

20 June 2023

## New Strategy Defines a Value-Focused Commercial Roadmap

### NEED TO KNOW

- New CEO outlines simplified, value-oriented commercial strategy
- Financing data room proceeding well for Stage 1A
- Updated DFS complete by August to support Stage 1B

**Defining a commercial strategy:** ADN has presented a targeted commercial strategy under new CEO Bob Katsioularis. It aims to be a highly focused player and ‘de-commoditise’ the Great White kaolin (GWP) resource, positioning the product to supply high-value growth markets, aligned with key industry players (eg European premium ceramic tiles). We believe this simplified strategy will kick start the transition from the initial ‘starter’ 1A stage to larger-scale operations.

**Simplification focus:** A return to core and complementary market opportunities which management regard as ‘world class’ narrows the company’s target market opportunity to segments that are contestable, sustainable and strategic. Overall, this simplifies the company’s position in the global kaolin market, which provides a platform of certainty to key stakeholders and target customers.

**Financing Stage 1A and DFS for Stage 1B – strong partnerships crucial for certainty:** The funding process for Stage 1A (\$50m) continues, and indications from the data room so far are positive. We expect this amount to be fully funded in the near term. An updated DFS is in process incorporating the commercial strategy focused on ceramics and cement to support Stage 1B, with completion scheduled for August in preparation for the discussions with cornerstone investors. The planned staged development of the mine reflects kaolin’s status as an industrial mineral for which customers require long-term dependable supplies of a consistent product.

### Investment Thesis

**GWP is a rare and valuable asset – quality, location, mine life:** The GWP is a world-class, high-quality kaolin deposit. The project is ideally located in the tier 1 location of South Australia, has low-risk mining and processing and a minimum 28-year mine life.

**Kaolin market seeks quality, and ADN can deliver:** Kaolin is a white clay material used in hundreds of industrial applications. ADN’s halloysite-kaolin products will be targeting the higher-value end of the market, namely ceramic and porcelain tiles as well as a cement additive. The GWP deposit has high levels of whiteness, brightness, opacity, purity and consistency, all characteristics customers desire in high-quality kaolin.

**Strong near- and medium-term catalysts:** With approval gained from the SA government, ADN has a clear path to commence production. We see multiple catalysts, including final funding and commencement of construction, a revised DFS, further signing of offtake agreements, commencement of production and then a staged ramp up to full capacity of 300ktpa of kaolin.

### Valuation A\$0.16 (unchanged)

Our risked NPV for ADN is A\$0.16/share. The key component of our valuation is GWP and the delivery of a staged ramp up of production in line with offtake agreements. The updated DFS will see a revision of our valuation.

### Risks

Key risks include project delays, funding issues, escalation in capital costs and inability to secure required offtakes.

Report prepared by MST Access, a registered business name of MST Financial services ABN 617 475 180 AFSL 500 557

MST Access has been engaged and paid by the company covered in this report for ongoing research coverage. Please refer to full disclaimers and disclosures.

### Equities Research Australia

#### Metals and Mining

**Michael Bentley**, Senior Analyst  
michael.bentley@mstaccess.com.au



Andromeda Metals (ASX: ADN) is an Australian company with a vision to lead the world in the sustainable supply of superior quality industrial minerals. With its large, high-quality halloysite-kaolin resources, ADN seeks to build long-term relationships with customers globally, supporting them to produce premium products and clean technologies. The company’s core asset is the Great White halloysite-kaolin Project.

<https://www.andromet.com.au/>

Valuation	<b>A\$0.16</b> (unchanged)
Current price	<b>A\$0.042</b>
Market cap	<b>A\$131m</b>
Cash on hand	<b>A\$19.6m</b> (31 March 23)

### Additional Resources

[Click here: Investor Update by Bob Katsioularis, Andromeda Metals CEO](#)

### Upcoming Catalysts and Newsflow

Period	
Q3CY23	Final funding of Stage 1A of GWP
Ongoing	Offtake agreement signing
2HCY23	Commencement of construction
August 2023	Revised DFS, Stage 1B
CY24	Commencement of production

### Share Price (A\$)



Source: FactSet, MST Access.

# FINANCIAL SUMMARY ANDROMEDA METALS

ANDROMEDA METALS LIMITED						ADN.AX
<b>Year end 30 June</b>						
<b>MARKET DATA</b>						
Share Price	A\$/sh	<b>0.04</b>				
52 week high/low	A\$/sh	0.10 - 0.03				
Valuation	A\$/sh	0.16				
Market Cap (A\$m)	A\$m	131				
Net Cash / (Debt) (A\$m)	A\$m	20				
Enterprise Value (A\$m)	A\$m	111				
Shares on Issue	m	3,110				
Options/Performance shares	m	44				
Other Equity	m	231				
Potential Diluted Shares on Issue	m	3,385				
<b>INVESTMENT FUNDAMENTALS</b>						
		Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
Reported NPAT	A\$m	(6)	(9)	(8)	(8)	6
Underlying NPAT	A\$m	(6)	(9)	(8)	(8)	6
EPS Reported (undiluted)	¢ps	(0.3¢)	(0.3¢)	(0.2¢)	(0.2¢)	0.2¢
EPS Underlying (undiluted)	¢ps	(0.3¢)	(0.3¢)	(0.2¢)	(0.2¢)	0.2¢
Underlying EPS Growth	%	0.0%	0.0%	-28.0%	-1.8%	-174.4%
P/E Reported (undiluted)	x	n/m	n/m	n/m	n/m	n/m
P/E Underlying (undiluted)	x	n/m	n/m	n/m	n/m	n/m
Operating Cash Flow / Share	A\$	(0.00)	(0.00)	(0.00)	(0.00)	0.00
Price / Operating Cash Flow	x	n/m	n/m	n/m	n/m	n/m
Free Cash Flow / Share	A\$	(0.00)	(0.00)	(0.00)	(0.02)	0.00
Price / Free Cash Flow	x	n/m	n/m	n/m	n/m	n/m
Free Cash Flow Yield	%	-6.6%	-11.5%	-7.6%	-48.5%	3.0%
Book Value / Share	A\$	0.01	0.06	0.05	0.05	0.05
Price / Book	x	5.13	0.76	0.81	0.85	0.80
NTA / Share	A\$	0.01	0.06	0.05	0.05	0.05
Price / NTA	x	5.13	0.76	0.81	0.85	0.80
Year End Shares	m	2,161	3,108	3,383	3,383	3,383
Market Cap (spot)	A\$m	91	131	142	142	142
Net Cash / (Debt)	A\$m	5	33	34	(35)	(31)
Enterprise Value	A\$m	86	98	108	177	173
EV / EBITDA	x	n/m	n/m	n/m	n/m	10.2x
Net Debt / Enterprise Value		(0.0)	(0.3)	(0.3)	0.3	0.3
<b>12-Month Relative Performance vs S&amp;P/ASX Metals &amp; Mining</b>						
<b>Profit &amp; Loss (A\$m)</b>						
		Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
Sales		-	-	-	-	37
Expenses		(6)	(9)	(8)	(8)	(26)
<b>EBITDA</b>		<b>(6)</b>	<b>(9)</b>	<b>(8)</b>	<b>(8)</b>	<b>11</b>
D&A		(0)	(0)	(0)	(0)	(2)
<b>EBIT</b>		<b>(6)</b>	<b>(9)</b>	<b>(8)</b>	<b>(9)</b>	<b>9</b>
Net Interest		0	0	1	1	(1)
Profit Before Tax		(6)	(9)	(8)	(8)	8
Tax		(0)	-	-	-	(3)
<b>Underlying NPAT</b>		<b>(6)</b>	<b>(9)</b>	<b>(8)</b>	<b>(8)</b>	<b>6</b>
Exceptionals		-	-	-	-	-
<b>Reported Profit</b>		<b>(6)</b>	<b>(9)</b>	<b>(8)</b>	<b>(8)</b>	<b>6</b>
<b>Balance Sheet (A\$m)</b>						
		Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
Cash		5	33	80	11	15
Receivables		1	1	1	1	3
Inventory		-	-	-	-	2
PP&E		0	2	6	67	71
Exploration		13	137	137	137	137
Other		0	1	1	1	1
<b>Assets</b>		<b>20</b>	<b>174</b>	<b>225</b>	<b>217</b>	<b>229</b>
Creditors		1	2	2	2	3
Debt		-	-	46	46	46
Leases		0	1	1	1	1
Provisions		0	0	0	0	0
Other		1	0	0	0	0
<b>Liabilities</b>		<b>2</b>	<b>3</b>	<b>49</b>	<b>49</b>	<b>50</b>
<b>Net Assets</b>		<b>18</b>	<b>171</b>	<b>176</b>	<b>168</b>	<b>179</b>
<b>Cashflow (A\$m)</b>						
		Jun-21	Jun-22	Jun-23e	Jun-24e	Jun-25e
Cash From Operations		(2)	(5)	(8)	(8)	13
Interest		0	0	1	1	(1)
Tax		0	1	-	-	(3)
<b>Net Cash From Operations</b>		<b>(1)</b>	<b>(4)</b>	<b>(7)</b>	<b>(7)</b>	<b>10</b>
Capex		(0)	(1)	(0)	(58)	(2)
Exploration		(5)	(4)	(4)	(4)	(4)
Investments		0	(6)	-	-	-
<b>Free Cash Flow</b>		<b>(6)</b>	<b>(15)</b>	<b>(11)</b>	<b>(69)</b>	<b>4</b>
Equity		8	43	12	-	-
Borrowings		(0)	(0)	46	-	-
Dividend		-	-	-	-	-
<b>Net Increase / (Decrease) in Cash</b>		<b>2</b>	<b>28</b>	<b>47</b>	<b>(69)</b>	<b>4</b>

