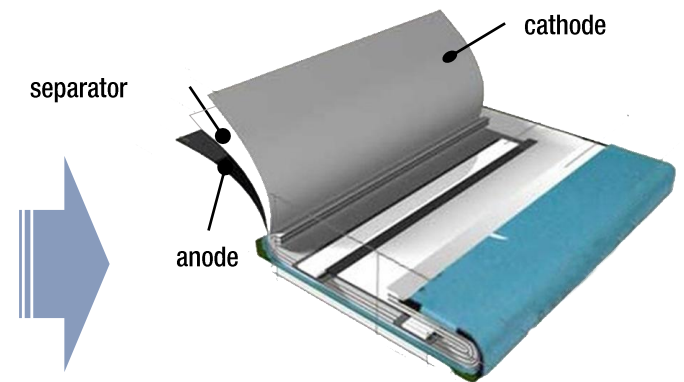
HPA Powder



Wet-coating separator sheets



SEM of coated separator



LIB architecture



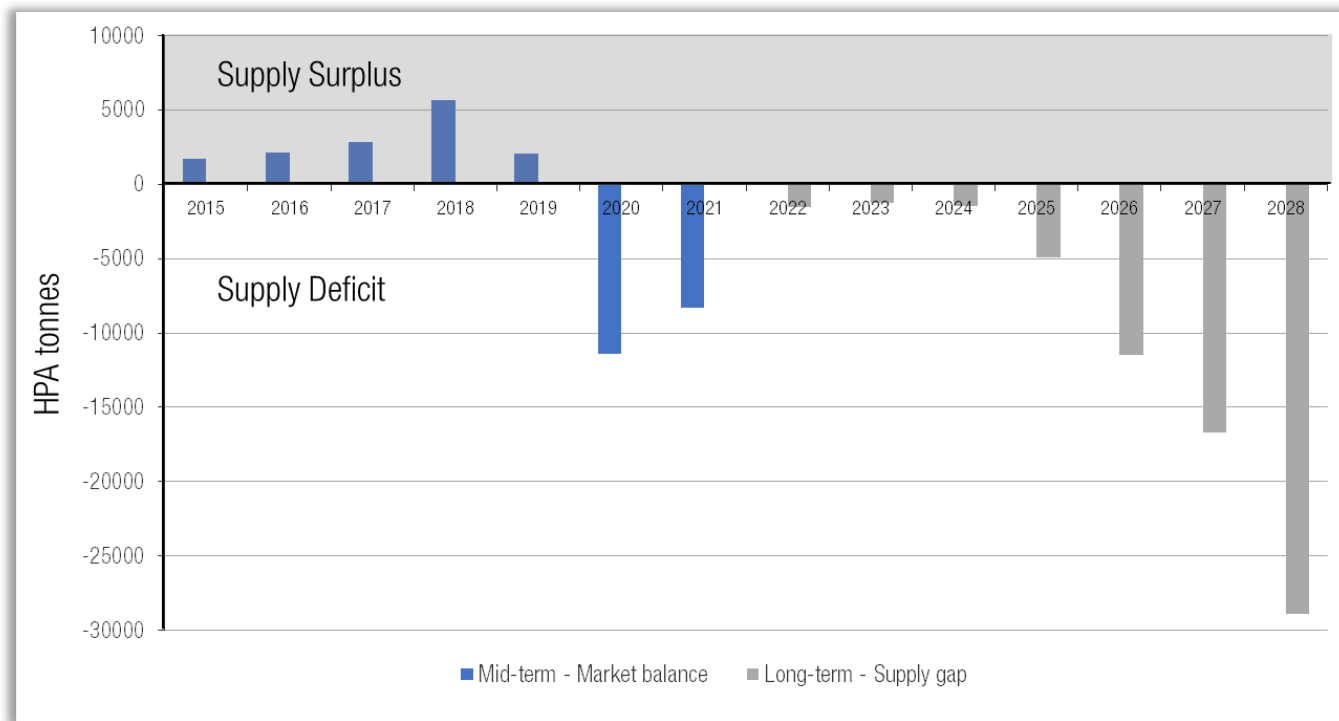
Global Market Outreach

- Global outreach campaign underway to identify key end-users:
 - Lithium-ion battery supply chain – 8 x test samples despatched
 - Sapphire glass/LED supply chains – 2 test samples despatched, a further 2 in preparation
- Looking to convert market interest to offtakes over the course of CY20

