



METALS

**Investor  
Presentation  
May 2019**

***Andromeda Metals***  
***An Emerging Force in Industrial Minerals***

ASX:ADN

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## **Competent Person’s Statement**

The information in this presentation that relates to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on information provided by Minotaur Exploration and compiled by Rhoderick Grivas, a Competent Person, who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Grivas is Chairman of Andromeda Metals. Mr Grivas has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the ‘Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves’. Mr Grivas consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

# Experienced Board & Management

## Rhod Grivas - Non-Executive Chairman

- Geologist with 30 years experience
- 16 years of corporate/board experience
- Previously taken projects from exploration to production
- Ex MD of Dioro Exploration - South Kal/Frogs Leg Mines
- Chair of Golden Mile Resources (ASX:G88)

## James Marsh - Managing Director

- Over 30 years industrial minerals experience
- Specialised in all aspects of the kaolin industry
- Previous first hand experience with the Poochera Project
- A qualified industrial chemist
- Wide experience in R&D, product development, operations and global marketing/sales

## Nick Harding - Executive Director

- Accountant and company secretary with +30 years mining experience
- Extensive experience in commercial and resource project management
- 5 years as CFO for Olympic Dam

## Andrew Shearer - Non Executive Director

- Geologist/geophysicist with 23 years experience in the mining and finance industries
- Currently a resources analyst with PAC Partners
- NED with Northern Cobalt (ASX:N27)

## Capital Structure (31 March 2019)

Shares on Issue	1,355,499,211
Listed Options (\$0.012/sh, exp 30/11/2020)	704,588,163
Unlisted Options (\$0.012/sh, exp 15/11/2021)	20,000,000
Cash (31/03/2019)	\$2.4m
Market Capitalisation (14/05/19)	\$10.84m

## Top 5 Shareholders (31 March 2019)

Buratu Pty Limited (Connolly Super Fund A/C)	10.72%
John & Shaun McDonald (Southland Snipe SF A/C)	3.42%
Adman Lunes Pty Ltd	2.07%
Peter Andrew Proksa	1.94%
Edward Garnet Bunn	1.84%

# The Andromeda Transformation



Transforming from gold-copper explorer to industrial minerals developer

## Primary Project Focus

- Poochera Halloysite-Kaolin Project JV with Minotaur Exploration
- Building an experienced team
- Scoping Study due for completion H1 2019



# Legacy Projects

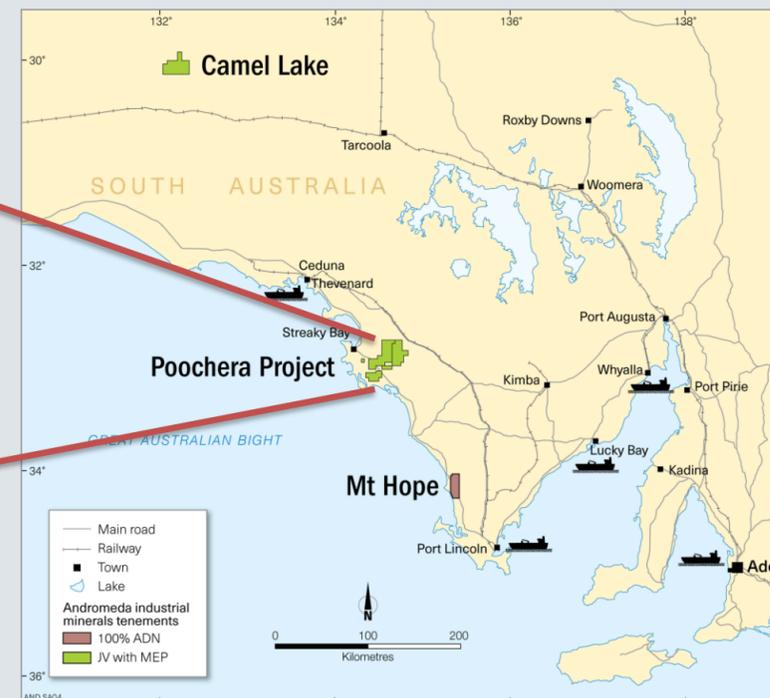
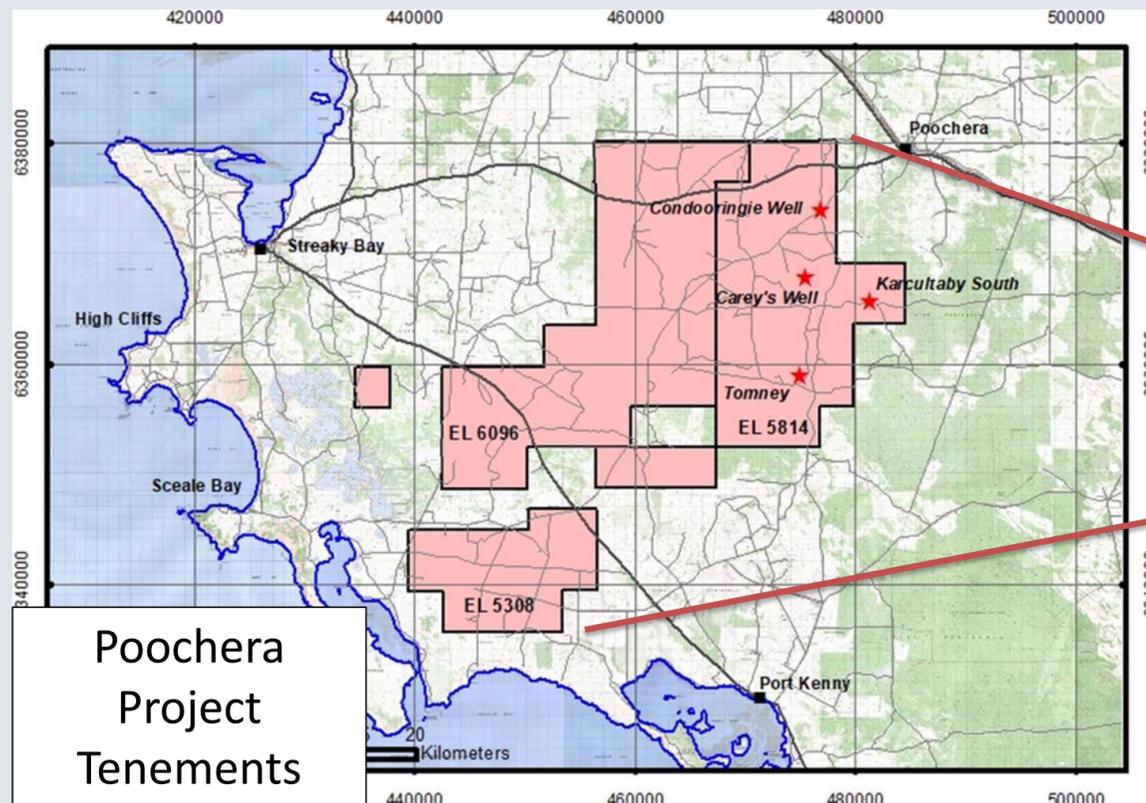
## Minimising holding costs/maximising value

