

OVERVIEW / PROJECT PORTFOLIO

Minotaur Exploration Ltd (ASX: MEP) is a mineral resource company with a portfolio of exploration and development projects and a 50% interest in a new technology venture.

Metal	Project	State	Owners
Copper - Gold	Eloise JV	Qld	OZL 70% MEP 30%
	Jericho JV	Qld	OZL 80%, MEP 20%
	Breena Plains JV	Qld	SFR 100%, OZL/MEP to earn up to 75%
	Peak & Denison	SA	MEP 100%
Base Metals	Highlands	Qld	MEP 100%
	Windsor JV	Qld	MEP 100%
Industrial Minerals	Great White Kaolin JV	SA	ADN 51%, MEP 49% ADN earning 75%
Halloysite Research & Development			Owners
Natural Nanotech Pty Ltd			ADN 50%, MEP 50%

FOCUS ON GREAT WHITE KAOLIN JV

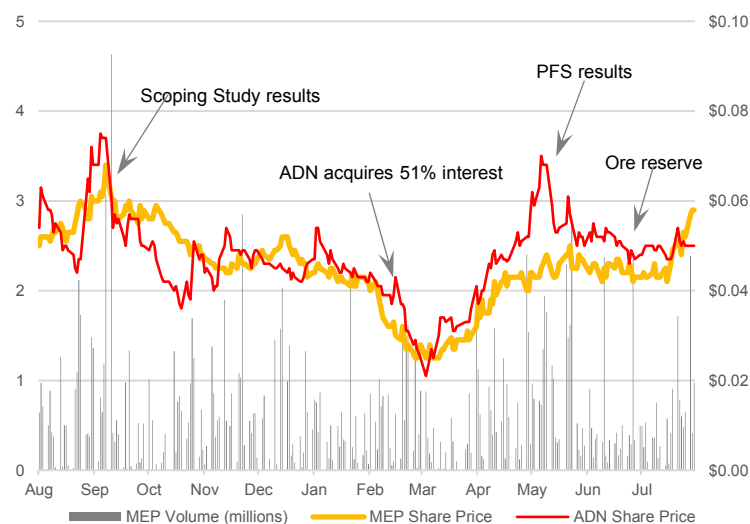
Assuming MEP maintains its 25% interest in the JV and contributes accordingly to the development capex:

Item	Project	ADN	MEP
Interest	100%	75%	25%
Capex	\$13m	\$10m	\$3m
Working capital	\$15m	\$11m	\$4m
Maximum cash requirement	\$28m	\$21m	\$7m
EBITDA per annum (x 26 y.)	\$79m	\$59m	\$20m
Project NPV _{8%}	\$511m	\$383m	\$128m
Company Market Cap.		\$79m	\$21m
Ratio MC/NPV		21%	17%

For MEP, the Great White Kaolin JV is one asset of the portfolio. For ADN, it is its flagship asset.

CORPORATE OVERVIEW (AUD)

Shares	364.4 million ordinary fully paid shares
Unquoted Options	6 Sep 2021: 2.53m options @ \$0.115 31 Dec 2021: 7.5m options @ \$0.0525 28 Nov 2022: 11.4m options @ \$0.10 28 Nov 2022: 6.8m options @ \$0.12
Share Price	\$0.058
Market Capitalisation	\$21.1 million
Cash	\$2.43 million as at 30 June 2020
Investments	\$1.78 million from 18.33m AOU shares @ \$0.097 \$0.26 million from 7.35m TMZ shares @ \$0.035 30 Nov 2022: 2.45 million TMZ options @ \$0.03 ⇒ Leveraged to the potential exploration success of AOU and TMZ and additional funding

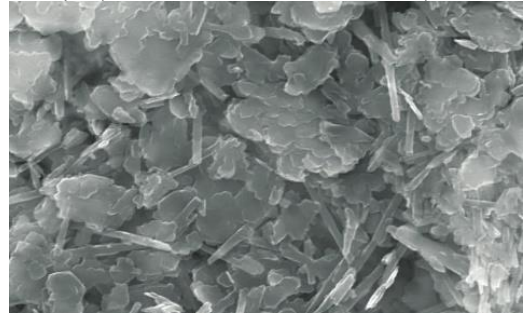


⇒ Apparent "correlation" with ADN likely to be related to overall market movements

HALLOYSITE

Halloysite is an industrial mineral that is part of the kaolinite group. Like kaolin, halloysite is essentially composed of aluminosilicates, however it has a hollow tubular crystal structure, which is rare and markedly different from the platelet crystal structure of kaolin. The natural nanotubes can be used in a wide variety of new technologies including water purification, energy storage, hydrogen storage, carbon capture and medical/pesticides carriers. They are far more cost-effective and environmentally friendly version of manufactured carbon nanotubes.

