



HIGH PURITY ALUMINA & HALLOYSITE/ KAOLIN DEVELOPMENT OPPORTUNITY

April 2018

ASX:ADN

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The estimate of Mineral Resources are not reported in accordance with the JORC Code 2012. A Competent Person has not done sufficient work to classify the estimate of Mineral Resources in accordance with the JORC Code 2012. It is possible that following evaluation and/or further exploration work the currently reported estimates may materially change and hence will need to be reported afresh under and in accordance with the JORC Code 2012. Nothing has come to the attention of Andromeda that causes it to question the accuracy or reliability of Minotaur’s estimates. However, Andromeda has not independently validated Minotaur’s estimates and therefore is not to be regarded as reporting, adopting or endorsing those estimates.

A TRANSFORMATION FOR ANDROMEDA

- Heads Of Agreement ("HOA") with Minotaur Exploration ("Minotaur") to acquire HPA/Halloysite projects and divest the Rover Cu/Au project.
- Poochera Project (South Australia) includes the **world class** kaolin/halloysite Carey's Well Deposit, with a:
 - JORC 2004 Measured Resource of 16.3Mt
 - Resource is larger, has a higher Al% and with less impurities than a number of peer projects
- Testwork underway to determine **high purity alumina (HPA)** feedstock amenability, with results expected during the option period.
- Indicative **off-take agreement** commitments received from a number of Chinese companies keen to lock in long-term supply of high-quality halloysite/kaolin product.
- Estimated short 2-3 year timeframe to bring Carey's Well kaolin-halloysite deposit into production with a projected **+20 year mine life**.
- Significant new opportunities emerging for Halloysite Nanotechnology applications.
- Market analysts forecast demand for HPA growing above 20%pa

Demand for HPA
growing at
>20%pa



EXPERIENCED BOARD AND MANAGEMENT

Rhod Grivas Non-Executive Chairman

Geologist with 30 years experience, including 16 years of corporate/board experience. Previously taken projects from exploration to production, and was Managing Director of Dioro Exploration - South Kal/Frogs Leg Mines. Currently, Chair of Golden Mile Resources (ASX.G88)

James Marsh Managing Director

30 years experience in the industrial minerals industry, specifically kaolin, including first hand experience with the Poochera project.

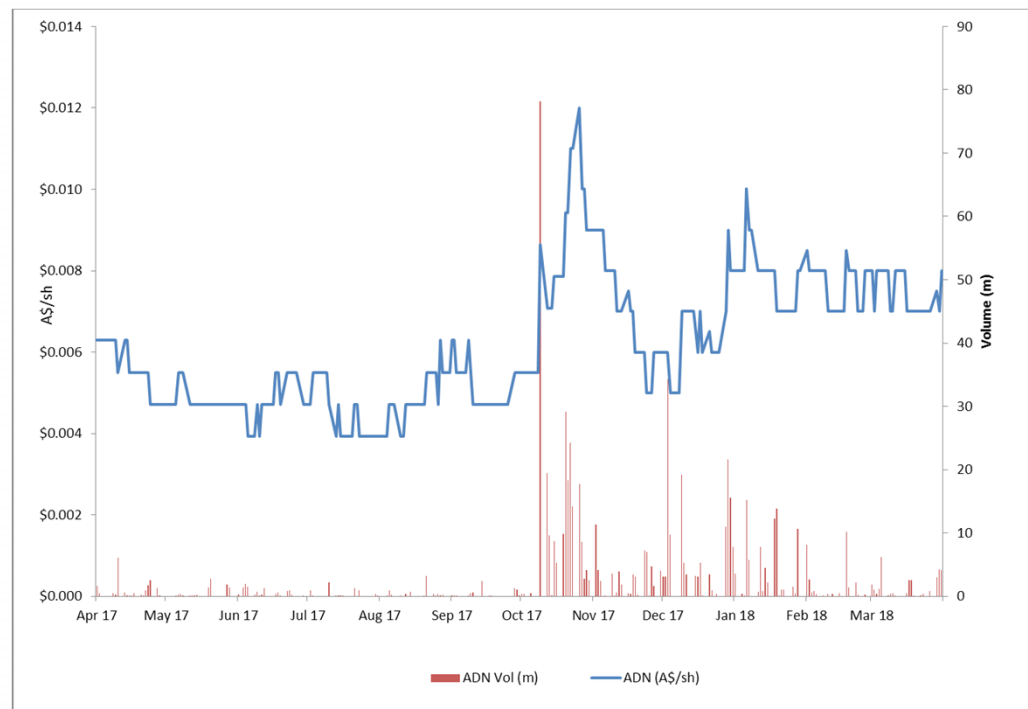
A qualified chemist who has worked extensively in sales and marketing in the industrial minerals sector. James has previously worked for Imerys, the worlds largest industrial minerals company, and has wide experience managing, marketing and sales in Asia and Europe.

