

# Andromeda

## Developing a World-Class Halloysite-Kaolin Project

James Marsh, Managing Director

**Noosa Mining Virtual Conference**  
**July 15<sup>th</sup> 2020**

ASX:ADN  
[www.andromet.com.au](http://www.andromet.com.au)

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# Andromeda Corporate Overview

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## Capital Structure (as at 30<sup>th</sup> June 2020)

- Market Capitalisation \$78.2M
- Cash \$3.0M
- Debt \$0M
- Enterprise Value \$75.2M
- 1,532,863,256 fully paid ordinary shares

## Options

- 615,173,484 listed (\$0.012 & expiry 30 Nov 2020)
- 17,500,000 unlisted (\$0.012 & expiry 15 Nov 2021)
- 59,000,000 unlisted (\$0.064 & expiry 28 Nov 2022)
- 20,000,000 unlisted (\$0.075 & expiry 28 Nov 2023)

## Top Five Shareholders

- |  |       |
|--|-------|
| 1. Buratu Pty Ltd (Conolly Super Fund A/C)                     | 7.87% |
| 2. Debuscey Pty Ltd  | 1.96% |
| 3. John Pezzaniti  | 1.50% |
| 4. BNP Paribas Nominees Pty Ltd (IB Au Noms Retail Client DRP) | 1.42% |
| 5. Citicorp Nominees Pty Ltd                                   | 1.03% |



# Company Overview

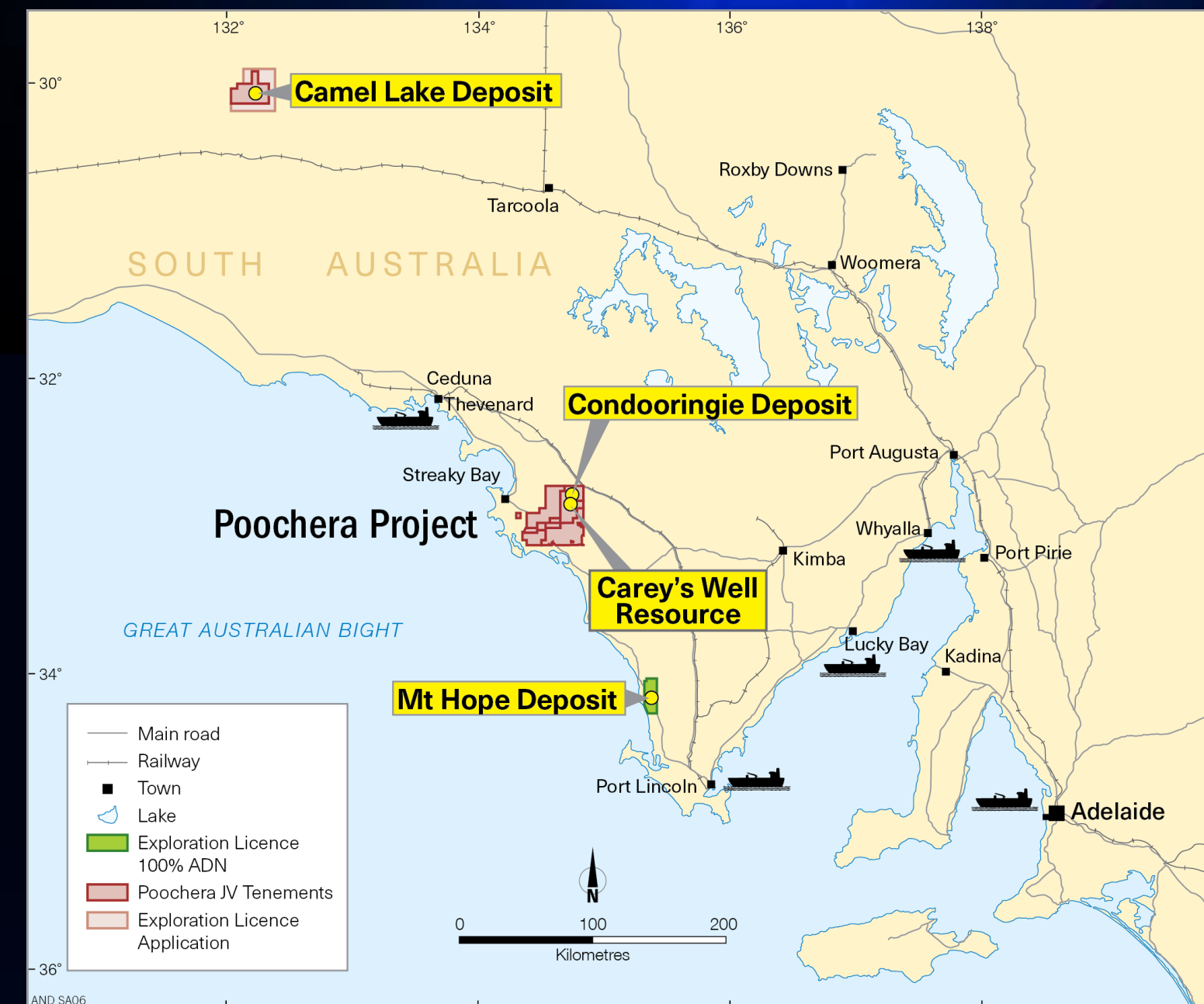
## Our Vision

To be a world leading supplier of halloysite-kaolin and nanotechnology materials

- Primary Focus - developing the Poochera Project core asset in South Australia into a world-class halloysite-kaolin operation
- Three new potential resources drilled and results pending
- Exploring for high-purity halloysite
- Developing new analytical techniques for halloysite