Source: ADN and MST Estimates

# Commercial Strategy: Supplier of Choice

## New CEO outlines a clarified and focused vision for development

---

New CEO Bob Katsioularis commenced in April 2023 and has outlined a highly focused commercial strategy update

---

Earlier in the year, Andromeda Metals (ADN) announced the appointment of Robert (Bob) Katsioularis as CEO and MD. Mr Katsioularis's international experience in sales and marketing of industrial minerals (including with Rio Tinto, Vale and Rusal) was seen as key to enabling increased focus on marketing of Great White products internationally. Mr Katsioularis commenced in the role in April, with the prior MD James Marsh continuing with the company and transitioning to a focused Sales & Marketing role under Mr Katsioularis's leadership.

## Opaque market conditions benefit suppliers such as ADN

Only 2 months into the role, Mr Katsioularis has provided an updated commercial strategy presentation to investors to articulate the revised positioning of GWP in the opaque and partnership-led global kaolin market. He highlighted that kaolin market dynamics lack the clarity of price discovery which finance providers and equity investors enjoy in more liquid commodities. However, for experienced participants in such markets, he indicated that these conditions provide the opportunity for suppliers to drive and determine the value-in-use for buyers in various market segments (i.e., the maximum price they are willing to pay) for their products in the marketplace. This provides the opportunity to target strategic profit pools in high value-in-use segments, where suppliers can command higher than average prices. Suppliers with an advantage are those able to deliver reliable long-term supply of these important minerals in rapidly growing high-value segments of the global market. ADN has a significant strategic edge, given the quality, size and uniqueness of the GWP deposit. Its simplified, more focused commercial strategy is designed to take advantage of this edge: through targeting these high value-in-use markets and segments.

## Driving forces behind the strategy – customer demand for quality and Ukraine's crippling supply effect

One of the new CEO's first tasks was to visit customers globally. ADN was previously solely Asia-Pacific focused, due mainly to the high transport costs to such markets as Europe. However, the global marketing and education trip opened up significant opportunities for ADN further afield.

Customers' willingness to pay higher prices is being driven by both the desire for high-quality product and emerging global supply shortages of kaolin, exacerbated by the crippling supply effect of Ukraine being out of the market. Ukraine was previously a supplier of 10% of kaolin globally (with a far higher proportion in Europe due to the higher demands for quality and closer proximity of this market).

## Transitioning to a de-commoditised strategy

Kaolin producers have typically sold product into highly commoditised markets with questionable growth outlooks, such as plastics, paints and paper. However, ADN's strategy has always been to not sell product into any of these markets, instead driving supply towards areas of the market which value the unique properties of the high-quality mineralisation contained in the GWP deposit.

The new commercial strategy focuses on a global approach to identifying where ADN's kaolin has the highest value-in-use applications and targeting partnerships with customers that are willing to pay premium prices, for whom ADN can be the supplier and partner of choice. ADN's leadership team has identified these segments by looking for those that:

- are **end-user or customer-driven segments** that depend on and value GWP product
- are **contestable** (for kaolin suppliers)
- are **large and fast-growing**
- offer the **opportunity for sustainable and strategic supply** partnerships.

---

ADN identifying most attractive target segments

---

The strategic approach also ensures that any product, market or customer opportunity must be value accretive – that is, must add value to the NPV over the life of mine of the Great White deposit.

**Figure 1: Andromeda’s strategic evolution**



Source: ADN.

We believe the shift in focus will ensure from the outset that the company can realise sustainable value from the GWP by aligning the project with the most compelling market opportunities globally. Furthermore, this clear commercial focus prior to construction will inform the mine-to-market response to ensure that the project is designed to provide a balanced supply position and realise sustainable value.

**Unique characteristics of GWP which drive its high-value focus**

The GWP deposit has unique attributes, confirmed by an international benchmarking exercise, which we see driving penetration in high-value markets under a well-executed commercial strategy:

- excellent whiteness – supports the best visual/colour properties
- excellent mechanical strength – suitable for larger format tiles
- excellent aluminium-to-iron ratio – provides for firing properties.

**Product suite: Simplifying with a focus on ‘core’ and ‘complementary’**

At the heart of ADN’s revised commercial strategy, and underpinning the project design, is clarifying what products it will target. As part of its strategic review, ADN has significantly simplified its target end-market product suite towards ‘core’ and ‘complementary’ product opportunities:

- **core:** Ceramic tiles, porcelain tiles and high-end porcelain tableware
- **complementary:** HRM low-carbon product for cement markets.

