



ARCHER

***Archer Exploration Limited***

***Investor Presentation***

October 2016



AXE has 2 major projects progressing towards commercialisation

Significant progress being made with the Leigh Creek Magnesite project

AXE is focused on capital efficiency and promotion of early cash flow projects

## **Magnesite**

- World leading resource
- Toll processing opportunities utilising existing infrastructure
- Test work successfully completed in advance of bulk trial
- Agreements negotiated to fast track development
- Growing demand for magnesia
- Attractive project economics

## **Graphite**

- 100% owned project
- Multi decade mine life
- Mine Lease Proposal prepared for lodgement
- Ultra-pure product testing has confirmed suitability for battery production
- Advanced product specification testing proves ability to manufacture a range of graphene products
- Access & availability of services including water

## **Other project opportunities**

- Cobalt Bull JV
  - Archer to receive \$200k cash payment and retain a 25% interest in select tenements with Cobalt Bull to spend \$2m on exploration over 3 yrs
  - Prospective for cobalt, manganese, copper and gold
- Additional Exploration licenses are prospective for: agricultural carbon, barite, tin, coal to liquids, lithium and base metals



- Advanced near term production opportunity in Magnesite
- Projects adjacent to existing infrastructure means low capital costs for mining
- Potential to access third party infrastructure means low capital costs for manufacture
- Board and management have proven experience in mining and product marketing
- All tenements 100% owned and located in South Australia a safe mining jurisdiction
- Supportive State Government – recent award of government grant
- Multiple further growth opportunities remain across the portfolio

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## Key information\*

**ASX Code:** AXE  
**Share price:** 6.5 cents

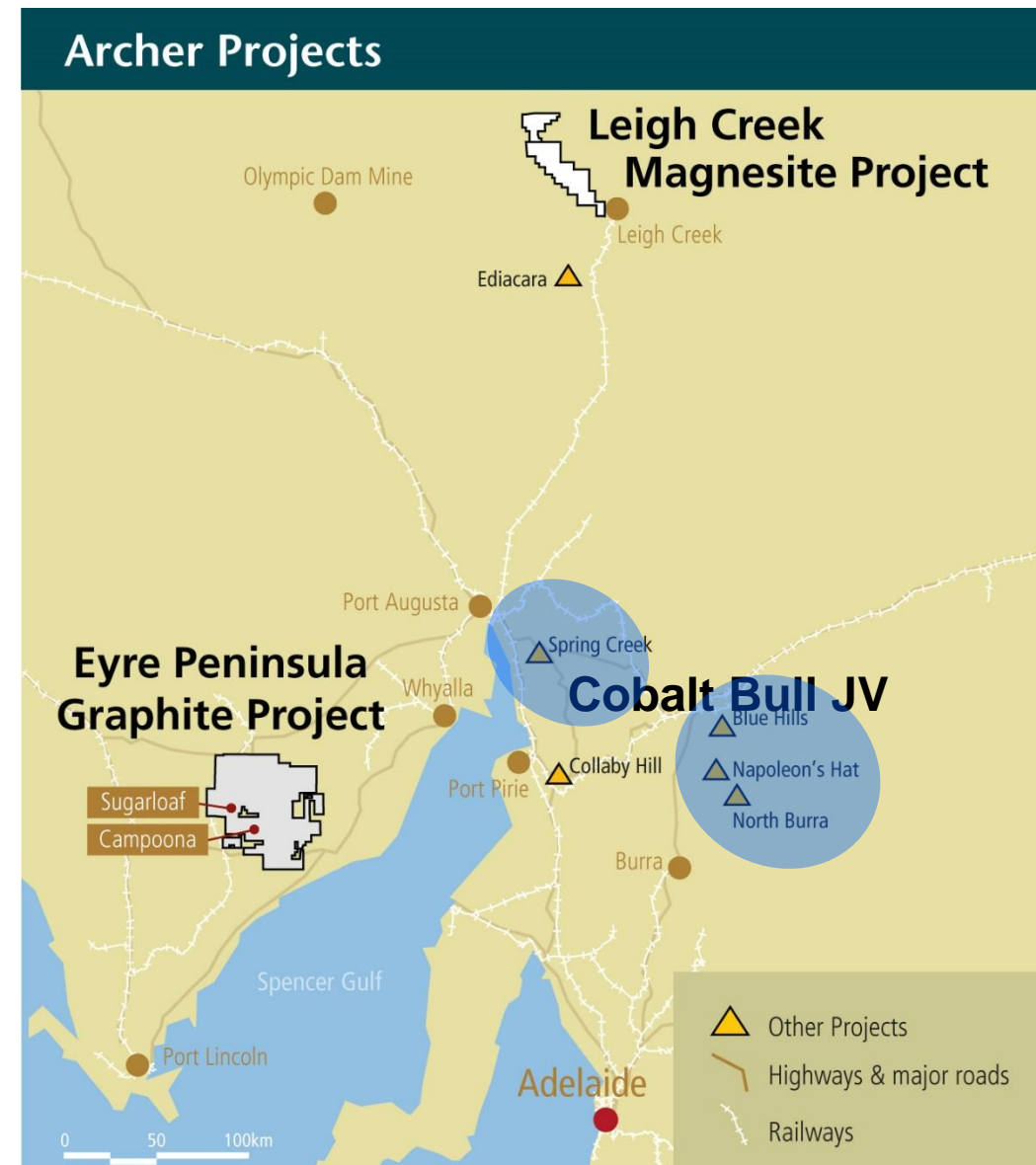
**Shares on issue:** 110.2 million  
**Market cap:** \$7.2 million