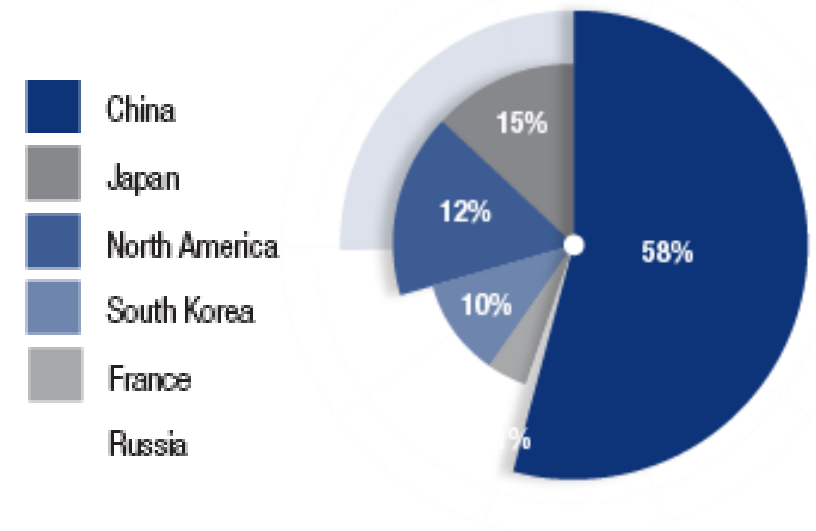


Projected HPA Deficit

- The HPA First Project is scheduled to deliver > 4N HPA into a growing market deficit
- As part of a detailed HPA market review (Dec 2019), CRU present a > 4N HPA market in relative balance until 2020, after which deficits build through to a large supply deficit of nearly 30,000tpa by 2028.