SEM image of the Great White Kaolin showing both platy kaolinite and nanotubular halloysite



Source: MEP, SEM = Scanning Electron Microscopy

STRATEGY FOR PROJECT DEVELOPMENT

Short term:

- Direct Shipping Ore (DSO) based on the Great White Kaolin mineral resource
- Wet refining toll process in China / Japan

Medium term:

- Wet refining process at mine site to produce ceramic feed

Long term:

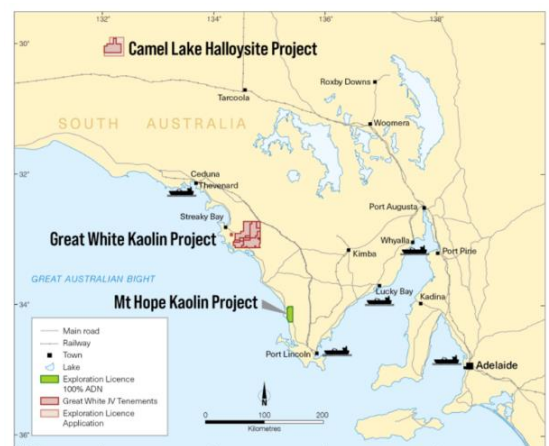
- Halloysite purification from Hammerhead deposit
- Production of HPA feedstock
- Production of high purity halloysite from Camel Lake
- Research and development of new applications for halloysite

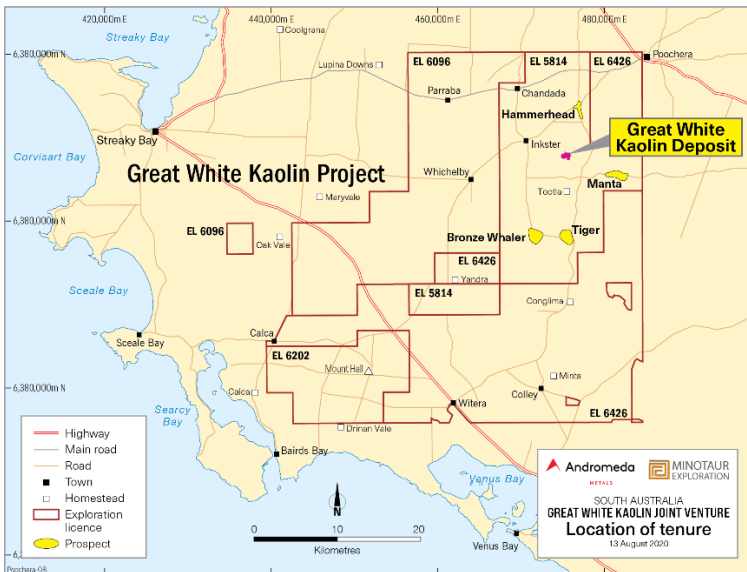
KEY OUTCOMES IF SUCCESSFUL

1. High value, high margin, long life mine
2. Recurrent relatively stable revenue to MEP over 26+ years
3. New commercial applications for halloysite

GREAT WHITE KAOLIN JV (formerly Poochera JV)

District	<ul style="list-style-type: none"> • Great White is a kaolin district of global significance, with a number of deposits • The Great White Kaolin is very pure and exceptionally white ⇒ Product for high value kaolin markets
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GREAT WHITE KAOLIN JV

Tenement	<ul style="list-style-type: none"> 4 tenements on western Eyre Peninsula, plus Camel Lake EL and ELA to the northwest totalling 2,550 km² all prospective for large tonnage high quality halloysite-kaolinite deposits Land cleared for sheep grazing and cereal crops Close to Streaky Bay township (c. 1,400 people) ⇒ No environmental red flags ⇒ Community services readily available
Ownership	<ul style="list-style-type: none"> Andromeda Metals is earning up to a 75% interest in the Great White Halloysite-Kaolin Project which is located approximately 635 km west by road from Adelaide and 130 km south-east of Ceduna on the Eyre Peninsula in South Australia
Geology	<ul style="list-style-type: none"> High-quality halloysite-kaolinite deposits occur extensively across the Project area making this a region of global significance for the mineral. The Great White mineralisation contains variable mixtures of kaolinite and halloysite
Product/ Uses	<ul style="list-style-type: none"> Low, medium and high halloysite blends for the ceramic and petrochemical cracking markets, along with new nanotechnology applications in lithium battery technology and as a strengthening additive to concrete

