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# Alpha HPA (A4N)

## Step downstream into high value markets

### Recommendation

**Buy** (unchanged)

### Price

**\$0.655**

### Valuation

**\$1.02** (unchanged)

### Risk

**Speculative**

### GICS Sector

Materials

### Expected Return

Capital growth	<b>56%</b>
Dividend yield	<b>0%</b>
Total expected return	<b>56%</b>

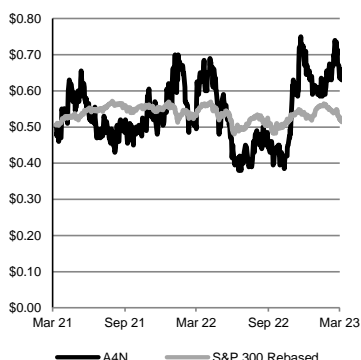
### Company Data & Ratios

Enterprise value	<b>\$534m</b>
Market cap	<b>\$562m</b>
Issued capital	<b>858m</b>
Free float	<b>85%</b>
Avg. daily val. (52wk)	<b>\$1,041,134</b>
12 month price range	<b>\$0.37-0.77</b>

### Price Performance

	(1m)	(3m)	(12m)
Price (A\$)	0.68	0.67	0.62
Absolute (%)	-3.0	-2.2	6.5
Rel market (%)	2.3	0.4	11.5

### Absolute Price



SOURCE: IRESS

### Adding value to HPA into sapphire glass markets

A4N has announced an agreement with a global technology partner which will enable the manufacture of sapphire glass at the company's HPA First Project located in Gladstone, Queensland. Phase A of the agreement involves investment of \$3.4m for two units which will provide product qualification by mid-2024; subsequent phases could see up to 100 units installed. For the tonnes of high purity alumina (HPA) which A4N converts into sapphire glass there is an estimated 10x product value uplift per alumina unit and 50% greater cash flow margin than producing HPA and precursors.

### Providing stronger leverage to high-growth tech markets

Sapphire glass is used in LED lighting, optics and consumer electronic manufacturing. Emerging high-growth markets include for micro-LED displays which are expected to supersede OLED and black-lit LCDs in smartphones and wearable electronic devices. The sapphire glass technology partner's energy efficient process coupled with A4N's ESG credentials is on-trend with re-shoring investment and consumer preferences.

The volume of A4N's HPA which will be value added into sapphire glass is not disclosed. However, even relatively small volumes could provide a material improvement to revenues with flow through to value. We also see this development as further third party endorsement of A4N's technology and products.

### Investment thesis: Speculative Buy, Valuation \$1.02/sh

A4N's high purity aluminium and high purity alumina (HPA) products have value-adding application across lithium ion battery, micro-LED and semiconductor manufacturing. These technologies are at the forefront of the global decarbonising and reshoring themes. We expect A4N to soon announce product offtake agreements in support of debt financing and FID for the full scale HPA First project.

A4N is a development company with prospective operations and cash flows only. Our Speculative risk rating recognises this higher level of risk and volatility of returns.

### Earnings Forecast

Year ending 30 June	2022a	2023e	2024e	2025e
Sales (A\$m)	2	8	57	353
EBITDA (A\$m)	(7)	(3)	22	254
NPAT (reported) (A\$m)	(7)	(5)	9	167
NPAT (adjusted) (A\$m)	(7)	(5)	9	167
EPS (adjusted) (eps)	(0.9)	(0.5)	0.9	16.8
EPS growth (%)	na	na	na	1765%
PER (x)	-70.4x	-121.3x	72.7x	3.9x
FCF Yield (%)	-7%	-18%	-35%	12%
EV/EBITDA (x)	-74.3x	-155.4x	23.9x	2.1x
Dividend (eps)	-	-	-	-
Yield (%)	0%	0%	0%	0%
Franking (%)	-	-	-	-
ROE (%)	-15%	-5%	6%	68%

SOURCE: BELL POTTER SECURITIES ESTIMATES

# Step downstream into high value markets

## A4N to further value-add its HPA products

A4N has reached agreements with global industrial furnace company Ebner Industrieofenbau GmbH (Ebner) and its subsidiary Fametec GmbH (Fametec) enabling A4N to roll-out Ebner-Fametec's sapphire growth technology using A4N's HPA feedstock. This move downstream into sapphire glass manufacturing is a logical and value adding complement to A4N's future HPA production.

