

ARCHER



# **ARCHER EXPLORATION LIMITED**

***Shaw Stockbroking Graphite Conference***

***Sydney 9<sup>th</sup> September 2014***

Gerard Anderson

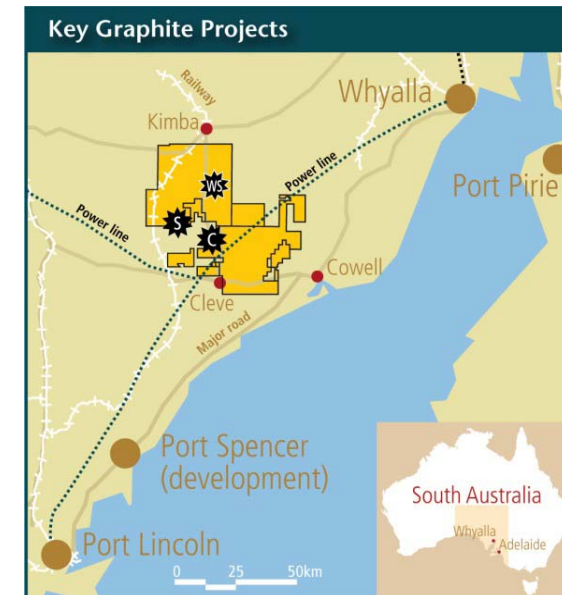
Managing Director

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## Executive Summary

1	<b>Large Position in a Premium Graphite Location</b>	<ul style="list-style-type: none"> <li>Archer has assembled a portfolio of tenements covering ~2,100km<sup>2</sup> near Cleve-Darke Peak-Kimba on Eyre Peninsula, South Australia</li> <li>The Eyre Peninsula is Australia's premier graphite exploration and production region</li> <li>Australia is a highly attractive investment location due to its low geopolitical risk, quality infrastructure and skilled local workforce</li> </ul>
2	<b>Multiple Discovered Resources</b>	<ul style="list-style-type: none"> <li>Combined JORC 2012 Resources for Campoona Shaft, Central Campoona and Wilclo South of 8.55Mt @ 9.0 Cg% to give 770,800t of contained graphite (5% Cg lower cut-off)                             <ul style="list-style-type: none"> <li>- Campoona Shaft Total: 1.65Mt @ 9.2 Cg%</li> <li>- Central Campoona Total: 0.52Mt @ 11.2 Cg%</li> <li>- Wilclo South Total: 6.38Mt @ 8.8 Cg%</li> </ul> </li> </ul>
3	<b>High Quality Graphite</b>	<ul style="list-style-type: none"> <li>Significant metallurgical tests at Campoona have been completed that demonstrate the ability to deliver high value fine graphite using conventional mechanical cell flotation (plant to be constructed at Sugarloaf)</li> <li>The portfolio provides optionality to deliver full spectrum of products to various end users</li> <li>Large and jumbo flake recovered from Wilclo South and Francis with petrology identifying further large flake potential at Cut-Snake, Balumbah and Argent</li> </ul>
4	<b>Exploration &amp; Expansion Upside</b>	<ul style="list-style-type: none"> <li>Less than 2% of the ~2,100km<sup>2</sup> tenement package has been explored</li> <li>Drilling covers Reverse Circulation (RC) and Diamond Drilling</li> <li>High quality airborne EM and magnetic coverage across key areas</li> <li>Own land at Sugarloaf and have binding HoA covering land purchase at Campoona Shaft</li> </ul>
5	<b>Close to Existing Infrastructure Network</b>	<ul style="list-style-type: none"> <li>Located close to existing and proposed infrastructure</li> <li>Power and major road infrastructure all located within the perimeter of the tenements with access to various port options</li> <li>Substantial saline groundwater aquifer located ~10km north of Sugarloaf has been drilled, tested and is expected to supply the full water needs of an extended project</li> </ul>



Advanced Graphite Projects  
 ☀ Campoona ☀ Sugarloaf ☀ Wilclo South

- ✓ Low sovereign risk, good access to infrastructure
- ✓ High quality product ≥98%
- ✓ Good recoveries
- ✓ Combined deposit grade of 9.0% Cg could support >25 year project
- ✓ Predominantly free-dig, open cut mining with low overall strip ratio
- ✓ Mining lease proposal underway

## *Experienced board and management, well funded and tight capital structure*

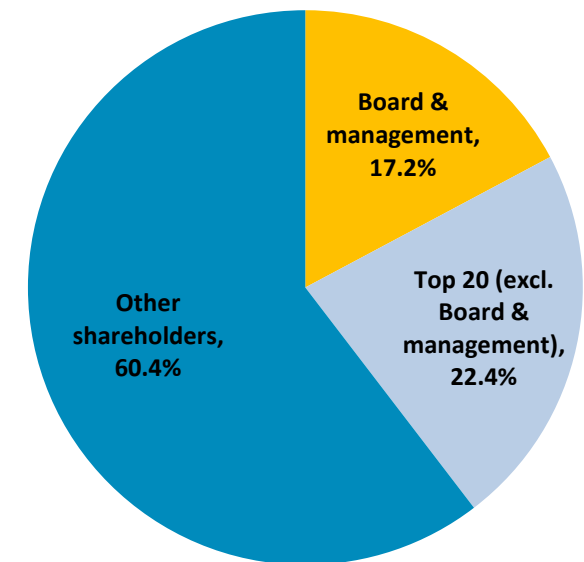
### Capital structure

Shares on issue	84.3m
Performance Rights (exp. 31/7/16)	2.32m
Share price (27/8/14)	\$0.185
Market capitalisation	\$15.6m
Cash (as at 30/6/14)	\$5.6m
Enterprise value	≈\$10.0m