## Additional Andromeda Assets

- ★ JV with Evolution Mining - Gold in Qld
- ★ JV with Environmental Copper Recovery - Copper in SA
- ★ JV with Cobra Resources PLC - Gold in SA
- ★ Gold tenements in Pilbara - Opportunities being investigated

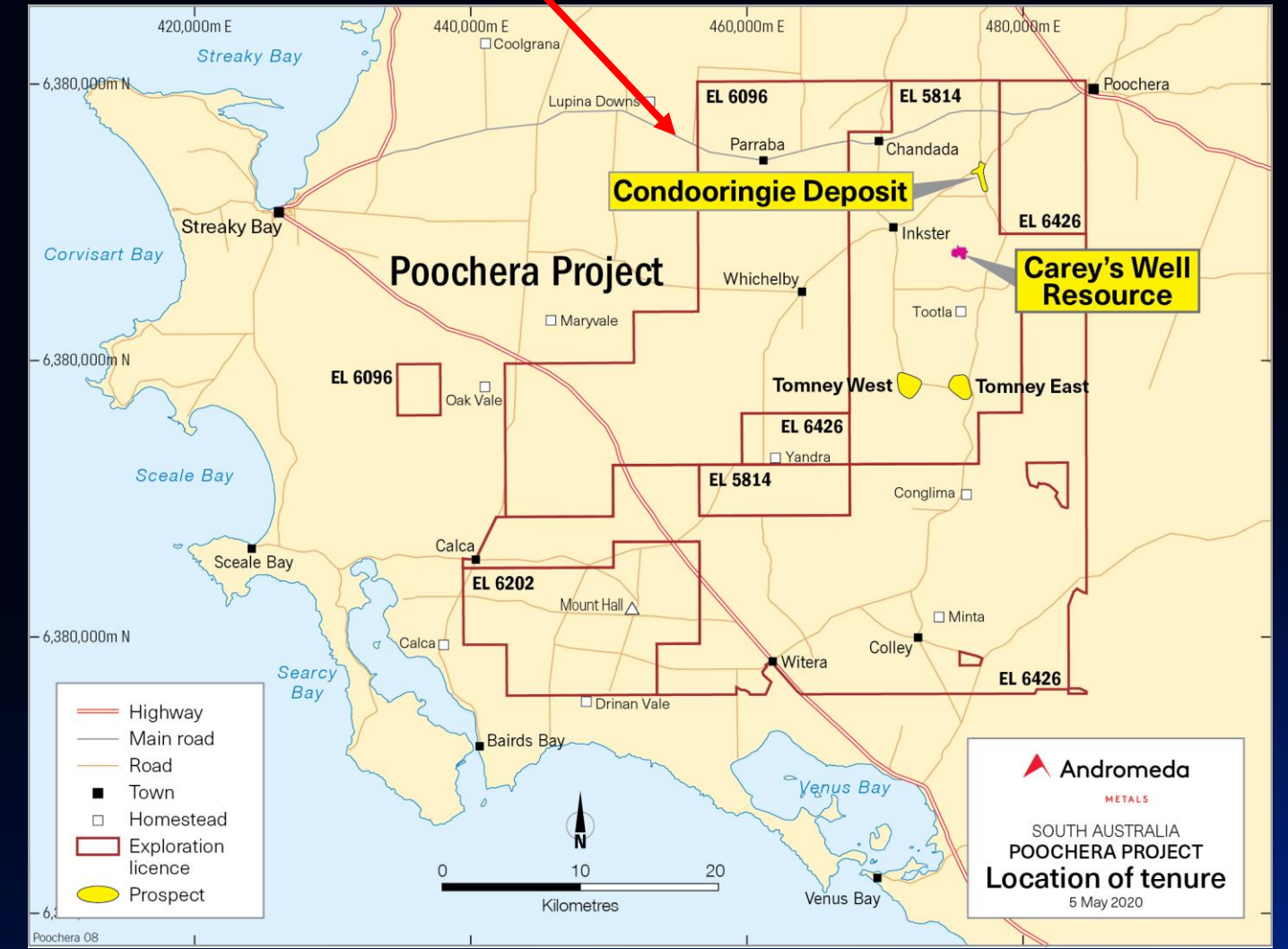
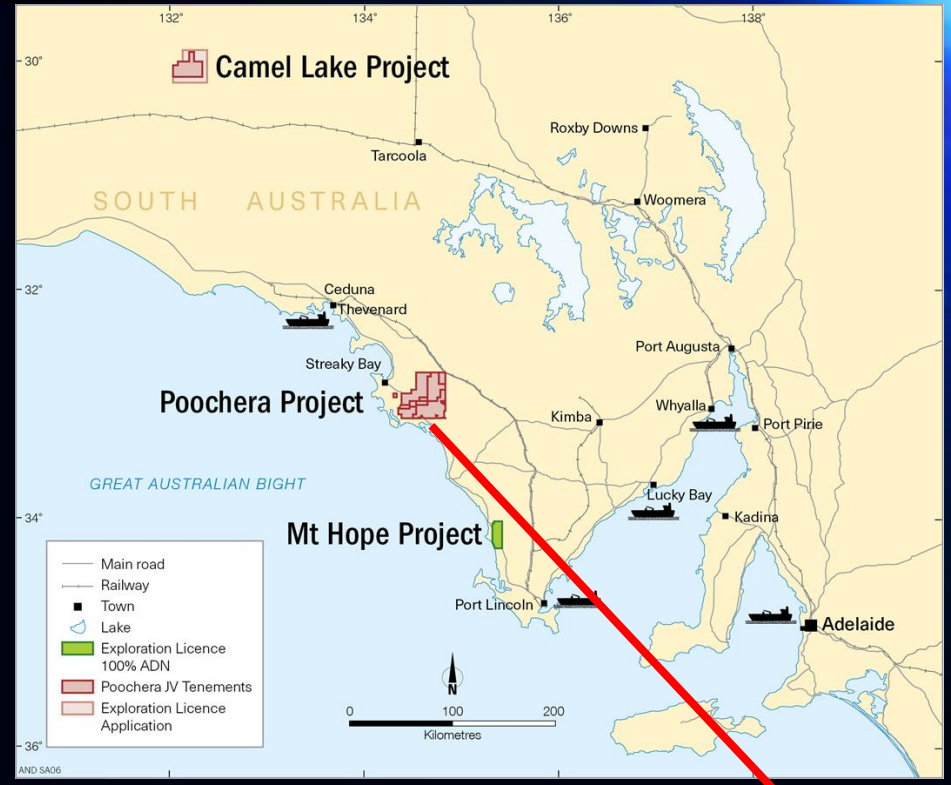