### PHASED INVESTMENT: PRODUCT QUALIFICATION THEN ROLL-OUT

Under the agreements, A4N will initially purchase two sapphire glass growth (production) units (Phase A) for installation by early 2024 into the HPA First Project Stage 1 Precursor Production Facility (PPF) which is currently in operation in Gladstone Queensland. The units are expected to cost ~A\$3.4m and enable product qualification by mid-2024. On successful qualification of Phase A, the Board will consider an expansion to up to 100 growth units by the end of 2025 in 2 stages (Phase B 48 units; Phase C 50 units).

### SOLVING SUPPLY-DISRUPTION FOR HIGH DEMAND GROWTH SECTORS

Sapphire glass is predominantly used in the manufacture of LED lighting, optics and consumer electronics. Emerging high-growth markets include micro LED technology which is expected to be the next generation of display technology in smartphone and wearable electronics. The 'optics' market category includes watch faces, lens covers and medical/defence applications.

Sapphire glass production is traditionally dominated by Russia and China (+80% of market), with Russian company Monocrystal estimated to represent 25-40% of global supply.

Ebner-Fametec has developed a more energy efficient sapphire growth technology which combined with A4N's ESG credentials is on-trend with OEMs re-shoring of supply chains and consumer preferences more broadly.

## Opportunity for A4N: 10x product value uplift

A4N has estimated that conversion of HPA to sapphire glass represents a product value uplift of around 10x per unit of alumina and that sapphire growth captures a 50% greater cash flow margin than producing HPA and precursors. The volume of HPA from A4N's total production which is represented by the agreements has not been disclosed.

### CONTEXT: REVENUE UPLIFT; PROJECT & PRODUCT ENDORSEMENT

- A4N's HPA First Project is expected to produce 10ktpa of HPA equivalent and the March 2020 DFS provided HPA price scenarios ranging US\$15,000/t-US\$25,000/t (i.e. revenues of US\$150-250m).
- We expect a diversified sales book across A4N's product suite into various technology markets. In a case where only 2.5% of A4N's HPA First Project volumes are converted into sapphire glass, we estimate that DFS-case project revenue could lift from US\$150-250m to US\$185-305m (an increase of around 23%) with a more modest uplift to cash margins.
- The agreement also provides additional strong third party endorsement of the HPA First Project and products.

## HPA First product suite & applications

**Table 1 - A4N's product suite & applications**

KEY APPLICATION	Lithium ion batteries			LEDs		Semi-conductors	Other
	Cathode	Separator	Anode	LED lights	Micro-LEDs (displays)		
<b>A4N PRODUCT</b>							
<b>Aluminium Precursors</b>							
Aluminium nitrate	HPA particle coating		HPA particle coating	Phosphors for white LEDs	Nano-size phosphors		Catalysts & YAG laser crystals
Aluminium sulphate	Sulphate blending (NCA & NCMA) & HPA particle coating						
<b>High Purity Alumina</b>							
HPA powder (gamma phase)		HPA layer coating		Phosphors for white LEDs			Specialty ceramics
HPA powder & tablets (alpha phase)				Sapphire glass wafers (substrate)	Sapphire glass wafers (substrate)		
Boehmite		Boehmite layer coating					Specialty ceramics