- JV with Evolution Mining – Gold in Qld
- JV with Environmental Copper Recovery - Copper in SA
- JV with Cobra Resources PLC – Gold in SA
- Gold project in NT – Seeking JV partner
- Gold project in Pilbara – Native Title agreements being negotiated



# Poochera Project - Overview

- World class halloysite-kaolin deposit
- Estimated short timeframe to production
- Long mine life
- Companies in several countries interested in purchasing Direct Shipping Ore (DSO)
- Indicative off-take agreements for >200,000 tpa processed mineral
- Commercial scale approval trials in progress for DSO and processed mineral
- High Purity Alumina (HPA) testwork proved a 99.99% (4N) feedstock in a single stage
- Numerous opportunities for halloysite in emerging nanotechnology applications

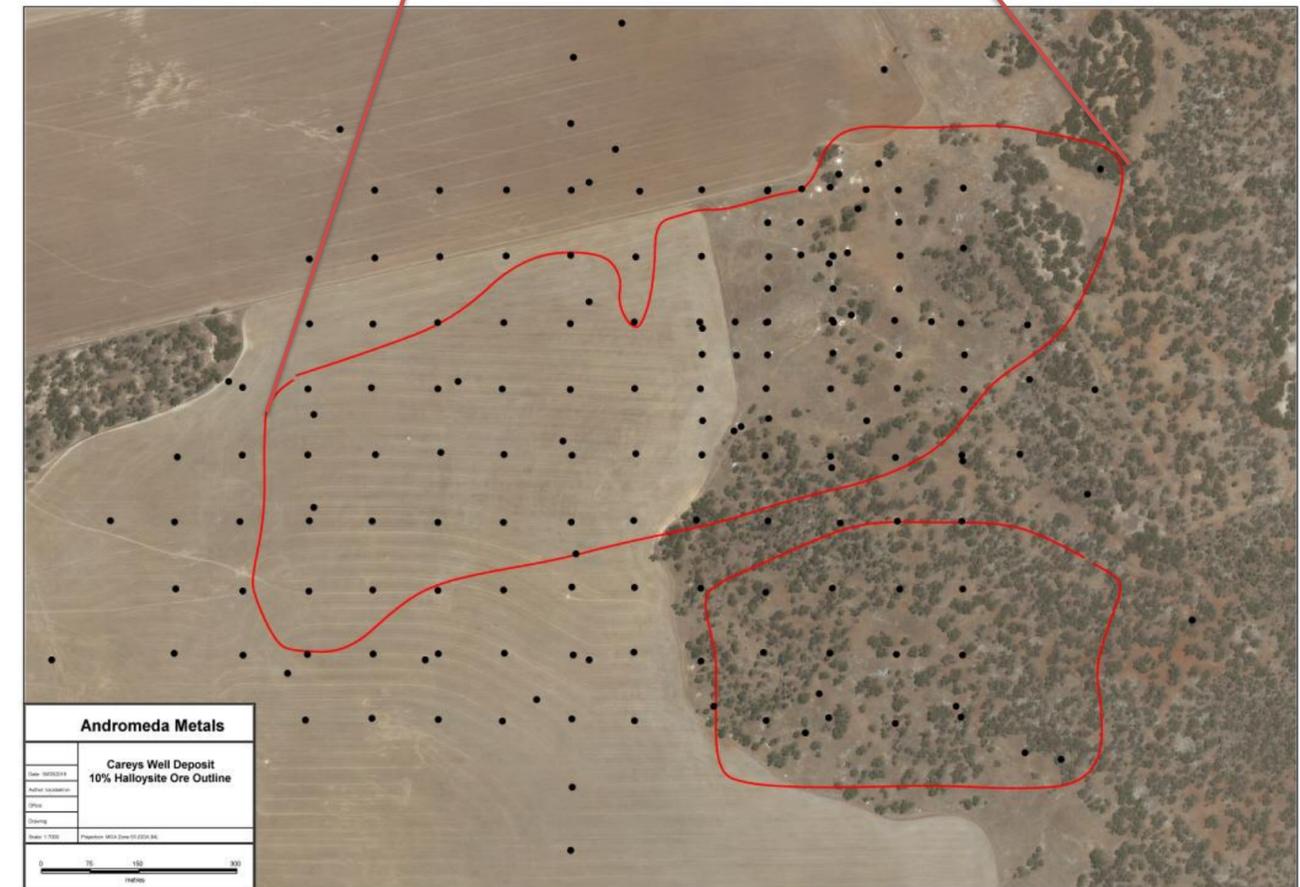
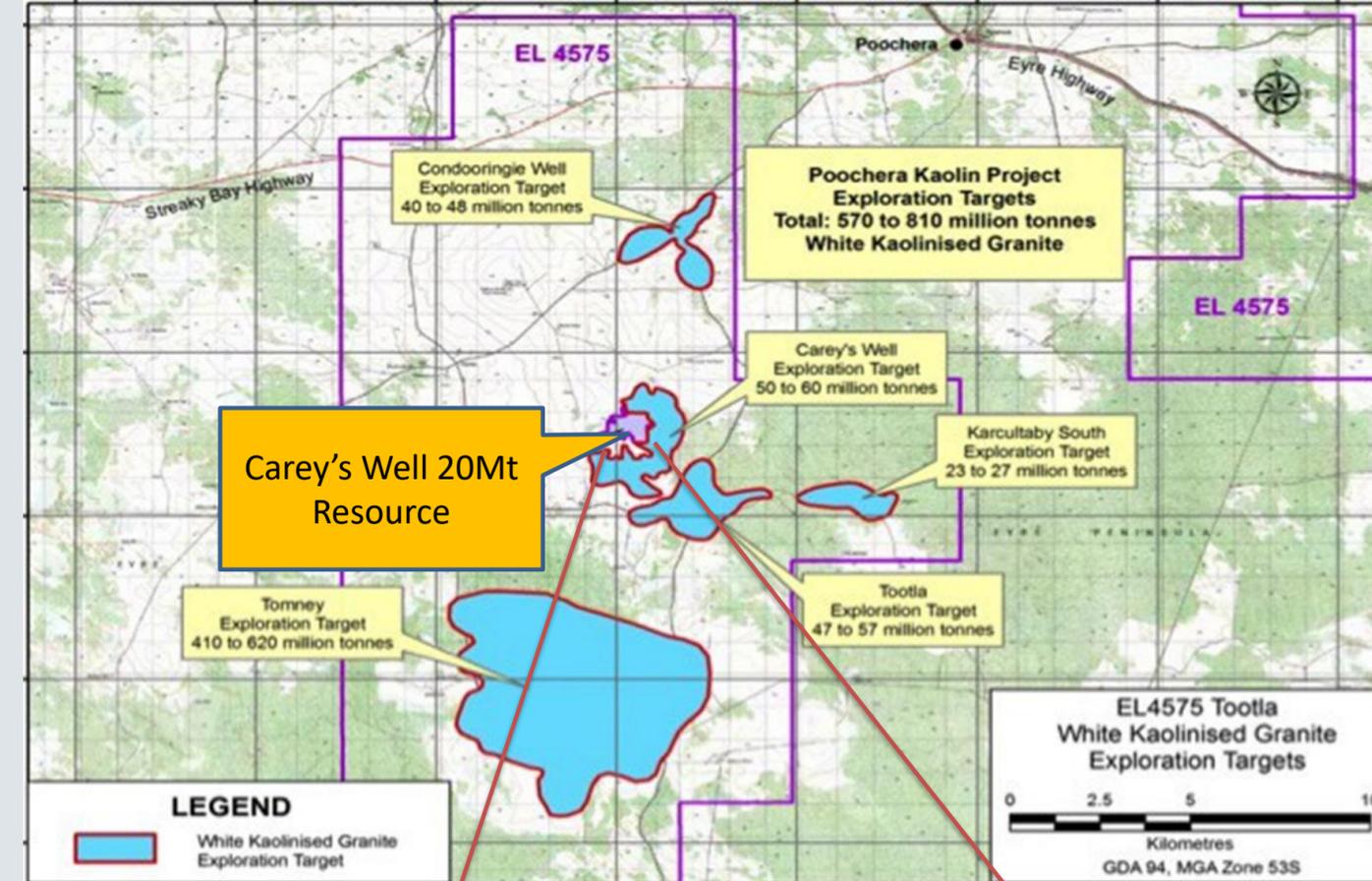


# Defined Resource

## JORC 2012 Resource Estimate for Carey's Well

- Total 20Mt\* of “bright white” kaolinised granite
- Halloysite component of 9.7Mt
- Extensive drilling campaign just completed and sample analysis in progress