# Poochera – World Class Opportunity

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## Primary Project Focus - Halloysite-Kaolin

- Carey’s Well - among the world’s largest halloysite-kaolin Reserves & Resources (1)
- Located close to essential infrastructure
- Pre-Feasibility Study delivered extremely robust project economics (2)
- High grade halloysite found at Condooringie (3)
- Significant high-quality kaolin found at Mt Hope project (4)
- Multiple opportunities in Halloysite Nanotube Technology (HNT) applications
- High Purity Alumina (HPA) testwork continuing with options under evaluation



(1) – Andromeda ASX announcement Dec 23 2019 – ‘Significant Increase in Mineral Resource for the Poochera Kaolin project’  
 (1) - Andromeda ASX announcement Jul 10 2020 – ‘Maiden Ore Reserve for Carey’s Well Deposit’.  
 (2) – Andromeda ASX announcement Jun 1 2020 – ‘Pre-Feasibility Study Further Improves Poochera Halloysite-Kaolin Project Economics’  
 (3) – Andromeda ASX announcement Mar 16 2020 – ‘High-Grade Halloysite Zone identified at Condooringie’  
 (4) – Andromeda ASX announcement Jul 15 2020 – ‘New Major Market Opportunity for Andromeda with Mount Hope Project’

# Significant Resources

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## Pre-Feasibility Study

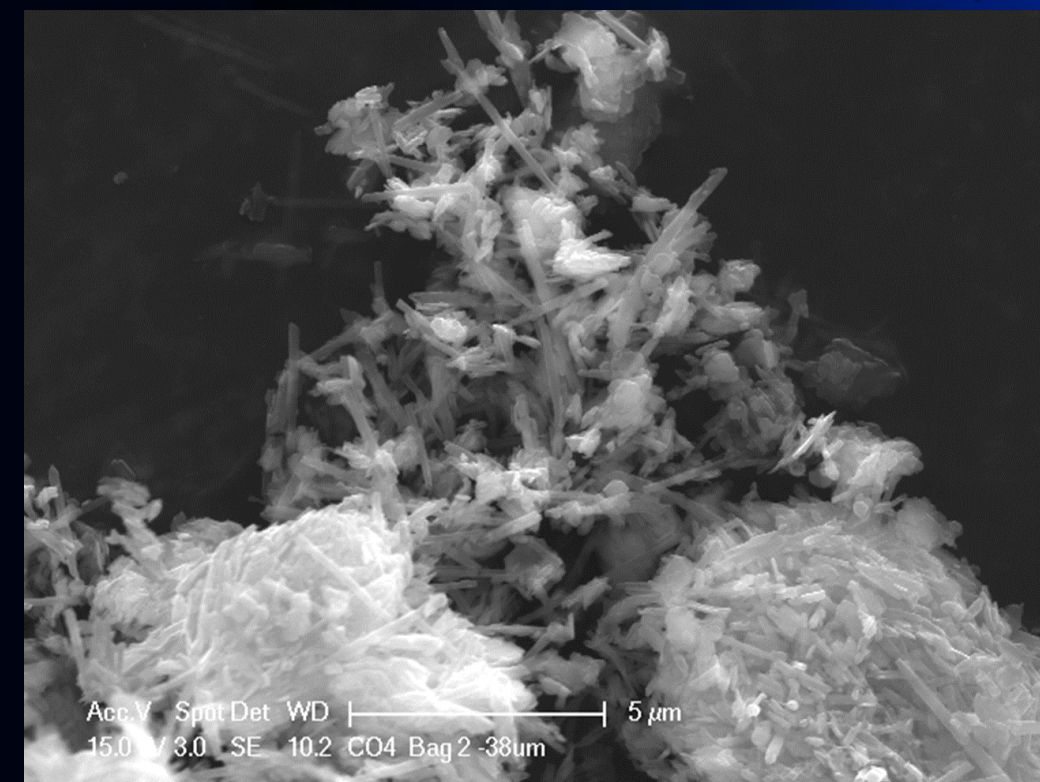
Resource Estimate for Carey's Well

- 26Mt of "bright white" kaolinised granite (now an Ore Reserve\*)
- High halloysite component of 9.7Mt

## Future Opportunities

- Condooringie – potential halloysite-kaolin resource
- Mount Hope – Historic Resource of >12Mt
- Tomney – potential halloysite-kaolin resource
- Camel Lake – exceptionally high purity halloysite targets

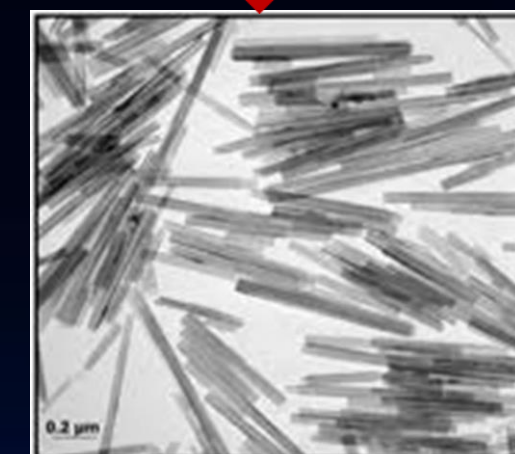
The Poochera resource is a naturally occurring blend of halloysite tubes and kaolinite plates



Kaolinite Plates



Halloysite Tubes



\* Andromeda ASX Announcement July 10 2020 – 'Maiden Ore Reserve for Carey's Well Deposit'

# The Halloysite-Kaolin Market

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## Mature Established Market

- Ceramics (high-quality porcelain) – Offtake LOI’s signed for a total of almost 1 million tpa in 3 product forms
  - Fully refined product value approx. A\$700/t<sup>(1)</sup> (230ktpa used in PFS)