Nick Harding Executive Director

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

Andrew Shearer Non Executive Director

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



CAPITAL STRUCTURE (20 APRIL 2018)

Shares on Issue	896,028,227
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 (31/12/2017)	\$1.68m
Market Capitalisation	\$6m

Top 5 Shareholders

Buratu Pty Limited (Connolly Super Fund A/C)	14.3%
Vulture Fish Pty Ltd	2.83%
Edward Garnet Bunn	2.24%
MLB Holdings Pty Limited (MLB Family A/C)	1.91%
M Spicer Investments Pty Ltd (Martin Spicer Family A/C)	1.90%

POOCHERA PROJECT OVERVIEW

Infrastructure

- Adjacent to Streaky Bay, SA, 130km (by road) east from Ceduna
- Port 15km from highway, power and rail infrastructure
- Tenements located on freehold land (sheep/wheat)

Defined Resource

- Carey's Well kaolin (+halloysite) deposit:
- JORC 2004 Measured Resource of 16.3Mt

Extensive test work completed at Carey's Well

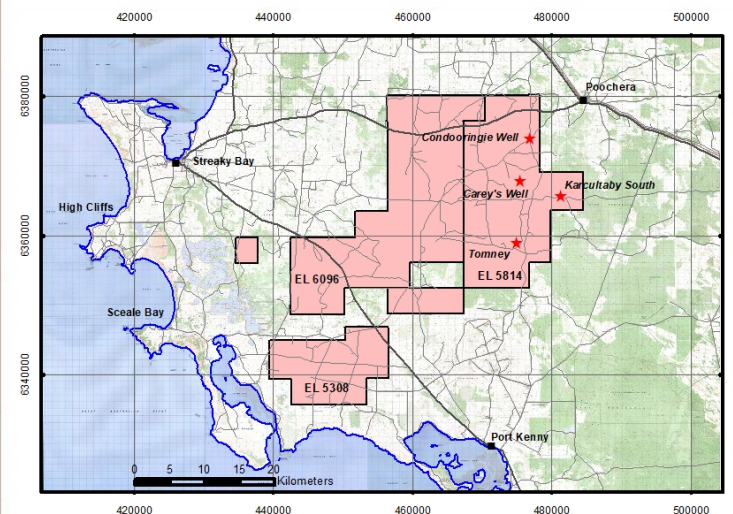
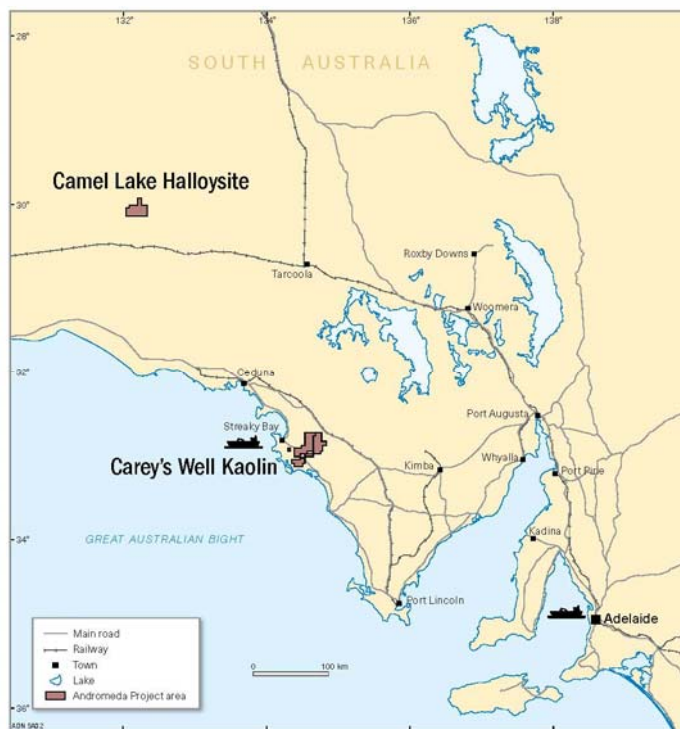
- Resource drilling
- Bulk sampling
- Pilot plant
- Marketing