\*Total resource adjusted due to updated bulk density measurements

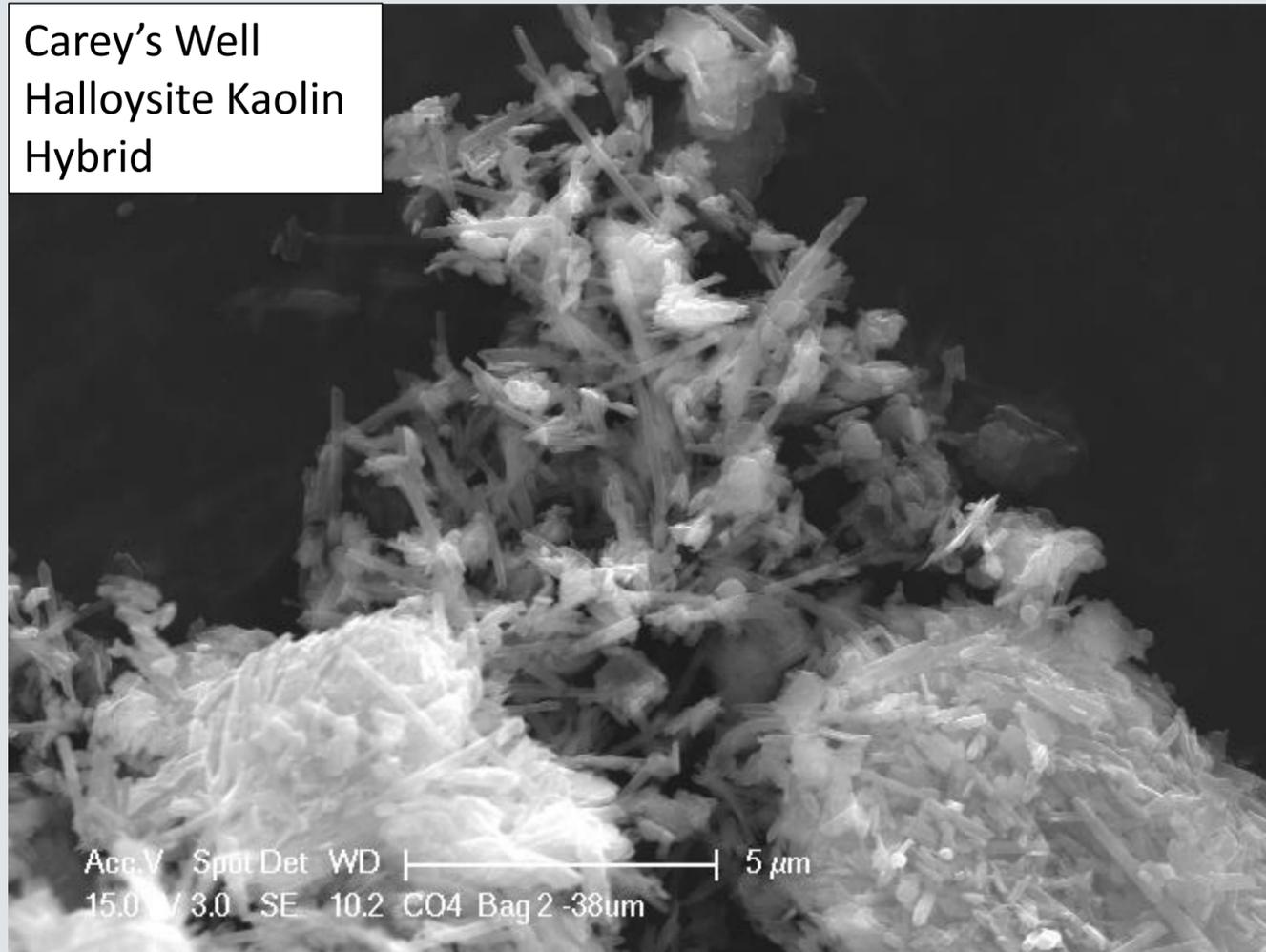


# What is Halloysite Kaolin?

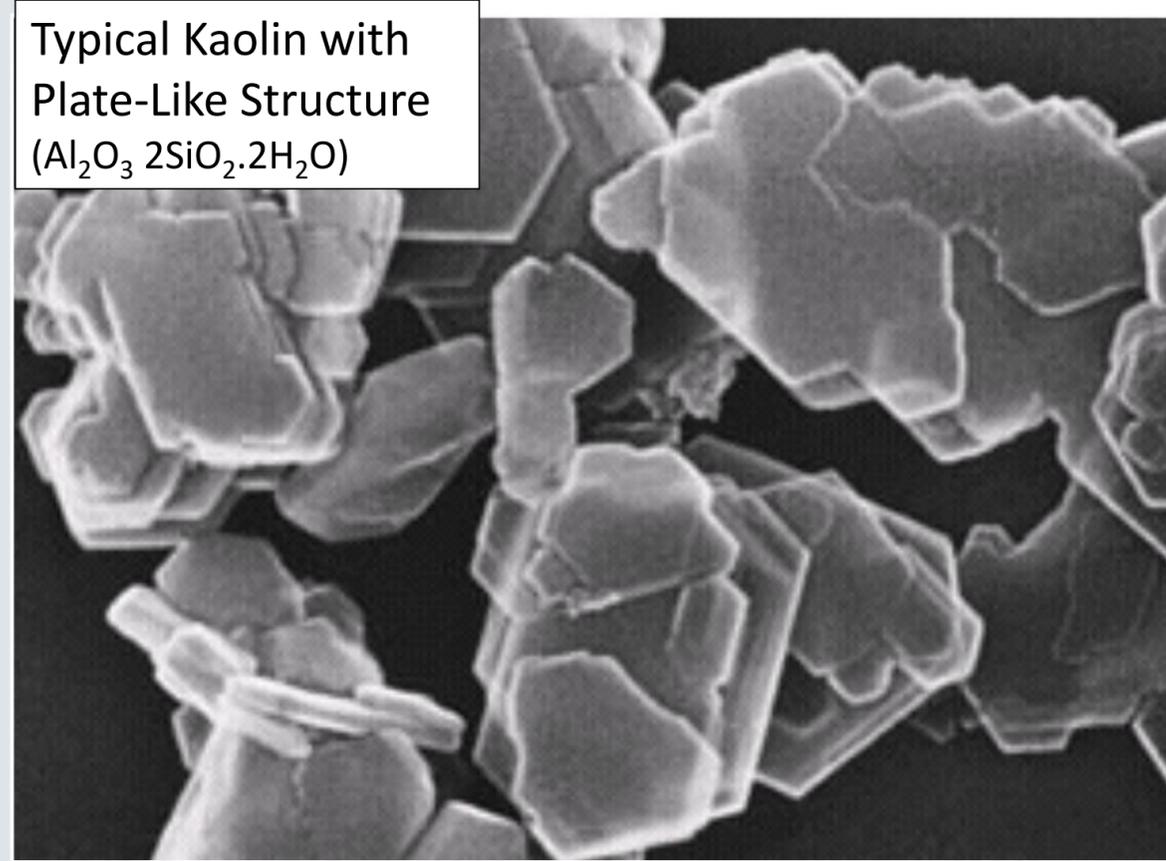
Halloysite is a rare 'tubular shaped' derivative of kaolin that has a wide variety of industrial uses