After these crucial components are well established and in a position of stability and strength, and when cash generation is underway, ADN will opportunistically advance other ‘adjacent’ opportunities (including high-purity aluminium and carbon capture) (see Figure 2).

**Figure 2: Market opportunity: products**

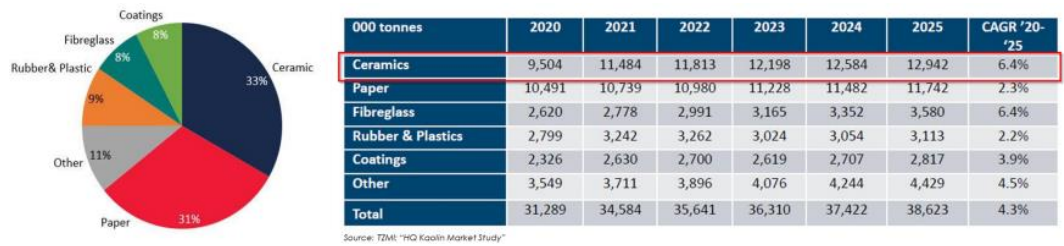


Source: ADN.

This simplified focus represents a sensible strategy, in our view. It clarifies the corporate intent around project design and provides more certainty for potential customers who require sustainable long-term supply agreements. Furthermore, the pivot to ‘core’ market segments targets the higher-growth components of the global market, with ceramics undergoing projected growth of 6.4% in 2020–2025 (see Figure 3), and the porcelain tile segment within this experiencing even faster growth at 7.3%.

GWP’s competitive advantages: whiteness, mechanical strength, aluminum–iron ratio

**Figure 3: Global kaolin demand by end-use (2021)**



Source: ADN.

## Aspiring to be ‘the best’ white mineral company globally

Aligning supply to these rapidly growing high-value markets will commercialise the resource at GWP in a consistently value-accretive way. This value-focused development strategy has been positioned as a driving principle of ADN, with an aspiration to ultimately position GWP as a critical supplier for the highest-value tile markets globally. Essentially, ADN is focused on defining and delivering commercial excellence, and we believe that the opaque nature of the market, its current strong conditions for suppliers, and the company’s leadership team create the conditions for ADN to make its vision a reality.

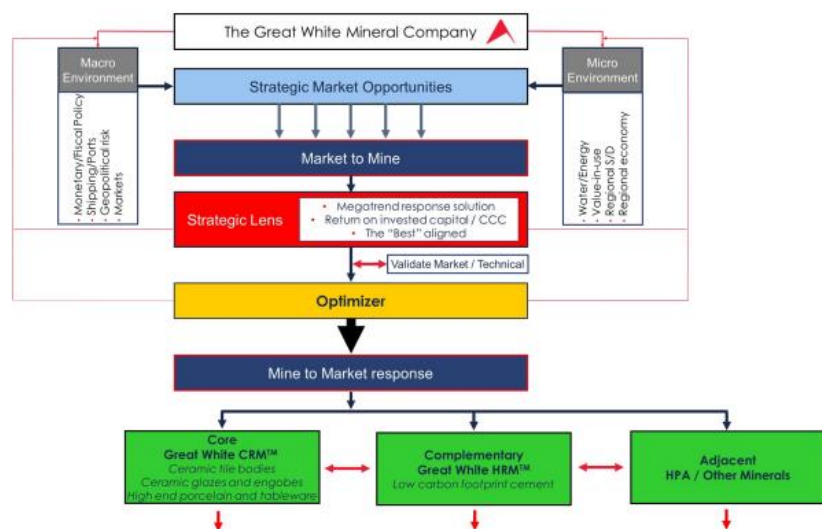
## Focusing on building blocks of commercial excellence

The commercial strategy is highly focused on cash generation and maintaining a secure financial position in the early phases of GWP execution, given the inability to collateralise kaolin as can be done in other more liquid LME-traded commodities. ADN is considering customer prepayment options and other customer-led initiatives as part of its development plan, which is deliberately staged to de-risk the broader expansion towards a scaled operation over time.

With a more focused strategy now centred on core and complementary product segments, the complementary product opportunities (primarily low-carbon cement and concrete) remain subject to ongoing work with concrete suppliers which ADN has indicated will be completed and outlined in more detail by the end of June. Assuming this work supports the inclusion of these target markets in the project scope (we expect they will), the initial core market segments to be targeted by ADN represent:

- high end ceramic tiles, particularly large format where market share is being taken from stone due to increasing crystalline silica health & safety concerns and ability to digitally print
- high end porcelain tiles, with kaolin adding to the resistance to water absorption
- porcelain tableware, particularly in the Japanese market
- cement and concrete where kaolin supports a lower-carbon product.

**Figure 4: Andromeda’s commercial strategy map**



Source: ADN.

The ‘de-commoditised’ outcome of this strategy represents a significant point of difference for ADN vs. many other commodity companies. While a different strategic approach could see the product delivered into China, which needs new suppliers, this market is relatively unattractive given its fragmentation and presence of many marketing intermediaries which results in a very high-cost route to market.

New commercial strategy is highly focused on cash generation.

## Next steps: two ongoing workstreams to flow into mid-August DFS

**Further commercial strategy optimisation:** ADN is finalising work around benchmarking the GWP products vs other products in the ceramics market. The next phase is formulation, which will outline how much of ADN's kaolin can be used in specific manufacturing settings (e.g. in a tile body), and pinpoint the exact product mix and type to optimise the manufacturing process that represents the highest-priority commercial opportunities for ADN.

**Technical evaluation of the cement and concrete market:** This is aimed at defining the value-in-use of this 'complementary' market segment. The product is already permitted for use in concrete and cement in Australia, but ADN expects it will be another 3-4 years before it achieves the same outcome to meet certification in the European market.

## Updated DFS Underway

An updated DFS is in development, incorporating the updated commercial strategy information which will support the equity requirement for project financing after the current debt process is completed.

### Current status

#### Data room open for Stage 1A debt investors

A data room has been opened for debt investors in relation to Stage 1A of the project (50ktpa for A\$50m) and management has indicated that there has been 'an excellent response' so far from potential partners. We understand there are 2-3 potential players currently advancing in the process.

#### ADN considering Stage 1B funding

ADN is already looking at Stage 1B based on perceived market demand for funding this part of the project, with a further ~A\$50m required to get to an annual production capacity of 150ktpa. In this regard the DFS marks a major potential milestone, as it will provide more detail on:

- a rebased project economic analysis over the near term (including cement and formulations)
- the overarching new commercial strategy and its fit with Stage 1B
- any updated contracts
- market outlook.

ADN has clearly stated that advancing Stage 1B is dependent on the outcomes of the DFS.

