



Halloysite/Kaolin & High Purity Alumina Development Opportunity

October 2018

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 H&SC Pty Ltd and Minotaur Exploration and previously released to the ASX. It is 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
- 18 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 experience including 15 years with Imerys – world's largest industrial minerals company
- 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 marketing/sales throughout Asia and Europe

Nick Harding *Executive Director*

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

Andrew Shearer *Non Executive Director*

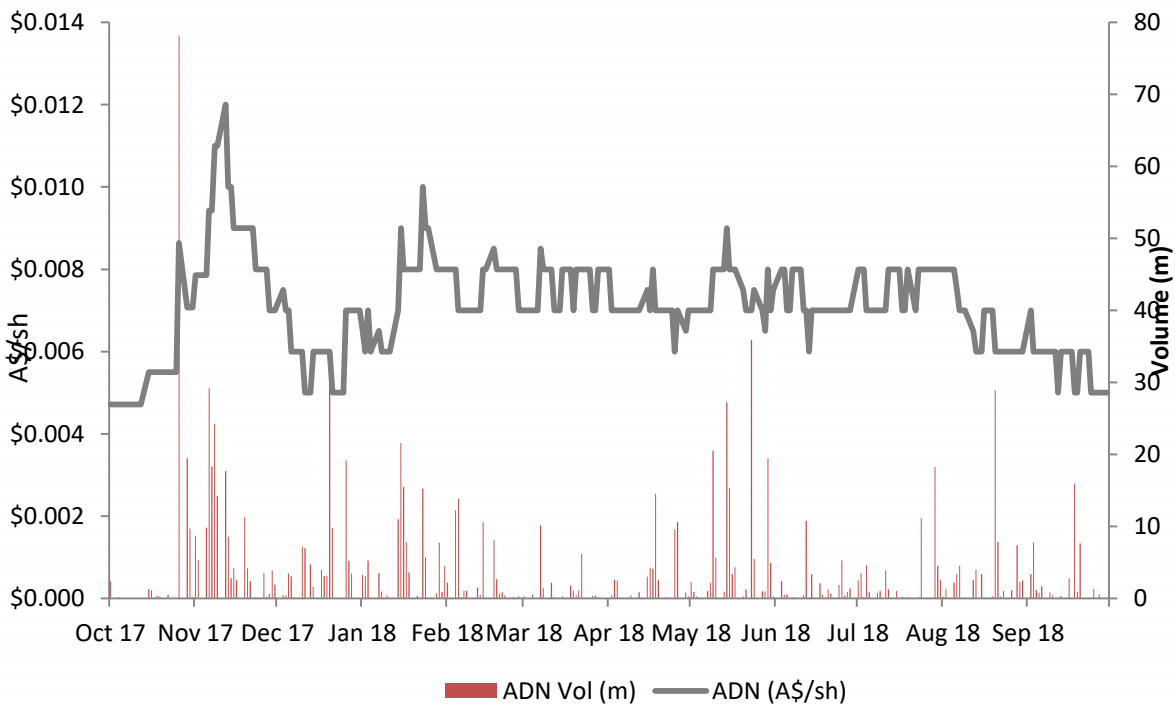
- Geologist/geophysicist with 23 years experience in the mining and finance industries
- Currently a resources analyst
- NED with Northern Cobalt (ASX:N27)

CAPITAL STRUCTURE (30 September 2018)

Shares on Issue	1,079,361,560
Listed Options (\$0.012/sh, exp 30/11/2020)	486,280,451
Unlisted options (\$0.015/sh, exp 31/03/2019)	2,476,507
Cash (30/09/2018)	\$1.77m
Market Capitalisation	\$5.4m

Top 5 Shareholders (20 APRIL 2018)

Buratu Pty Limited (Connolly Super Fund A/C)	12.88%
John & Shaun McDonald (Southland Snipe SF A/C)	4.52%
Vulture Fish Pty Ltd	3.31%
J Moody Nominees Pty Ltd (The Moody Super Fund A/C)	1.91%
Edward Garnet Bunn	2.13%



The Andromeda Transformation

- JV with Minotaur Exploration to acquire the Poochera HPA/Halloysite-Kaolin Project in South Australia
- Poochera contains the **World Class** halloysite-kaolin Carey's Well Deposit:
 - ❑ JORC 2012 Resource of 23.9Mt¹
 - ❑ Significantly larger with higher purity than peer projects
 - ❑ JV includes the Camel Lake high purity halloysite deposit
- Testwork proved a **high purity alumina (HPA)** feedstock capability of 99.99% (4N)
- Testing in progress targeting a 99.999% (5N) alumina product
- Indicative **off-take agreements in place** from Chinese ceramics companies for >200,000t/pa of processed halloysite-kaolin product
- EOI for minimum 200,000t/pa of raw ore from Chinese processing plant
- Estimated short 1-3 year timeframe to bring Carey's Well into production with a projected **lengthy mine life**
- Significant new opportunities emerging for Halloysite Nanotechnology applications