Indicative Offtake Agreements

- Indicative offtake agreements for 200,000t pa
- Increased demand for high quality Carey's Well product from Chinese ceramics industry

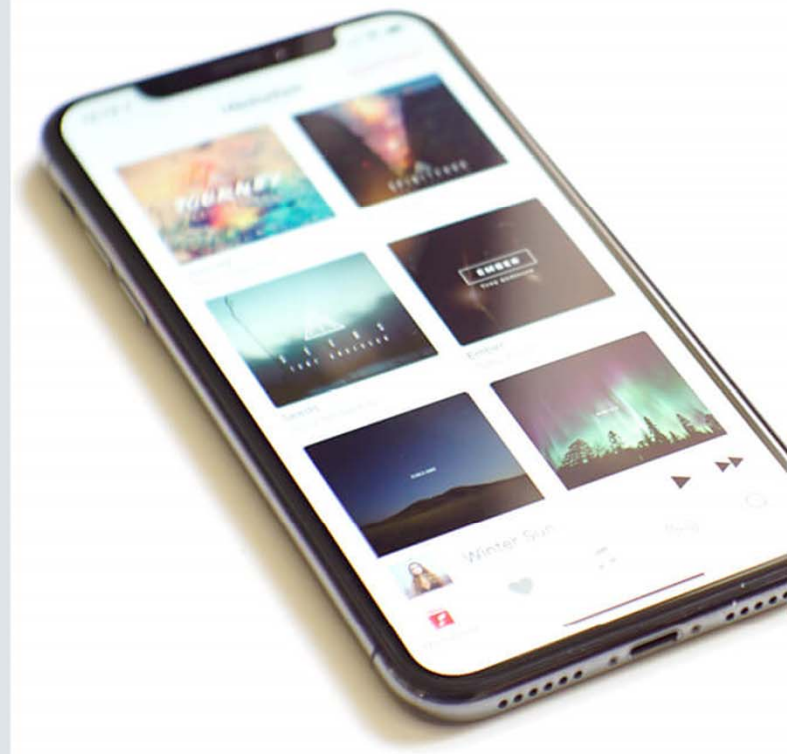
Technology Potential

- HPA feedstock
- Proppants used in fracking
- Strengthening additive for concrete
- For catalytic cracking of petrochemicals