### Project timeline: Key milestones

- End-June 2023: Information Memorandum updated to support Stage 1B expansion
- Mid-July 2023: Lodgement of Environmental Bond enabling construction of Stage 1A to commence shortly thereafter
- Mid-August 2023: DFS to be updated and completed
- October 2024: First product shipment – ADN has emphasised that the project must be ready for shipping by this date in order to participate fully in the negotiation season for industrial minerals which generally occurs from September to early December each year, and in order for GWP products to have a 'seat at the table' for global sales agreements in the period following that negotiation season. As such, this is an important deliverable for the project.

---

Revised DFS for Stage 1B with rebased economic analysis given the new commercial strategy.

---

# Recent Offtake Activity: New CEO Starts Resetting the Portfolio

ADN's long-term business is based around having secure long-term offtake agreements in place. The key to the offtakes is that ADN's product is certified by the customer and that the customers tend to be 'sticky' once the product is part of their process.

## Updated offtakes: Stage 1A almost covered; helps with funding

Prior to the arrival of the new CEO, 4 major offtakes in place across its 4 different products. As discussed, ADN's new strategy is to focus on a core product (CRM for ceramics) and a complementary product (HRM for cement).

Accordingly, the company has revised its portfolio of offtakes. The updated contracts cover ~43.8kt of product for the first year of production, with just over half of that being the core CRM™ ceramics product (based on averaging out the contracted volume over the life of the contract. Deliveries into the contract may vary over the contract life and may not be the same volume each year).

This level of coverage will be of great assistance in funding of the project.

The previous and updated offtake scenarios are shown in Figure 5.

**Figure 5: Andromeda's previous and current offtake arrangements**

<b>Product information</b>	<b>Concentrate product: Great White KCM™ 90</b>	<b>Concrete product: Great White HRM™</b>	<b>Ceramic product: Great White CRM™</b>	<b>Coatings product: Great White PRM™</b>
	<p>A semi-refined high-quality kaolin for direct use, further refinement or upgrade of resources</p> <ul style="list-style-type: none"> <li>Highly consistent premium grade</li> <li>Halloysite optimised</li> <li>Suitable as feed for HPA</li> </ul>	<p>A refined kaolin for sale for use as a concrete and building product additive</p> <ul style="list-style-type: none"> <li>Decarbonisation of concrete</li> <li>Performance improvements</li> <li>Cost and labour savings</li> </ul>	<p>A fully refined product for the high-end ceramics market</p> <ul style="list-style-type: none"> <li>World-class grade</li> <li>High whiteness and translucency</li> <li>Good green and fired strength</li> </ul>	<p>A fully refined product for the coatings and polymers markets</p> <ul style="list-style-type: none"> <li>World-class grade</li> <li>Ultra-high brightness</li> <li>Cost savings</li> </ul>
<b>Previous offtake arrangements</b>	2 binding offtakes signed for minimum 66,000t during first 3 years with remaining capacity under negotiation	Binding offtake agreement signed with IMCD for 22,500t during first 3 years	Binding offtake for 5,000tpa	70,000tpa (coatings and polymers), for delivery when project is producing 300kt of product per year
<b>Updated offtake arrangements</b>	5,000t in first year of production (suitable for HPA production)  A total of 25,000t over first 3 years of production (suitable for HPA production)	A total of 22,500t over first 3 years of production (cement production)	A total of 115,000t over first 5 years of production (ceramics production)	70,000tpa (coatings and polymers), for delivery when project is producing 300kt of product per year

Source: ADN.

The Ceramic product, CRM™ has the highest volumes contracted

## Details of updated offtakes

**KCMTM90 offtake cancelled:** On 26 July 2022, ADN announced it had entered into a binding offtake term sheet with Asia Material Resources in relation to the supply of 23,500–38,500 tonnes of Great White KCMTM90 over the first 3 years of production. Some of the terms and conditions required by the customer became unacceptable to ADN given its new strategy. As a result, the agreement was terminated.

**New offtake – China market: CRM™ and KCM™90:** ADN has signed a term sheet with Foshan Gaoming Xing-Yuan Machinery, a company based in Foshan City, a major ceramics production base in Guangdong Province, China. The agreement is for:

- 115,000t of Great White CRM™ over a 5-year period
- 5,000t of Great White KCM™90 in the first year of production.

**Further new offtake – Japanese ceramics: KCM™90:** ADN signed a legally binding offtake agreement with Plantan Yamada, a highly respected Japanese manufacturer of high-quality ceramics and porcelain. The agreement is for supply of 25,000 tonnes of high-quality Great White KCM™90 over the first 3 years of production. It replaces the previous term sheet signed between the parties and announced via ASX in August 2022.



# Valuation: A\$0.16 – A Long-Life Project; Exposure to Industrial Minerals and Optionality

## Valuation summary: our analysis suggests strong upside

Based on our current assessment (pre the updated DFS – see below) of the fundamental value of the GWP, we believe that ADN's share price is currently trading at a substantial discount to fair value. The commercialisation of these projects has all the more potential based on the construction of the GWP, which will provide cash flow to reinvest in the most prospective projects over time.

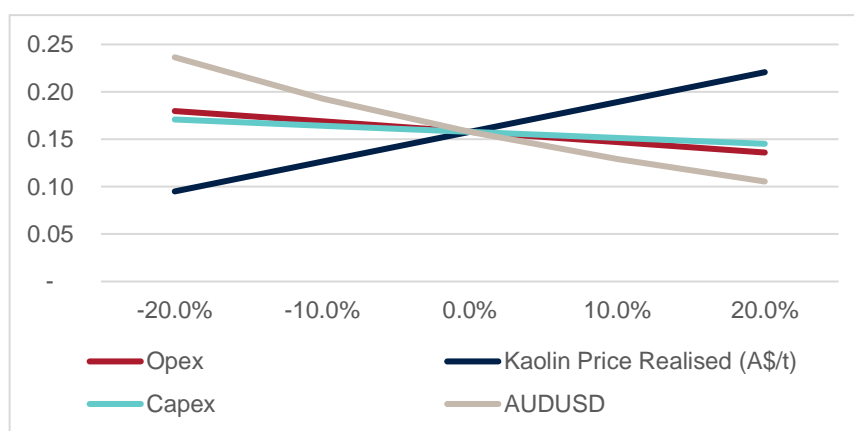
Our risked NPV for ADN is A\$0.16/share (see Figure 6), fully diluted for remaining equity finance requirements to fund the project capital expenditure. Our valuation indicates significant upside compared to the current share price. Figure 7 shows the key sensitivities for our valuation.

**Figure 6: Base-case valuation summary**

NPV OF PROJECTS	A\$M	EQUITY VALUE A\$/SHARE FULLY DILUTED	Valuation Methodology
Great White Kaolin Project	510	0.15	Risked Project NPV
Exploration and Investments	30	0.01	MST Estimate
<b>ENTERPRISE NPV</b>	<b>540</b>	<b>0.16</b>	
Add: Cash	20	0.01	31st March 2023
<b>EQUITY VALUE PRE SG&amp;A</b>	<b>559</b>	<b>0.17</b>	
SG&A	(25)	(0.01)	NPV of Corporate Costs
<b>EQUITY VALUE</b>	<b>534</b>	<b>0.16</b>	

Source: Company data, MST estimates.

**Figure 7: Sensitivity analysis**



Source: MST estimates.