¹ ASX Release 22/9/18 Minerals Resource Update for the Poochera Project

Demand for HPA
growing at
28%pa



Poochera

Project Overview

Defined Resource at Carey's Well

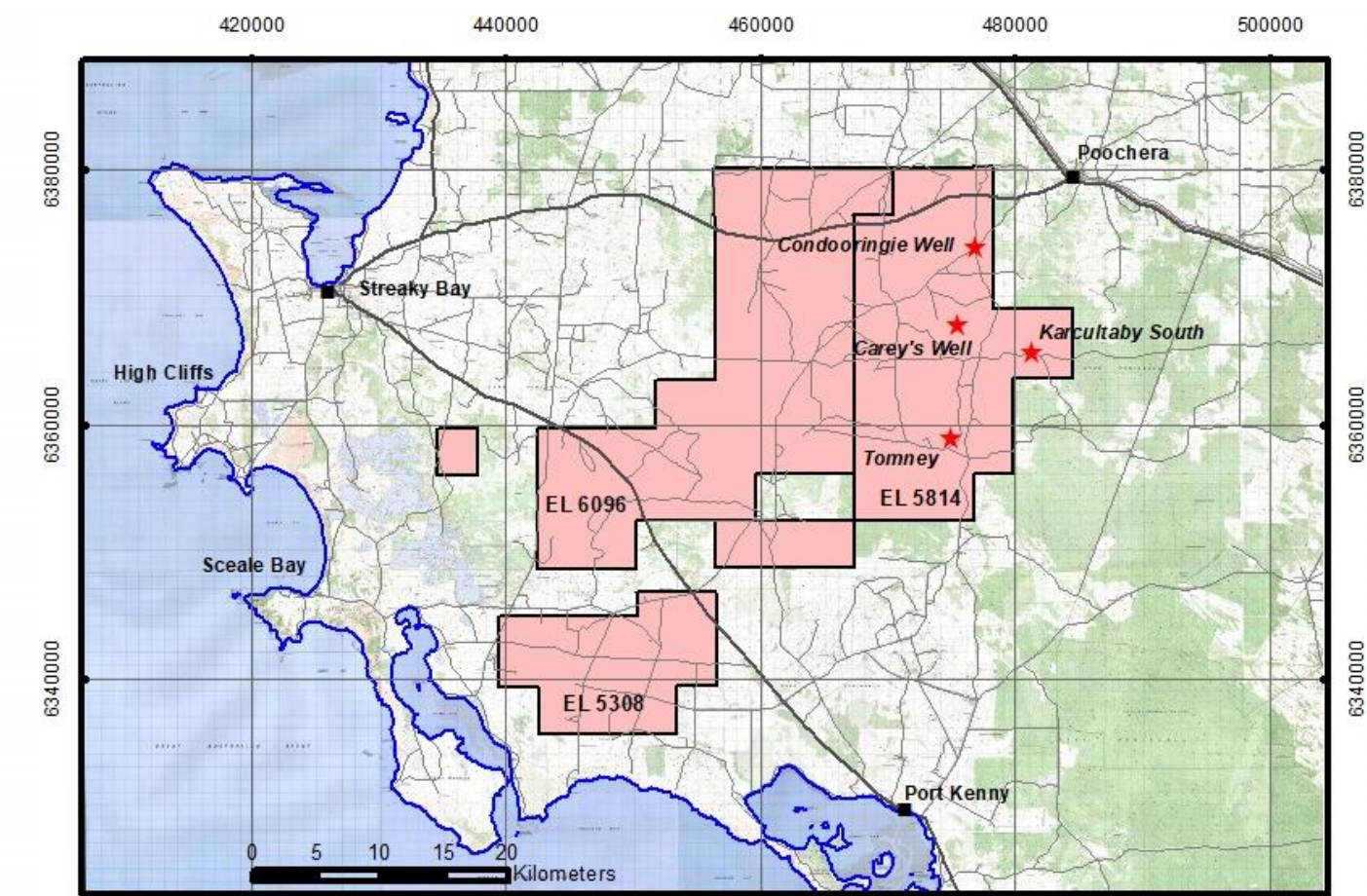
- One of the world's largest deposits of its type

Extensive Testwork Completed

- Resource drilling
- Bulk sampling
- Pilot plant processing
- High Purity Alumina analysis

Infrastructure

- Adjacent to Streaky Bay, SA
- Highway access to ports at Ceduna and Lucky Bay
- Tenements located on freehold land (sheep/wheat)
- Simple dry quarrying type extraction process



What is Halloysite Kaolin?

A Rare and Valuable form of Kaolin

Main Mature Established Markets

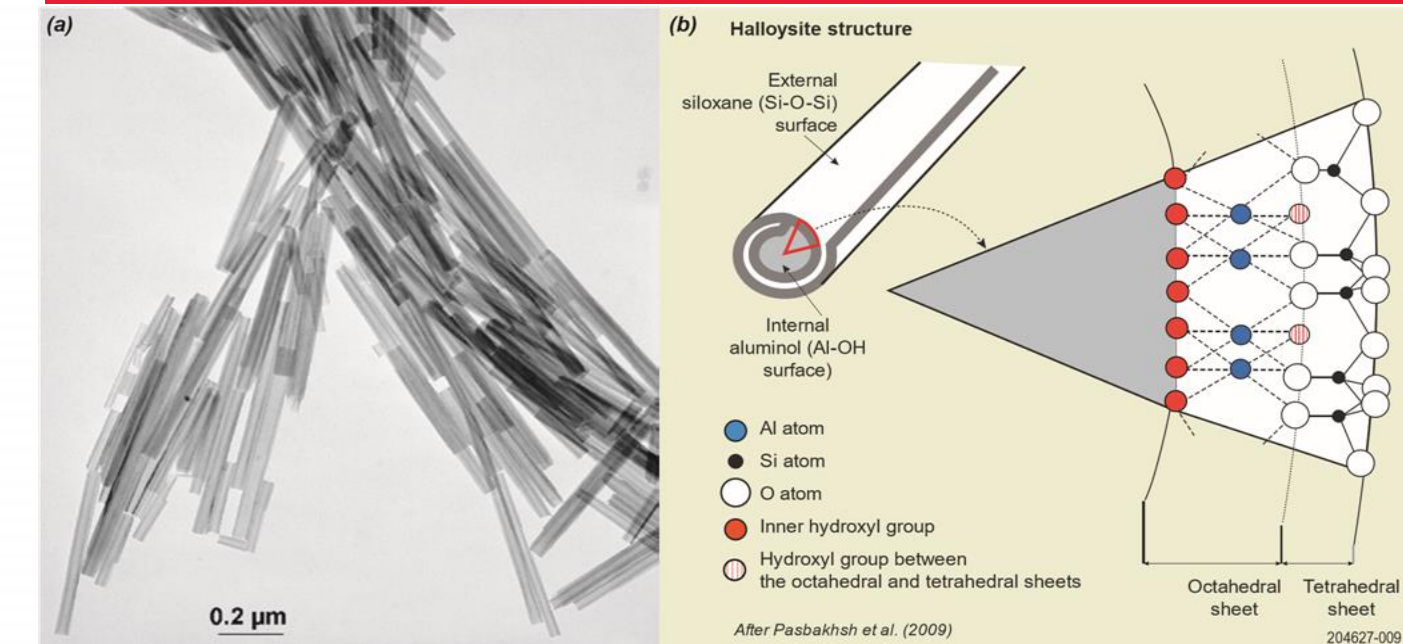
- Ceramics - Valued product for high-quality porcelain (Approx.\$500 - \$1000/t)
- Catalysts – Superior catalyst for Fluid Catalytic Cracking (FCC) which is a crucial process in petroleum refineries (up to \$800/t)

