

# Andromeda

## Developing a World-Class Halloysite-Kaolin Project

James Marsh, Managing Director

**NWR Small Cap Resources Presentation**  
**May 7<sup>th</sup> 2020**

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



# Andromeda Corporate Overview

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

- Market Capitalisation \$72.7M
- Cash \$3.09M
- Debt \$0M
- Enterprise Value \$69.6M
- 1,483,662,408 fully paid ordinary shares

## Options

- 661,874,332 listed (\$0.012 & expiry 30 Nov 2020)
- 20,000,000 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)                     | 8.51% |
| 2. | Debuscey Pty Ltd  | 2.02% |
| 3. | BNP Paribas Nominees Pty Ltd (IB Au Noms Retail Client DRP) | 1.56% |
| 4. | John Pezzaniti  | 1.38% |
| 5. | Citicorp Nominees Pty Ltd                                   | 1.31% |



# Company Overview

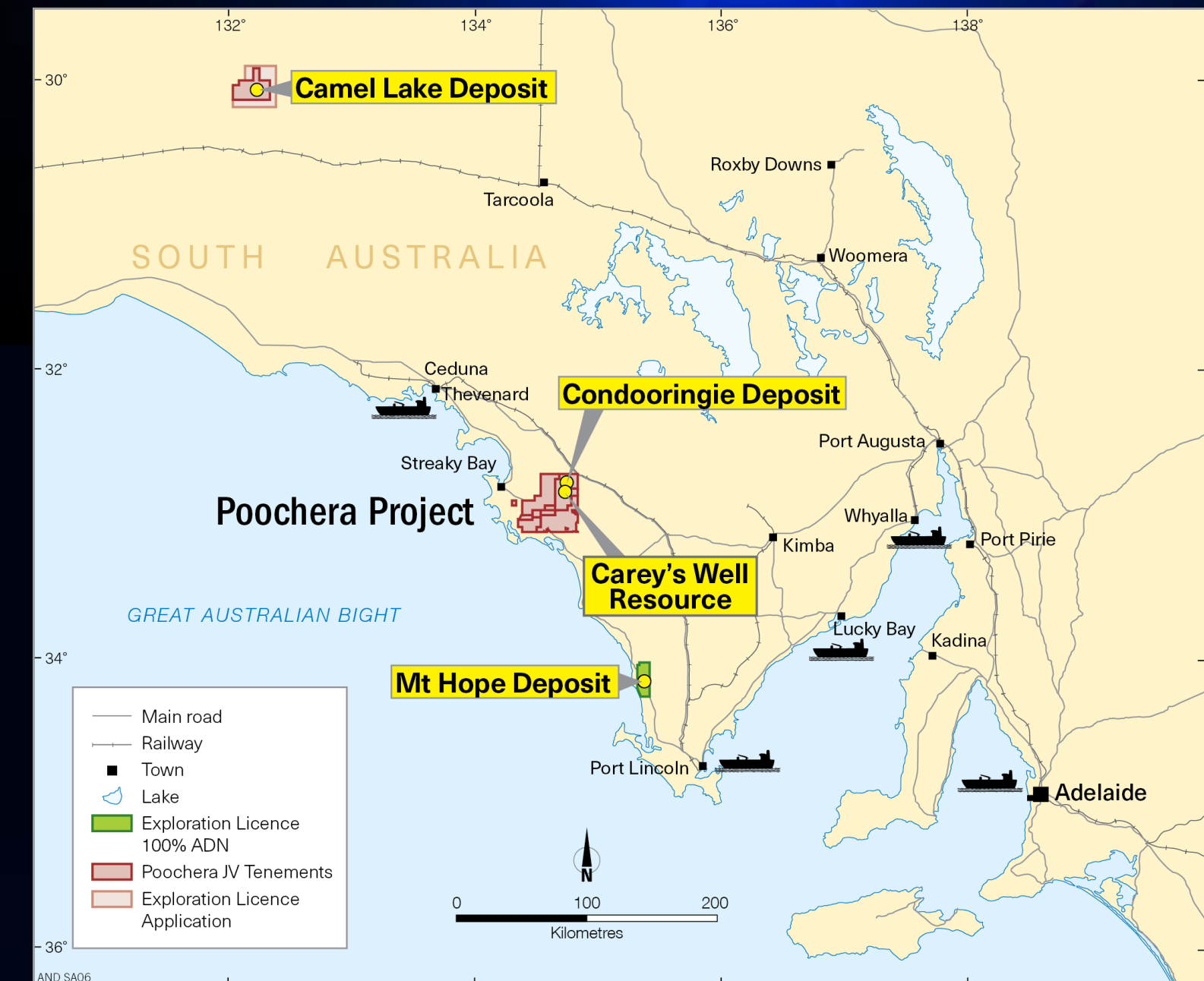
## Our Vision

*To be a world leading producer of halloysite-kaolin, and a specialist nanotechnology company*