## Updated DFS in August to provide pathway to Stage 1B: Potential valuation upside

ADN is already looking at Stage 1B based on perceived market demand for funding this part of the project, with a further ~A\$50m required to get to an annual production capacity of 150ktpa.

The updated DFS will provide updated parameters and economic analysis for the project based on ADN's simplified commercial strategy and greater understanding of the potential global market, particularly in Europe.

ADN has clearly stated that advancing Stage 1B is dependent on the outcomes of the DFS.

We will update our valuation once the DFS is released. We see this updated DFS as a potential catalyst for valuation upgrades given the company's assessment of market conditions and new strategy.

## Key assumptions of our valuation

- An average realised product price of A\$686/t (escalated at 2.5%pa)
- A mine development schedule as outlined in the original DFS incorporating an adjustment for a 3-year ramp up to 300ktpa (reflecting the August 2022 announcement)
- First product sales in FY25 (with our assumptions incorporating a conservative 6-month delay from current management expectations)

**Figure 8: Our key valuation assumptions**

<b>PROJECT ASSUMPTIONS</b>	
Project Ownership (%)	100%
Strip Ratio (waste : ore)	2.3:1
Processing Plant Throughput (dmt, years 1)	100,000
Processing Plant Throughput (dmt, years 4-5)	300,000
Processing Plant Throughput (dmt, years 8-28)	600,000
Stage 1 Capex (A\$m, real)	103
Stage 2 Capex (A\$m, real)	12
Stage 3 Capex (A\$m, real)	81
Stage 4 Capex (A\$m, real)	60
Mine Life (years)	28
Final Product Sold (kdmt, life-of-mine)	6,440
Average Annual Product Sold (kdmt, life-of-mine)	230
Ore Reserve (mt)	15.1
<b>COST &amp; FINANCING ASSUMPTIONS</b>	
Discount Rate (%)	10.0%
Inflation Rate (%)	2.5%
Capital Cost, Stages 1-4 (A\$m, real)	181
Operating Costs (A\$/t feed, real)	159
AISC (A\$/dmt product sold, real)	352
Pre-Tax NPV (A\$m)	756
Post-Tax NPV (A\$m)	510
<b>PRICING &amp; EXCHANGE RATE ASSUMPTIONS</b>	
AUDUSD	0.70
Weighted Average Product Sale Price (A\$/dmt)	686
Royalty Rate (%)	3.5%
Corporate Tax Rate (%)	30.0%

Source: MST estimates.

## Positive catalysts for the share price and valuation

- **Binding offtake agreements:** Further binding offtake agreements with firm visibility on volumes and prices would be a significant de-risking catalyst for the project.
- **Funding of Stage 1A project:** The funding of capital expenditure relating to major resource developments for small companies is always a major challenge and uncertainty. Delivery of a competitive funding package for the project would be a major de-risking catalyst for the stock.
- **Updated DFS Stage 1B:** We see the delivery of the updated DFS as a potential major catalyst for the stock given the company's assessment of market opportunities and its simplified commercial strategy.
- **Early project delivery:** The early commencement of any of the projects would generate cash flows sooner and would reflect positively on management, which would likely boost the valuation.
- **Price increases:** The valuation is sensitive to the underlying kaolin price. Price increases would have a positive effect on the valuation and share price.
- **Capital cost and/or operational cost savings:** Capital and operational cost savings would benefit the valuation and would reflect positively on management.

## Risks to the share price and valuation

We highlight the key risks to the share price and our valuation below, noting that early-stage mining projects have a number of key risks which need careful management and consideration.

### Macro risks

- **Approvals processes:** The mining lease is in hand, but some secondary approvals are required.
- **Kaolin price decreases:** This is the key valuation sensitivity.
- **Foreign exchange rates:** As highlighted in Figure 7, material appreciation of AUD/USD would negatively impact our valuation. Our base-case assumption is \$0.70 AUD/USD.

### Company and project-specific risks

- **Updated DFS:** We see the updated DFS as a potentially positive development for the valuation of ADN. However, there is a risk that the DFS will see a decrease in the potential valuation, driven potentially by increased costs or potential market deterioration.
- **Offtake risks:** Lack of progress or failure to sign offtake agreements present a major risk to the project.
- **Further delays to development:** Any delays in moving into construction would be a negative for the stock.
- **Access to funding:** There is no guarantee that sufficient funding will be available to advance or develop the project. The inability to secure funding would be a major negative for the stock.
- **Cost inflation:** Inflation is a pervasive issue in the global economy at present and is particularly acute with regards to the mining industry where commodity prices are strong, and profitability is healthy for operational projects. Any inflation in operational or capital costs without a corresponding increase in the commodity price will compress margins of the project and potentially undermine the economics and viability of the project.

### Mitigating factors

The project's location in South Australia close to port and other key infrastructure, as well as the simple, shallow nature of the deposit and conventional processing, are all notable tailwinds for the project and provide an offset to the risk inherent to a mining development in general as well as project-specific risks identified for the GWP. These favourable factors provide confidence in the project potential and offset the risk profile by:

- providing certainty around the project timeline (approvals, availability of labour and equipment)
- reducing technical risks given the project's history and access to qualified local mining capability
- minimising political risks given the supportive state government and local community
- benefiting from infrastructure tailwinds given the project's location close to the South Australian coastline.

# Appendix – A Refresher on the Kaolin Market

## What is kaolin?

### Characteristics and uses

Kaolin is a white industrial clay consisting of the mineral kaolinite. Kaolin is used as a filler, additive, and pigment in a variety of industries. Whiteness, brightness, opacity, electrical resistivity, low abrasion, high purity, consistency, and fine particle size are all desirable qualities in high-quality kaolin.

### Forms of kaolin

Kaolins are produced in four basic forms.

**Hydrous kaolin** is characterised by its fine particle size, plate-like or lamellar particle shape, and chemical inertness. All naturally formed kaolins, no matter the final form, start in the hydrous state.

**Halloysite kaolin** is a relatively rare form of kaolin, which has a significant halloysite (kaolin nanotube) content that is highly desirable in some applications where it attracts a premium price.

**Metakaolin** is derived from hydrous kaolin by applying temperatures of 750–800 C in a calcination process which drives away the bound water to give a loosely crystalline reactive material. This product is mainly used in the polymer and construction sectors.

**Fully calcined kaolin** is derived from hydrous kaolin by a high-temperature (1000–1100 C) calcination process, which drives away the bound water and turns it into an amorphous material with a fused structure. This product is mainly used in the paper, ceramics, polymer, and coatings sectors.

### Figure 9: Kaolin: refined product



Source: ADN.

### Demand overview: growing portfolio of uses and expanding markets

The total market for kaolin is approximately 30m tonnes per annum. A wide array of kaolin products is on offer, including unprocessed ore, with a variety of end-use markets. Within the broad end-use markets, there is significant spread in pricing based on the specific requirements of each application.