GREAT WHITE KAOLIN PFS PARAMETERS *

Mineral Resource Dec 2019	Category	Tonnes	Brightness ¹	-45 μm ²
	Measured	15.6 Mt	82.3%	50.7%
	Indicated	4.9 Mt	81.7%	49.8%
	Inferred	5.5 Mt	82.4%	50.4%
	Total	26.0 Mt	82.2%	50.5%
⇒ High degree of confidence in the mineral resource estimate ⇒ Largest halloysite-kaolinite district globally				
Ore Reserve	Great White (formerly Carey's Well) Kaolin Deposit			
	Probable	12.5 Mt	52% (-45 μm recovery) 15% halloysite 78% kaolinite	
Mining	<ul style="list-style-type: none"> Shallow open-cut mining 500,000 tpa over 26 years Strip ratio 2.1 : 1 			

* as per Andromeda Metals Ltd Pre-Feasibility Study results (ASX announcement 1st June 2020)

GREAT WHITE KAOLIN PFS PARAMETERS *

Stage 1 DSO	<ul style="list-style-type: none"> Direct Shipping Ore (DSO) Pre-production capital estimated at A\$13 million Plus working capital of A\$15m ⇒ Modest development capital ⇒ Excellent financeability by a junior company
Stage 2 Processing	<ul style="list-style-type: none"> On-site wet-processing plant and infrastructure, fully funded by revenues from DSO production from Y1 Throughput 500,000 tpa of kaolinised granite Yield 46% or 233,000 tpa of hydrous product Stage 2 capital estimated at A\$56 million
Price/ cost/ margin	<ul style="list-style-type: none"> Premium halloysite kaolin price assumption A\$700/t LOM average AISC A\$354/t Operating margin A\$346/t or 49% ⇒ Market pricing has been indicated by end users and commercial contacts in China, Japan and Europe. ⇒ Excellent operating margin
Financial Return	<ul style="list-style-type: none"> After-tax NPV 8% = A\$511 million IRR = 135% Payback period 15 months ⇒ Exceptional financial returns
Product	<ul style="list-style-type: none"> 233,000 tpa of refined premium halloysite-kaolin product with a 15% halloysite content 4N (99.99% Al₂O₃) purity achieved with only a single purification stage ⇒ Potential feedstock for High Purity Alumina (HPA) production
Off-take	<ul style="list-style-type: none"> Commercial product trials in China and Japan Product testing throughout Asia and Europe with potential customers and distributors ⇒ Non-binding Letters of Intent received for: <ul style="list-style-type: none"> 211,000 tpa of premium wet refined halloysite-kaolin 307,000 tpa of dry processed halloysite-kaolin 405,000 tpa of Direct Shipping Ore (DSO) ⇒ LOI received in excess of capacity



Bulk sampling



Dry-processed halloysite-kaolin

UPCOMING NEWS FLOW

2020	<ul style="list-style-type: none"> Hammerhead and Tiger halloysite-kaolin maiden mineral resources Progress customer off-take agreements Definitive Feasibility Study results
2021	<ul style="list-style-type: none"> Development study for the Hammerhead deposit High purity halloysite mineral resource
H1 2022	<ul style="list-style-type: none"> Start of site works at the Great White deposit
On-going	<ul style="list-style-type: none"> Halloysite nanotubes applications R&D

KAOLINITE and HALLOYSITE

Deposits	<p>Kaolin is a white clay composed largely of the platy mineral, kaolinite, an alumina silicate formed by hydrothermal alteration or weathering of igneous rock such as granite. Globally, kaolin deposits are largely the platy mineral kaolinite, but in some places may contain its nanotubular pseudomorph halloysite.</p> <p>Halloysite is chemically identical to kaolinite, halloysite being a rolled up nanotubular form of platy kaolinite. For some as yet unknown reason, halloysite nanotubes, although globally rare, are present in significant proportions (20–40–60–90%) in the various Eyre Peninsula kaolin deposits. The variability is observed between deposits and within deposits.</p>
Market	<p>According to the US Geological Survey, the global kaolin market was about 42Mt in 2019 and valued at US\$6.6 Billion, based on an average United States' price of US\$158/t. However, this is almost all kaolinite, and a large proportion of this is low value material used as filler or extender in paper, coatings, cement so the smaller higher value part is masked in the overall statistics. One of the high value segment of this market is ceramics (about 30% of the market) where raw product prices varies from US\$200/t through to US\$800/t. However this is just the hydrous kaolinite side. High value ceramics (porcelain and fine china) also add about 15 to 25% halloysite to their kaolin mix</p>
Key Suppliers	<p>The key suppliers of halloysite are:</p> <ul style="list-style-type: none"> Longyan in China with a 50-50 halloysite – kaolin product Imerys (NK.PA, headquartered and listed in Paris) with an operation in New Zealand (Matauri Bay). Imerys is the world's largest producer of kaolin with its main operations in the UK, US and Brazil. In Australia, Imerys operates the Pittong kaolin deposit in Victoria. <p>Most premium ceramics producers blend halloysite into their kaolin mix with halloysite commanding a price in excess of US\$800/t. Adding 20% halloysite to a high quality (high brightness ultra-fine grained) ceramic kaolin blend increases price significantly</p>
Pricing	Prices for refined kaolins range from US\$200/t to US\$1,000/t according to product quality
Substitutes	Substitutes for kaolin include bentonite, chlorite, feldspar, talc, and pyrophyllite in ceramics; chlorite, mica and talc in paint; calcium carbonate and talc in paper; bentonite, mica, talc and wollastonite in plastics; and mica and talc in rubber