New and Emerging Markets

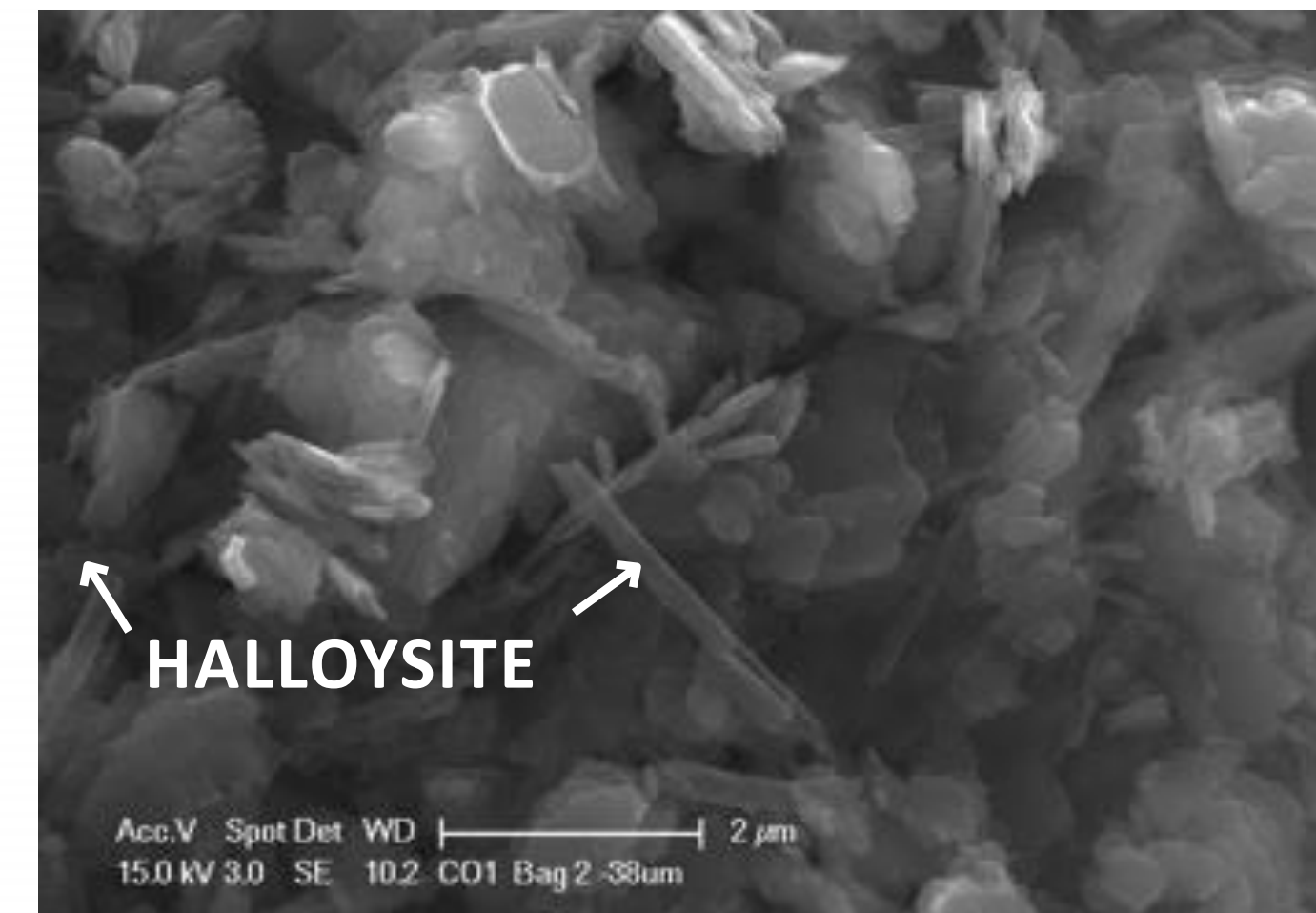
- Carbon Capture: nanotube technology
- Batteries, superconductors and water purification: carbon nanostructures
- HPA Production
- Remediation
- Carriers: biocides, pesticides and medicines
- Coatings: flame retardants and nucleating agents

The Carey's Well material is a naturally occurring hybrid blend of halloysite and kaolin that can be mined and dry-processed at site, or wet-processed at a secondary location

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



Carey's Well Halloysite Kaolin Hybrid Product



Global Opportunities

High Purity Alumina

The ability for Carey's Well to produce high purity 4N or even 5N HPA represents a very significant opportunity for development

- Traditional HPA manufacturing is very high cost using refined aluminum metal feed
- The new kaolin feed production process can reduce costs by more than half
- Being developed by new entrants Altech Chemicals (ATC), FYI Resources (FYI) and Hill End Gold (HEG)
- Halloysite Kaolin from Carey's Well is high purity feed reaching 4N in one purification stage instead of the usual minimum of two
- The acquisition has the potential to position Andromeda with the lowest Market Capitalisation, highest tonnage and grade resource in the Australian HPA market

	Type	Mkt Cap (A\$m)	In-Situ Resource (Mt)	Mass yield (%)*	Al ₂ O ₃ (%)*	Fe ₂ O ₃ (%)*	TiO ₂ (%)*
Andromeda Metals (ADN)	Kaolin	6	12.7	49%	37.0%	0.56%	0.45%
Hill End Gold (HEG)	Kaolin	11	3.68	43%	34.7%	1.6%	1.12%
FYI Resources (FYI)**	Kaolin	18	9.6		23%	0.80%	
Altech Chemicals (ATC)	Kaolin	83	12.7		29.5%	0.70%	0.45%
Collerina Cobalt (CLL)	Lateritic	67					

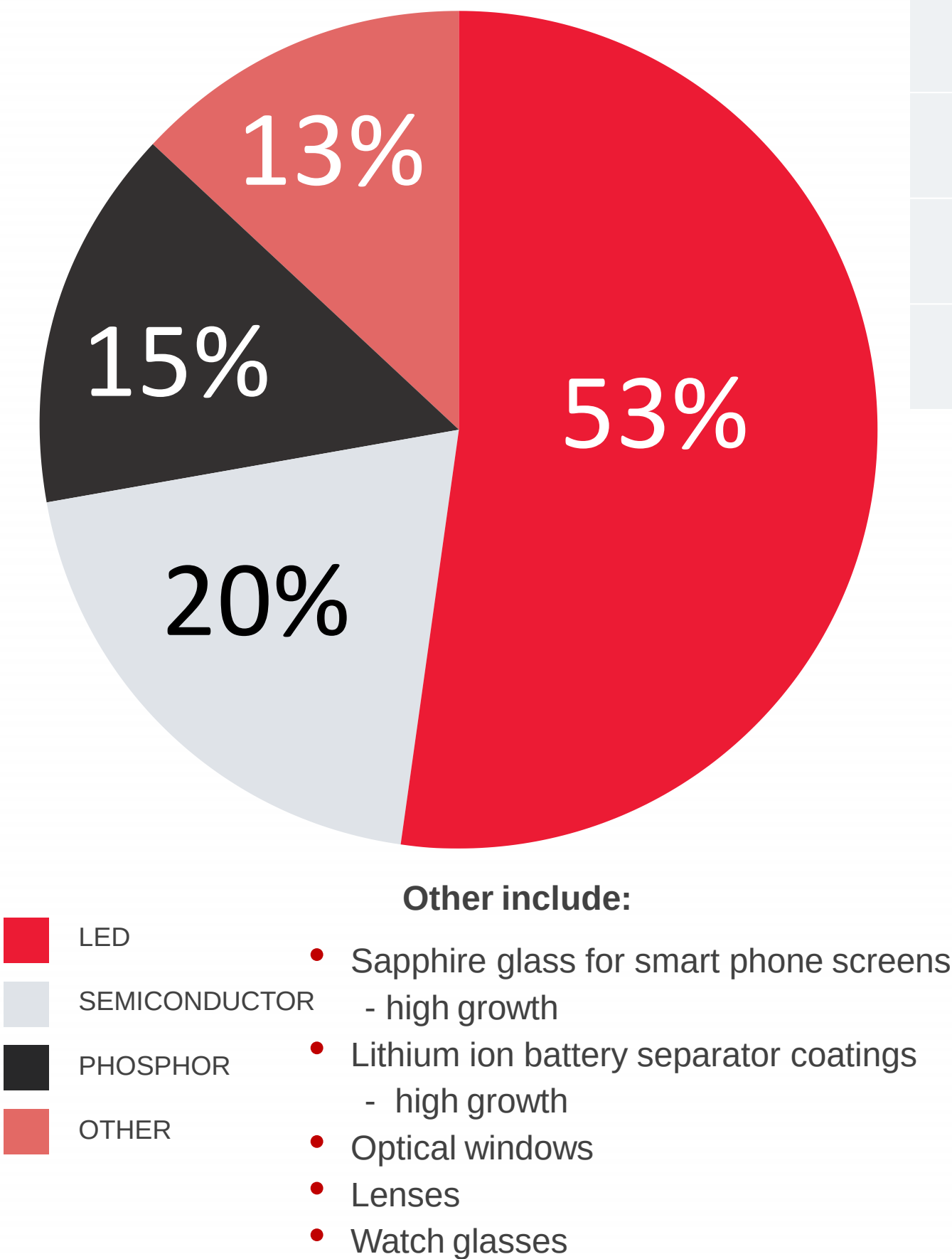
* Note the various grades reported by the companies are based on different mesh sizes in particular FYI -45um, ATC -300um, HEG 63um & ADN -45um.