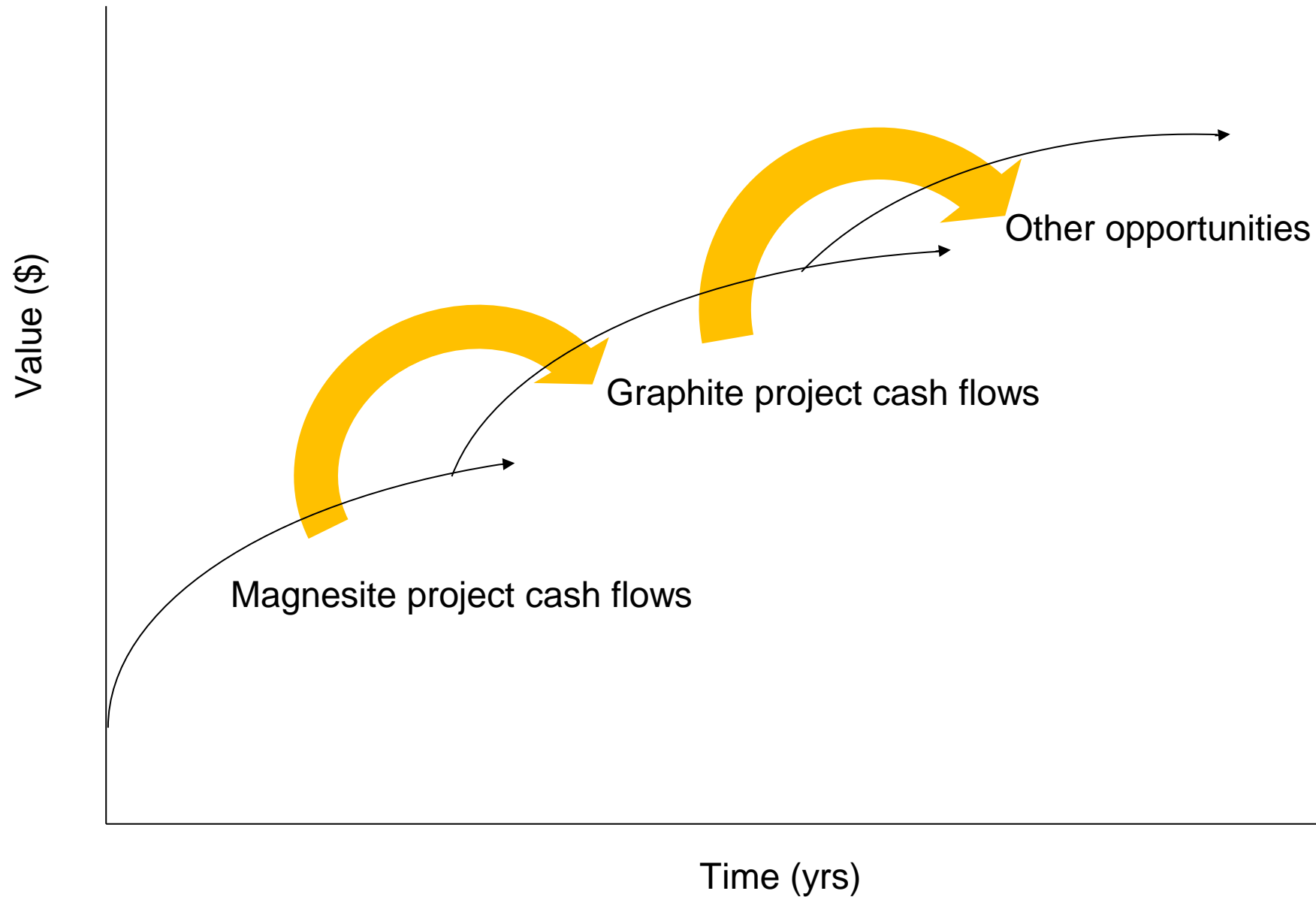
### Shareholdings

**Management:** 12%  
**Top 20:** 29%  
**Top 50:** 41%

\* Information as at COB 20 Oct 2016

- **Leigh Creek Magnesite**
  - World's largest magnesite deposit of its type & 20+ year resource.
  - Advanced negotiations with established commercial kiln operators regarding toll treatment
  - Commercial calcining of magnesite expected to commence CY2017
  - Quick path to production and cash flow generation
  - Potential to generate long term growth
- **Campoona graphite**
  - Advanced ultrapure carbon project
  - Lithium battery grade graphite