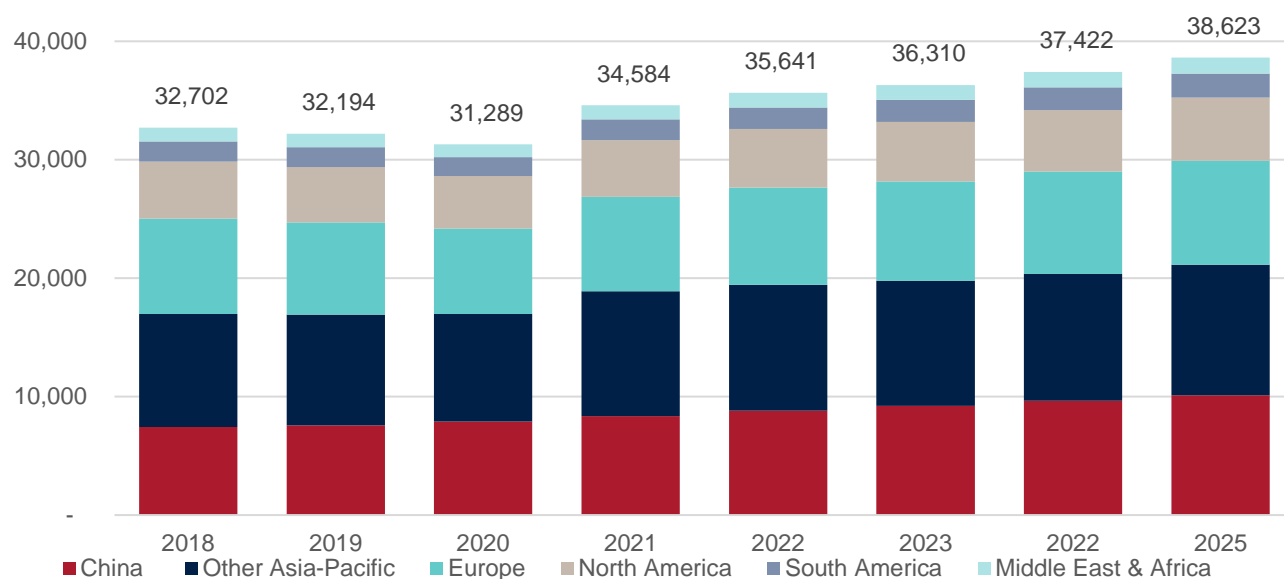
All kaolin resources are different. Customers that have developed a 'recipe' for kaolin tend to stick to the same method and not to change from one kaolin product to another.

### Demand by region: global demand growth looks strong, driven by China

**China leading the charge with industrial development and economic growth.** ADN forecasts global demand (in tonnes) to grow at a 2020–2025 CAGR of 4.3% (see Figure 10), adding 7.3m tonnes to the market over this period.

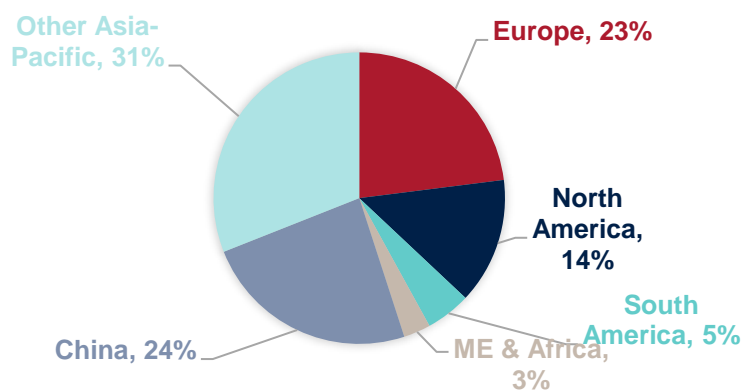
China is expected to lead 2020–2025 global growth for kaolin, closely followed by the Middle East and Africa, albeit off a significantly smaller base. Increased demand within Asia Pacific is attributed to its fast growth resulting from industrial development and improving economic conditions, as well as the availability of kaolin reserves within the region. The mature economies of Europe and North America are expected to see robust growth on the back of strong consumer and business activity.

**Figure 10: Global kaolin demand by region ('000t), 2018–2025**



Source: Markets and Markets, Kaolin Market Global Forecasts.

**Figure 11: Kaolin demand by region: market size (US\$m), 2021/22**



Source: Markets and Markets, Kaolin Market Global Forecasts.

**Chinese market may be larger than previously reported – with a significant supply deficit.** Given its proximity to the largest market for kaolin, and a decreasing domestic supply in terms of volume and quality, ADN is very well positioned to provide high-quality kaolin in the Chinese market.

China's middle class has tremendous purchasing power, demanding a wide array of goods and services containing kaolin. Dislocation of manufacturing from mature economies to China has slowed in recent years, but China is expected to remain one of the largest global manufacturing hubs for the foreseeable future.

Industry consultant TZMI has performed an in-depth study of the Chinese kaolin market and believes it is significantly larger than has previously been reported. A significant supply deficit has been unfolding since 2019. In 2021, TZMI estimates 1.56m tonnes of kaolin were imported into China, a near 15% CAGR from 2017. While demand growth is expected to be strong, domestic sources are limited and product quality tends towards the lower end of the market.

TZMI has estimated the aggregate total addressable Chinese market for ADN's kaolin products at approximately 1.6m tonnes in 2022. By 2025, TZMI estimates China will require an additional 1.3m tonnes of imported high-quality kaolin.

### Demand by sector: growth fuelled by paper, ceramics, paints industries

Increased demand for kaolin from end-use sectors such as paper, ceramics & sanitaryware, and coatings is driving up overall market demand. In 2021, the ceramics industry is estimated to have accounted for 33% of the global market for kaolin, closely followed by the paper sector with 31% (see Figure 12).

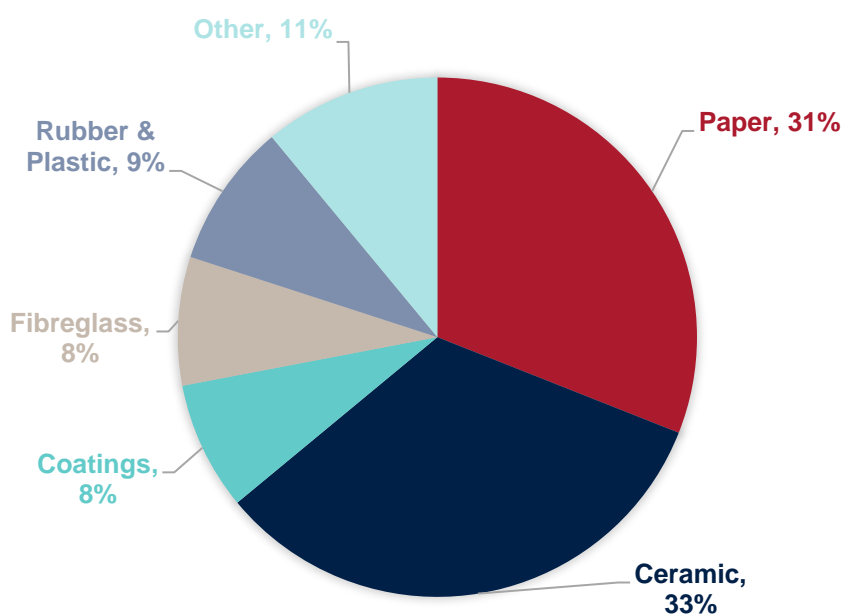
**Paper:** Demand for paper packaging has been fuelled by increased e-commerce activities, creating high demand for paper board and paper packaging in e-commerce activities across the globe. The increasing demand for paper in print media in emerging countries in the Asia-Pacific region is driving the growth of the paper industry. The rise in demand for paper packaging will be offset by the decline in demand for fine paper as businesses continue to rely more heavily on digital resources.