The Carey's Well material is a naturally occurring hybrid blend of halloysite and kaolin

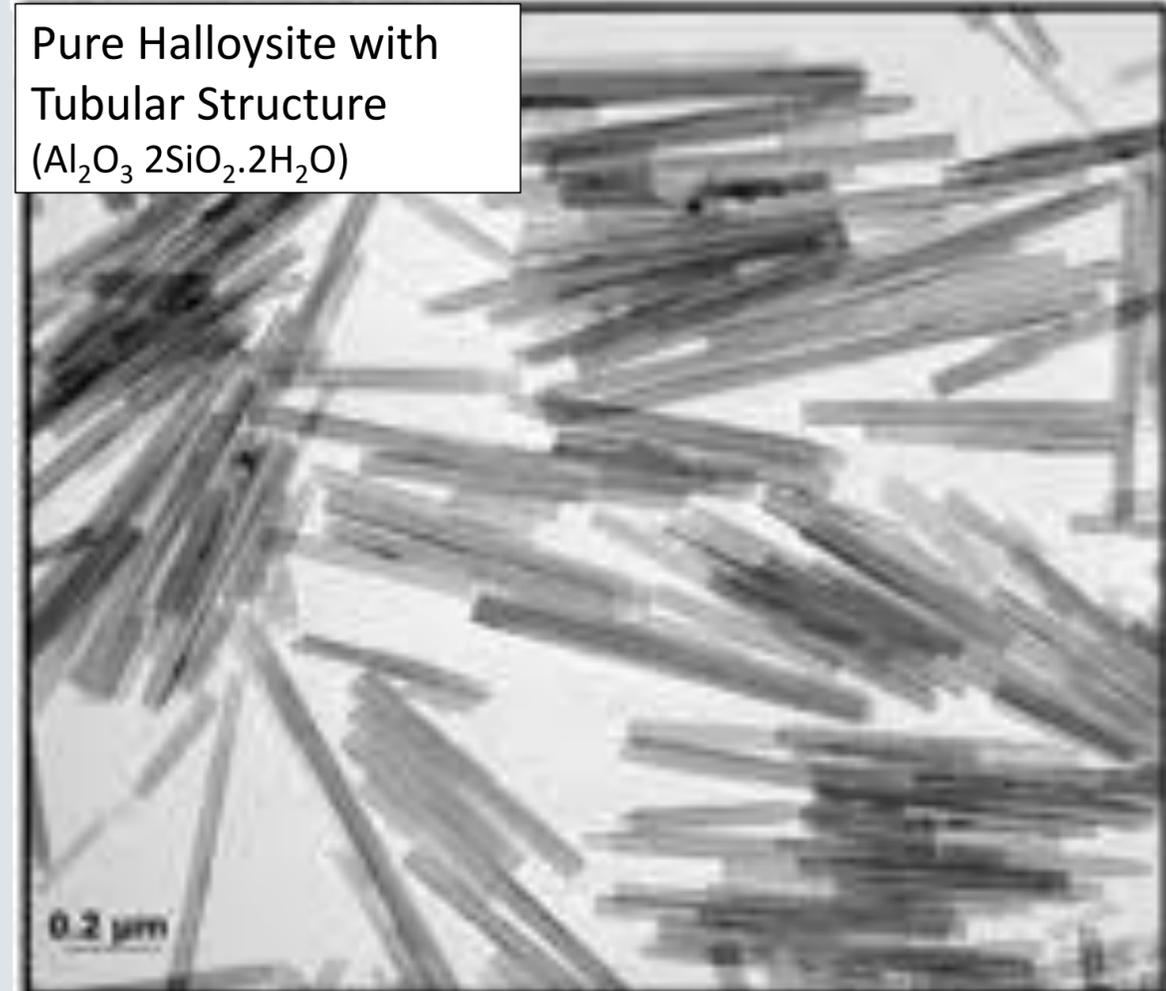
Carey's Well  
Halloysite Kaolin  
Hybrid



Typical Kaolin with  
Plate-Like Structure  
( $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$ )



Pure Halloysite with  
Tubular Structure  
( $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$ )



# Product & Target Markets

for halloysite kaolin

## Mature Established Markets

- Ceramics - for high-quality porcelain
- Catalysts - for Fluid Catalytic Cracking (FCC)

## New and Emerging Markets

- High Purity Alumina production (HPA)
- Halloysite Nanotube Technologies

## Indicative Relative Commercial Values

- Pure Kaolin - AU\$300/t
- Kaolin/Halloysite Hybrid - AU\$500 - AU\$1000/t
- Pure Halloysite - US\$3000/t upwards
- HPA 4N – US\$30,000 to US\$35,000/t