** Reported grades for FYI are based on ICP assay methodology versus XRF for other companies, therefore not shown on this table

High Purity Alumina (HPA)

- High Purity Alumina (HPA) is aluminum oxide (Al_2O_3) powder with a purity equal or greater than 99.99%
- HPA demand is experiencing dramatic growth due to its extensive use in today's high-performance electronic devices and electric vehicles, with market analysts forecasts for annual growth rate well above 20%
- HPA pricing escalates significantly based on purity levels

4N HPA CONSUMPTION BY APPLICATION (2016)



PRODUCT	PURITY	PRICE (US\$/t)
3N HPA	99.9%	\$6,000
4N HPA	99.99%	\$23,000
5N HPA	99.999%	\$50,000

- 4N HPA is the largest sector of the HPA market
- Current global 4N HPA market demand is ~26ktpa²
- This is expected to increase to 125ktpa³ by 2025 driven demand in LED lights, speciality glass and lithium batteries

^{2,3} Ursatall Data Collection High Purity Alumina Industry Market Report May 2018

Global Opportunities

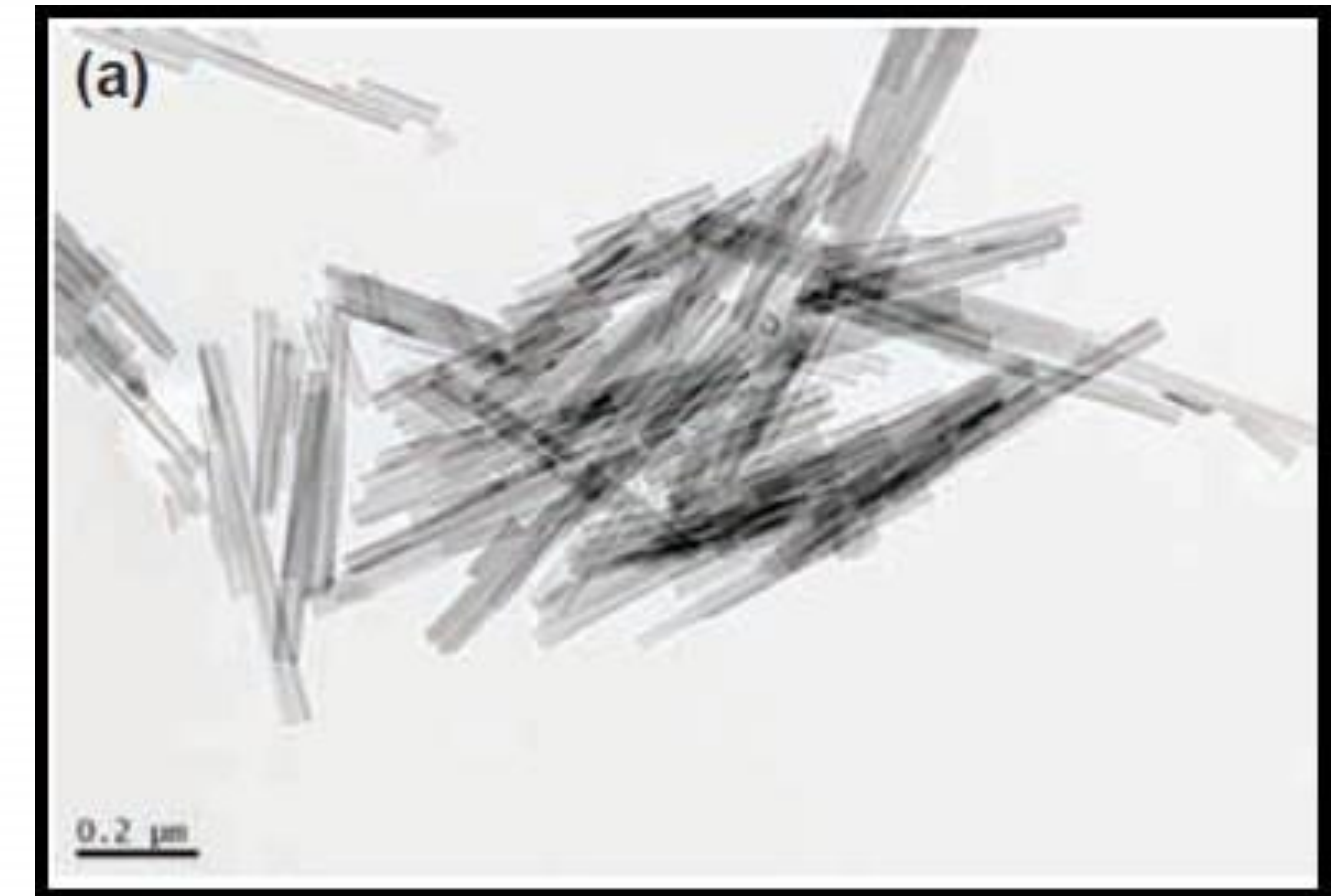
Nanotechnology Applications

The Global Innovative Center for Advanced Nanomaterials (GICAN) industry hub at the University of Newcastle is already finding excellent results with Carey's Well halloysite kaolin in nanotube technology research

Application research areas include:

- Low cost replacement for expensive carbon nanotubes – water purification
- Production of carbon nano-structures – battery and super capacitor performance improvements
- Carbon dioxide capture, storage and conversion to fuel
- Micro-containers - delivery of drugs, biocides and other active agents

Pure Halloysite



This new research of halloysite nanotubes for use in technologies such as CO₂ capture/conversion, super capacitance, water purification and battery application represents an enormous opportunity with unlimited blue sky potential