### Board & management

Chairman	Greg English
Managing Director	Gerard Anderson
Non-Executive Director	Tom Phillips AM
Non-Executive Director	Alice McCleary
Company Secretary	Damien Connor

### Share ownership summary



*Archer is in a strong financial position to advance Australia's largest Graphite Project while maintaining a tight capital structure*

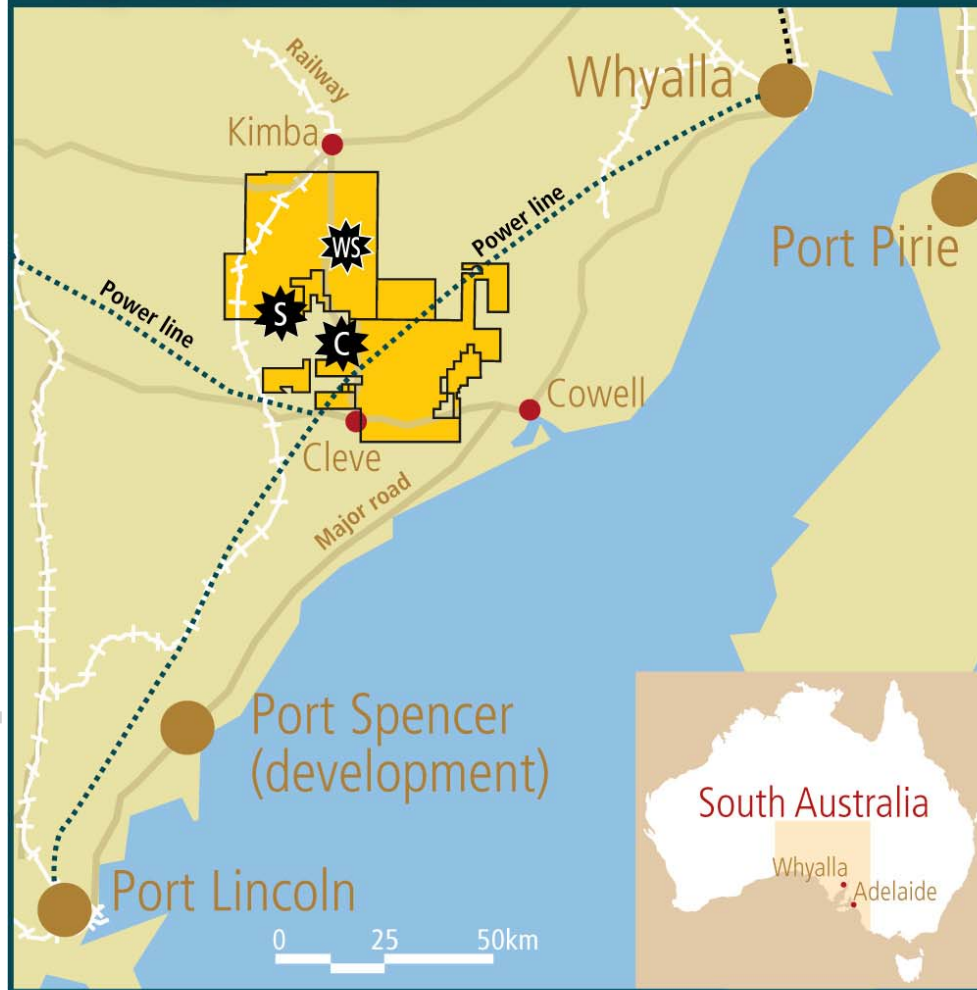
## Track record of identifying projects and creating value

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- 2008
    - Began precious metal exploration at Sugarloaf tenement
  - 2009
    - Land opportunities identified – manganese prospects
  - 2010
    - Leigh Creek magnesite acquired – manganese drilling – graphite intersections at Sugarloaf
  - 2011
    - Drilling commenced on Campoona graphite deposits
  - 2012
    - Sold West Roxby Area IOCGU project to BHP for \$8m – Maiden JORC graphite resource at Campoona
  - 2013
    - Acquired Sugarloaf property – Campoona drilling – graphene research development with Adelaide University
  - 2014
    - Purchased Waddikee graphite project
    - Undertaking Strategic Review of Leigh Creek magnesite project