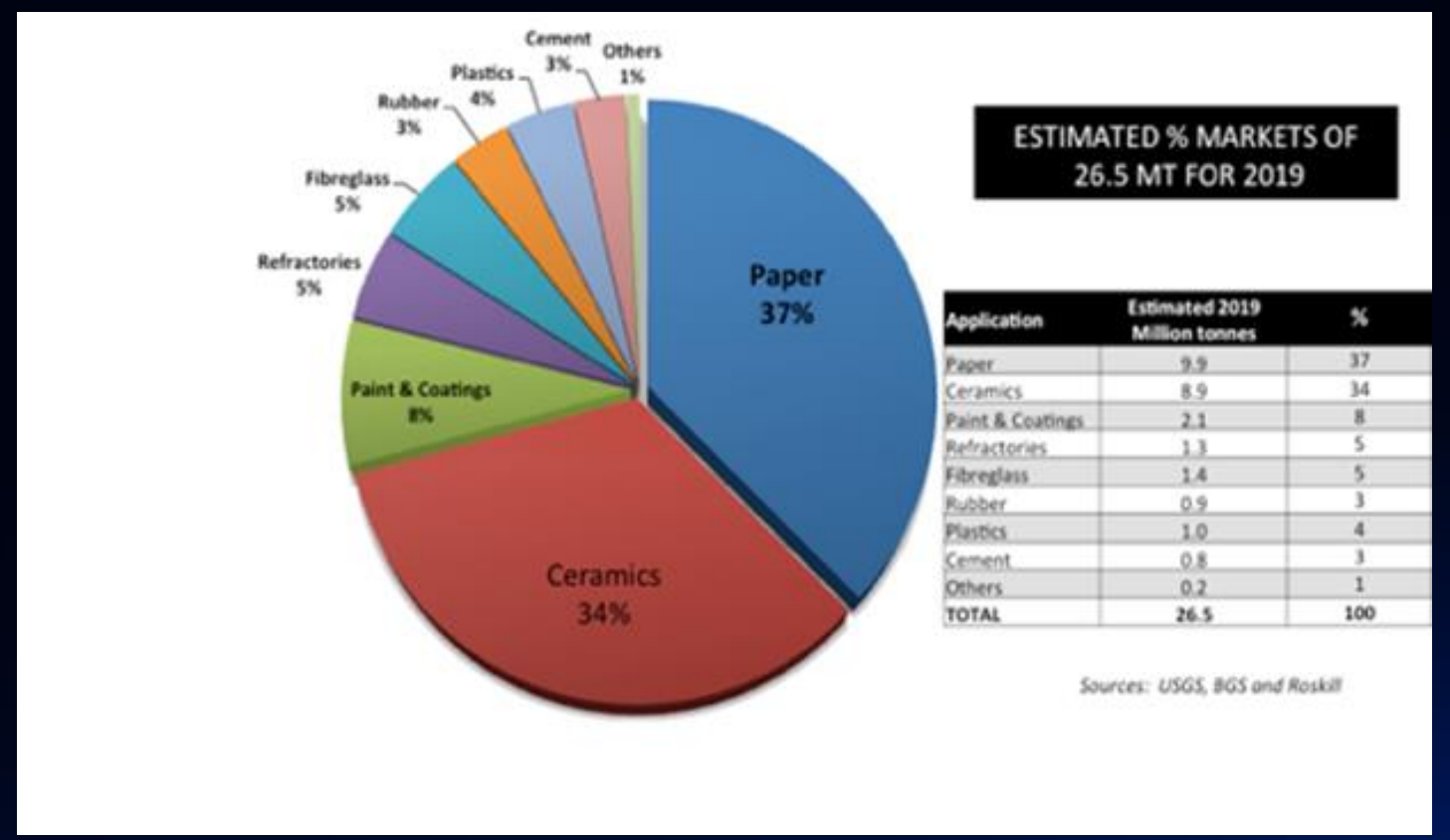
## Emerging Market

- Halloysite Nanotube Technologies – Existing and Emerging
  - Product value A\$1,000/t - A\$5,000/t (depending on % purity)

## New Market

- High Purity Alumina production (HPA) – New
  - Product value approx. US\$25,000/t (4N purity)

- The global market for kaolin into ceramics is about 9 million tpa with a projected compound annual growth rate of 4% through to at least 2027
- Andromeda is targeting the high value end of the market valued at US\$62 billion in 2019<sup>(2)</sup>, and expected to reach US\$91.5 billion by 2026