SOURCE: COMPANY DATA AND BELL POTTER SECURITIES ESTIMATES

## Risked & diluted valuation summary

**Table 2 - Risked & diluted valuation summary**

Product price scenario	1	2	3
			<b>Preferred</b>
<b>Price - 4N HPA equivalent basket (US\$/t)</b>	<b>15,000</b>	<b>20,000</b>	<b>25,000</b>
<b>HPA First Project</b>			
<b>Unrisked NPV (10% discount rate)</b>	<b>295</b>	<b>726</b>	<b>1,157</b>
Risk discount		20%	
<b>Risked NPV (10% discount rate)</b>	<b>236</b>	<b>581</b>	<b>925</b>
Corporate costs		-40	
<b>Enterprise value</b>	<b>196</b>	<b>541</b>	<b>885</b>
Net debt / (cash)		-28	
<b>Equity valuation (risked, undiluted)</b>	<b>225</b>	<b>569</b>	<b>914</b>
Assumed capital raise \$m	90		
Assumed raise price \$/sh	0.557		
Government grant \$m	60		
Current shares on issue m	858		
In the money options m	30		
Assumed capital raising dilution m	162		
<b>Diluted shares on issue m</b>	<b>1,049</b>		
Net debt / (cash) (including options, assumed raising & grants)	-189		
<b>Equity valuation (risked, diluted)</b>	<b>385</b>	<b>730</b>	<b>1,074</b>
<b>Equity valuation (risked, diluted) \$/sh</b>	<b>0.37</b>	<b>0.70</b>	<b>1.02</b>
Current share price	0.655		
Valuation / price	0.6x	1.1x	1.6x

SOURCE: COMPANY DATA AND BELL POTTER SECURITIES ESTIMATES

Our risked and diluted A4N valuation is based on:

- 4N HPA prices of US\$25,000/t (consistent with CRU Group's market outlook);
- A4N's March 2020 Definitive Feasibility Study HPA First Project capital and operating costs; and
- A4N's published Precursor Production Facility (June 2021) capital and operating cost estimates.

Risk and dilution to calculated NPV:

- Project risk discount of 20% to take into account project stage (DFS completed, pre-development stage); and
- Dilution from an assumed \$90m equity raising prior to commencement of full scale construction in mid-2023, at a 15% discount to A4N's current share price.

### **Preferred valuation at high end of product price range**

Our preferred HPA product pricing assumption is at the high end of A4N's published definitive feasibility study price ranges, which we believe is justified:

- Since the DFS, A4N has identified a number of precursor high purity aluminium and alumina products which have the potential to add further value to the project. These precursor products are produced mid-stream of the project's flow-sheet, are expected to be higher margin and have the potential to provide increased return on capital invested.
- The global decarbonisation and reshoring themes have accelerated as developed economies look to address climate change targets. A4N's HPA First Project products have applications in technologies directly linked to these themes; the manufacturing of lithium ion batteries, LED lighting and semiconductors.
- There is potential for A4N's products to have applications in the manufacture of micro-LEDs. Micro LED technology is expected to be the next generation of display technology, superseding OLED and black-lit LCDs.
- Commercialisation of A4N's HPA First Project technology could step beyond the proposed Gladstone project development. With A4N's propriety technology, HPA First Project could be scaled up or replicated elsewhere. A4N and ORI have a MoU to investigate the technical and commercial feasibility of establishing a new facility in North America near ORI's Carseland asset in Alberta, Canada.
- A4N has announced the HPA First Project has received a Federal Government funding grant of \$45m (\$40.5m to A4N) to support the project through the Modern Manufacturing Initiative programme. Subsequently, a further grant of up to \$15.5m from the Critical Minerals Accelerator Initiative was awarded.

### **Future capital requirements & funding options**

A4N's March 2020 HPA First Project DFS estimated capital costs of \$308m, including \$27m over-run contingency.

The HPA First Project's location (Gladstone, Queensland) and end products (inputs into key decarbonising technologies) make it a candidate for Government-backed concessional debt finance. We expect that the Northern Australia Infrastructure Facility, Clean Energy Finance Corporation and Export Finance Australia will consider extending debt facilities to support the project. We also expect that commercial banks diversifying away from carbon intensive projects will have an interest in extending debt and working capital finance.

The following table outlines the HPA First Project's capital requirements and the sources of funding which we assume. We factor in a \$90m equity raising over the next twelve months to support the project's development and working capital ahead of debt draw-down.

**Table 3 - Future capital requirements**

<b>Capital costs (2020 DFS estimates)</b>		<b>A\$m</b>
Processing plant		173
Utilities		19
Infrastructure		39
Indirects		44
Owners costs		7
<b>Total excluding contingency</b>		<b>281</b>
Contingency		27
<b>Total funding requirement</b>		<b>308</b>
<b>Assumed sources of funds</b>	<b>% est.</b>	<b>A\$m</b>
Debt finance	65%	200
Equity	35%	108
<b>Total</b>	<b>100%</b>	<b>308</b>

SOURCE: COMPANY DATA AND BELL POTTER SECURITIES ESTIMATES

# Alpha HPA Ltd summary

## Company description

A4N's HPA First Project is aiming to supply high-purity alumina (HPA) at a purity of greater than 99.99% (or 4N) to the lithium ion battery and light emitting diode (LED) manufacturing sectors. The project's proprietary technology is expected to disrupt incumbent HPA production through significantly lower unit costs. Results of a March 2020 DFS outlined a 10,000tpa 4N HPA project with a capital cost of \$308m and pre-tax annual cash flow of \$133-280m at 4N HPA prices ranging US\$15,000-25,000/t.