## A diverse portfolio of high quality assets

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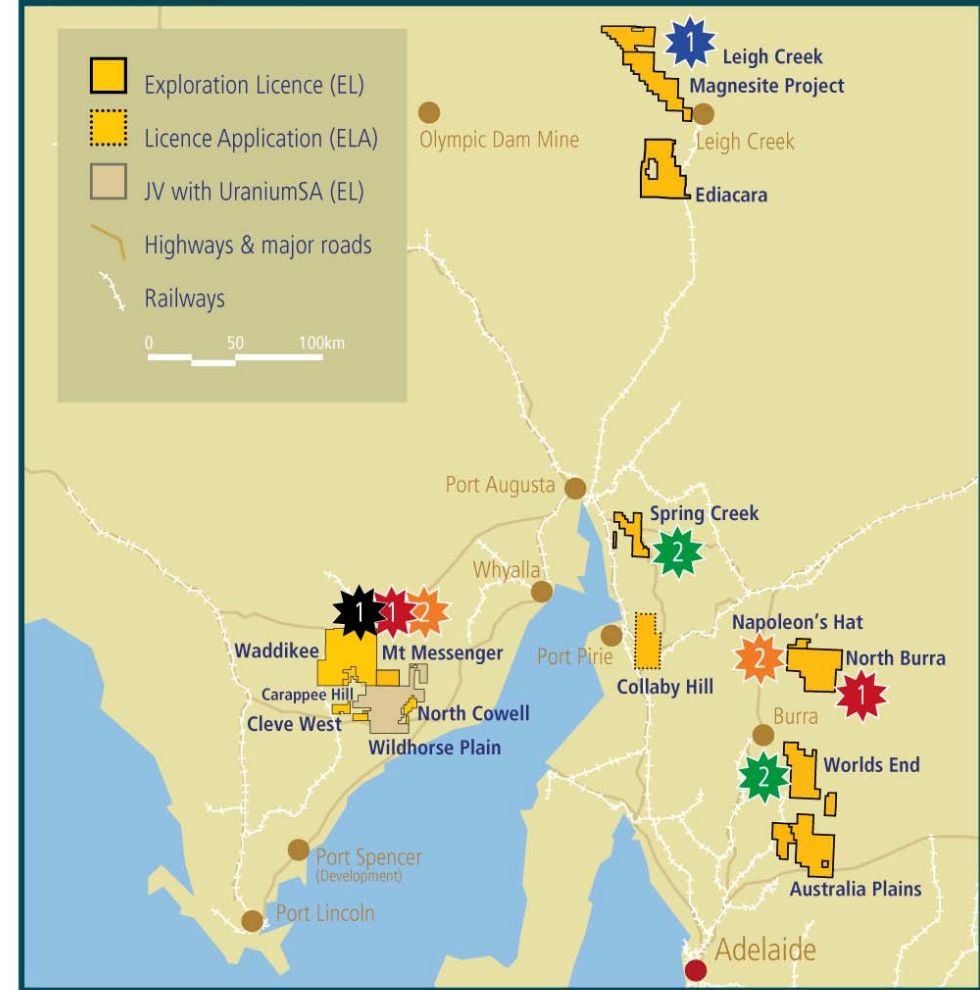
### Eyre Peninsula Project



#### Advanced Graphite Projects

- Campoona
- Sugarloaf
- Wilclo South

### All Projects



#### Priority 1 and 2 targets:

- Graphite
- Magnesite
- Manganese
- Copper
- Gold
- 5

## *Archer's targeted graphite market*

- Target markets include:
  - Batteries – dry cell, alkaline and lithium-ion
  - Recarburisation of steel
  - Brake pads
  - Carbon brushes
  - Lubricants and greases

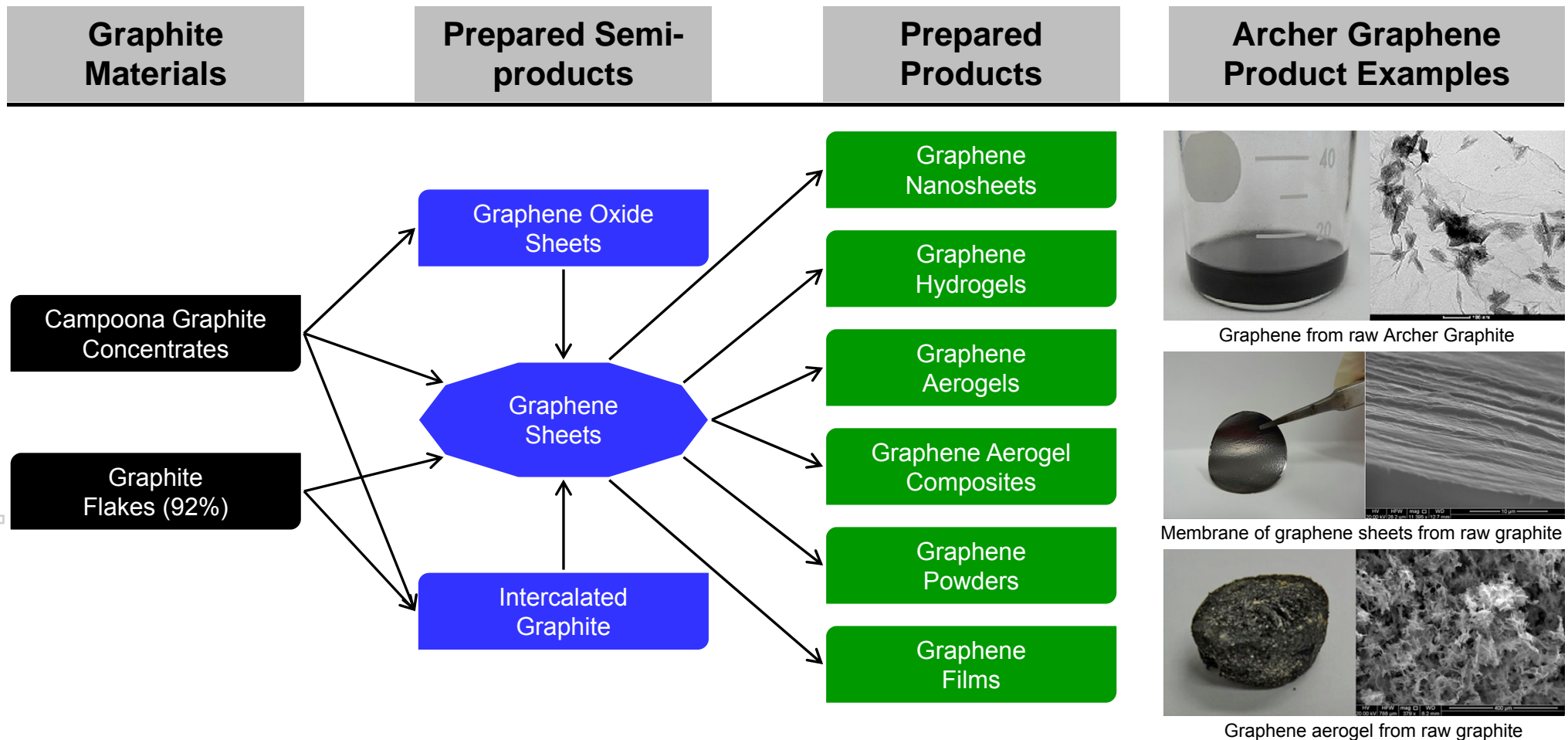


## *Archer Exploration market engagement*

- High purity graphite concentrates to be provided to specific market segments for assessment
- Market interest from Asia and North America
- Seeking to negotiate pre-sale and off-take agreements with prospective buyers
- Research agreement entered with Adelaide University to focus on new product opportunities for Archer graphite and graphene products