(1) Project economics have been established on market research provided by First Test Minerals a world authority on clay materials. The high grade, rare halloysite-kaolin product commands a US\$500/t (A\$700/t) in the ceramics industries of China, and a number of countries throughout Asia, the Middle East, and Europe.

(2) Andromeda ASX announcement Jul 10 2020 – “Maiden Ore Reserve for Carey’s Well Deposit”.

# Operational Strategy

## Short Term – early cash flow

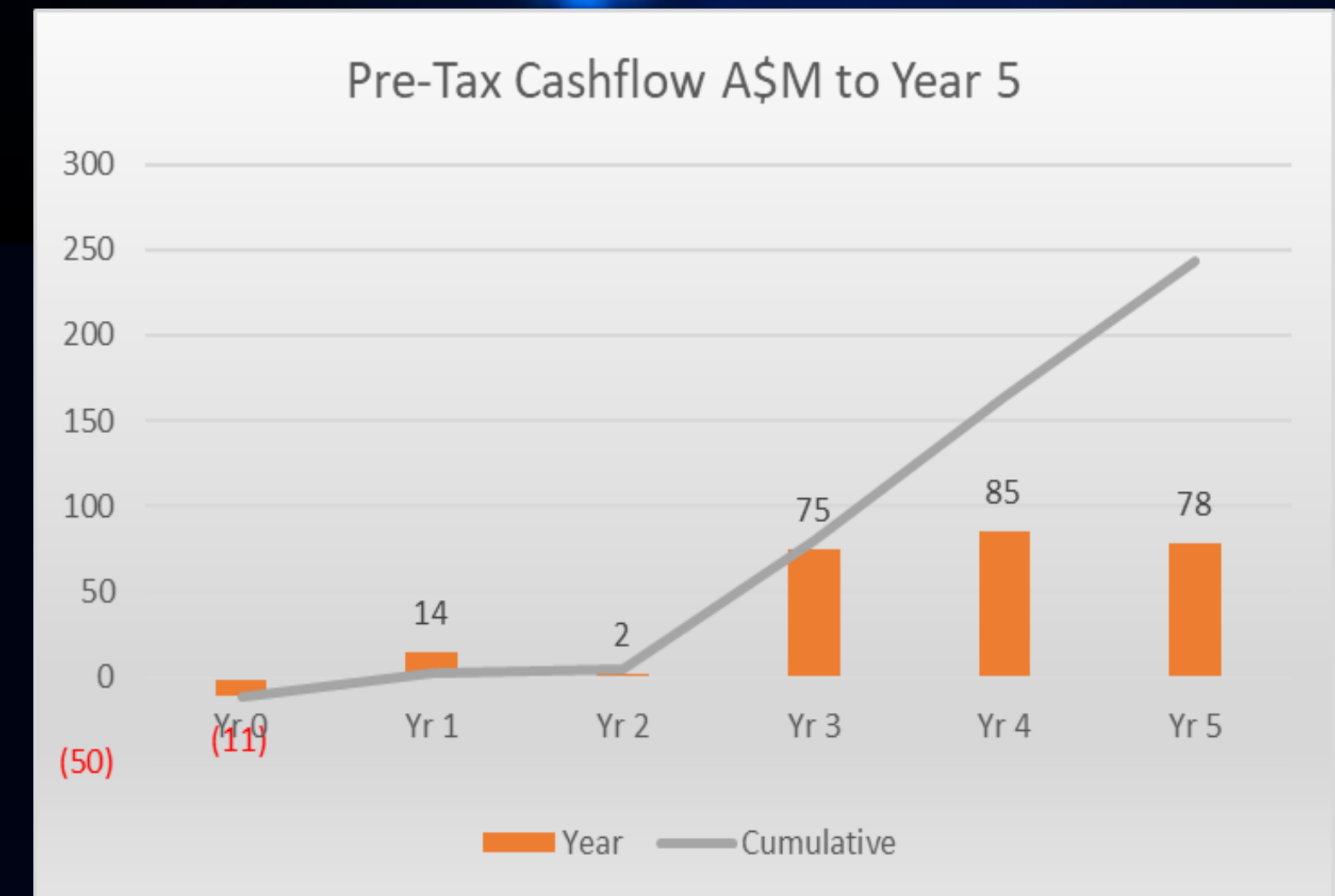
- Based on Carey’s Well Resource
- Direct Shipping Ore (DSO) to Toll Wet-Refining
- Wet Refining Toll Process (China/Japan) – premium product