> 4N HPA Market Dynamic



China dominant HPA Supply

Project Layout



Alpha HPA



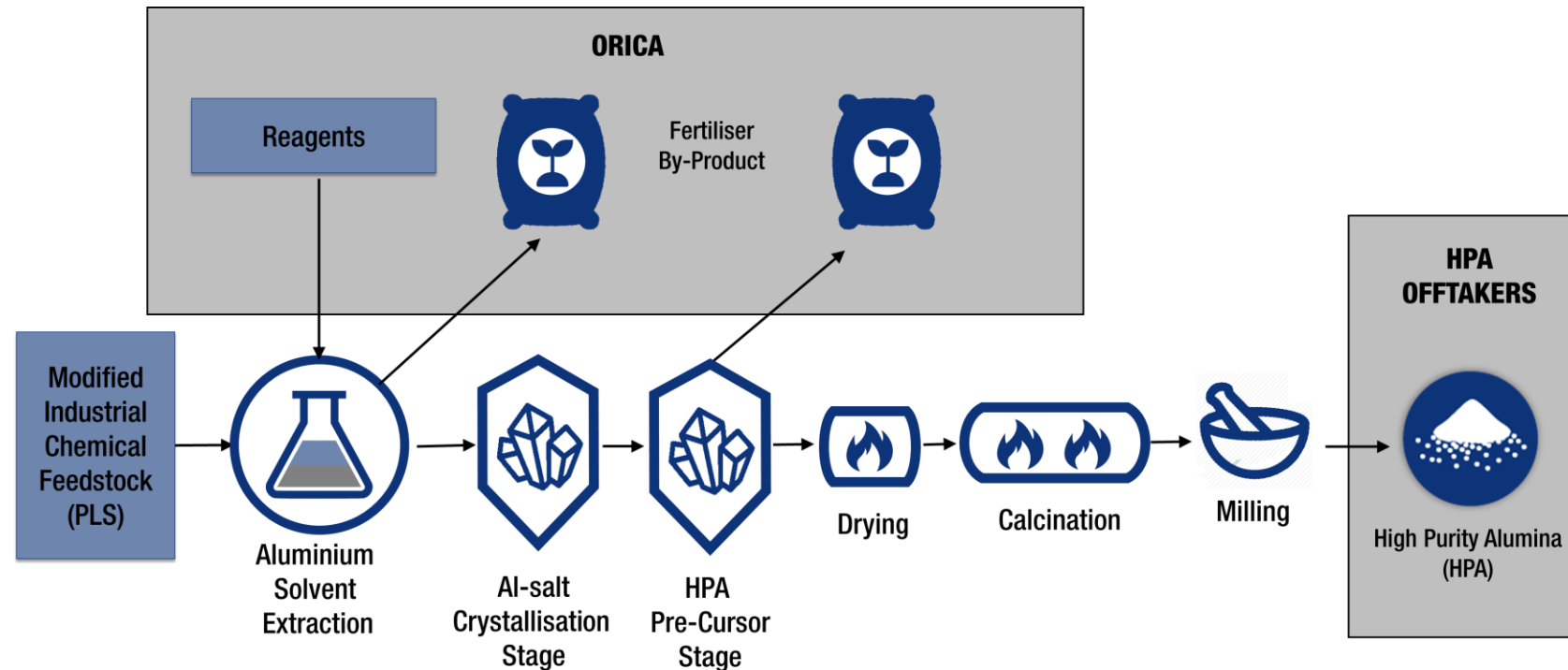
3D Model - HPA First Commercial Plant

HPA First – Process Flow Sheet



Alpha HPA

- Alpha HPA's proprietary HPA First process is disruptive to both existing and proposed HPA production processes:
 - Low operational risks:** Front-end atmospheric temperatures and pressures
 - Simplicity:** Ability to recycle reagents as by-products for sale
 - Low production costs:** DFS OpEx estimates <US\$6,000/tonne HPA
 - Purity:** Pilot Plant purity reaching 99.998% purity



Alpha HPA's Process Flexibility



Alpha HPA's process is capable of producing a range of HPA and high-purity boehmite products suitable for:

- LED market (for sapphire substrates)
- Separator and electrode (cathode and anode) coatings for lithium-Ion Batteries (LIBs)
- Electrolyte pre-treatment of LiPF_6 based electrolyte
- Gamma alumina for the catalysts market