  - Successful graphene manufacture
  - Option to expand into large flake
- **Other opportunities**
  - Cobalt Bull
  - Barite
  - Coal to liquid
  - Lithium, tin and base metal exploration prospects





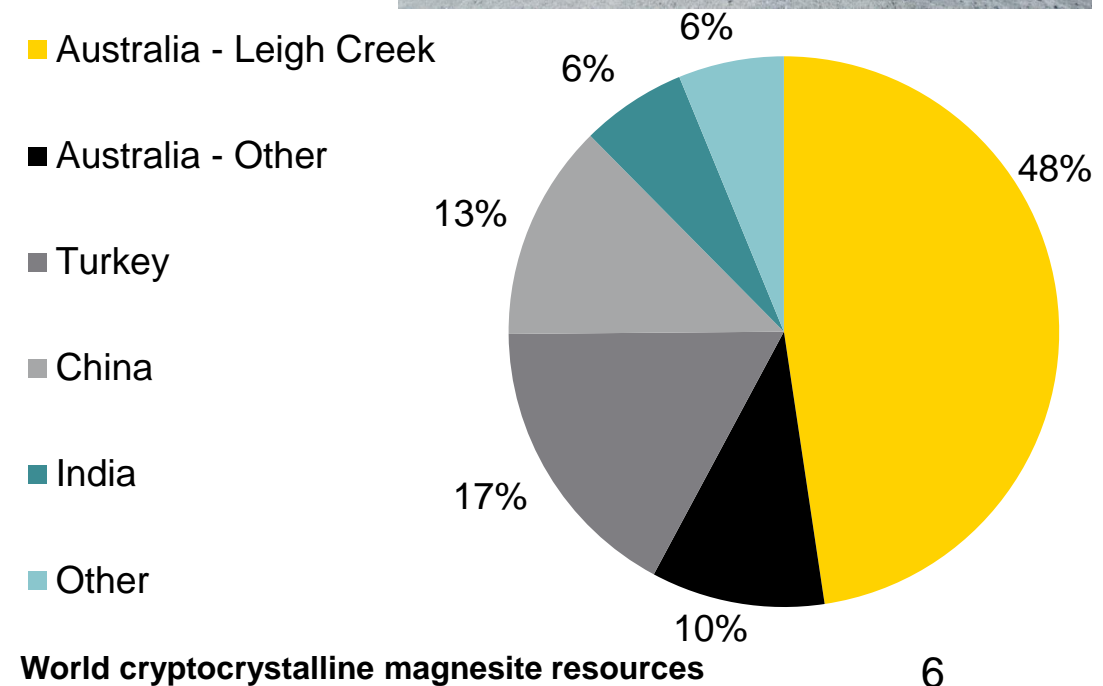
## Leigh Creek Magnesite Project is 48% of world cryptocrystalline resources

- Cryptocrystalline magnesite is a unique and scarce mineral representing only 7% of world's total magnesite resources
- Cryptocrystalline can produce a wide range of valuable commercial products including Dead Burn Magnesia (DBM) and Caustic Calcine Magnesia (CCM)