## Medium Term – 18 months from start of operations

- Wet Process at Mine Site – 50% sand removal
- Potential to produce a final market-ready product at site

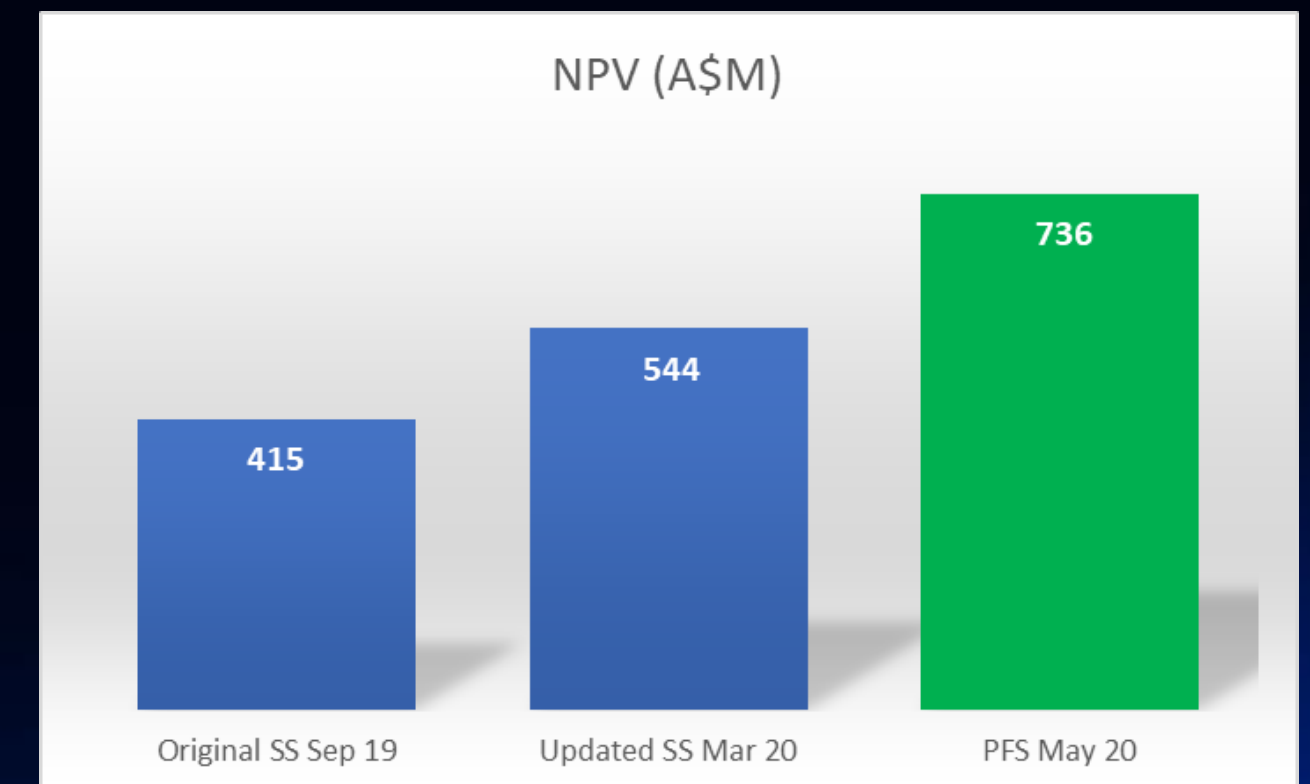
## Longer Term

- Supply of high-purity kaolin from Mount Hope deposit
- Halloysite Purification opportunity for Condooringie material
- Premium HPA feedstock – partnership/collaboration opportunities
- Halloysite Nanotechnology – research partnerships
- High-purity halloysite – Camel Lake prospect