In June 2021, a HPA First Project Stage 1 was estimated to have revenues of \$10-15m and generate free cash flow of \$1.5-5.0m from aluminium precursor production of 200tpa. When integrated into the full HPA First Project, this free cash flow increases to \$8-11m. The project was subsequently up-scaled to 350tpa.

The HPA First Project is a solvent extraction process using an aluminium chemical feedstock purchased on globally traded markets. Orica Ltd (ORI) and A4N have executed a definitive agreement for ORI's supply of process reagents and for by-product offtake. This agreement has required significant third party due diligence of the HPA First Project process.

## Investment view: Speculative Buy, Valuation \$1.02/sh

A4N's high purity aluminium and high purity alumina (HPA) products have value-adding application across lithium ion battery, micro-LED and semiconductor manufacturing. These technologies are at the forefront of the global decarbonising and reshoring themes. We expect A4N to soon announce product offtake agreements in support of debt financing and FID for the full scale HPA First project.

A4N is a development company with prospective operations and cash flows only. Our Speculative risk rating recognises this higher level of risk and volatility of returns.

## Valuation methodology

We have modelled the HPA First Project using assumptions consistent with the March 2020 DFS. We assume:

- 4N HPA prices of US\$25,000/t (consistent with CRU Group's market outlook);
- A4N's March 2020 Definitive Feasibility Study HPA First Project capital and operating costs; and
- A4N's published Precursor Production Facility (June 2021) capital and operating cost estimates.

Risk and dilution to calculated NPV:

- Project risk discount of 20% to take into account project stage (DFS completed, pre-development stage); and
- Dilution from an assumed \$90m equity raising prior to commencement of full scale construction in mid-2022, conservatively at a 15% discount to A4N's current share price.

## Risks

Risk to an investment in A4N include, but are not limited to:

- **Commodity price and exchange rate fluctuations.** The future earnings and valuations of development and operating assets and companies are subject to fluctuations in underlying commodity prices and foreign currency exchange rates.
- **Technology:** Projects may be reliant on commercialisation of new production processes and methodologies which have yet been proven on a large scale. Technology may be replicated by competitors resulting in a loss of market share.
- **Infrastructure access.** Projects are reliant upon access to transport and pipeline infrastructure. Access to infrastructure is often subject to contractual agreements, permits and capacity allocations. Agreements are typically long-term in nature. Infrastructure can be subject to outages as a result of weather events or the actions of third party providers.
- **Operating and capital cost fluctuations.** Markets for raw material inputs and labour can fluctuate and cause significant differences between planned and actual operating and capital costs. Key operating costs are linked to commodity and labour markets. Companies are also exposed to costs associated with future land rehabilitation.
- **Sovereign risks.** Companies' assets are subject to the sovereign risk of the country of location and may also be exposed to the sovereign risks of major offtake customers.
- **Regulatory changes.** Changes to the regulation of infrastructure and taxation (among other things) can impact the earnings and valuations of companies.
- **Environmental risks.** Companies are exposed to risks associated with environmental degradation as a result of their production processes.
- **Operating and development risks.** Companies' assets are subject to risks associated with their operation and development. Development assets can be subject to approvals timelines or weather events, causing delays to commissioning and commercial production.
- **Occupational health and safety (OH&S) risks.** Companies are exposed to OH&S risks.
- **Funding and capital management risks.** Funding and capital management risks can include access to debt and equity finance, maintaining covenants on debt finance, managing dividend payments and managing debt repayments.
- **Merger/acquisition risks.** Risks associated with value transferred during merger and acquisition activity.
- **Impact of pandemic infection such as Coronavirus disease (COVID-19).** This may have an adverse impact on the macro economic factors, including the mobility of labour, which can impact asset valuations.