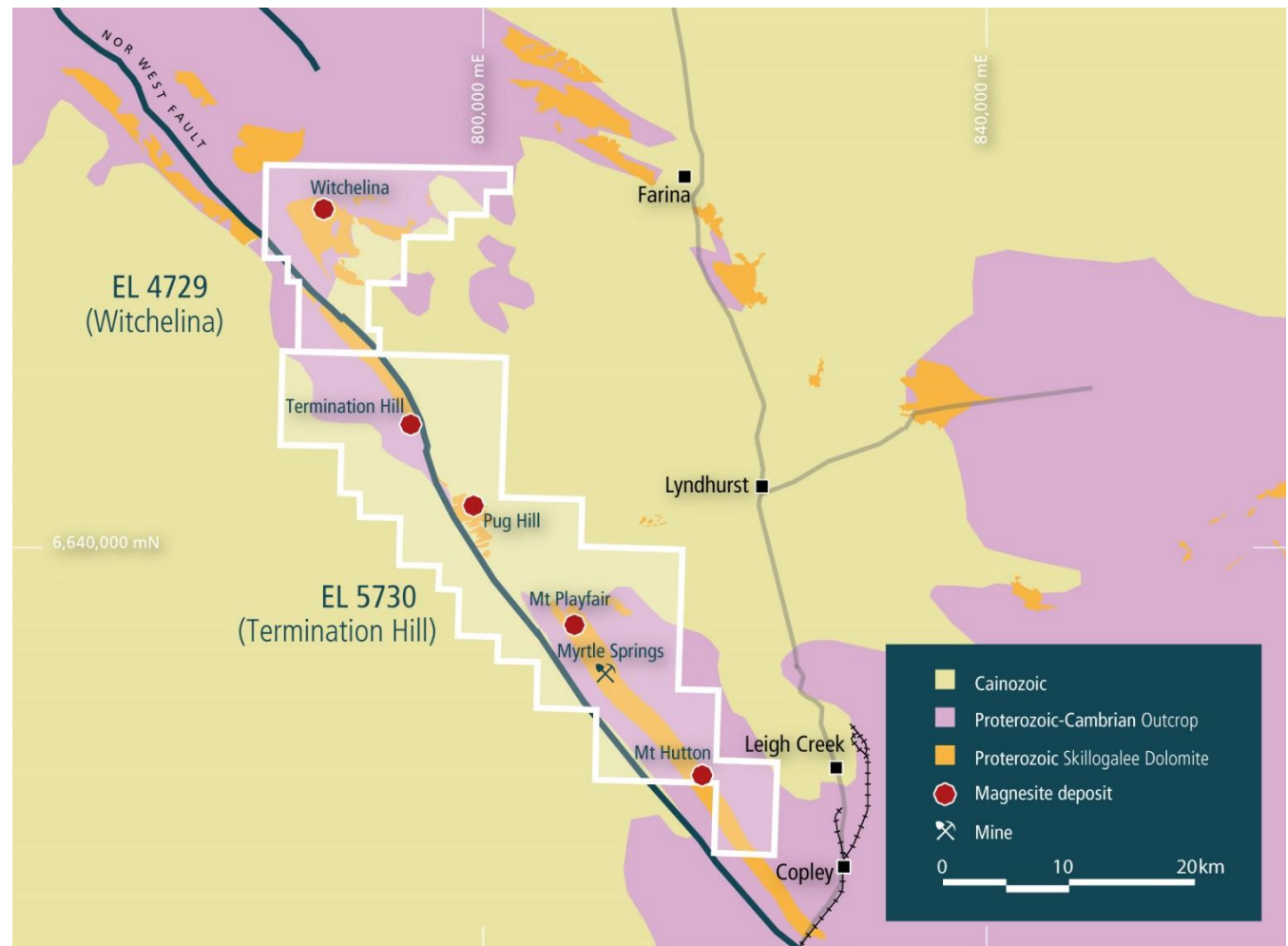
Country	Resources (Mt)
Australia – Leigh Creek	453
Australia – Other	97
Turkey	162
China	121
India	59
Other	59
Sub Total	951

Source: Industry Consultant. Various industry publications





- 6 magnesite deposits that extend for more than 120km NW of Leigh Creek Township
- Magnesite is a series of parallel dipping beds with dolomite interburden
- Closure of Alinta's operation's has created government and local support for projects in this region
- Mutual cooperation with Bowmans Intermodal to identify shared infrastructure possibilities



- Calcining test work of Leigh Creek Magnesite successfully completed by CSIRO
- Test designed in conjunction with commercial kiln operator
- Further testing to be conducted by kiln operator to establish temperature, residency time and other parameters
- Critical preliminary work ahead of a bulk trial



*Removing deadburn magnesite from furnace*



*Cooling of deadburn sample*



*Deadburn magnesite product*



**Demand for magnesia is expected to continue growing through 2017, at a rate of 3.6% pa ( growth trend rate of the last 12 years = 4.7% pa)**

## Global Magnesia Demand Expected Growth

	<b>2017E</b>	<b>Growth (%)</b>
	<b>('000 t)</b>	
<b>High Value</b>		
Deadburn (DBM)	2,197	3.5
Electrofused (EFM)	965	3.8
Caustic calcined (CCM)	866	7.6
	4,028	4.4
<b>Low Value</b>		
DBM	6,770	3.5
CCM	1,811	2.5
	8,581	3.3
<b>Total</b>	<b>12,609</b>	<b>3.6</b>

- No capital required for production process.
- Archer aims to mine up to 125,000 tpa of magnesite at Mount Hutton (17.5Mt @ 40.1% MgO).
- Bulk trials to confirm characteristics of monolithic deadburn magnesia product (**MDBM**) – market continuing to grow
- Advanced discussions with local kiln operators about possible toll processing
- Paul Rix (Archer NED) – 12 years magnesia marketing experience (ex QMag Marketing Manager). Potential customers identified. Marketing to be aided by bulk trial which will produce quantities to supply samples
- Potential for low cost expansion dependant on kiln access, customer demand and regulatory permissions