Carey's Well

Pathway to Production

Bulk Sampling

- Extract approx. 200t for full-scale commercial processing trials (wet and dry)
- Use product for full-scale commercial application trials
- Lock in legally binding agreements for DSO and processed material

Key Actions

- Characterise the halloysite component of the resource
- Complete Feasibility Study
- Complete all studies to obtain a Mining Licence
- Complete HPA testwork for 5N product
- Market to the petroleum industry for catalyst cracking
- Collaborate with University of Newcastle to advance nanotechnology application opportunities
- Commence direct shipping ore business
- Contract toll production of fully refined product



Investment Summary

- The Poochera Halloysite Kaolin Project gives Andromeda an advanced project capable of being advanced rapidly through to operation
- The project comprises a globally significant resource of high quality product with a lengthy mine life
- The price of halloysite kaolin is forecast to increase by 10% p.a. and global demand exceeds supply
- Significant new opportunities emerging for High Purity Alumina and Halloysite Nanotechnology applications
- DSO business with a number of potential customers provides early cashflow opportunities
- Indicative offtake agreements with ceramic manufacturers adds support for potential high margin revenues generation

The price of
halloysite kaolin
is forecast to
increase by
10% p.a.

Example photo of kaolin mineralisation, not from the Poochera Project



CONTACT DETAILS

James Marsh

Managing Director

Nick Harding

Executive Director

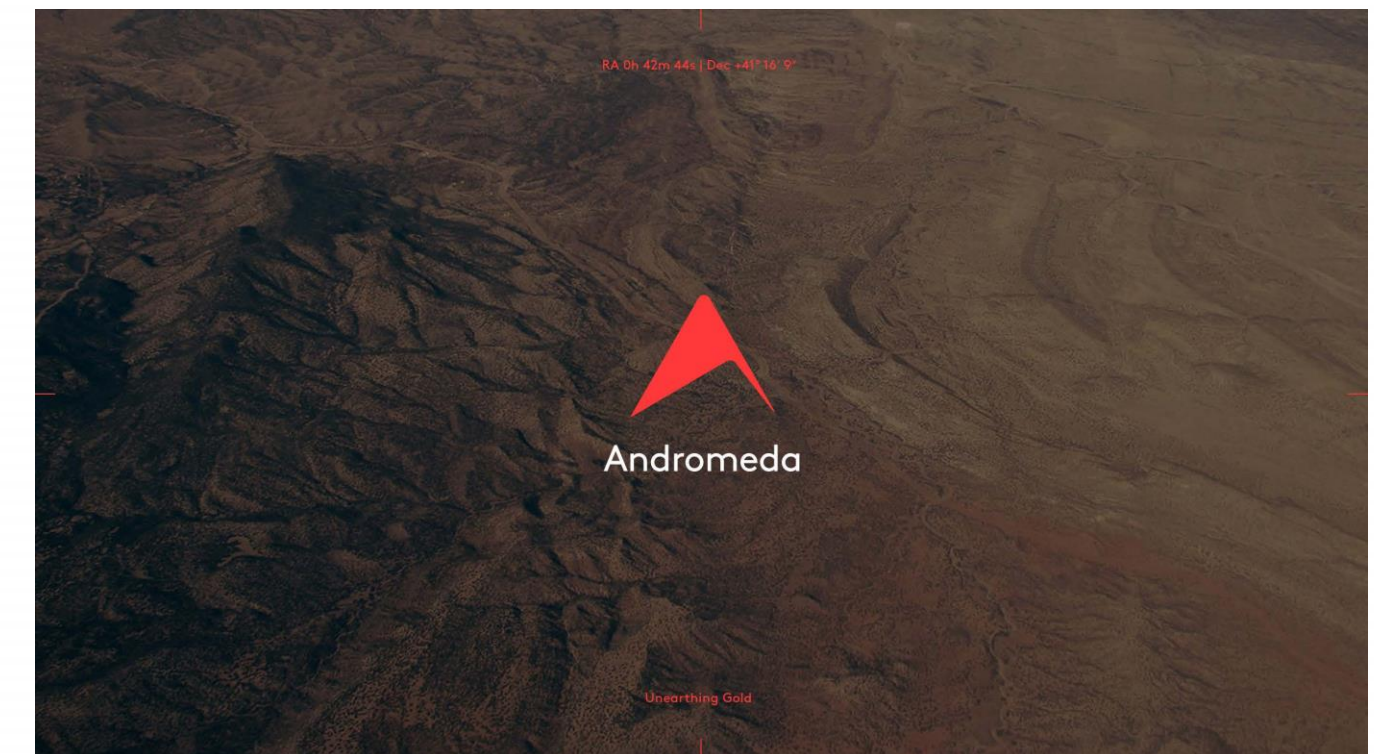
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APPENDICES