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*Two-year research program with University of Adelaide commenced into graphite and graphene related products*



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## Archer scores on 4 of the 6 key factors used to evaluate graphite companies

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### **Deposit size and quality**

Australia's largest JORC 2012 Resource 8.55Mt @ 9.0 Cg% (5% Cg lower cut-off grade)



### **Location**

All assets located in South Australia with access to power, water, roads and ports. Archer owns the land needed for initial mining and long-term mineral processing.



### **Flake size distribution**

Waddikee added large flake graphite and now have a range of flake sizes contained within the Eyre Peninsula Project. Further work to prove the distribution and mining priorities.



### **Product purity**

Bulk flotation tests provided concentrates grading 92 – 98% TGC  
Acid cleaning upgrades concentrates to 98 - 99.7% TGC



### **Product off take**

Product testing underway by prospective buyers/JV partners. Off-take agreements to be secured prior to commencement of production.



### **Timeframe to production**

Campoona MLP expected to be lodged Q4. Approval expected by mid 2015. Process flow sheet to be modified to accommodate flake graphite production



## Significant graphite tenements

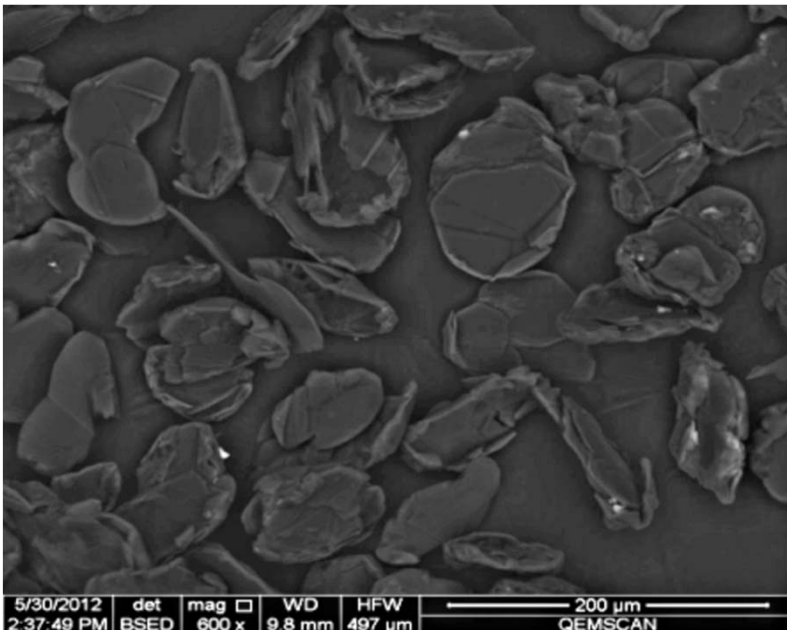
- Substantial tenement position ( $\approx 2,100\text{km}^2$ ) in graphite province
  - recently extended with the purchase of the Waddikee tenement
- Key projects include Campoona Shaft, Central Campoona, and Wilclo South
- There are an additional 10 graphite prospects with large exploration upside
  - current contained resource likely to grow appreciably with further drilling
  - high quality EM has identified numerous distinct linear conductors



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## Campoona: high grade, fine flake graphite

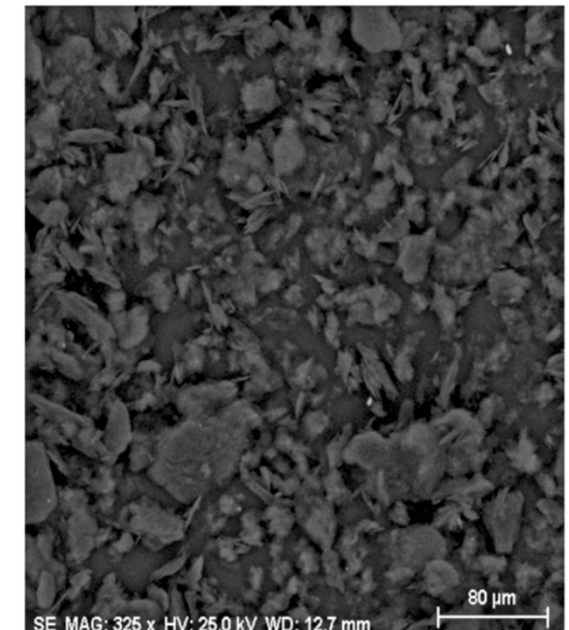
- High quality fine flake graphite concentrates on both Campoona Shaft and Central Campoona
- Bulk flotation tests provided concentrates grading 92 – 98% Cg
  - acid cleaning upgrades concentrates >98% Cg – 99.7% Cg
- Excellent recoveries for all geologic horizons
- Robust results provide confidence for Archer to enter the higher value end of the graphite market
- Campoona Shaft is on freehold pastoral land and has a binding agreement over sufficient land at Campoona Shaft for mining to proceed



Typical Campoona concentrate prior to re-cleaning



Bulk flotation concentrates



Bulk flotation re-cleaner concentrates + tail under SEM

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## *Waddikee: acquisition adds large flake graphite and increases graphite resources*