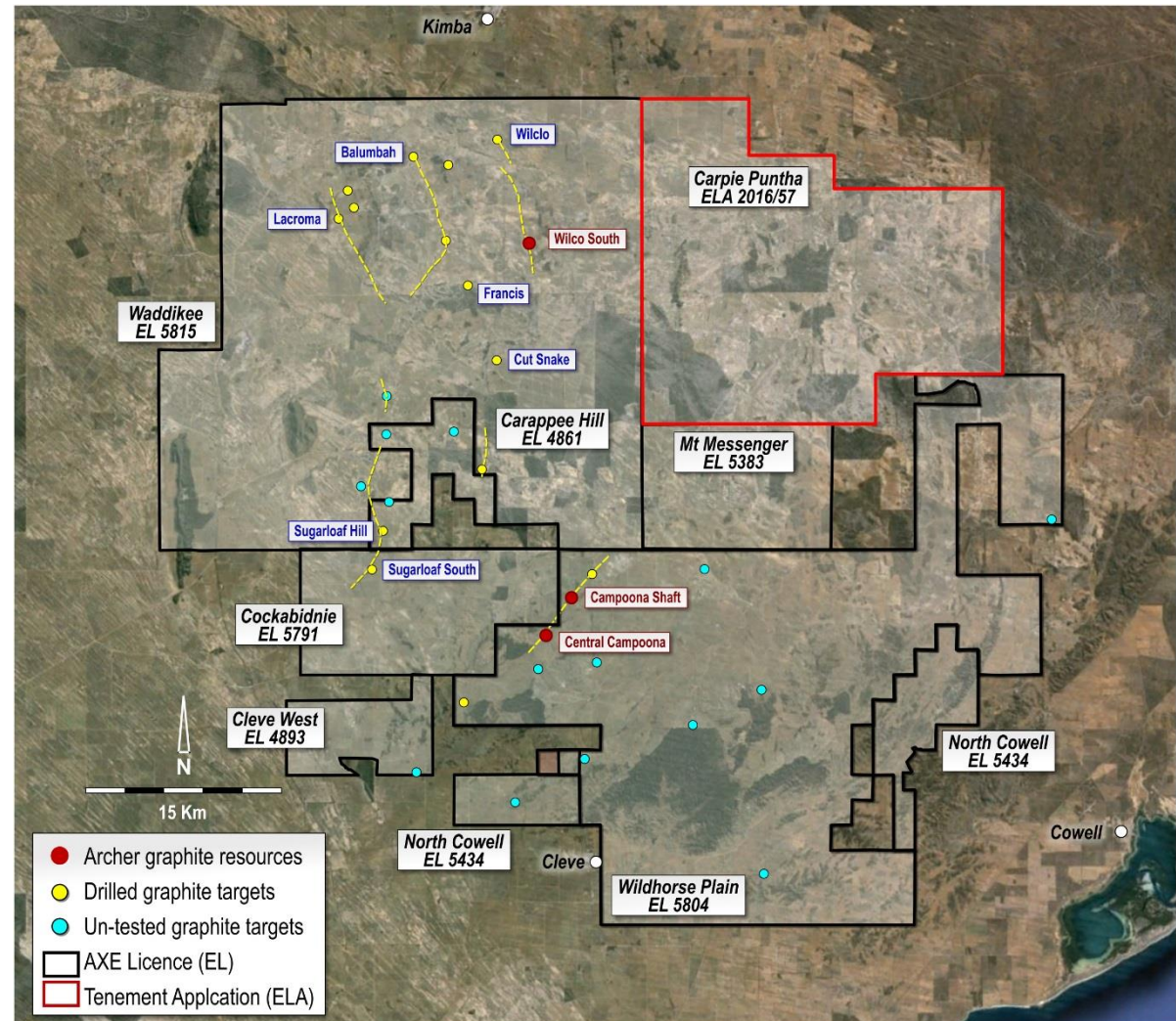
# Key dates – magnesite project

Activity	Q4 16	H1 17	H2 17	H1 18
Lab testing	✓			
Bulk trial /pilot test				
Secure offtake				
Sign toll processing agreement				
Magnesite mining				
Magnesite toll processing				
Customer sales				



- **Campoona graphite**

- Mining lease proposal completed
- Capable of producing ultra pure ultra fine battery grade graphite, and suitable for graphene manufacture
- Continuing to seek off-take partners with potential to move to early production
- Indicative life of mine revenue of A\$858 million and NPV of A\$126m over 17 year mine life
- Multiple graphite expansion opportunities (Waddikee prospects and projects)
- Pre-production capital costs of A\$36m