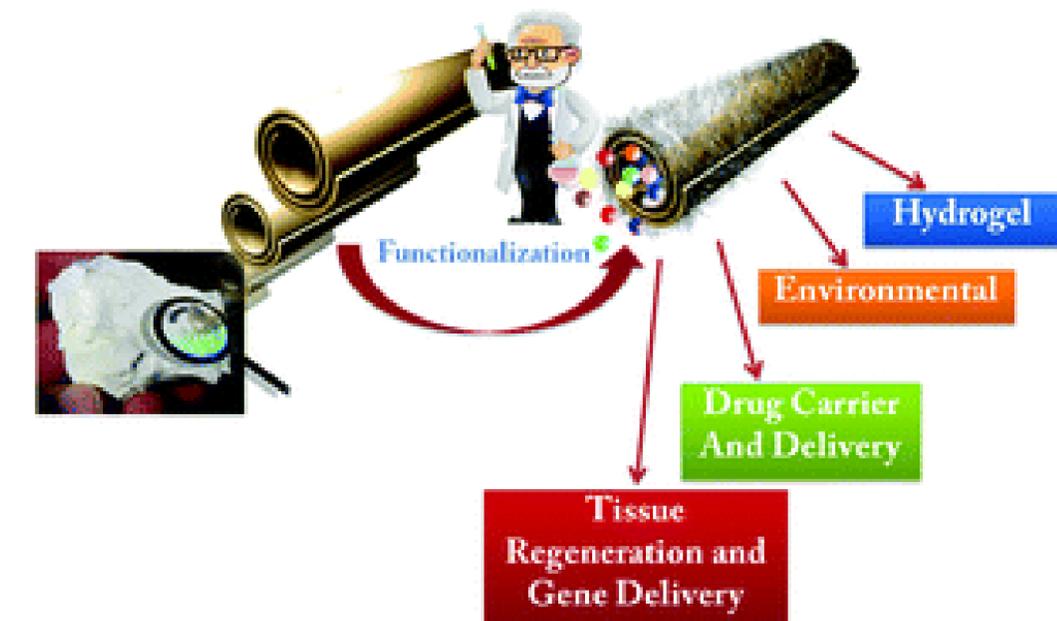
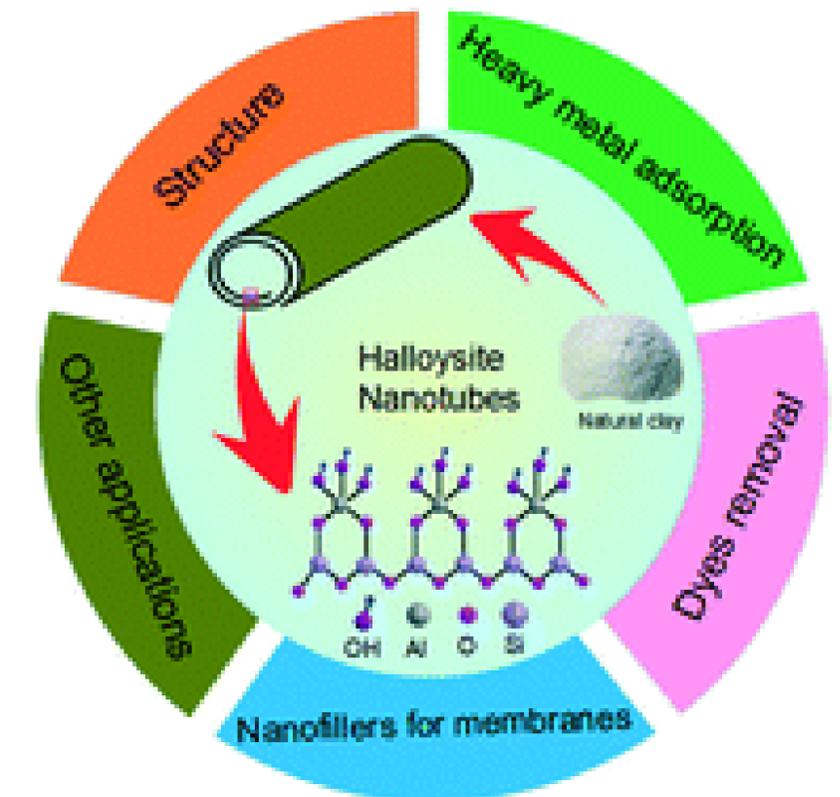


# Nanotechnology Applications

- Global Innovative Center for Advanced Nanomaterials - University of Newcastle using Poochera halloysite kaolin in ground-breaking nanotube technology R&D
- Halloysite IP Joint Venture with Minotaur Exploration (announced May 16<sup>th</sup> 2019)

## Emerging Applications:

- Batteries and Super-Capacitors
- Water Purification
- Carbon Dioxide Capture - Storage and Conversion to Fuel
- Medical Delivery of Drugs
- Construction – Delivery of Biocides
- Agriculture – Delivery of Pesticides and Fertilisers



# Marketing Strategy

## Opportunities

### Short Term

- **Direct Shipping Ore** – early cash flow

Testing in progress with several companies in China, Japan and India

### Medium Term

- **Fully Processed Mineral** – second phase value add

Technical approval for > 200,000t/pa by a number of end users

### Long Term

- **Premium HPA feedstock**

99.99% purity (4N) confirmed in only one purification stage

- **Nanotechnology**

Advanced stage research



# Bulk Sampling & Processing Trials

## Bulk Sampling

- >200t bulk sample taken in October 2018

## Commercial Processing Trials

- Commercial scale dry processing – Completed
- Full scale wet processing – Q2 2019
- Commercial application trials to follow