# Pre-Feasibility Study Highlights

- Initial mine life of 26 years mining at 500ktpa
- Early shallow open-cut mining to ship DSO for toll wet-refining overseas
- Wet-processing on site during the second year of operation to remove sand (50%)
- EBITDA (LOM) of A\$2.06B
- Net Present Value of A\$736M (pre-tax@discount rate of 8%)
- Internal Rate of Return of 175%
- Pre-production capital cost A\$13M
- Maximum cash requirement of A\$28M prior to DSO operation/revenues received
- Breakeven payback 15 months from the start of site works
- Construction of onsite wet-processing plant to be funded from cashflow

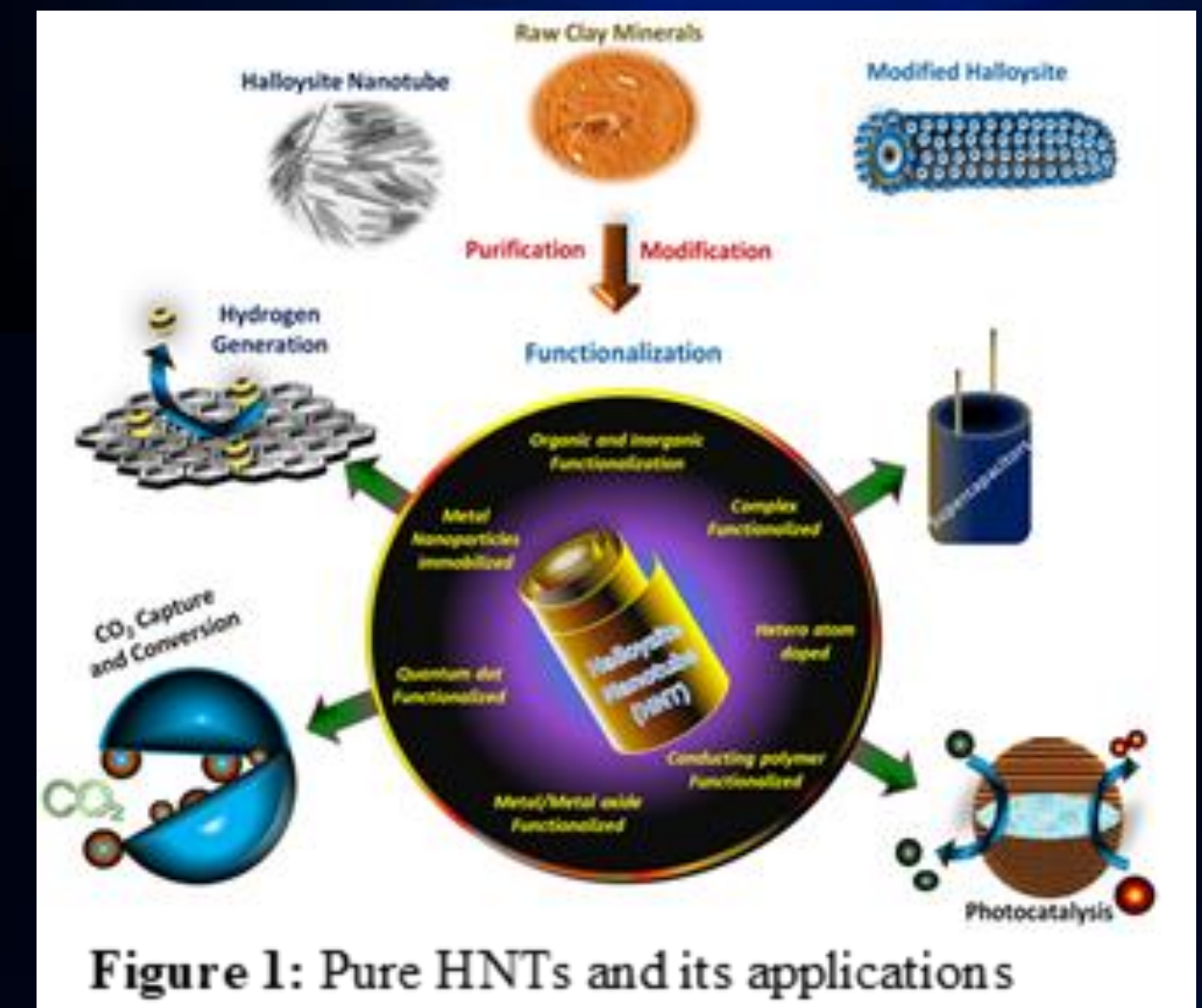




# The Halloysite Nanotube Potential

## Emerging and Existing Applications

- Hydrogen Storage and Transport
- Batteries and Super-Capacitors
- Water Purification
- Carbon Dioxide Capture/Storage and Conversion to Fuels
- Medical Delivery of Drugs and Anti-Bacterial Properties
- Construction
- Agriculture/Delivery of Herbicides
- Polymers and Coatings (reinforcement and fire-retardancy)
- Remediation of contaminated soils