- All tenements are owned 100% by Archer and its subsidiaries except for the uranium rights attaching to EL 5804
- Primary focus on Magnesite and Graphite
- Archer retains a diverse portfolio of exploration assets in South Australia
  - Low Marginal cost of maintaining tenements
  - leverage team experience to uncover and crystallise value
- Cobalt Bull to earn a 75% interest in tenements EL 5749, 5433, 5540 and 5794 though:
  - Upfront payment of \$200,000 cash and
  - Commitment to spend up to \$2.0m on exploration over 3 years

<i>Project</i>	<i>Tenement</i>	<i>Commodity</i>
Carappee Hill	EL 4861	Graphite
North Burra	EL 5433	Base Metals
North Cowell	EL 5434	Base Metals
Wildhorse Plain	EL 5804	Graphite
Napoleans Hat	EL 5769	Gold
Cleve West	EL 4893	Graphite
Ediacara	EL 4869	Barite
Ediacara	PELA 567	Coal to Liquids
Wichelina	EL 4729	Magnesite
Termination Hill	EL 4567	Magnesite
Spring Creek	EL 5540	Base Metals
Mt Messenger	EL 5383	Graphite
Collaby Hill	EL 5553	Base Metals
Waddikee	EL 5815	Graphite
Cockabidnie	EL 5791	Graphite
Blue Hills	EL 5794	Copper/Gold
Carpie Puntha	ELA 2016/57	Lithium
Frome	ELA 2016/71	Lithium

\*Scoping study ASX: 19 September 2016



<b>Emerging industrial minerals producer</b>	<ul style="list-style-type: none"><li>➤ Cryptocrystalline magnesite has superior physical and chemical characteristics enabling the production of high value magnesia products</li><li>➤ Management has extensive magnesite marketing expertise</li></ul>
<b>Close proximity to established industrial infrastructure</b>	<ul style="list-style-type: none"><li>➤ Magnesite close to existing towns (no-FIFO)</li><li>➤ Access to existing power, water, rail and all weather bitumen road connections to the port of Adelaide</li><li>➤ Magnesite = low capital cost</li></ul>
<b>Robust project concept</b>	<ul style="list-style-type: none"><li>➤ Straight forward project concept and strategy</li><li>➤ Magnesite project with outstanding project economics with expansion opportunity</li></ul>
<b>Rapid pathway to financing and production</b>	<ul style="list-style-type: none"><li>➤ Agreement with toll processors provides low cost and rapid pathway to production</li><li>➤ First product sales targeted for early 2018</li></ul>



## Scoping Study

Information in relation to the Eyre Peninsula Graphite Project Scoping Study, including production targets and financial information, included in this document is extracted from an ASX announcement entitled “*Positive results from SA Graphite Project scoping study*”, lodged with ASX on 19 September 2016 and is available to view at [www.arccherexploration.com.au](http://www.arccherexploration.com.au). Archer confirms that all material assumptions underpinning the production target and financial information set out in that announcement continue to apply and have not materially changed.

## Forward looking statements

The information in this presentation is published to inform you about Archer Exploration Limited and its activities. Some statements in this presentation regarding estimates or future events are forward looking statements.

Although Archer Exploration Limited believes that its expectations reflected in these forward-looking statements are reasonable, such statements involve risks and uncertainties and no assurance can be given that actual results and outcomes will be consistent with these forward-looking statements.

## Competent Person Statement

The Mt Hutton Central Mineral Resource estimate, exploration results and Exploration Target reported herein, insofar as they relate to mineralisation, are based on information compiled by Mr Wade Bollenhagen, Exploration Manager of Archer Exploration Limited. Mr Bollenhagen is a Member of the Australasian Institute of Mining and Metallurgy who has more than eighteen years experience in the field of activity being reported. Mr Bollenhagen has sufficient experience which is relevant to the styles of mineralisation and types of deposit under consideration and to the activity that he is undertaking 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' relating to the reporting of Exploration Results. Mr Bollenhagen consents to the inclusion in the report of matters based on his information in the form and context in which it appears.

The information relating to the Mt Hutton Central Mineral Resource estimate was extracted from an announcement entitled "*Mount Hutton Central JORC 2012 Resource*", lodged with ASX on 12 April 2016. The information relating to the Leigh Creek Magnesite Resource (excluding Mount Hutton Central) was first reported by Pima Mining NL on 3 September 1999 and was prepared in accordance with the JORC Code 1999. Archer confirms that it is not aware of any new information or data that materially affects the information included in the announcement of 12 April 2016 or 3 September 1999 and that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.