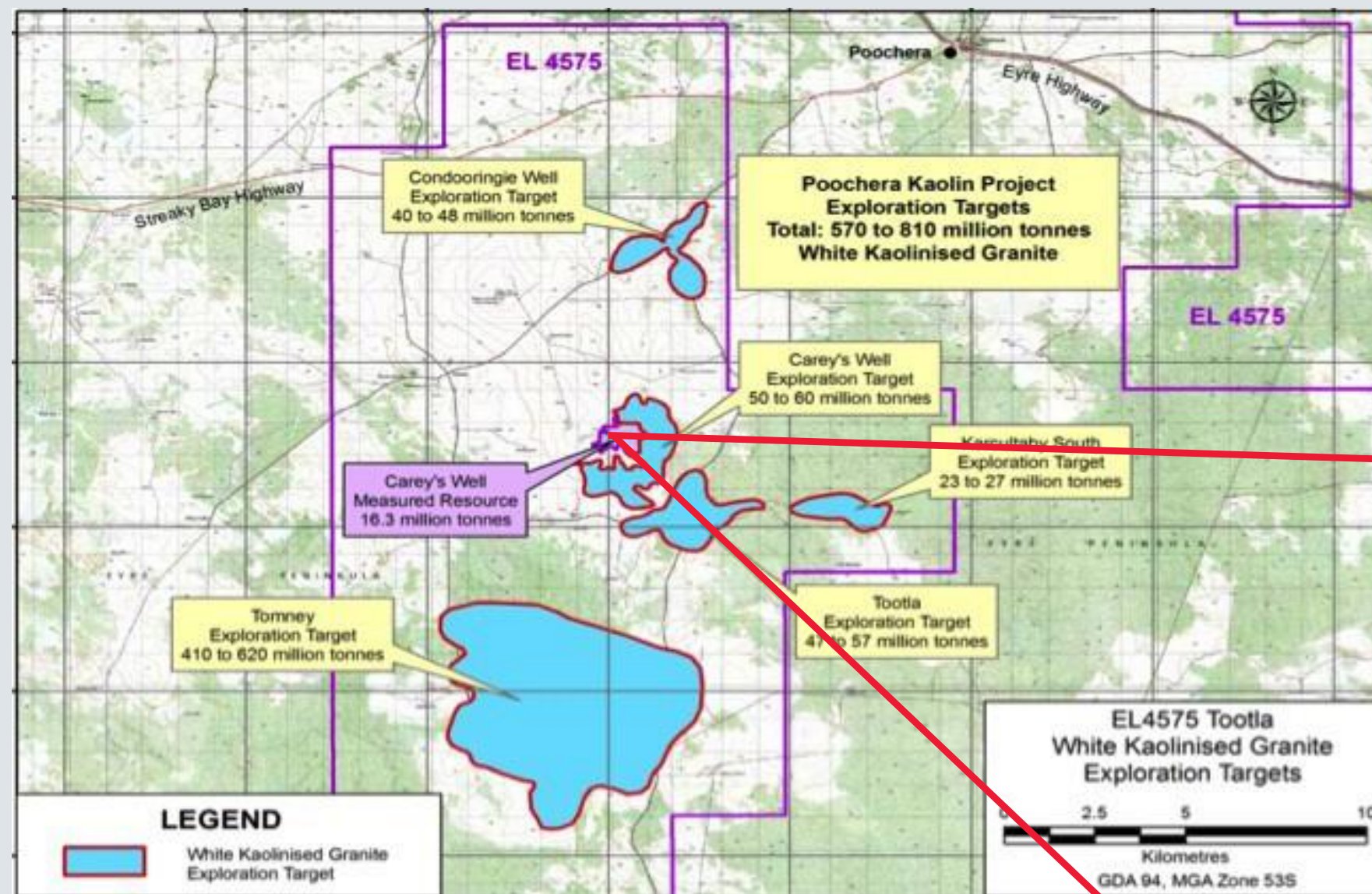
FARMIN DEAL PROPOSALS

Shared risk/reward on both projects while limiting shareholder dilution

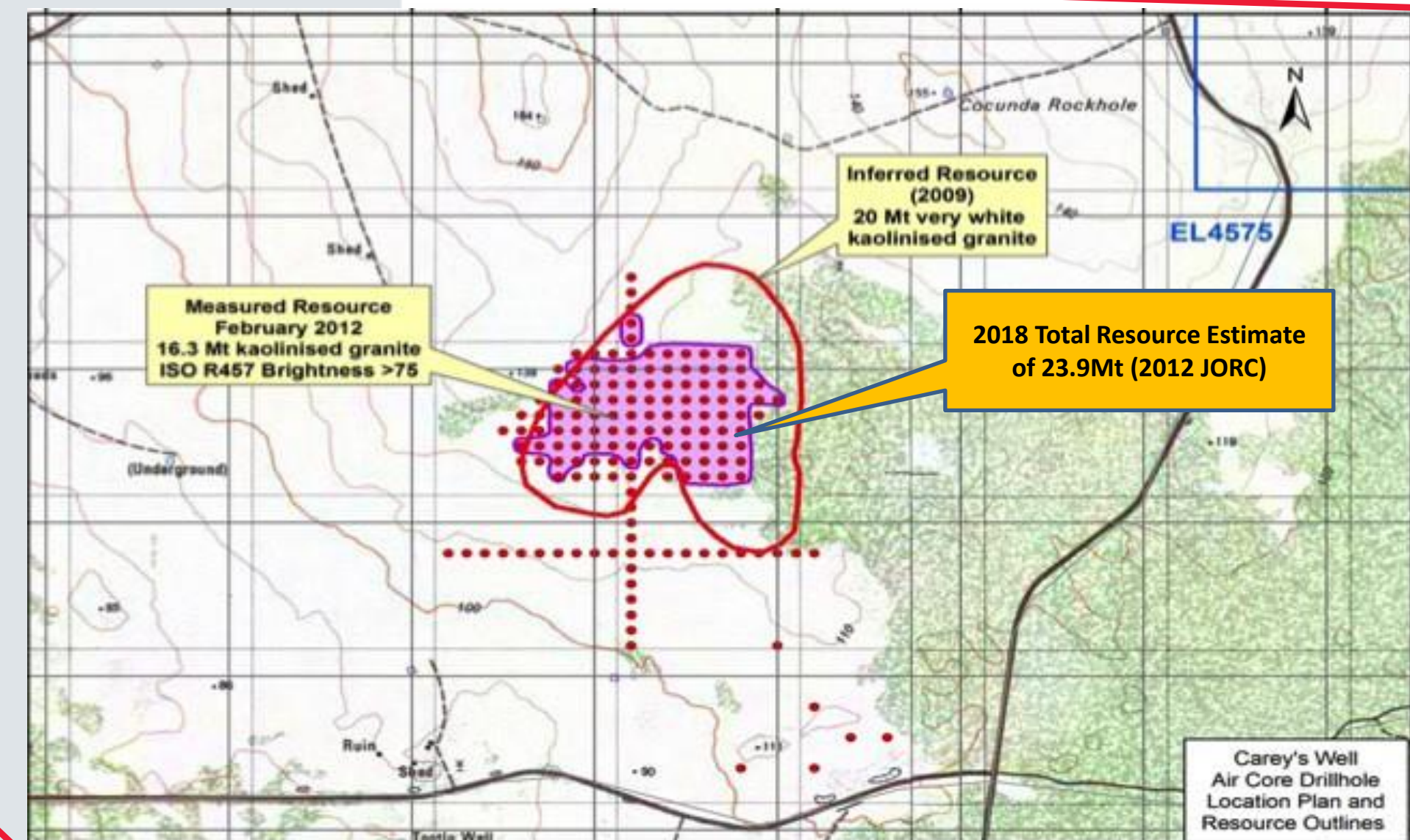
Deal delivers Andromeda a cost effective entry into the HPA/Halloysite sector

HOA TERMS	
Minimum Spend within 9 months	\$400,000
Spend to achieve 51%	\$3m within 2 years
Spend to achieve additional 24%	\$3m within 3 years
75% on Decision To Mine (DTM)	

POOCHERA PROJECT & CAREY'S WELL DEPOSIT



JORC 2012 Resource Estimate 23.9Mt of “bright white” kaolinised granite using an ISO Brightness R457 cut-off of 75 for minus 45 micron kaolin product