## Commercial Agreements

- Seek binding agreements for DSO and processed mineral

Bulk Sampling  
at Carey's Well



Dry Processed  
Mineral



# Mine Plan

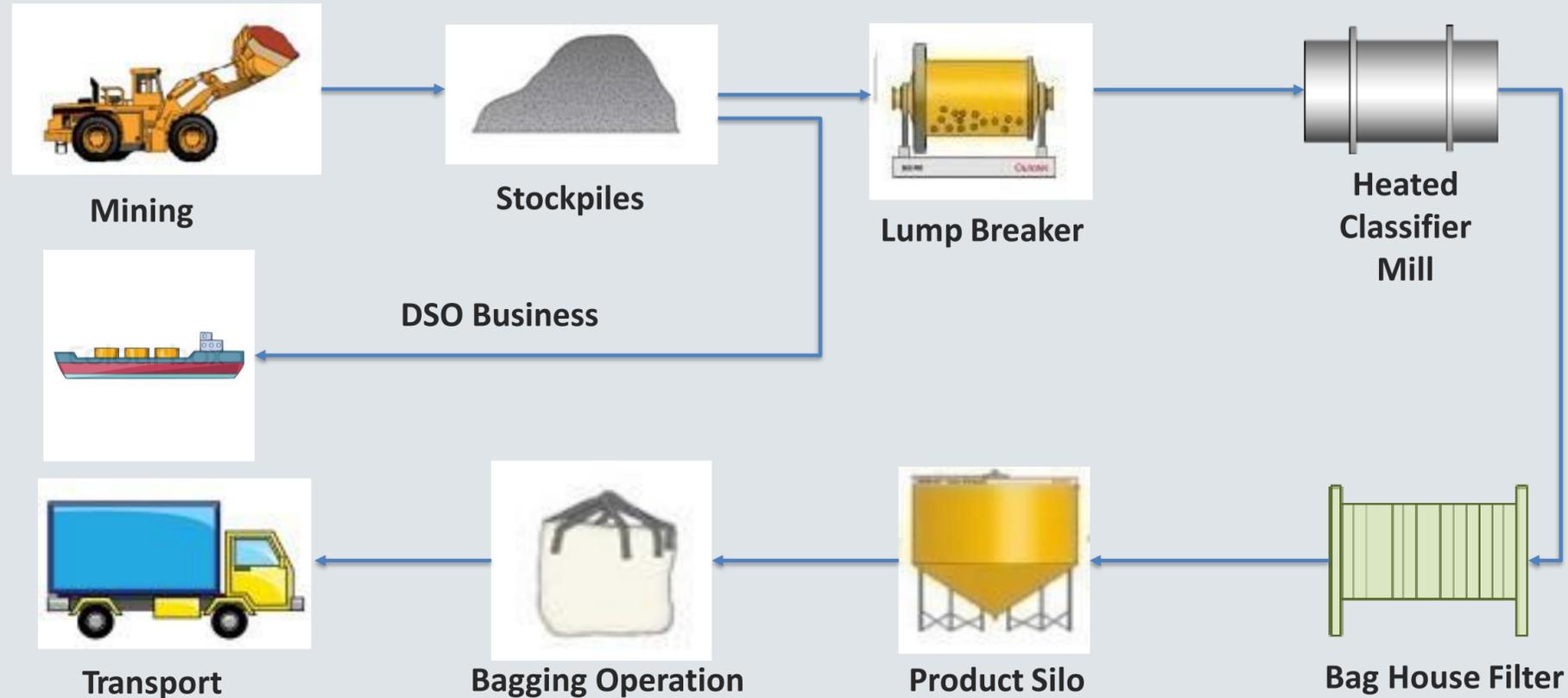
- Open cut quarry
- Low stripping ratio
- Campaign mining using contractors
- Stockpile at site and/or near port facility
- Pit backfill and progressive mine rehabilitation



# Processing Options

Following commencement of DSO business

- Second stage dry-processing to remove 50% waste (sand)
- Transport cost reduced > half
- Potential to give a high value market ready product (testing in progress)
- Toll wet-processing overseas