high purity α -alumina beads
>99.995% purity



sapphire glass/wafers – LED lighting



high purity α -alumina powder
>99.995% purity



Separator and electrode coating for
lithium-ion batteries



high purity boehmite powder
>99.995% purity



Separator and electrode coating for
lithium-ion batteries



high purity γ -alumina powder
>99.995% purity



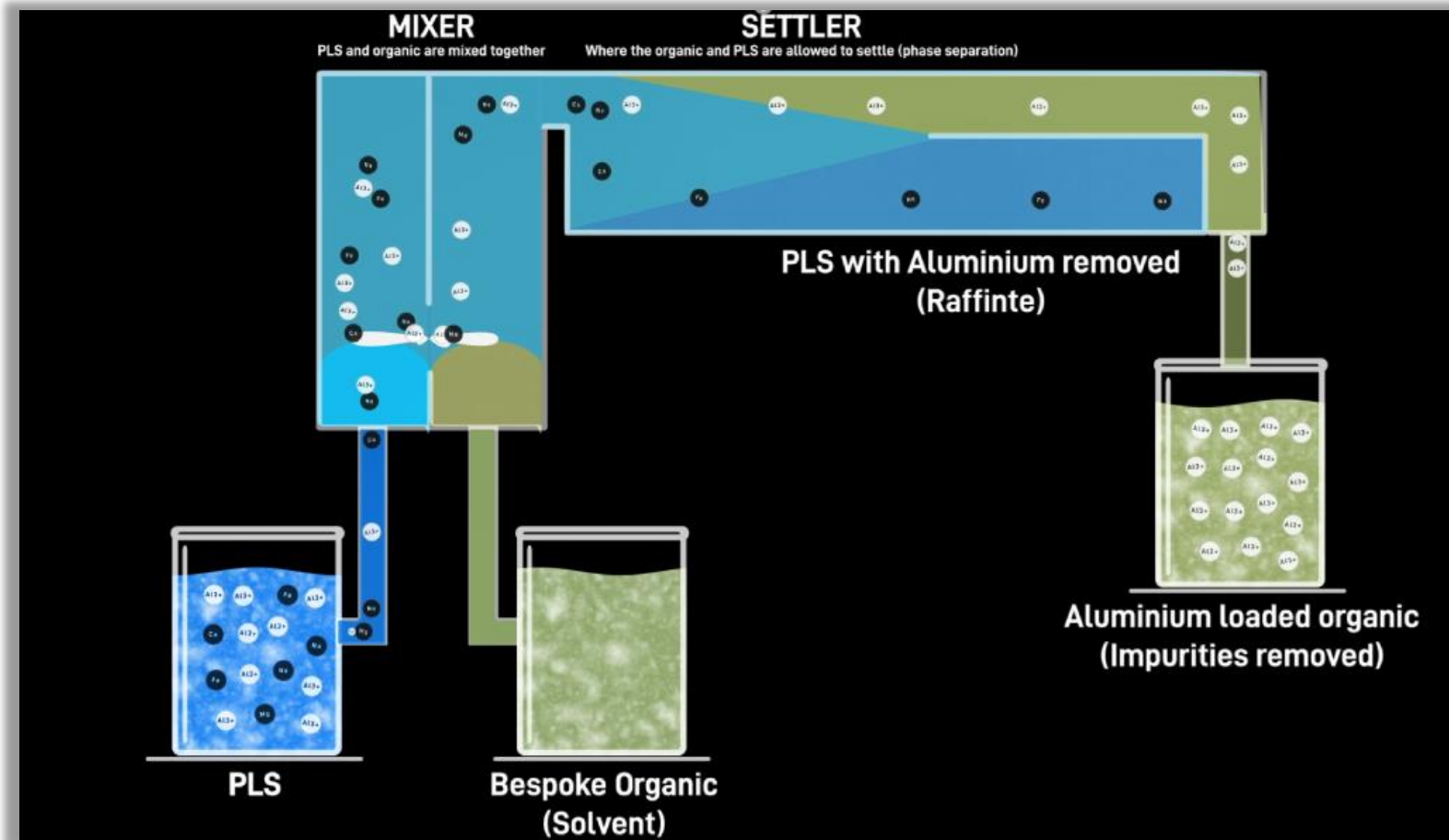
Catalyst and water treatment

SX based process technology



Alpha HPA

- Alpha HPA's key process advantage is the application of established Solvent Extraction (SX) technology to aluminium extraction and purification



Schematic of Alpha HPA's SX circuit

Project Schedule



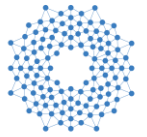
Alpha HPA

- Alpha HPA is progressing offtakes, permitting and financing workstreams with a target of having Project construction commencing March Qtr 2021
- Targeting first HPA production by late CY2022