- Primary Focus - developing the Poochera Project core asset in South Australia into a world-class halloysite-kaolin mining operation
- Also upgrading the historic Mt Hope halloysite-kaolin resource
- Working on a new halloysite-kaolin resource at Condooringie
- Exploring for high-purity halloysite at Condooringie & Mt Hope

## 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

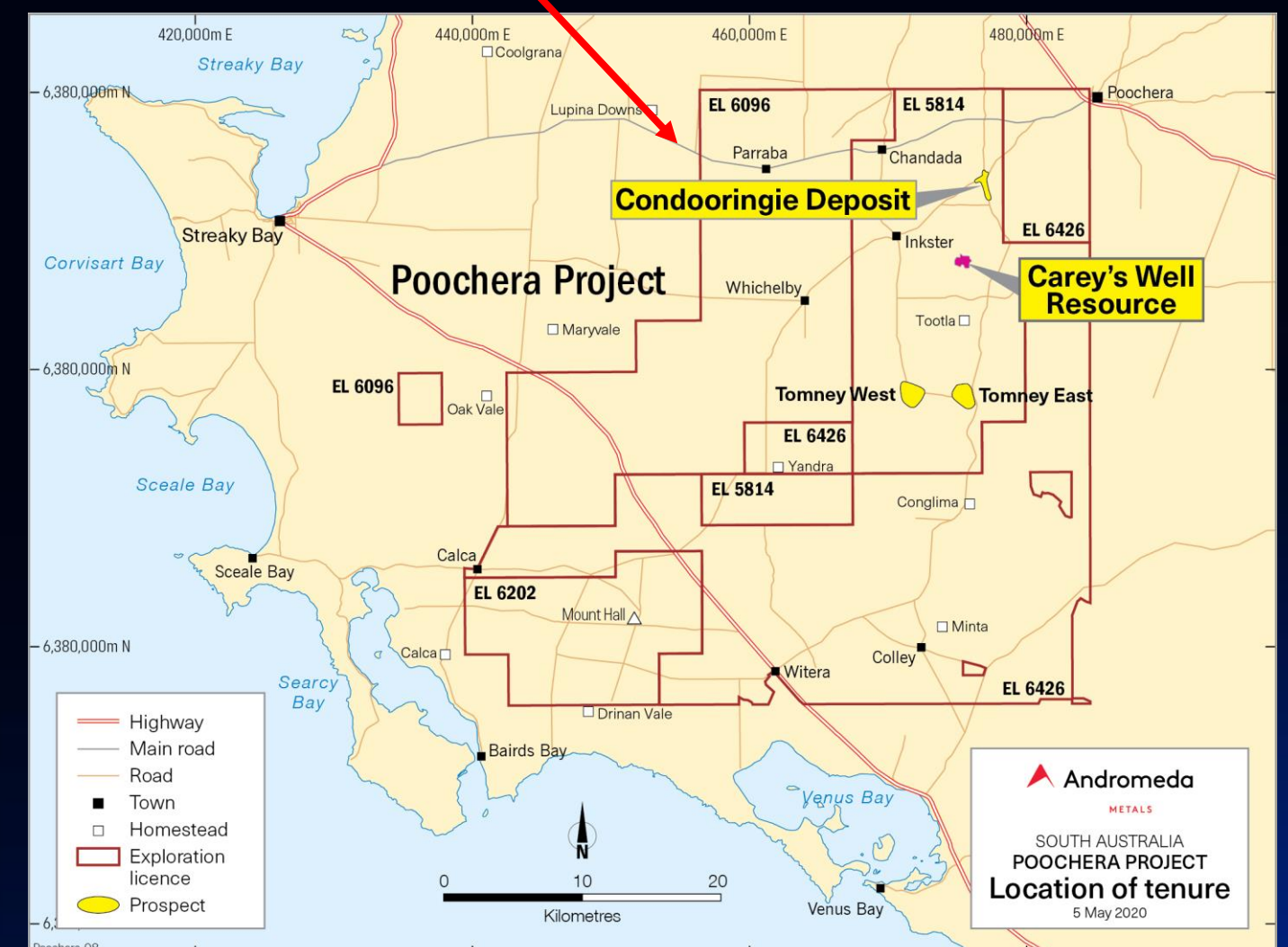
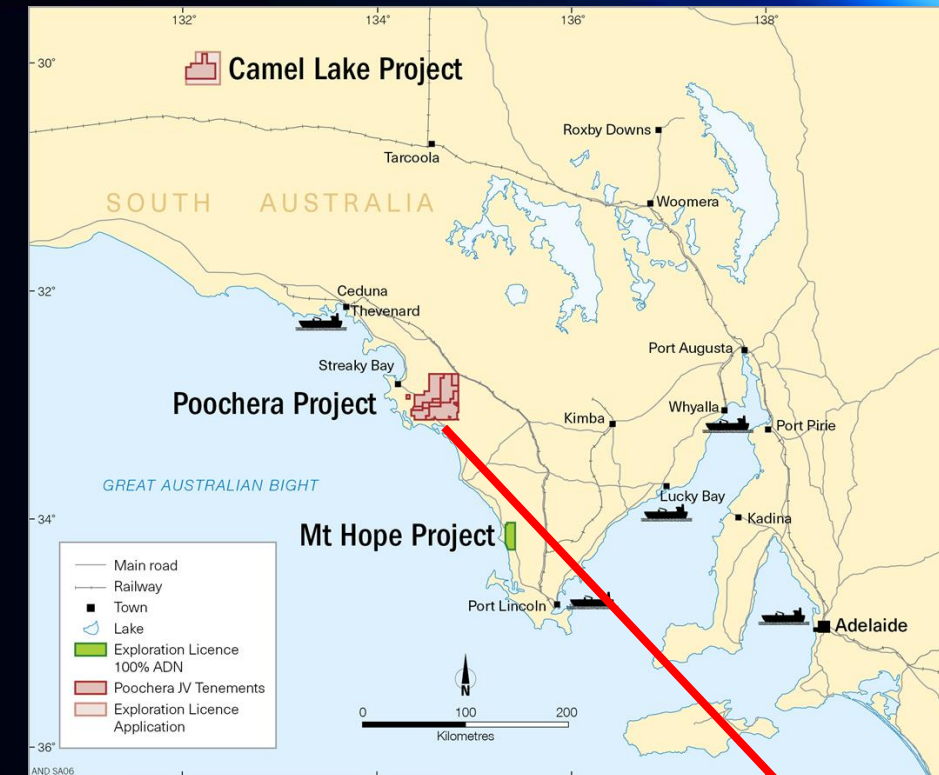