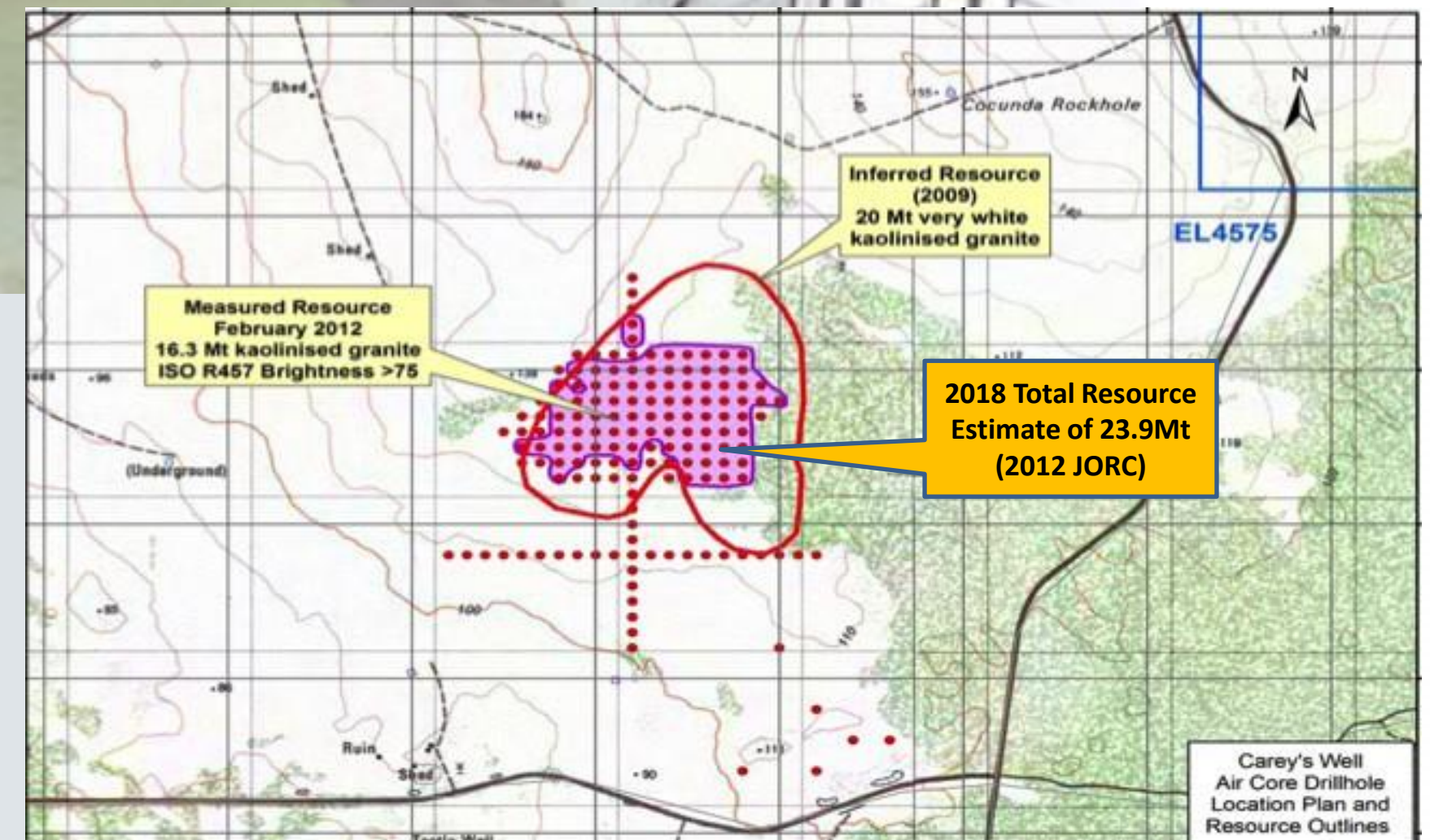
The Carey's Well kaolin Mineral Resource Estimate, and the supporting Exploration Data was published by Andromeda Metals on 22nd August 2018 in accordance with the JORC Code 2012

Carey's Well

Ready to Go

- Minotaur spent in excess \$5M on geology and product development
- Pilot plant work demonstrated recovery of ~ 75% kaolin for semi-refined (dry processed) product.
- A range of halloysite/kaolinite product blends developed and technically approved by customers
- Commercially viable logistics options for shipment of bulk products
- Baseline environmental study showed no impediments to mine approval
- Technical approvals with end users and indicative offtake agreements signed for over 200,000tpa of fully processed product