CAREY'S WELL: PATHWAY TO PRODUCTION

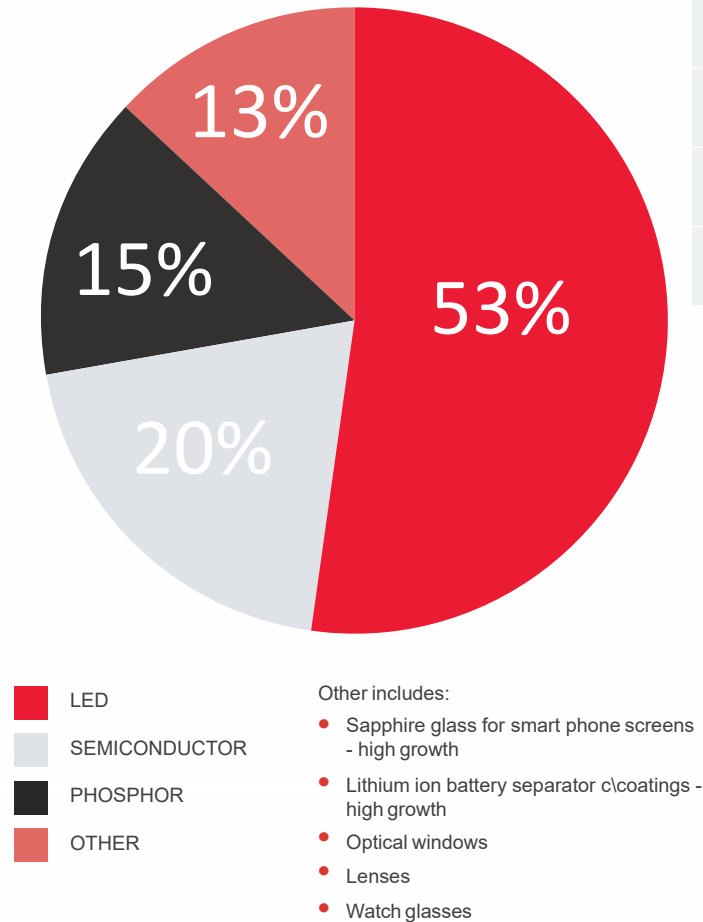
- Complete HPA test work to confirm amenability of existing ore
- Update 2012 JORC resource based on Halloysite test work on existing drill samples
- Revise Scoping Study using updated resource and a dry-processing pathway
- Conduct additional bulk tonnage drilling to refine plant trials and financial modelling
- Engage with end users to convert ceramic market offtake agreements to binding agreements
- Advance environmental and community baseline studies for Feasibility Studies
- Accelerate HPA & proppant R&D and commercialisation
- Market products to catalyst cracking in the petroleum industry
- Collaborate with University of Newcastle to advance nanotechnology application studies



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 use is experiencing dramatic growth due to its extensive use in today's high-performance electronic devices and electric powered vehicles, with market analysts forecasts for annual growth rate 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 ~26ktpa
- This is expected to increase to 48ktpa by 2025 driven by the phasing out of old and inefficient technologies (e.g. incandescent lighting), and increasing demand for clean technology industry materials (e.g. EPV batteries).

GLOBAL OPPORTUNITIES: HIGH PURITY ALUMINA

The ability for Carey's Well to produce high purity 4N HPA represents a significant opportunity for development.

- Traditional manufacturing of HPA involves utilising expensive refined aluminum metal and intensive labour and energy costs resulting in a significant cost of production, with a stringent overlay of environmental and government regulations.
- New process flow paths for producing HPA using natural kaolin rather than aluminium metal as a starting point have been developed by new entrants Altech Chemicals (ATC), FYI Resources (FYI) and Hill End Gold (HEG).
- Kaolin from Carey's Well is one of the purest kaolin feedstocks available with confirmatory testwork on the ability to produce 3N and 4N HPA undertaken in trials with Bureau Veritas, UniSA and the University of Newcastle.
- 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 (%)*
Hill End Gold (HEG)	Kaolin	15	3.68	43%	34.7%	1.6%	1.12%
Andromeda Metals (ADN)	Kaolin	6	16.3	49%	38.0%	0.60%	0.50%
FYI Resources (FYI)**	Kaolin	25	16.1				
Altech Chemicals (ATC)#	Kaolin	70	12.7		29.5%		
Collerina Cobalt (CLL)	Lateritic	61					

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

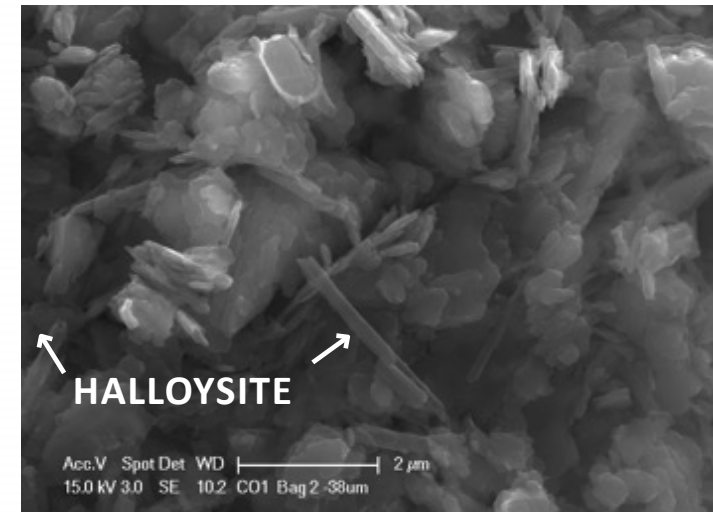
** Reported grades for FYI are based on ICP assay methodology versus XRF for other companies, therefore not shown on this table

ATC has reported Fe₂O₃ and TiO₂ levels on the Reserve not the Resource.