# Poochera –World Class Opportunity

## Primary Project Focus - Halloysite-Kaolin Project

- Carey's Well is one of the world's largest halloysite-kaolin Resources(1)
- Located close to essential infrastructure
- Updated Scoping Study improved already very robust Project economics(2)
- High grade halloysite found at Condooringie(3)
- Significant potential product found at Mt Hope halloysite-kaolin 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’

(2) – Andromeda ASX announcement Apr 6 2020 – ‘Wet-Processing Delivers Improved Economics for Poochera Halloysite-Kaolin Project’

(3) – Andromeda ASX announcement Mar 16 2020 – ‘High-Grade Halloysite Zone identified at Condooringie’

(4) – Andromeda ASX announcement Apr 20 2020 – ‘Significant kaolin intersected at Mount Hope halloysite-kaolin project’



# Defined Resource

## Current Pre-Feasibility Study

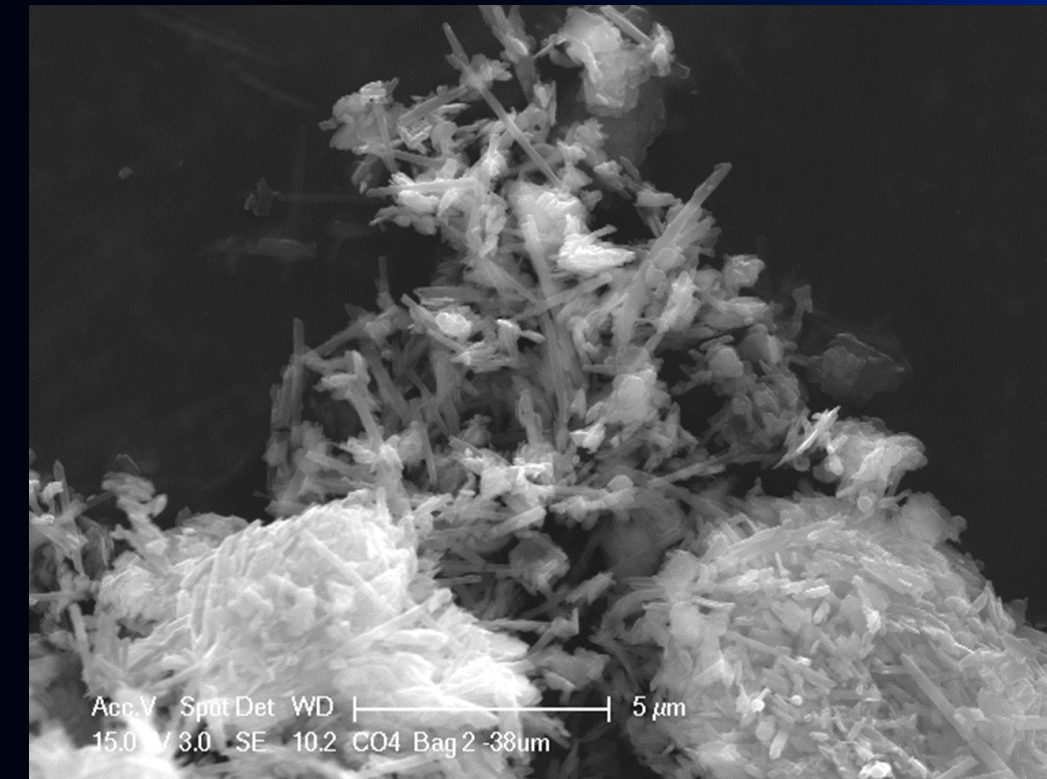
JORC 2012 Resource Estimate for Carey's Well

- Over 20Mt of “bright white” kaolinised granite
- High halloysite component of 9.7Mt

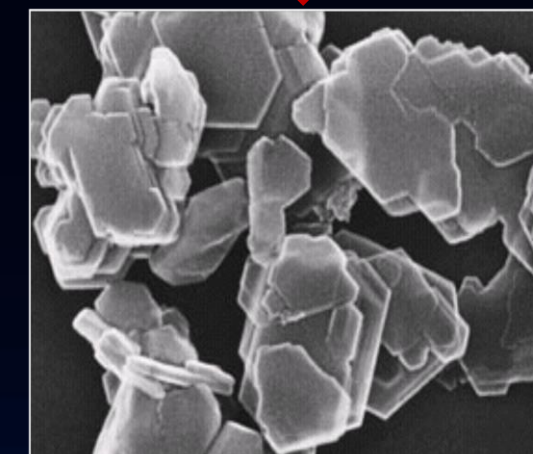
## Future Opportunities

- Condooringie drilling – high purity halloysite targets
- Mount Hope - historical non JORC Resource of 12.26Mt
- Camel Lake – exceptionally high purity halloysite targets

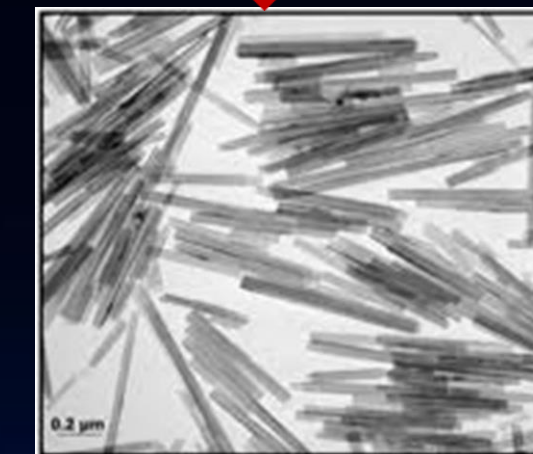
The Poochera resource is a naturally occurring hybrid blend of halloysite tubes and kaolinite plates