- Recently completed acquisition of neighbouring EL4662 from Monax Mining Limited
- JORC 2012 Inferred Resource at Wilclo South of 6.4Mt grading 8.8% Cg (561,400t of contained graphite at 5% cut off)
- Flake graphite exceeding 200 $\mu$ m - 500 $\mu$ m. Flake component 25-50%.
  - marketable (>90%Cg) large, medium and fine flake recovered at Wilclo South and Francis providing product optionality



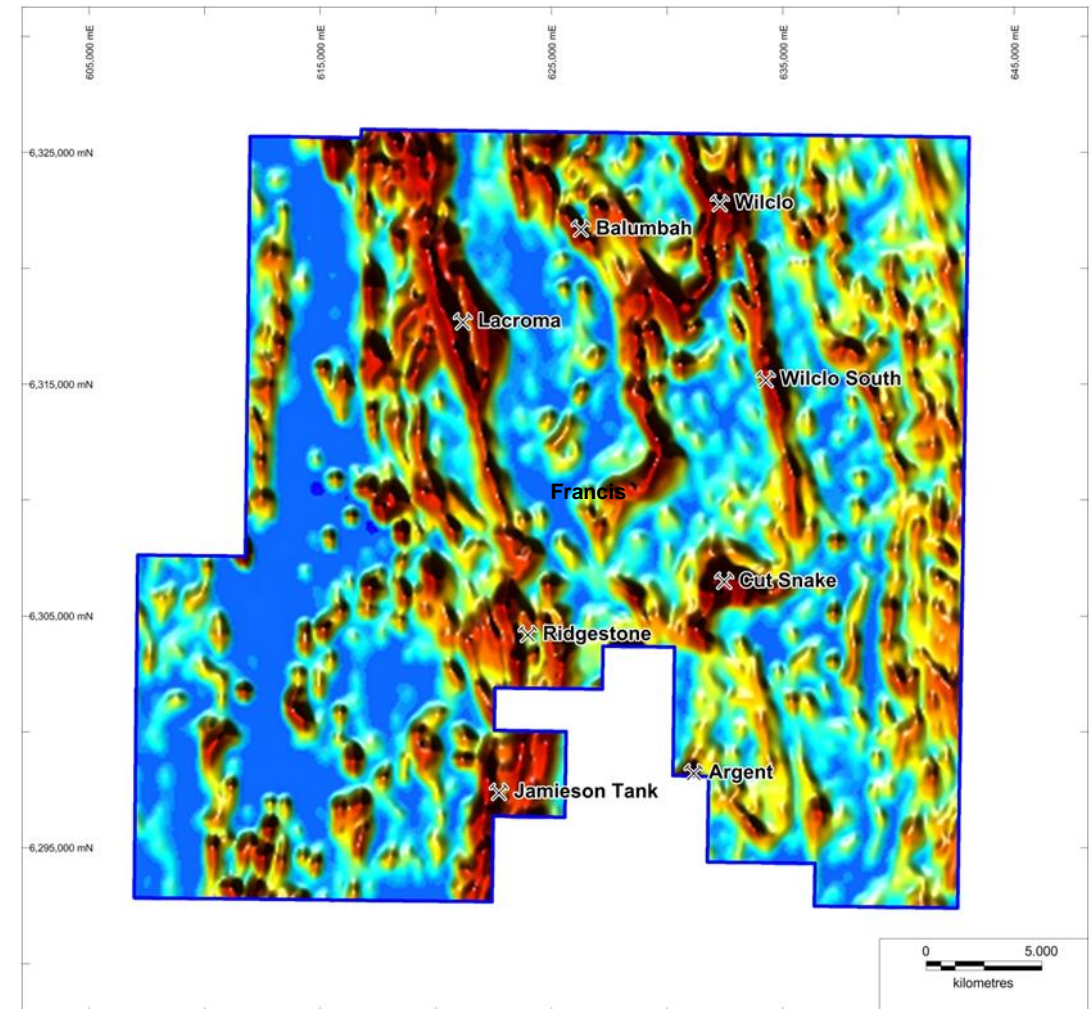
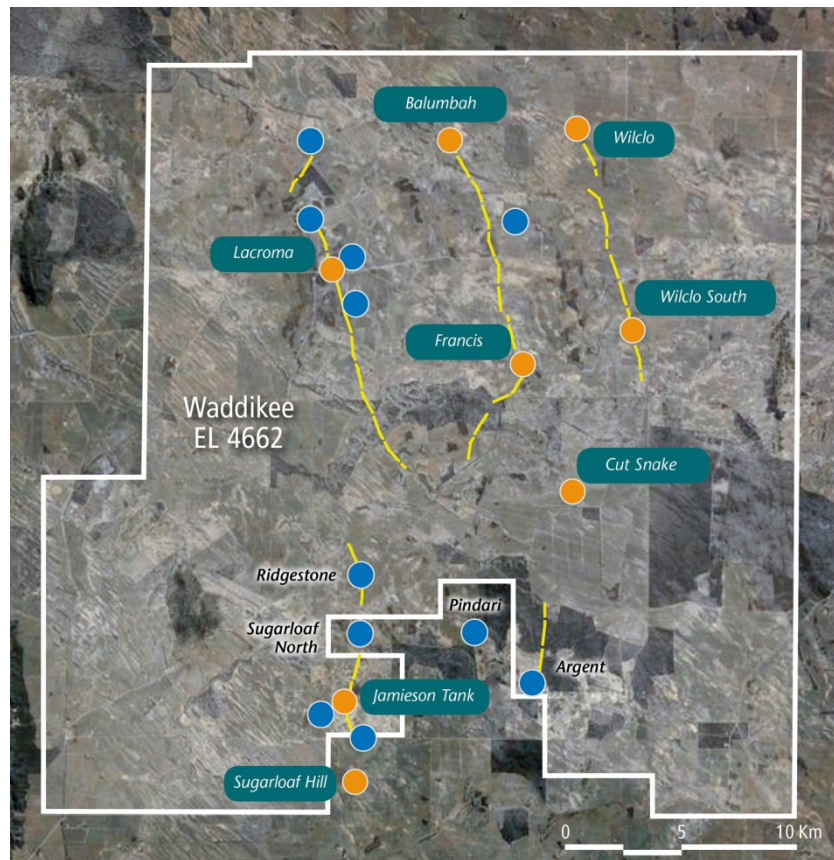
Hole WG044, 73-74m



Flake aggregates from RC drill hole WG041 (98-99m).