Table 4 - Financial summary

Date	23/03/23						Bell Potter Securities						
Price	AS/sh 0.655						Stuart Howe (showe@bellpotter.com.au, +61 3 9235 1856)						
Valuation	AS/sh 1.02												
<b>PROFIT AND LOSS</b>							<b>FINANCIAL RATIOS</b>						
Year ending 30 June	Unit	2021a	2022a	2023e	2024e	2025e	Year ending 30 June	Unit	2021a	2022a	2023e	2024e	2025e
Revenue	\$m	1	2	8	57	353	<b>VALUATION</b>						
Expenses	\$m	(15)	(9)	(11)	(35)	(99)	EPS	Ac/sh	(2)	(1)	(1)	1	17
<b>EBITDA</b>	\$m	<b>(14)</b>	<b>(7)</b>	<b>(3)</b>	<b>22</b>	<b>254</b>	EPS growth (Acps)	%	na	na	na	na	1765%
Depreciation & amortisation	\$m	(2)	(0)	(1)	(6)	(18)	PER	x	-28.0x	-70.4x	-121.3x	72.7x	3.9x
EBIT	\$m	(16)	(7)	(5)	16	236	DPS	Ac/sh	-	-	-	-	-
Net interest expense	\$m	(0)	0	-	(8)	(15)	Franking	%	0%	0%	0%	0%	0%
Profit before tax	\$m	(16)	(7)	(5)	9	221	Yield	%	0%	0%	0%	0%	0%
Tax expense	\$m	-	-	-	-	(55)	FCF/share	Ac/sh	(1.2)	(4.4)	(11.7)	(23.2)	8.1
<b>NPAT (reported)</b>	\$m	<b>(16)</b>	<b>(7)</b>	<b>(5)</b>	<b>9</b>	<b>167</b>	FCF yield	%	-2%	-7%	-18%	-35%	12%
<b>NPAT (adjusted)</b>	\$m	<b>(16)</b>	<b>(7)</b>	<b>(5)</b>	<b>9</b>	<b>167</b>	EV/EBITDA	x	-38.1x	-74.3x	-155.4x	23.9x	2.1x
<b>CASH FLOW STATEMENT</b>							<b>LIQUIDITY &amp; LEVERAGE</b>						
Year ending 30 June	Unit	2021a	2022a	2023e	2024e	2025e	Net debt / (cash)	\$m	(50)	(17)	(22)	208	127
<b>OPERATING CASH FLOW</b>							Net debt / Equity	%	-100%	-36%	-15%	129%	39%
Receipts from customers	\$m	-	-	9	47	294	Net debt / Net debt + Equity	%	82517%	-56%	-17%	56%	28%
Payments to suppliers and employees	\$m	(3)	(4)	(17)	(33)	(92)	Net debt / EBITDA	x	3.6x	2.3x	6.4x	9.3x	0.5x
Tax paid	\$m	-	-	-	-	(55)	EBITDA / net int expense	x	-148.6x	432.5x	0.0x	3.0x	17.0x
Net interest	\$m	0	0	-	(8)	(15)	<b>PROFITABILITY RATIOS</b>						
Other	\$m	1	-	-	-	-	EBITDA margin	%	-1446%	-352%	-46%	39%	72%
<b>Operating cash flow</b>	\$m	<b>(2)</b>	<b>(4)</b>	<b>(8)</b>	<b>7</b>	<b>132</b>	EBIT margin	%	-1676%	-362%	-64%	29%	67%
<b>INVESTING CASH FLOW</b>							Return on assets	%	-52%	-14%	-5%	3%	33%
Capex	\$m	(7)	(31)	(97)	(237)	(51)	Return on equity	%	-54%	-15%	-5%	6%	68%
Acquisitions	\$m	-	0	-	-	-	<b>ASSUMPTIONS - Prices (nominal)</b>						
Other	\$m	-	-	-	-	-	Year ending 30 June	Unit	2021a	2022a	2023e	2024e	2025e
<b>Investing cash flow</b>	\$m	<b>(7)</b>	<b>(31)</b>	<b>(97)</b>	<b>(237)</b>	<b>(51)</b>	4N HPA price	US\$/t	25,000	25,000	25,000	25,000	25,000
<b>FINANCING CASH FLOW</b>							4N HPA price	AS/t	33,787	34,014	34,014	33,784	33,784
Debt proceeds/(repayments)	\$m	(0)	(0)	-	250	-	FX	US\$/A\$	0.74	0.74	0.74	0.74	0.74
Dividends paid	\$m	-	-	-	-	-	<b>ASSUMPTIONS - Sales (equity)</b>						
Proceeds from share issues (net)	\$m	51	1	110	-	-	Year ending 30 June	Unit	2021a	2022a	2023e	2024e	2025e
Other	\$m	0	-	-	-	-	4N HPA sales	t	-	-	-	1,247	10,000