Kaolinite Plates



Halloysite Tubes



# The Halloysite-Kaolin Market

## 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. AU\$700/t (used in Scoping Study)

## Emerging Market

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

## New Market

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



# 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% waste sand removal
- Potential to produce a final market-ready product at site

## Longer Term

- Halloysite Purification opportunity for Condooringie material
- Premium HPA feedstock – partnership/collaboration opportunities
- Nanotechnology – research partnerships



Extremely High Grade 4N HPA Just  
Produced from Carey's Well Feed

# Updated Scoping Study Highlights

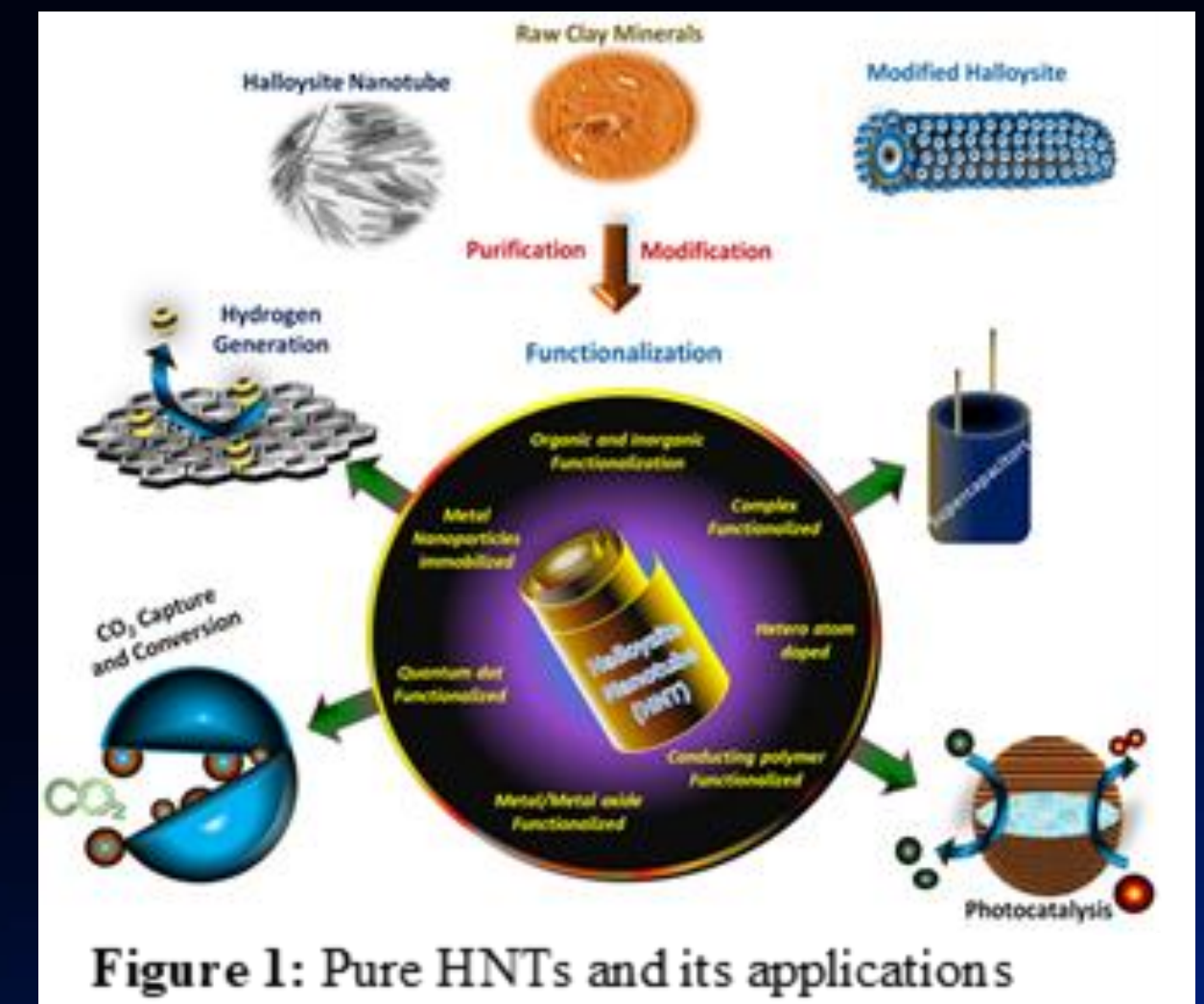
- Initial mine life of 15 years at 500ktpa
- Early shallow open-cut mining to ship DSO for toll wet-refining in China
- Wet-processing on site during the second year of operation to give a 'Concentrate'
- LOM projected cashflow A\$1.05B
- LOM Revenue A\$2.38B
- Net Present Value of A\$544M (discount rate of 8%)
- Internal Rate of Return of 175%
- Pre-production capital cost A\$13M
- Maximum cash requirement of A\$29M prior to DSO operation/revenues received
- Breakeven payback 15 months from the start of site works
- Construction of the wet-processing plant to be funded from cashflow