The logo for Archer Exploration Limited, featuring the word "ARCHER" in white capital letters on a dark teal rectangular background, followed by a stylized orange and yellow oval icon. The background of the slide features a complex, light blue wireframe pattern resembling a molecular structure or a topographical map.


ARCHER

## *Archer Exploration Limited*

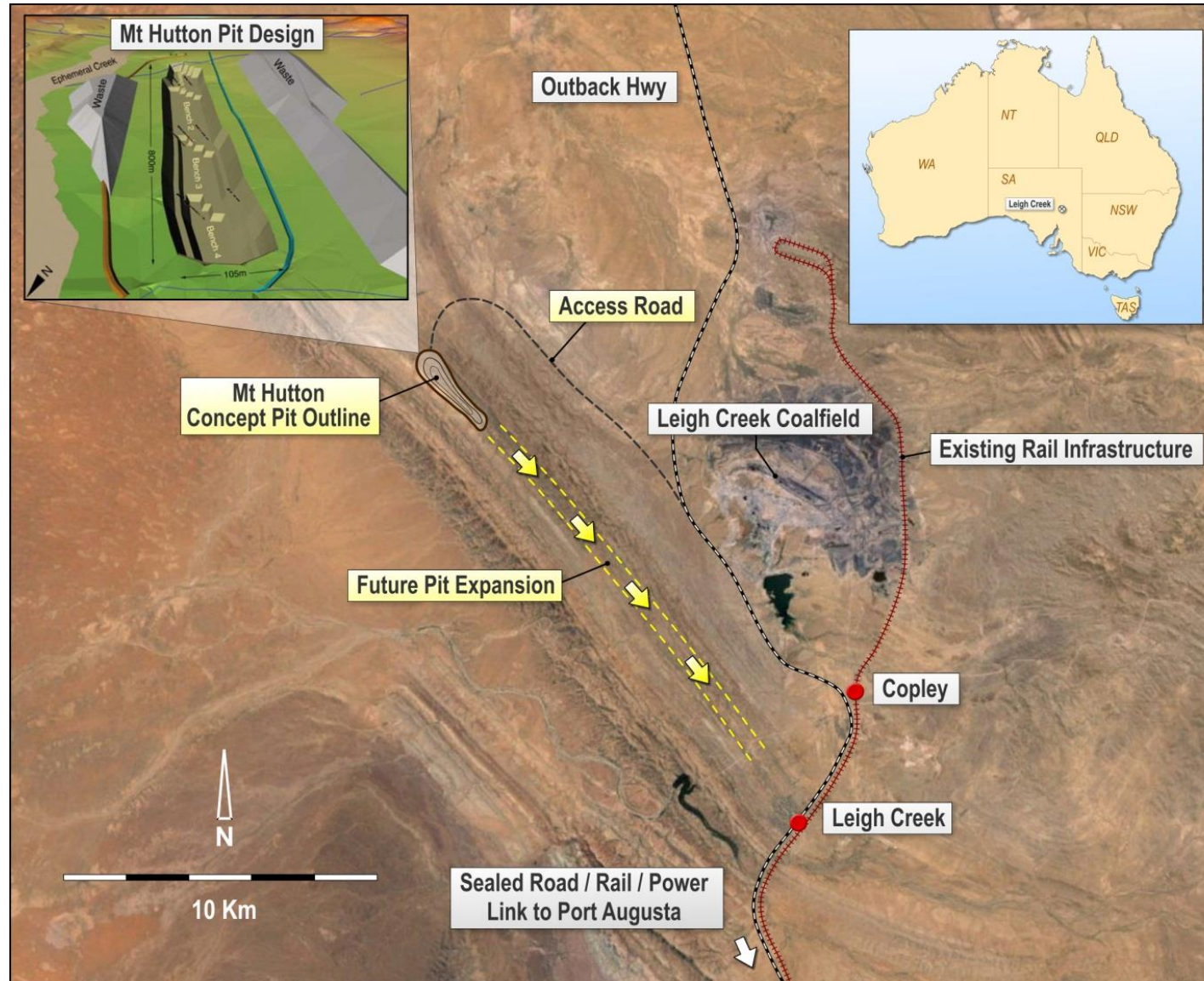
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A close-up, low-angle photograph of a molecular model, showing dark, spherical atoms connected by thin, metallic rods, set against a blurred background.