Streaky Bay Pilot Plant



CAREY WELL: PROCESS FLOWSHEET

Simple low cost operation

Short construction time

Rapid entry to market

Perfect for resource and location



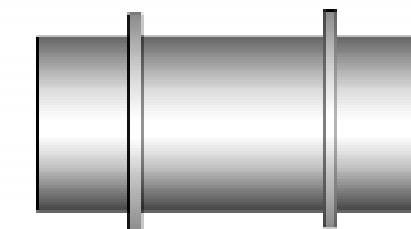
Mining



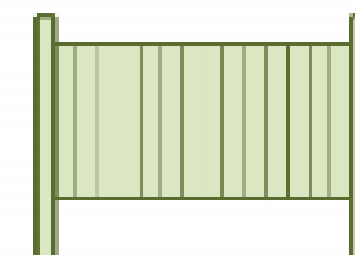
Stockpiles



Lump Breaker



Heated Classifier Mill



Bag House Filter



Product Silo

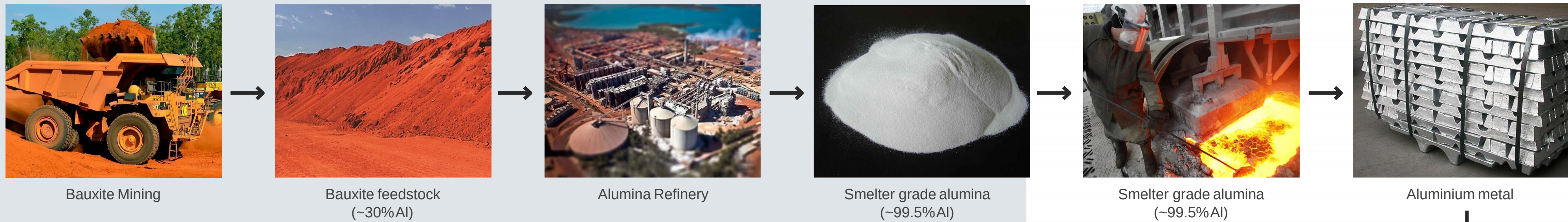


Bagging Operation



Transport

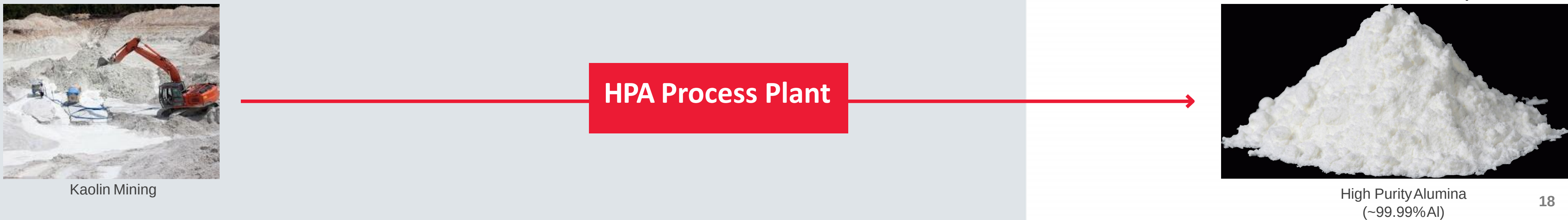
SIMPLIFIED HPA PRODUCTION ROUTE



Traditional multi-stage process route using refined aluminium metal

VERSUS

Simplified route using kaolin



Camel Lake Halloysite Deposit

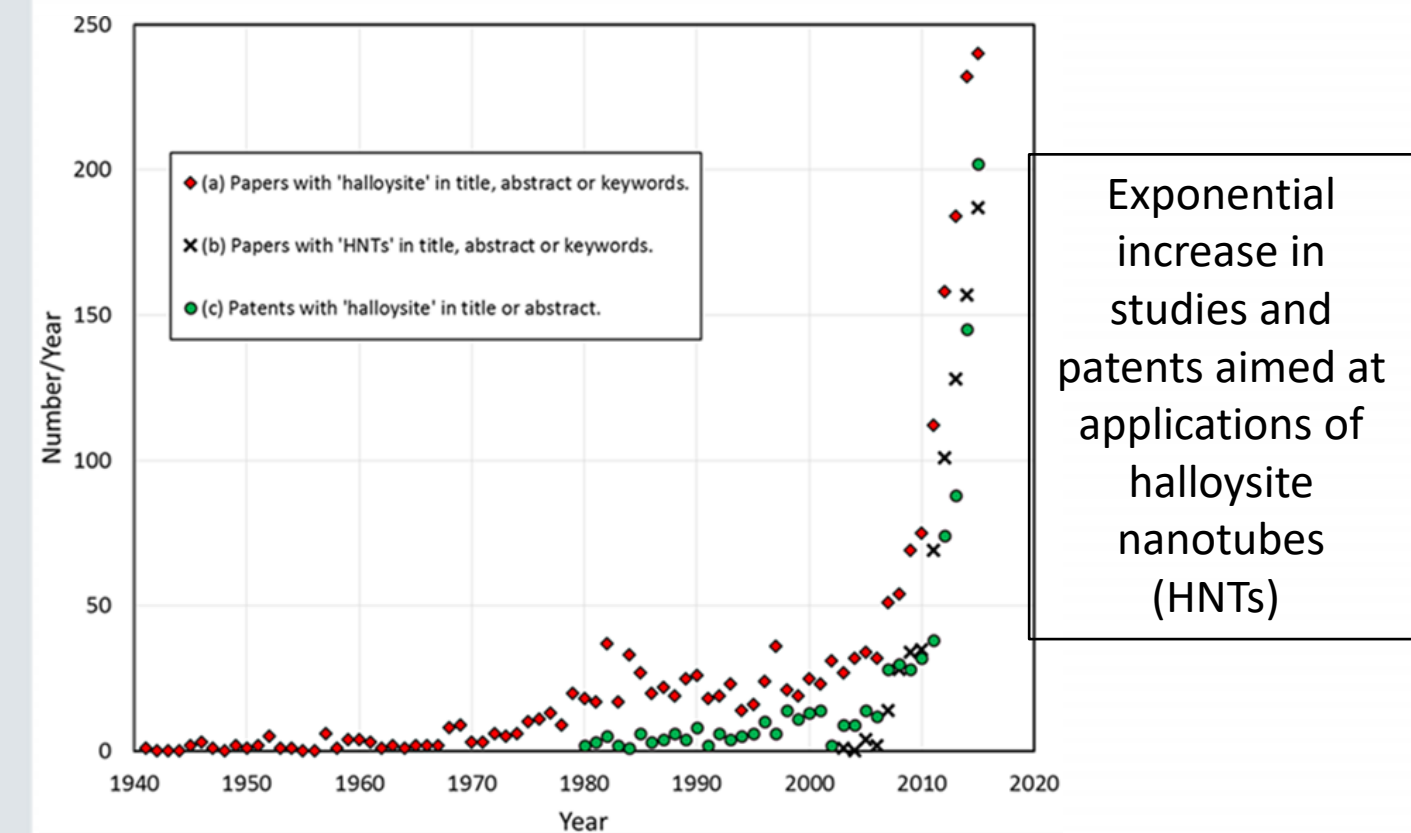
- Pure halloysite is extremely rare in the world
- Current market value up to US\$3000/t
- Only one genuine commercial operation with reducing output due to quality and limited reserves
- World experts believe that Camel Lake is of the highest purity and uniformity
- Recent nanoscience and nanotechnology technologies have opened up numerous opportunities

Applications Include:

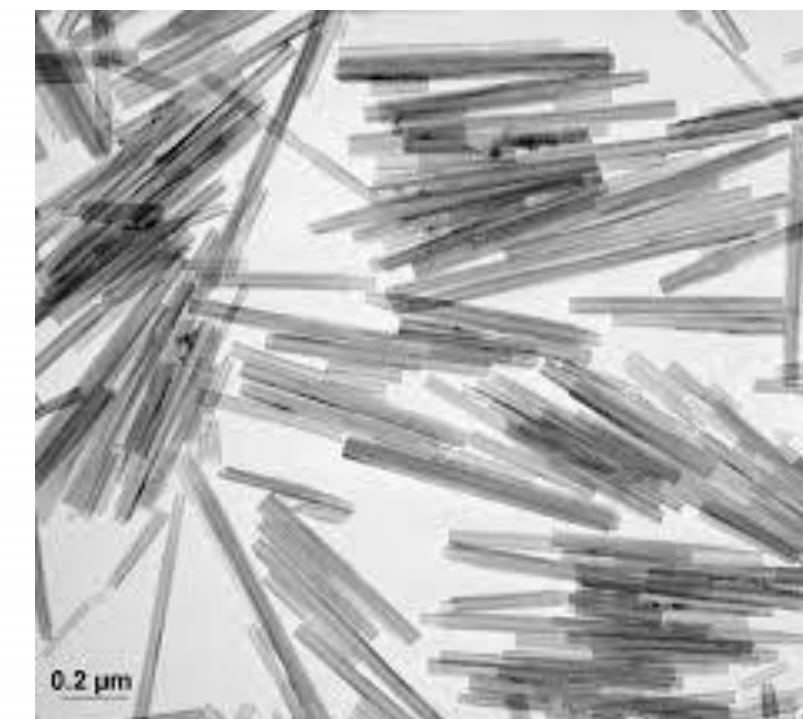
- Nanocomposites with polymers
- Targeted drug delivery and/or the extraction of cancer cells from circulation through the body
- Nanotemplating – production of carbon nanostructures for battery and superconductor optimisation
- Functionalization with chemical and biochemical agents - agriculture, cosmetics and environmental remediation
- Capture, storage and conversion of gases – e.g. CO₂ to fuel
- Environmental and bio-sensors
- Water purification

Since 2005, the number of patents has virtually equaled the number of papers on HNTs

Halloysite is readily translated into important new technologies – much greater than any other clay mineral



Halloysite Deposit Very Close to Surface



Micrograph of High Purity Camel Lake Halloysite



Thank You