# The Halloysite Nanotube Potential

## Emerging and Existing Applications

- Hydrogen Storage and Transport – Grant funded research in progress
- Batteries and Super-Capacitors – Excellent results obtained and additional grant funding applied for
- Water Purification – Excellent results obtained and additional grant funding applied for
- Carbon Dioxide Capture/Storage and Conversion to Fuels – Excellent results obtained and additional grant funding applied for
- Medical Delivery of Drugs and Anti-Bacterial Properties – Grant funding application submitted
- Construction – Positive results found in concrete and application testing in progress
- Agriculture/Delivery of Herbicides – Grant funding application submitted
- Polymers and Coatings (reinforcement and fire-retardancy) – Customers waiting
- Remediation – Application testing in progress in Australia and USA





# What's Next?

- Pre-feasibility study to be released – by the end of May 2020
- Mining lease approvals – commencing June 2020
- Upgrade Mt Hope resource – 2020
- Define a halloysite-kaolin resource at Condooringie – 2020
- Progress halloysite nanotube application research – ongoing
- Secure an HPA alliance/collaboration partner
- Obtain a high purity halloysite resource – 2020/2021
- Commencement of operations at Carey's Well – target late 2021
- Feasibility studies on Condooringie and Mt Hope prospects – starting late 2020



Typical Kaolin Mine



# In Summary

- Andromeda has one of the world's largest resources of halloysite-kaolin
- This is a high value industrial mineral
- Global demand is increasing\* and production 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 blue-sky potential in high-purity halloysite, nanotube technology and HPA

*\*Global Market Insights - Growth Projections 2016 to 2024 & Zion Market Research - Global Kaolin Market*



# Thank You

**Cautionary Statements**

The Scoping Study referred to in this announcement has been undertaken to determine the potential viability of a direct shipping and dry-processing operation to produce high-quality halloysite-kaolin product at Poochera in South Australia that will provide Andromeda Metals with the confidence to undertake further and more detailed feasibility studies for the project. It is a preliminary technical and economic study of the potential viability of the Poochera Halloysite-Kaolin Project. It is based on low level technical and economic assessments that are not sufficient to support the estimation of ore reserves. Further exploration and evaluation work and appropriate studies are required before Andromeda Metals will be in a position to estimate any ore reserves or to provide any assurance of an economic development case.

The Production Target referred to in this announcement is based on Measured and Indicated Resources for the mine life. Andromeda Metals has concluded that it has reasonable grounds for disclosing a Production Target, however there is no certainty that the Production Target or preliminary economic assessment will be realised.

The Scoping Study 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 Scoping Study will be achieved.

To achieve the range of outcomes indicated in the Scoping Study, funding in the order of AUD 13 million, inclusive of working capital, will likely 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 Scoping Study. These materials include 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 to the Study. All financial assumptions and estimates are quoted in Australian Dollars ('A\$' or 'AUD') only, unless indicated otherwise.

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