PRODUCT PROPERTIES

Trademark	<ul style="list-style-type: none"> Given the excellent properties of the Great White Kaolin, the ParlaWhite® (PW) has been registered with IP Australia. The name refers to the Parla Peak landmark in the Poochera locality
Products	<ul style="list-style-type: none"> PW90 and PW70 refers to the Great White Kaolin Halloysite-Kaolin products with respectively >90% and >70% finer than 2 µm

PW90 PRODUCT BENCHMARKING

Property	PW90	China 1	China 2	Europe 1	Europe 2	Europe 3
< 2 µm	90	80	80	82	85	70
< 1 µm	78	50	60	50	70	60
Brightness (ISO)	90	80	80	80	87	85
Chemical Analysis (%)						
SiO ₂	45.3	49.3	48.0	52.0	48.0	48.0
Al ₂ O ₃	38.0	35.5	36.0	34.0	37.0	36.5
Fe ₂ O ₃	0.35	0.30	0.30	0.43	0.47	0.68
TiO ₂	0.03	0.03	0.02	0.17	0.01	0.02
MgO	0.17	0.27	0.04	0.26	0.25	0.30
Na ₂ O	0.38	0.08	0.24	0.01	0.15	0.10
K ₂ O	0.14	2.36	1.20	0.30	1.20	1.65
Mineralogical Analysis (%)						
Halloysite	20	30	-	-	10	-
Kaolinite	80	70	90	80	67	80

Source: ADN

PRODUCT TESTING / SALES

Ceramic Testing	<ul style="list-style-type: none"> Laboratory scale ceramic testing performed at the JV pilot plant facility as well third-party pilot facilities in the UK and USA. <p>⇒ Strong interest received</p>
Refinery Testing	<ul style="list-style-type: none"> Refinery scale testing currently in progress at commercial scale in China and Japan and performed at the JV pilot plant facility as well third-party pilot facilities in the UK and USA. Total of 50 tonnes of PW90 and PW70 products currently in commercial scale trials Additional product samples requested from numerous potential customers
Pricing	<ul style="list-style-type: none"> Price in the range of US\$500-600/t for PW90 product packaged ex-works in China (higher elsewhere) according to agents and potential customers <p>⇒ Supporting PFS price assumption of US\$500/t with 0.70 exchange rate gives A\$700/t</p>

UPSIDE

HPA	<ul style="list-style-type: none"> HPA metallurgical testing of the Great White Kaolin has indicated that 99.99% (4N) purity could be achieved with only one stage of purification. <p>⇒ Opportunities to be involved in this rapidly growing sector</p> <p>⇒ Potential value-added product</p>
High Purity Halloysite	<ul style="list-style-type: none"> Global occurrences of high purity halloysite are extremely rare And demand is growing significantly due to the development of a large range of new high-tech applications Current market price for high grade halloysite reported up to US\$3,000/t <p>⇒ Opportunity to supply high-value niche markets</p>

KEY RISKS AND MITIGANTS

Technical (geological mining, processing)	<ul style="list-style-type: none"> Overall technical risks are mitigated by the quality of the deposit and the simplicity of the mining and processing operations. <p>⇒ High probability of project development</p>
Financing Risk	<ul style="list-style-type: none"> Financing risks are mitigated by the very low capital expenditure and the excellent NPV/capex ratio
Permitting Risk	<ul style="list-style-type: none"> A timely grant of the mining permits is required to develop the projects
Market Risk	<ul style="list-style-type: none"> The existing non-binding Letters of Intent need to be converted into binding off-take agreements