## Waddikee: strong likelihood for further Resource growth

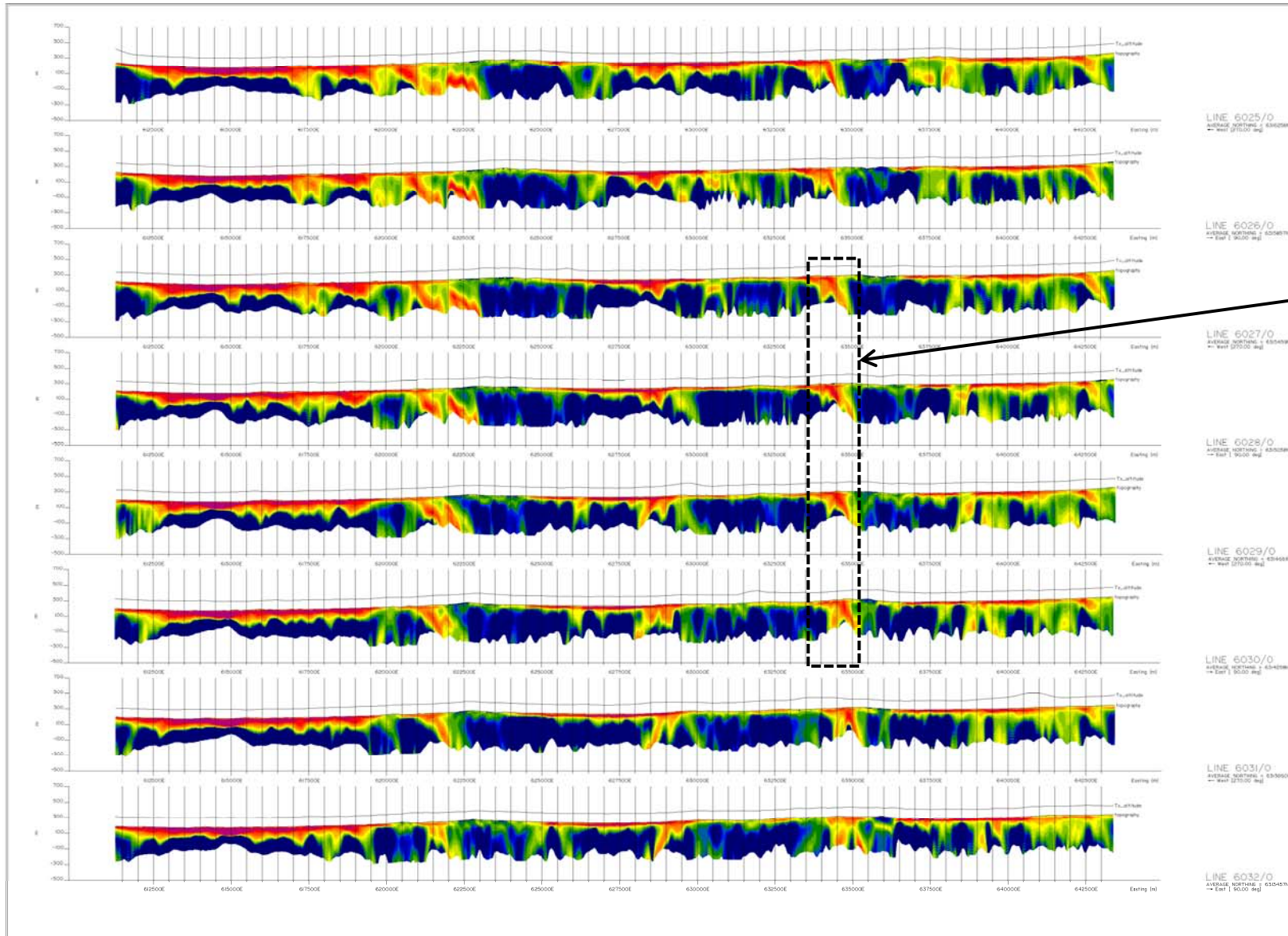
- High quality electromagnetic database outlines  $\approx 20$  kms of distinct linear conductive bodies that remain to be fully drill tested.
  - 7 known graphite prospects all coincident with EM conductors. Francis prospect is high grade with intercepts  $>20\%$  Cg



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## Waddikee: EM provides excellent predictive vectoring tool for exploration for flake graphite