**Pharmaceuticals:** In pharmaceuticals and cosmetics (which command some of the highest prices), high-quality kaolin is used as an inert filler and active ingredient.

**Ceramics & sanitaryware:** The ceramics & sanitaryware sector (bricks, tiles, tableware) has shown the strongest growth for kaolin use in recent years and has just surpassed paper as the biggest application for the first time ever. Ceramics & sanitaryware demand is being driven by high demand for ceramic tiles in the construction sector of highly populated and emerging economies, such as India and China, and high demand for ceramics in Europe and North America, where real-estate churn and economic growth are robust. The ceramics & sanitaryware segment is projected to grow at the highest CAGR during the forecast period.

**Coatings:** Kaolin is used in the paints and coatings industry as a functional filler and extender. Relative to other components in the formulation, it is inexpensive but for kaolin producers it is seen as a highly profitable sector. Kaolin provides the following benefits to coatings: cost savings; brightness; durability; opacity (mainly calcined kaolin); viscosity control and spreading properties; chemical and heat resistance; and good suspension (non-settling) properties. Demand for high-quality kaolin is expected to increase with its intensity of use in many paint products, offsetting some of the much higher cost of titanium dioxide, the primary opacifier used in paint manufacture.

Figure 12: Ceramics segment leads kaolin demand: kaolin market breakdown, 2021/22



Source: ADN.

## New markets – nanotechnology and high-purity alumina

**Halloysite nanotube technology field.** Tubular halloysite formations are suited to uses in nanotechnology, which may drive the advancement of many leading environmental technologies (such as carbon capture and conversion).

The field of halloysite nanotube technology (HNT) has been growing, with new applications creating demand for these microscopic materials.

**New applications in important industries.** Halloysite-kaolin can be used to manufacture nanocarbon material as a low-cost and more effective replacement for carbon nanotubes in high-tech applications such as hydrogen storage, water purification, carbon capture, soil remediation and renewable energy. The unique halloysite nanotube component surface structure and chemistry can also be functionalised to give excellent performance in many nanotechnological applications.

Research into halloysite-kaolin includes new applications in essential products in healthcare, agriculture (slow-release fertiliser), and construction. Its use assists in the delivery of targeted drugs for cancer, improved properties for implants in dentistry and orthopaedics, and the control of pests on food crops.

**High-purity alumina and kaolin – a potential high-margin product.** High-purity alumina (HPA) is a high-purity form of aluminium oxide ( $Al_2O_3$ ).

This non-corrosive, bright and non-metallurgical alumina product is high value and has extensive applications in manufacturing artificial sapphire substrates, light-emitting diode (LED) lights, semiconductor wafers, ceramics, phosphors, synthetic gemstones, smartphone components, and glass for wristwatches, optical windows and televisions. It is important to note that there is no substitute material for HPA in the manufacture of synthetic sapphire. Increasingly, HPA is seeing strong demand for use in lithium-ion (Li-ion) batteries, where it is used as a coating on ceramic cathodic separator sheets.

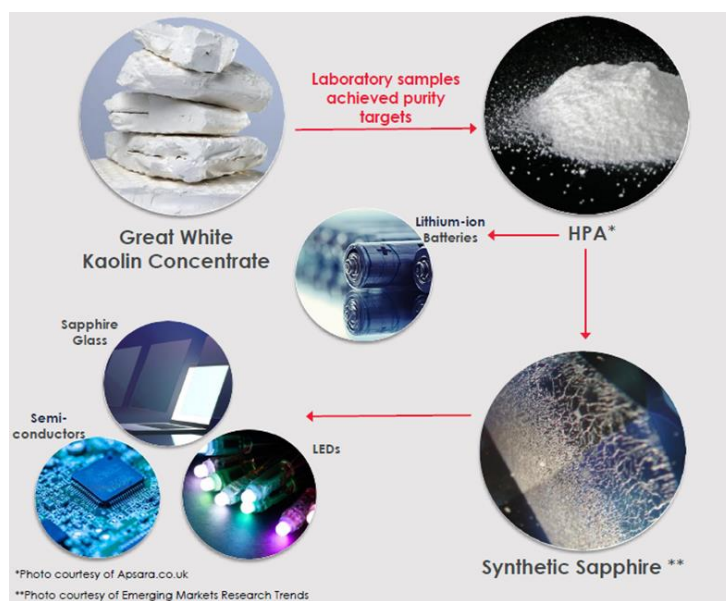
A patent application was made by ADN in July 2022 for a novel manufacturing process for HPA and smelter-grade alumina (SGA) using kaolin as a feed material.

Figure 13: Nanomaterials – potential uses for GWP kaolin



Source: ADN

Figure 14: HPA – potential uses for GWP kaolin



Source: ADN

## Supply overview: producers and competitive landscape

The kaolin market is fragmented, owing to the presence of several established regional and domestic players. Many small and large companies are engaged in kaolin exploration and mining.

### Lower-quality kaolin: lots of choice

Consumers of lower-quality kaolin have a variety of alternatives, and can select a product based on its price, type/grade, and mechanical/physical attributes that are appropriate for the product they are manufacturing.

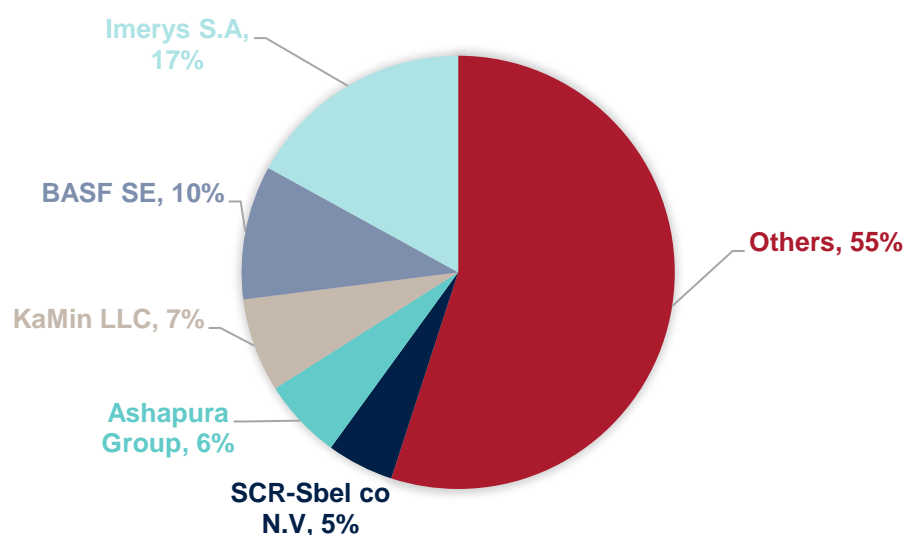
### Fewer options for high-quality kaolin

However, in the market for consistent high-quality kaolin, the options are significantly reduced. Kaolin processing and value adding require technical expertise. Several companies collaborate to explore, mine, and process kaolin into a final product, which is further used by several end-use industries.