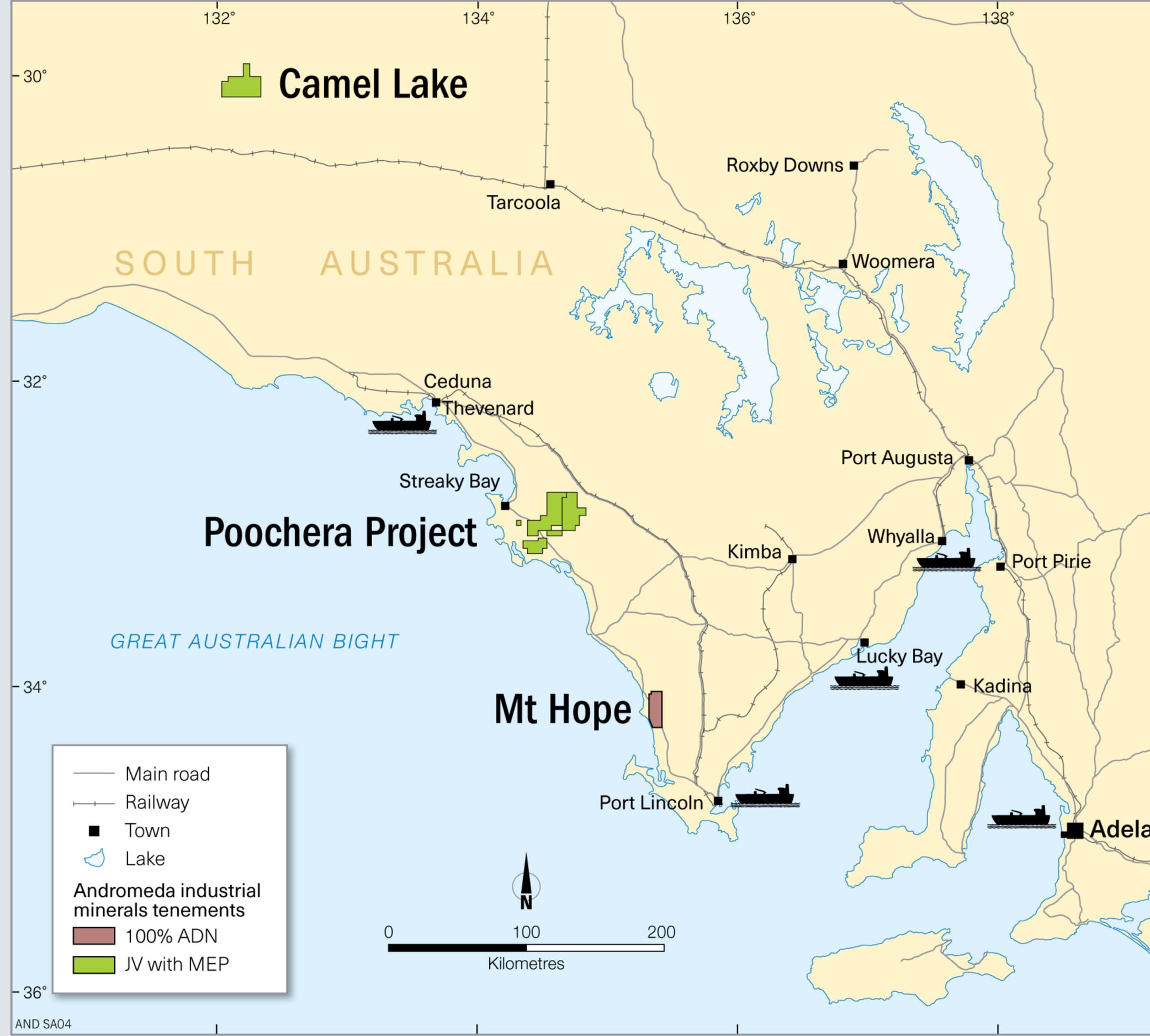


Streaky Bay Pilot Plant



# Existing Infrastructure

- Adjacent to Streaky Bay, SA
- Ports at Ceduna and Lucky Bay have capacity and offer suitable shipping options
- Cost and accessibility assessments are in progress



# Poochera Project – Key Deliverables

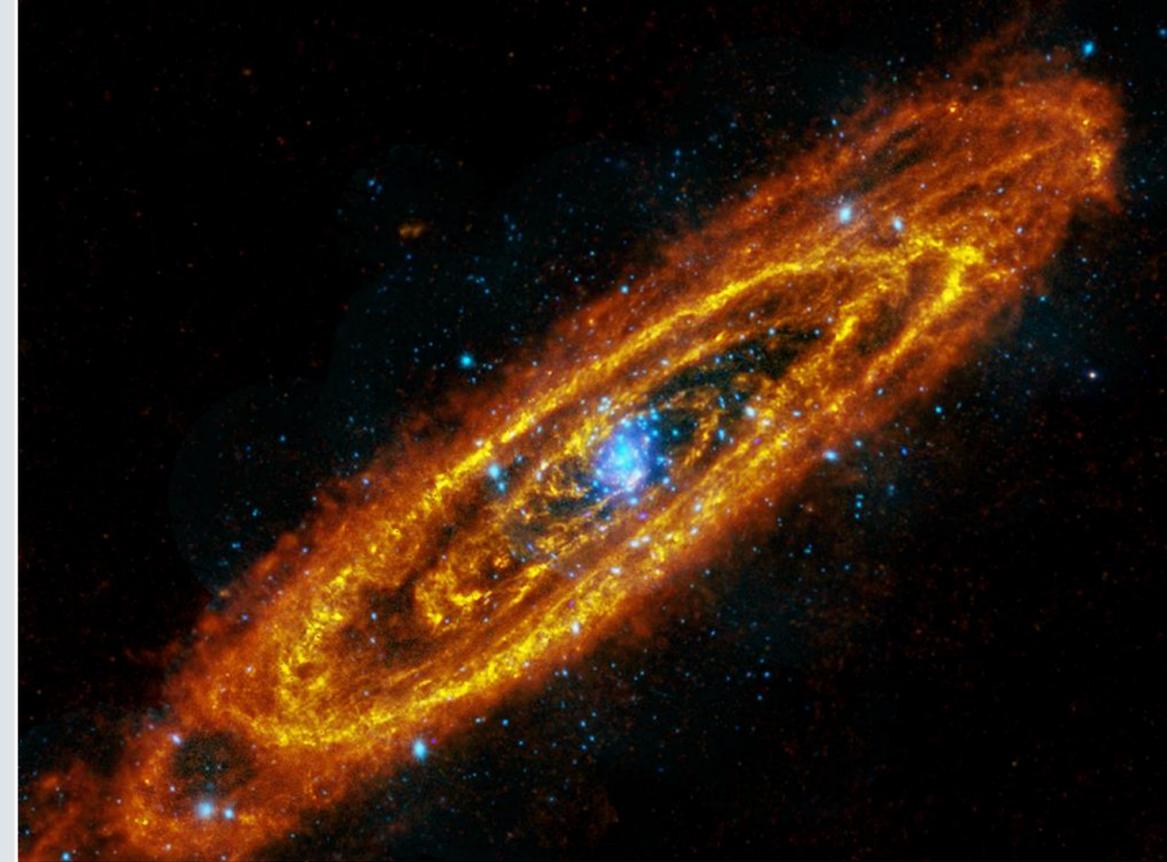
- DSO customer testing in China, Japan and India
- Dry processing trials in USA and China
- Product testing of dry and wet processed mineral by targeted customers
- Binding customer offtake agreements for DSO and processed products
- Complete testing from April drilling program to finalise mine design
- Optimum logistics options identified
- Completion of Scoping Study
- Rapid progression to feasibility studies and mine permitting
- Progress halloysite nano-technology R&D
- Identify partner for HPA development



# Summary

- South Australia has one of the world's largest resources of halloysite kaolin
- This is a relatively high value industrial mineral
- Global demand is increasing\*
- Global production is decreasing
- Andromeda is well positioned to become one of the world's leading producers of this mineral
- Huge blue-sky potential in HPA and nano-technology

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



## Thank You

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