<b>Financing cash flow</b>	\$m	<b>51</b>	<b>1</b>	<b>110</b>	<b>250</b>	<b>-</b>	5N Al-Precursor #1 - Al-Nitrate	t	-	-	98	175	175
<b>Change in cash</b>	\$m	<b>42</b>	<b>(34)</b>	<b>5</b>	<b>20</b>	<b>81</b>	5N Al-Precursor #2 - Al-Sulfate	t	-	-	98	175	175
Free cash flow	\$m	(8)	(35)	(105)	(230)	81	<b>VALUATION</b>						
<b>BALANCE SHEET</b>							<b>VALUATION</b>						
Year ending 30 June	Unit	2021a	2022a	2023e	2024e	2025e	Product price scenario	1	2	3	Preferred		
<b>ASSETS</b>							4N HPA price US\$/t	15,000	20,000	25,000			
Cash	\$m	50	17	22	42	123	HPA First project \$m						
Receivables	\$m	1	3	2	11	71	Unrisked NPV (10% discount rate)		295	726	1,157		
Inventories	\$m	-	0	1	3	10	Risk discount	20%					
Capital assets	\$m	1	28	124	355	388	Risked NPV		236	581	925		
Other assets	\$m	0	6	6	6	6	Corporate costs \$m	(40)					
<b>Total assets</b>	\$m	<b>52</b>	<b>55</b>	<b>155</b>	<b>418</b>	<b>598</b>	Enterprise value \$m		196	541	885		
<b>LIABILITIES</b>							Net debt / (cash) \$m	(28)					
Creditors	\$m	2	7	2	7	20	<b>Equity valuation (risked, undiluted) \$m</b>	<b>225</b>	<b>569</b>	<b>914</b>			
Borrowings	\$m	-	-	-	250	250	Assumed capital raise \$m	90					
Provisions	\$m	-	-	-	-	-	Assumed raise price \$/sh	0.56					
Other liabilities	\$m	0	1	1	1	1	Current shares on issue m	858					
<b>Total liabilities</b>	\$m	<b>2</b>	<b>8</b>	<b>3</b>	<b>258</b>	<b>270</b>	In the money options m	30					
<b>NET ASSETS</b>							Assumed capital raising dilution m	162					
Share capital	\$m	100	102	212	212	212	<b>Diluted shares on issue m</b>	<b>1,049</b>					
Reserves	\$m	8	10	10	10	10	Net debt / (cash) (including options & assumed raising) \$m	(189)					
Accumulated losses	\$m	(57)	(64)	(69)	(60)	107	Equity valuation (risked, diluted) \$m		385	730	1,074		
Non-controlling interest	\$m	-	-	-	-	-	<b>Equity valuation (risked, diluted) \$/sh</b>	<b>0.37</b>	<b>0.70</b>	<b>1.02</b>			
<b>SHAREHOLDER EQUITY</b>	\$m	<b>50</b>	<b>47</b>	<b>152</b>	<b>161</b>	<b>328</b>							
Weighted average shares	m	694	794	894	993	993							

SOURCE: BELL POTTER SECURITIES ESTIMATES



**Recommendation structure**

**Buy:** Expect >15% total return on a 12 month view. For stocks regarded as 'Speculative' a return of >30% is expected.

**Hold:** Expect total return between -5% and 15% on a 12 month view

**Sell:** Expect <-5% total return on a 12 month view

*Speculative Investments are either start-up enterprises with nil or only prospective operations or recently commenced operations with only forecast cash flows, or companies that have commenced operations or have been in operation for some time but have only forecast cash flows and/or a stressed balance sheet.*

*Such investments may carry an exceptionally high level of capital risk and volatility of returns.*

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