Imerys (France), BASF (Germany), Ashapura Group (India), SCR-Sibelco (Belgium), and KaMin (US) lead in the market and are recognised as the visionary leaders in this industry (see Figure 15 for market share breakdown).

Customers' willingness to pay higher prices is being driven by both the desire for high-quality product and emerging global supply shortages of kaolin, exacerbated by the crippling supply effect of Ukraine being out of the market. Ukraine was previously a supplier of 10% of kaolin globally (with a far higher proportion in Europe due to the higher demands for quality and closer proximity of this market).

**Figure 15: Market share of key kaolin market players**



Source: *Press Markets and Markets, MST Access.*

Note: Some of the major kaolin companies included in 'Others' are: EICL (India), Thiele Kaolin (US), LASSELSBERGER (Hungary), Quarzwerke (Germany), Sedlecký kaolin (Czech Republic), 20 Microns (India), Shree Ram (India), KERAMOST (Czech Republic), Uma Group of Kaolin (India), Jiangxi Sincere Mineral Industry (China), Active Minerals International (US), Burgess Pigment (US), Kaolin (Malaysia), Kerala Clays & Ceramic Products (India), Mota Ceramic Solutions (Portugal), Manek Group (India). Proscor Resources (Ukraine) has ceased production as a result of the conflict with Russia.



# Methodology & Disclosures

MST Access is a registered business name of MST Financial Services Pty Ltd (ACN 617 475 180 "MST Financial") which is a limited liability company incorporated in Australia on 10 April 2017 and holds an Australian Financial Services Licence (Number: 500 557). This research is issued in Australia through MST Access which is the research division of MST Financial. The research and any access to it, is intended only for "wholesale clients" within the meaning of the Corporations Act 2001 of Australia. Any advice given by MST Access is general advice only and does not take into account your personal circumstances, needs or objectives. You should, before acting on this advice, consider the appropriateness of the advice, having regard to your objectives, financial situation and needs. If our advice relates to the acquisition, or possible acquisition, of a financial product you should read any relevant Product Disclosure Statement or like instrument.

This report has been commissioned by Andromeda Metals Ltd. and prepared and issued by Michael Bentley of MST Access in consideration of a fee payable by Andromeda Metals Ltd. MST Access receives fees from the company referred to in this document, for research services and other financial services or advice we may provide to that company.

MST Financial also provides equity capital markets ("ECM") and corporate advisory services through its capital markets division, MST Capital Markets ("MST Capital"). MST Capital provides these services to a range of companies including clients of the MST Access service. As such, MST Capital may in future provide ECM and/or corporate advisory services to the company that is the subject of this research report and, accordingly, may receive fees from the company for providing such services. However, MST Financial has measures in place to ensure the independence of its research division is maintained, including information barriers between its Capital Markets and Research teams. In addition, neither MST Access, nor any of its research analysts, receive any financial benefit that is based on the revenues generated by MST Capital Markets or any other division of MST Financial.

The analyst has received assistance from the company in preparing this document. The company has provided the analyst with communication with senior management and information on the company and industry. As part of due diligence, the analyst has independently and critically reviewed the assistance and information provided by the company to form the opinions expressed in the report. Diligent care has been taken by the analyst to maintain an honest and fair objectivity in writing this report and making the recommendation. Where MST Access has been commissioned to prepare content and receives fees for its preparation, please note that NO part of the fee, compensation or employee remuneration paid will either directly or indirectly impact the content provided.

**Accuracy of content:** All information used in the publication of this report has been compiled from publicly available sources that are believed to be reliable, however we do not guarantee the accuracy or completeness of this report and have not sought for this information to be independently certified. Opinions contained in this report represent those of MST Access at the time of publication. Forward-looking information or statements in this report contain information that is based on assumptions, forecasts of future results and estimates of amounts not yet determinable, and therefore involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of their subject matter to be materially different from current expectations.

**Exclusion of liability:** To the fullest extent allowed by law, MST Access shall not be liable for any direct, indirect or consequential losses, loss of profits, damages, costs or expenses incurred or suffered by you arising out of or in connection with the access to, use of or reliance on any information contained in this report. No guarantees or warranties regarding accuracy, completeness or fitness for purpose are provided by MST Access, and under no circumstances will any of MST Financials' officers, representatives, associates or agents be liable for any loss or damage, whether direct, incidental or consequential, caused by reliance on or use of the content.

# General Advice Warning

MST Access Research may not be construed as personal advice or recommendation. MST encourages investors to seek independent financial advice regarding the suitability of investments for their individual circumstances and recommends that investments be independently evaluated. Investments involve risks and the value of any investment or income may go down as well as up. Investors may not get back the full amount invested. Past performance is not indicative of future performance. Estimates of future performance are based on assumptions that may not be realised. If provided, and unless otherwise stated, the closing price provided is that of the primary exchange for the issuer's securities or investments. The information contained within MST Access Research is published solely for information purposes and is not a solicitation or offer to buy or sell any financial instrument or participate in any trading or investment strategy. Analysis contained within MST Access Research publications is based upon publicly available information and may include numerous assumptions. Investors should be aware that different assumptions can and do result in materially different results.

MST Access Research is distributed only as may be permitted by law. It is not intended for distribution or use by any person or entity located in a jurisdiction where distribution, publication, availability or use would be prohibited. MST makes no claim that MST Access Research content may be lawfully viewed or accessed outside of Australia. Access to MST Access Research content may not be legal for certain persons and in certain jurisdictions. If you access this service or content from outside of Australia, you are responsible for compliance with the laws of your jurisdiction and/or the jurisdiction of the third party receiving such content. MST Access Research is provided to our clients through our proprietary research portal and distributed electronically by MST to its MST Access clients. Some MST Access Research products may also be made available to its clients via third party vendors or distributed through alternative electronic means as a convenience. Such alternative distribution methods are at MST's discretion.

## Access & Use

Any access to or use of MST Access Research is subject to the [Terms and Conditions](#) of MST Access Research. By accessing or using MST Access Research you hereby agree to be bound by our Terms and Conditions and hereby consent to MST collecting and using your personal data (including cookies) in accordance with our [Privacy Policy](#), including for the purpose of a) setting your preferences and b) collecting readership data so we may deliver an improved and personalised service to you. If you do not agree to our Terms and Conditions and/or if you do not wish to consent to MST's use of your personal data, please do not access this service.

Copyright of the information contained within MST Access Research (including trademarks and service marks) are the property of their respective owners. MST Access Research, video interviews and other materials, or any portion thereof, may not be reprinted, reproduced, sold or redistributed without the prior written consent of MST.