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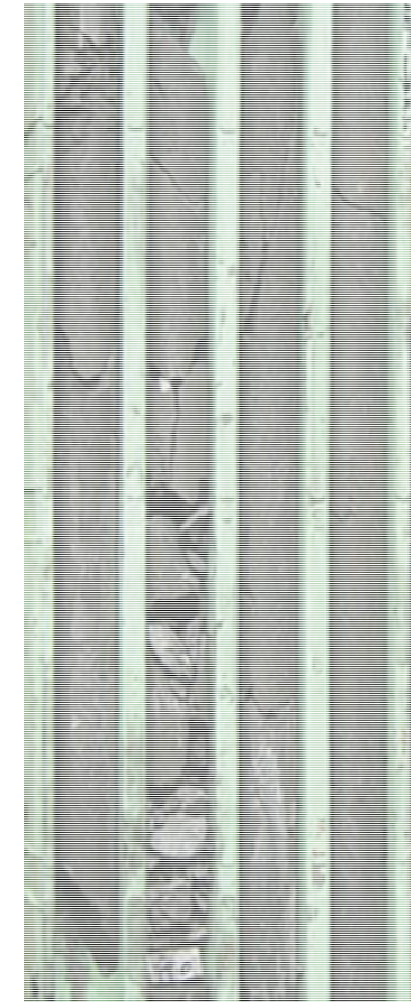
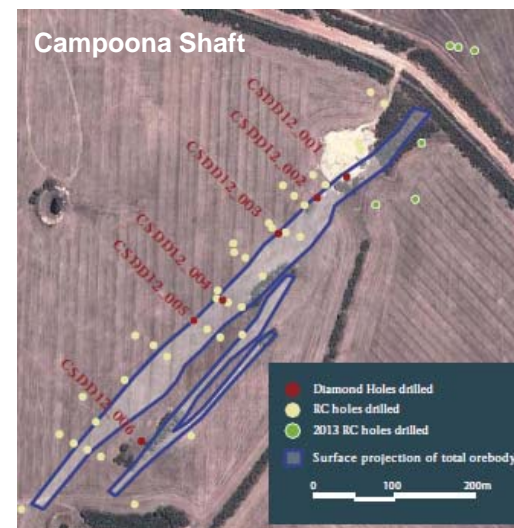
Wilclo South Resource of 6.38Mt grading 8.8% Cg over 1.2kms is open to the north and south for several kilometres.

## Australia's largest combined JORC 2012 graphite resource

8.55Mt @ 9.0 Cg% (lower cut-off grade of 5% Cg)\*

Area	Resource Category	Tonnes (Mt)	Graphite (% Cg)	Contained Graphite (tonnes)
Campoona Shaft	Measured	0.32	12.7	40,600
	Indicated	0.78	8.2	64,000
	Inferred	0.55	8.5	46,800
Central Campoona	Indicated	0.22	12.3	27,100
	Inferred	0.30	10.3	30,900
Wilclo South	Inferred	6.38	8.8	561,400
<b>Combined</b>	<b>Total</b>	<b>8.55</b>	<b>9.0</b>	<b>770,800</b>

\* This information was prepared and first disclosed under the JORC Code 2012 (Archer Exploration Limited, ASX Announcement)



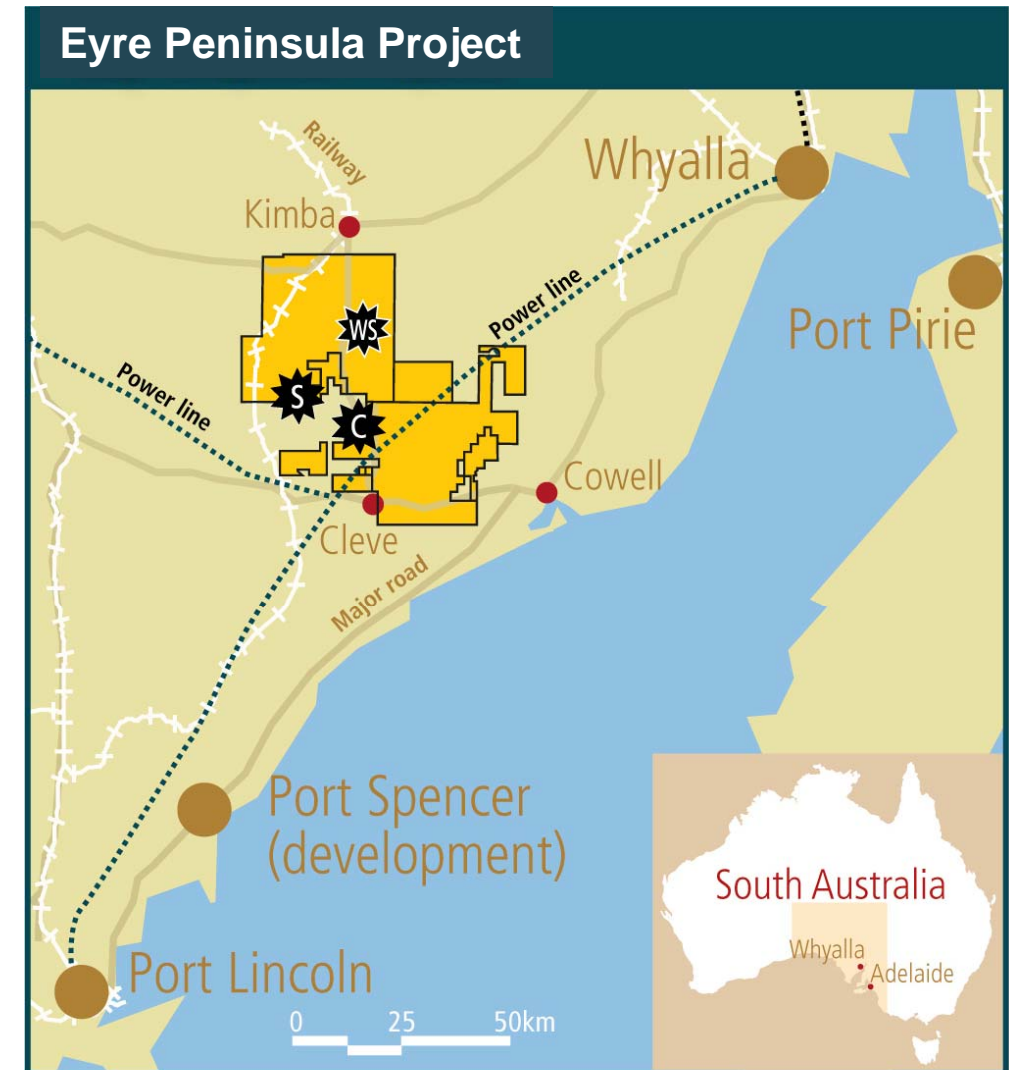
Diamond drill cores from CSDD12\_002

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## Access to critical infrastructure