HALLOYSITE: A RARE & HIGH VALUE KAOLIN DERIVATIVE

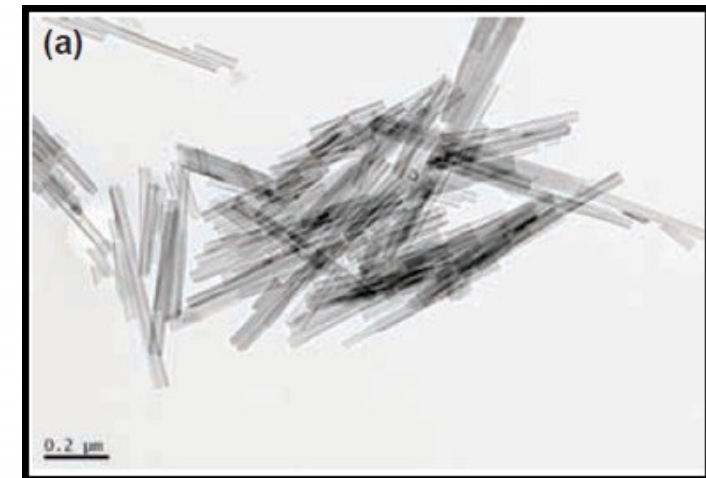
- High quality tableware ceramics (porcelain, bone china and fine china) for whiteness, translucency and plasticity (Approx.\$500mt)
- Catalysts – Fluid Catalytic Cracking (FCC) is one of the most important conversion processes used in petroleum refineries (Up to \$800mt)
- Proppant manufacturing for fracking applications
- Carriers: biocides and medicines
- Coatings: flame retardants and nucleating agents
- Cosmetics: water purification, remediation and molecular sieves
- Concrete reinforcement
- The Poochera kaolin deposit is a naturally occurring blend of kaolin and halloysite.
- This can be selectively mined and dry processed for the ceramic and FCC industries, and wet processed at a suitable secondary location for other applications.

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



GLOBAL OPPORTUNITIES: NANOTECHNOLOGY APPLICATIONS

- Replacement for expensive carbon nanotubes - energy storage and carbon-hydrogen capture and storage applications
- Fibre reinforcement - plastics, body armour and blast protection
- Micro-containers - delivery of drugs, biocides and other active agents
- Early R&D research to study the structural characterisation and the application of Halloysite nanotubes sourced from Poochera and Camel Lake was undertaken with UniSA
- Now a major R&D industry hub has been set up at the University of Newcastle under a new Global Centre of Nanotechnology where halloysite nanotube technology applications will be researched.
- The nanotechnology team hold the Camel Lake and Poochera deposits in high regard