# What's Next?

- Mining lease approvals – in progress
- Progress customer offtake agreements – through 2020
- Define a kaolin resource at Mount Hope - imminent
- Define a halloysite-kaolin resources at Condooringie and Tomney – 2020
- Potential studies on Condooringie and Mt Hope prospects – starting late 2020
- Progress halloysite nanotube application research – ongoing
- Secure an HPA alliance/collaboration partner – in progress
- Obtain a high purity halloysite resource – 2021
- Evaluation of additional industrial mineral opportunities - ongoing
- Commencement of operations at Carey's Well – target early 2022



Approximately 10t of Commercial Scale Product  
produced in Japan for Customer Offtake  
Approvals

# Andromeda - A Compelling Story

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<p>Andromeda Phase 1 DSO</p>	<p>Andromeda Phase 2 On-Site Processing</p>
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Large Gold Project

Large Lithium Project

High Purity Alumina Project

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Capex A\$28M</li> </ul> | <ul style="list-style-type: none"> <li>• Capex - funded from cashflow</li> <li>• Payback 15 months</li> <li>• IRR 175%</li> <li>• NPV A\$736M</li> </ul> |
|--|--|

- Capex A\$1.0B
- Payback 30 months
- IRR 25%
- NPV A\$1.0B

- Capex A\$1.0B
- Payback 48 months
- IRR 25%
- NPV A\$1.0B

- Capex A\$400M
- Payback 45 months
- IRR 20%
- NPV A\$500M

# In Summary

- Andromeda has one of the world's largest resources of halloysite-kaolin
- This is a high value industrial mineral selling into a low-volatility market
- Global demand is increasing and supply is decreasing\*
- Low capex project with a short timeline to operation
- Simple business model with low impact mining
- Andromeda is well positioned to become the world's leading producer of this mineral
- Huge potential in high-purity halloysite, nanotube technology and HPA
- Opportunities to build a diversified industrial minerals business



Typical Kaolin Mine with Very Simple, Shallow, Quarry-like Operation

\* First Test Minerals Ltd Jun 2020 - 'Andromeda Metals Halloysite/Kaolin Marketing Report' Not Published

# Thank You

### Cautionary Statements

The preliminary feasibility study (Pre-Feasibility Study, PFS) referred to in this announcement has been undertaken to study a range of options to produce high-quality halloysite-kaolin product from the Kaolin Resource at Poochera in South Australia in order to provide Andromeda Metals with a basis for more detailed Definitive Feasibilities Studies for the Project. It is a technical and economic study to identify preferred mining, processing and infrastructure requirements but it has not finalised these. The PFS work has advanced assessments of environmental and socio-economic impacts and requirements but these are also not finalised. The estimation of ore reserves is yet to be done.

The Production Target referred to in this announcement is based on this PFS and supported mainly by Measured and Indicated Resources and only minor Inferred Resources. Andromeda Metals has concluded that it has reasonable grounds for disclosing a Production Target, however there is no certainty that the Production Target or the economic assessment will be realised.

The PFS is based on the material assumptions outlined elsewhere in this announcement. These include assumptions about the availability of funding. While Andromeda Metals 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 range of outcomes indicated by the PFS will be achieved.

To achieve the range of outcomes indicated in the PFS, funding in the order of A\$28M, inclusive of working capital, is likely to be required. Investors should note that there is no certainty that Andromeda Metals will be able to raise that 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 Andromeda Metals' existing shares. It is also possible that Andromeda Metals could pursue other 'value realisation' strategies to provide alternative funding options.

Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the PFS.

This announcement includes forward looking statements. For further information on forward looking statements please refer to the end of this release.

### Forward Looking Statements

Some of the statements contained in this report are forward looking statements. Forward looking statements, include, but are not limited to, statements concerning estimates of tonnages, expected costs, statements relating to the continued advancement of Andromeda's projects and other statements that are not historical facts. When used in this report, and on other published information of Andromeda, the words such as 'aim', 'could', 'estimate', 'expect', 'intend', 'may', 'potential', 'should' and similar expressions are forward looking statements. Although Andromeda believes that its expectations reflected in the forward-looking statements are reasonable, such statements involve risks and uncertainties and no assurance can be given that actual results will be consistent with these forward-looking statements. Various factors could cause actual results to differ from these forward looking statements include the potential that Andromeda's project may experience technical, geological, metallurgical and mechanical problems, changes in market prices and other risks not anticipated by Andromeda. Andromeda is pleased to report this summary of the Study in a fair and balanced way and believes that it has a reasonable basis for making the forward-looking statements in this announcement, including with respect to any mining of mineralised material, modifying factors, production targets and operating cost estimates.

This announcement has been compiled by Andromeda from the information provided by the various contributors. All financial assumptions and estimates are quoted in Australian Dollars ('A\$' or 'AUD') only, unless indicated otherwise.

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