Task	Months	2020				2021				2022				
		MarQ	JunQ	SepQ	DecQ	MarQ	JunQ	SepQ	DecQ	MarQ	JunQ	SepQ	DecQ	
OFFSITE														
EIS		█												
Regulatory Approvals		█												
HPA Offtakes		█												
Financing		█												
Financial Approval														◆
PROCESS PLANT														
Front End Engineering	6				█									
Detailed Design	7					█								
Long Lead Item Delivery	15					█								
Site Establishment														◆
Buildings & Civil Works	12					█								
Plant Assembly	10							█						
Commissioning	6												█	
Production Ramp-Up	24													◆

Adjusted DFS Project Schedule

Board & Management



Alpha HPA



Norman Seckold
Chairman

40+ years in the full time management of natural resource companies. Past Chairman and Director of listed companies including Bolnisi Gold NL, Timberline Minerals Inc., Perseverance Corporation Limited, Valdora Minerals NL, Palmarejo Silver and Gold Corp. Currently Chairman of Santana Minerals Limited and Sky Metals Limited and Deputy Chairman of Nickel Mines Limited.



Rimas Kairaitis
Managing Director

20+ years experience in minerals exploration and project development in gold, base metals and industrial minerals. Led the geological field teams to the discovery of the Tomingley and McPhillamy's gold deposits in NSW and steered the Hera gold-lead-zinc Project from discovery through to successful commissioning and commercial production. Previously founding Managing Director and CEO of ASX-listed Aurelia Metals. Currently a Director of Sky Metals Ltd.



Peter Nightingale
Director and CFO

30+ years as a Director or Company Secretary for a range of resource companies including Pangea Resources Limited, Timberline Minerals Inc., Perseverance Corporation Limited, Valdora Minerals NL, Mogul Mining NL and Bolnisi Gold NL. Currently a Director of Nickel Mines Limited and unlisted Prospech Limited.



Justin Werner
Non-Exec. Director

20+ years' mining and management experience. Previously consulted to a number of blue chip mining companies including BHP, Rio Tinto and Freeport McMoran. Successful track record of mine discovery and development. Currently Managing Director of Nickel Mines Limited.



Tony Sgro
Non-Exec. Director

Chemical Engineer with 45+ years' senior management experience in the supply of specialised equipment to the process industries with an emphasis on mining and oil & gas. Co-founder, Director and General Manager of Kelair Pumps for 36 years.



Rob Williamson
Chief Operations Officer

Rob is a mechanical engineer and joins the Company having recently rebuilt and started up a new 155ktpa SX zinc refinery in the USA in the capacity of Vice President and GM of the facility and ideally placed to bring 20 years of experience in large facility operations to Alpha HPA. Rob is based in Brisbane and responsible for building a Project delivery team for our HPA project in Gladstone.