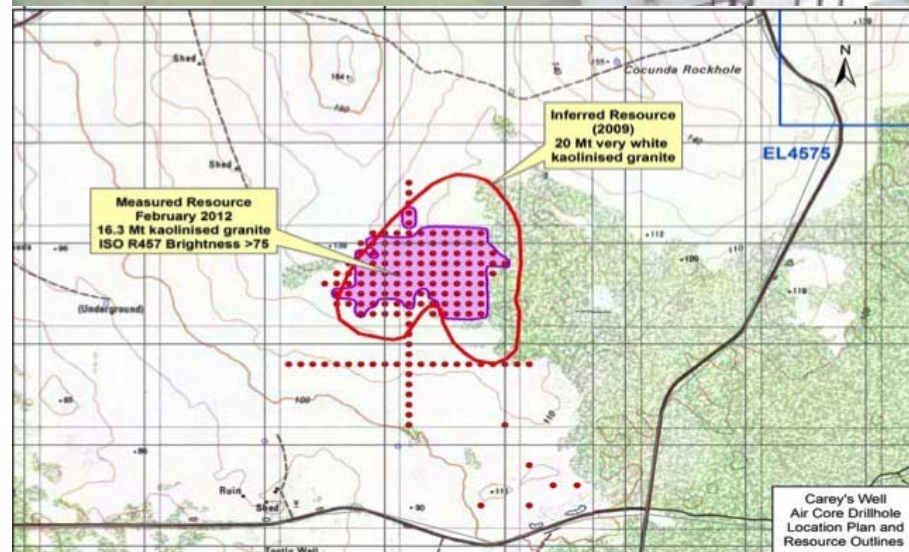


This new research of halloysite nanotubes for use in technologies such as CO₂ absorption, super capacitance and battery application represents an enormous opportunity with unlimited blue sky potential.

CAREY'S WELL DEPOSIT: SCOPING STUDY

- Minotaur ran an internal Scoping Study on the Carey's Well Deposit.
- Pilot plant work demonstrated recovery of ~ 75% kaolin for semi-refined (dry processed) product.
- A range of halloysite/kaolinite product blends were obtained. The resource is located close to road, rail, and power.
- A number of port options for shipment of product are available.
- No environmental impediments from flora survey. Potential to complete decision to mine within 2-3 years
- Product marketed to potential end users, indicative offtake agreements in place for 200,000tpa

Minotaur has spent in excess of \$5M on drilling, pilot & scoping studies, offtake agreements and R&D



IN CONCLUSION

- Acquisition of the Kaolin Project from Minotaur will provide Andromeda with an advanced project capable of being advanced rapidly through feasibility to a development decision within 2-3 years
- The project comprises a globally significant resource of high quality product with a +20 year or significantly greater mine life.
- The price of halloysite kaolin is forecast to increase by 10% p.a.
- Significant new opportunities emerging for High Purity Alumina and Halloysite Nanotechnology applications.
- Indicative offtake agreements in place with Chinese ceramic manufacturers adding support for potential revenues to be generated by the project.
- Strong NPV and IRR return on base case modelling with unlimited upside due to market advances in HPA and Halloysite nanotechnology.



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CONTACT DETAILS

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**(Commencing 1st June 2018)*

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APPENDICES



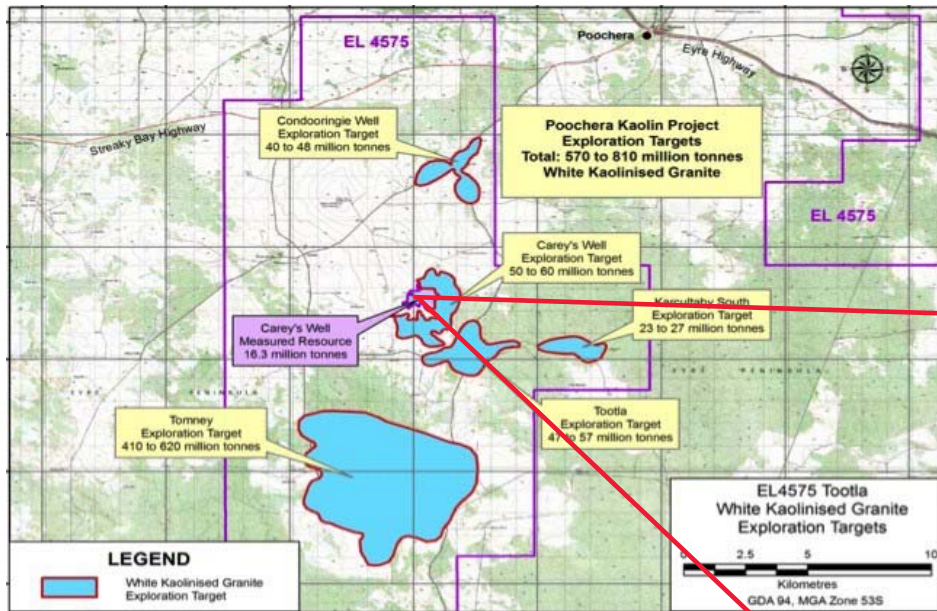
FARMIN DEAL PROPOSALS

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

HOA TERMS	
Option Period	60 days
Minimum Spend within 9 months	\$400,000
Spend to achieve 51%	\$3m within 2 years
Spend to achieve additional 24%	\$3m within 3 years
Other	75% on Decision To Mine (DTM)