Leigh Creek Magnesite Project conceptual development layout

- 453 million tonnes @ 41.4% MgO
- Mineral Resource calculated to 60m deep but is open at depth
- Located 20km northwest of the Leigh Creek township
- Detailed historic DFS drilling, metallurgical and other test work results owned by Archer.
- Mt Hutton Central JORC 2012 resource 17.5 million tonnes @ 40.1% MgO

Deposit	Measured (Mt)	Indicated (Mt)	Inferred (Mt)	Total (Mt)	MgO (%)
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## JORC 2012 Mineral Resources

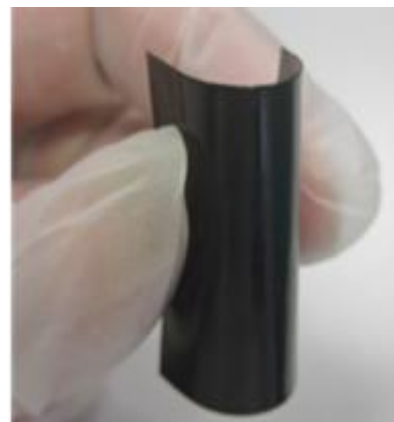
Mount Hutton Central	12.0	5.5	0.0	17.5	40.1
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## JORC 2004 Mineral Resources

Mount Hutton South		72.0	53.0	125	42.9
Mount Playfair	0.0	21.0	23.0	44.0	42.5
Pug Hill	0.0	10.0	10.0	20.0	42.7
Termination Hill	4.0	5.0	20.0	29.0	42.8
Witchelina	23.7	94.0	99.0	216.7	40.0
<b>Total</b>	<b>27.7</b>	<b>202</b>	<b>205</b>	<b>434.7</b>	<b>41.4</b>

## High grade Campoona graphite concentrate enables production of pure graphene

- Research collaboration agreement with University of Adelaide. Test results showed:
  - Production of high grade graphene using one step process.
  - Manufacture of numerous products (inks, conductive films, electrodes).
  - Graphene electrodes performs well (resistivity of 0.5Ohm/sq).
- Graphene products have enormous potential.
- Further discussions and test work ongoing.

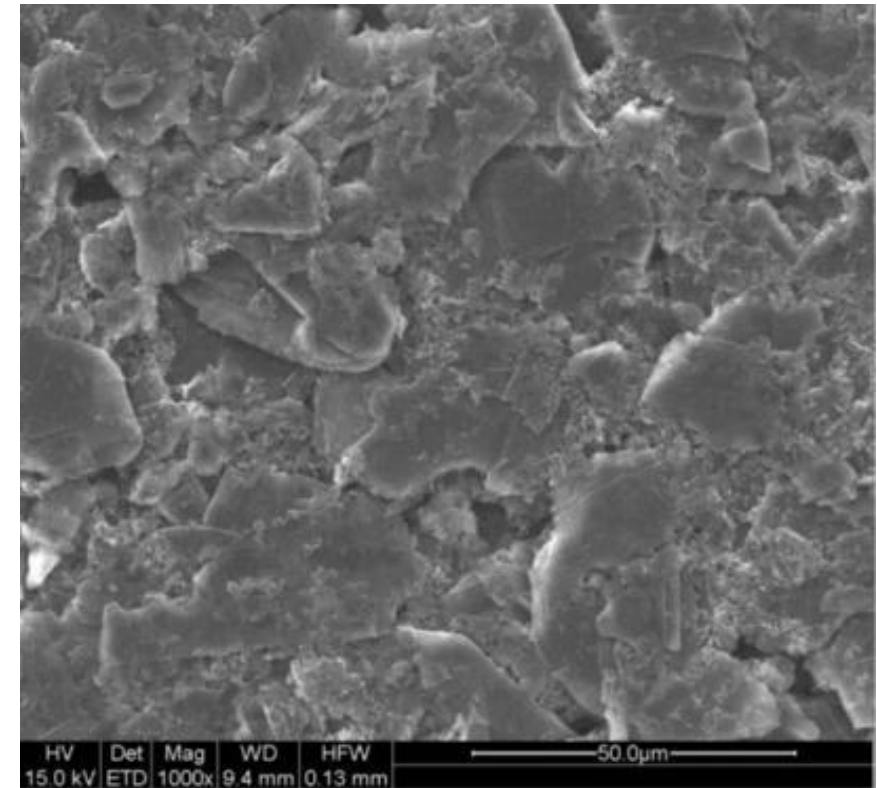


Selected graphene products : graphene conductive film, conductive flexible polymer, graphene composite and electrodes for batteries and supercapacitors



## Campoona graphite targeting > 99% Cg natural graphite concentrate

- Aim to produce products grading to 99.5% carbon, matching the world's highest quality natural graphite.
- Production of up to 10,500 tpa high purity graphite
- Typical specifications:
  - Carbon 98.5 – 99.5% Cg
  - Carbon 98.5 – 99.5% Cg
  - Sulphur <0.1%
  - Fe < 100ppm
  - Ni, Cu, V < 10ppm
  - Specific gravity 2.35 g/cc
- Application in lithium-ion batteries tested. Tests showed that Archer graphite performance equivalent to commercially available synthetic graphite.



SEM image of 99.5% Cg Campoona graphite