Contacts

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Managing Director

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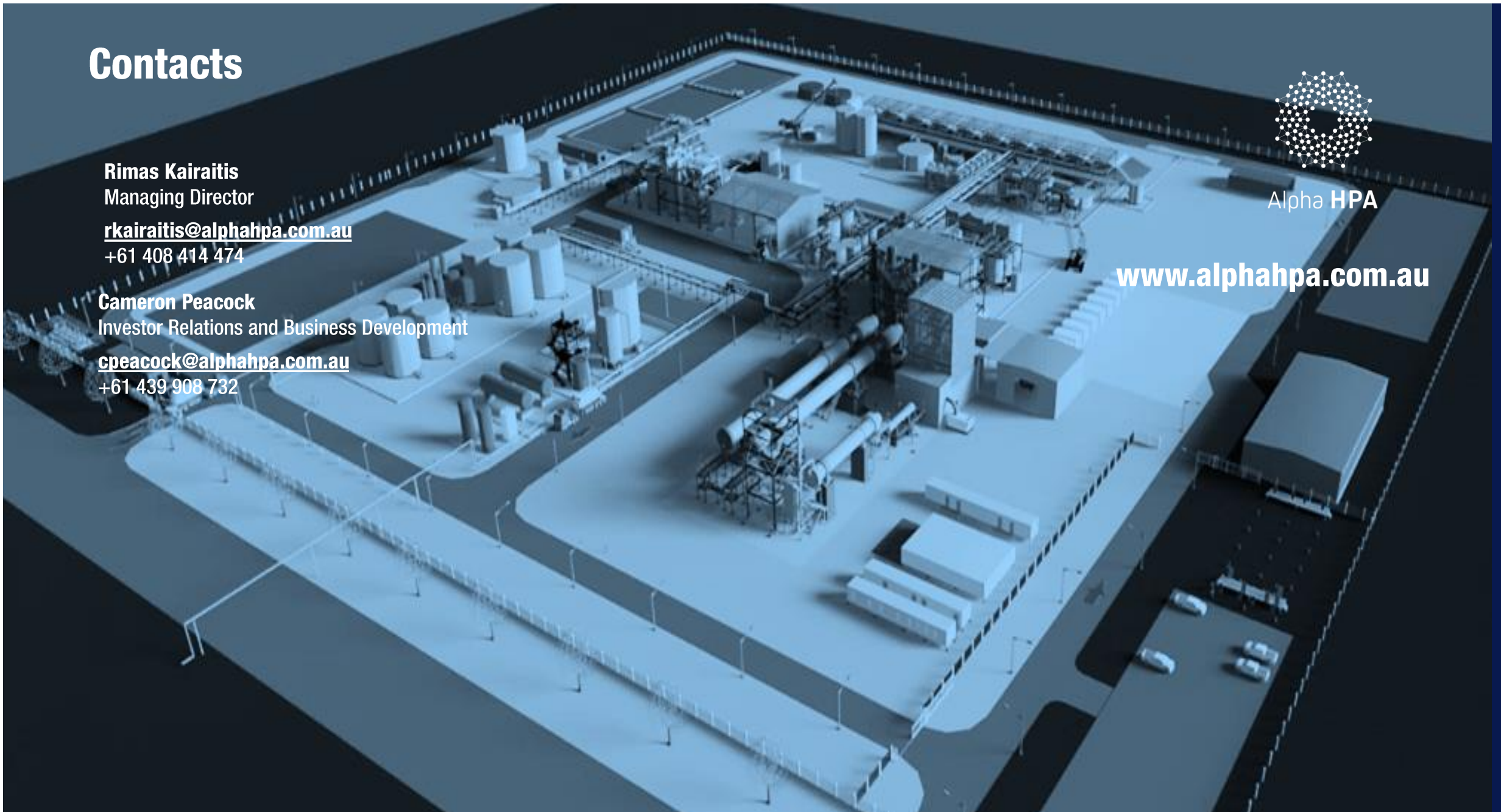
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Competent Person Statement (Process Development Testwork)

Information in this announcement that relates to metallurgical results is based on information compiled by or under the supervision of Dr Stuart Leary, an Independent Consultant trading as Delta Consulting Group. Dr Leary is a Member of The Australasian Institute of Mining and Metallurgy. Dr Leary has sufficient experience to the activity which he is undertaking to qualify as a Competent Persons under the 2012 Edition of the 'Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Leary consents to the inclusion of the technical data in the form and context in which it appears.

For further information on testwork results and processes see ASX announcements dated 19 June 2020, 21 May 2020, 23 April 2020, 25 March 2020, 17 March 2020, 10 December 2019, 21 November 2019, 10 October 2019, 23 September 2019, 28 August 2019, 5 August 2019, 25 July 2019, 2 July 2019, 3 June 2019, 17 April 2019, 7 March 2019, 4 December 2018, 20 November 2018, 6 September 2018, 31 August 2018, 9 July 2018, 30 April 2018, 26 April 2018, 21 March 2018, 6 March 2018, 21 February 2018, 8 December 2017, 30 November 2017, 29 November 2017, 24 November 2017 and 13 November 2017.