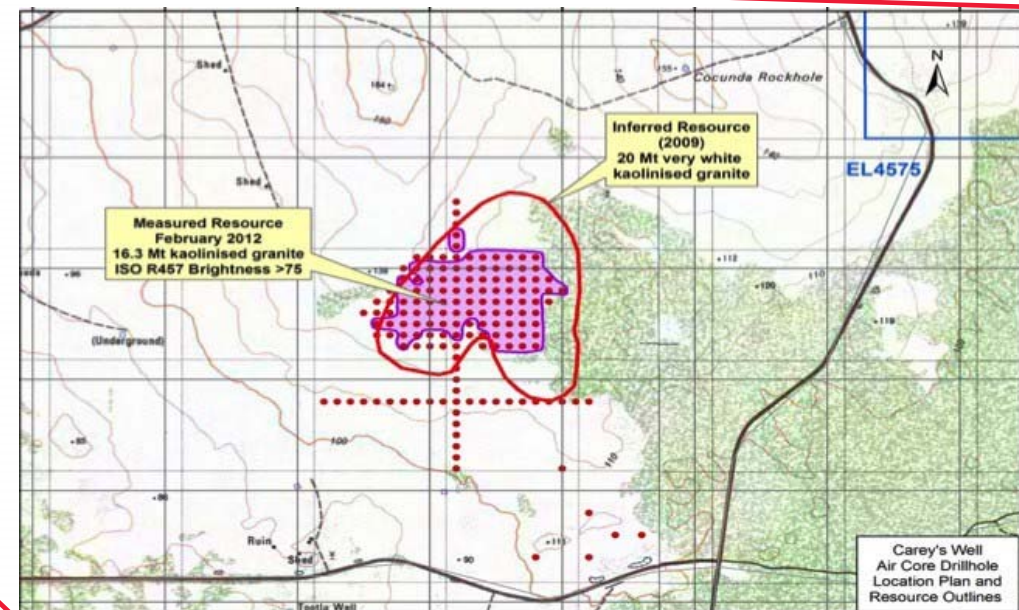
Shared risk/reward on both projects while limiting shareholder dilution

POOCHERA PROJECT & CAREY'S WELL DEPOSIT



**JORC 2004 Measured Resource 16.3Mt
with 45% yield of -45 micron kaolin, using
an ISO Brightness R457 cutoff of 75**

The Carey's Well kaolin Mineral Resource Estimate, and the supporting Exploration Data was published by Minotaur Exploration on 8 February 2012, refer ASX website <https://www.asx.com.au/asxpdf/20120208/pdf/4247hg1j61295n.pdf>. Minotaur confirms that all material assumptions and technical parameters underpinning the estimates published on 8 February 2012 have not materially changed. However, it must be noted that the kaolin resource estimate was not reported in accordance with the JORC Code 2012 and may not conform to the requirements in JORC Code 2012.



CAREY WELL: PROCESS FLOWSHEET

**Simple low cost
operation**

**Short
construction
time**

**Rapid entry to
market**

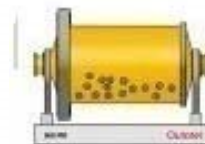
**Perfect for
resource and
location**



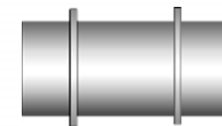
Mining



Stockpiles



Lump Breaker



Heated Classifier Mill



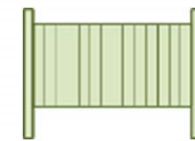
Transport



Bagging Operation



Product Silo



Bag House Filter

SIMPLIFIED HPA PRODUCTION ROUTE



Bauxite Mining



Bauxite feedstock
(~30% Al)



Alumina Refinery



Smelter grade alumina
(~99.5% Al)



Smelter grade alumina
(~99.5% Al)



Aluminium metal

Traditional multi-stage process route using refined aluminium metal

VERSUS

Simplified route using kaolin



Aluminium metal



High Purity Alumina
(~99.99% Al)



Kaolin Mining



HPA Process Plant



THANK YOU