- Major power lines within reach
- Various port options
- Good road network
- Company owns land at Sugarloaf and Campoona Shaft, and has a binding HoA over the freehold land needed to commence operations
- High yielding aquifer near processing site
- Potable water allocation
- Accommodation and services all in the area
- Predominantly free-dig, open cut mining with low overall strip ratio
- South Australia one of the world's most stable AAA mining jurisdictions

**Mining Lease Proposal 70% completed with submission planned for Q4 calendar 2014**



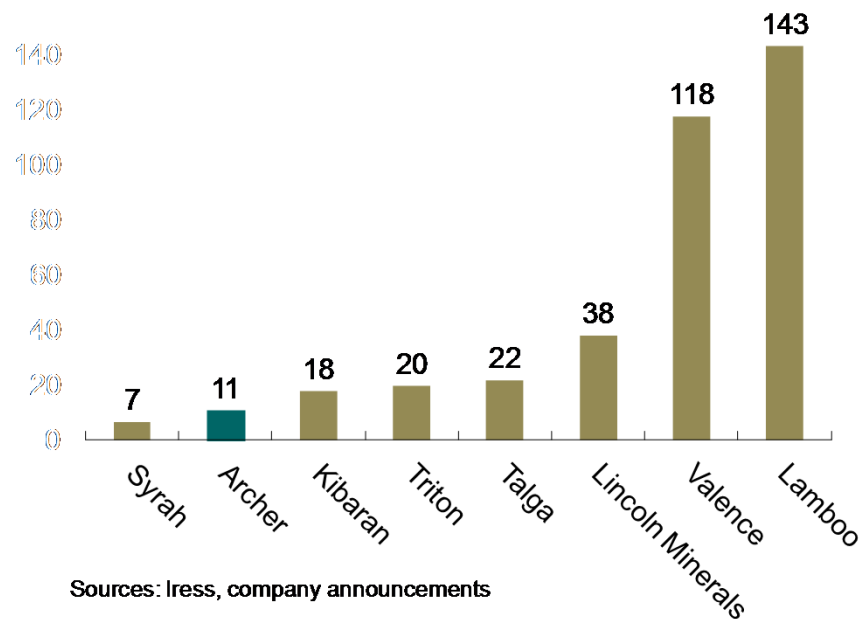
Advanced Graphite Projects

- Campoona
- Sugarloaf
- Wilclo South

## Peer comparison

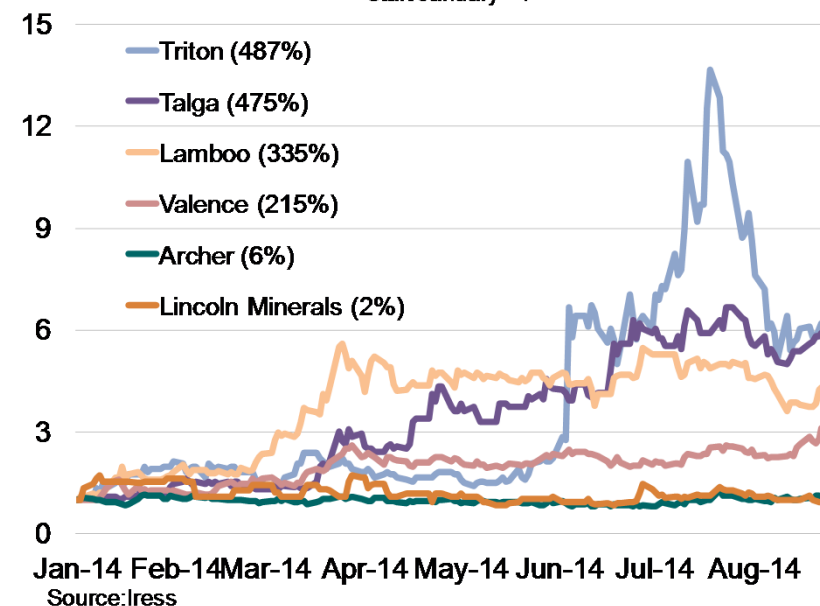
- JORC 2012 Resource of 8.55Mt @ 9.0 Cg% (5% GC lower cut-off grade) with significant exploration upside
- Flake and high purity fine graphite
- Deep oxidation ≈ 100m provides high degree of natural liberation of graphite from gangue
- Largely free-dig mining
- Archer has one of the lowest EV/resource ratios with further exploration likely to significantly increase contained graphite

Enterprise value per tonne of contained graphite ratio



Share price growth

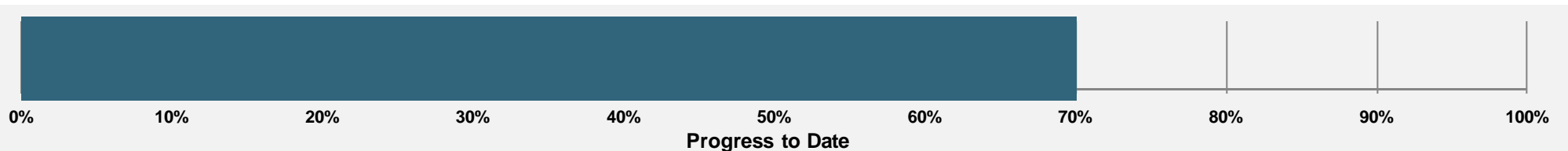
start January =1





## Progressing Campoona Mining Lease Proposal for submission in Q4 2014

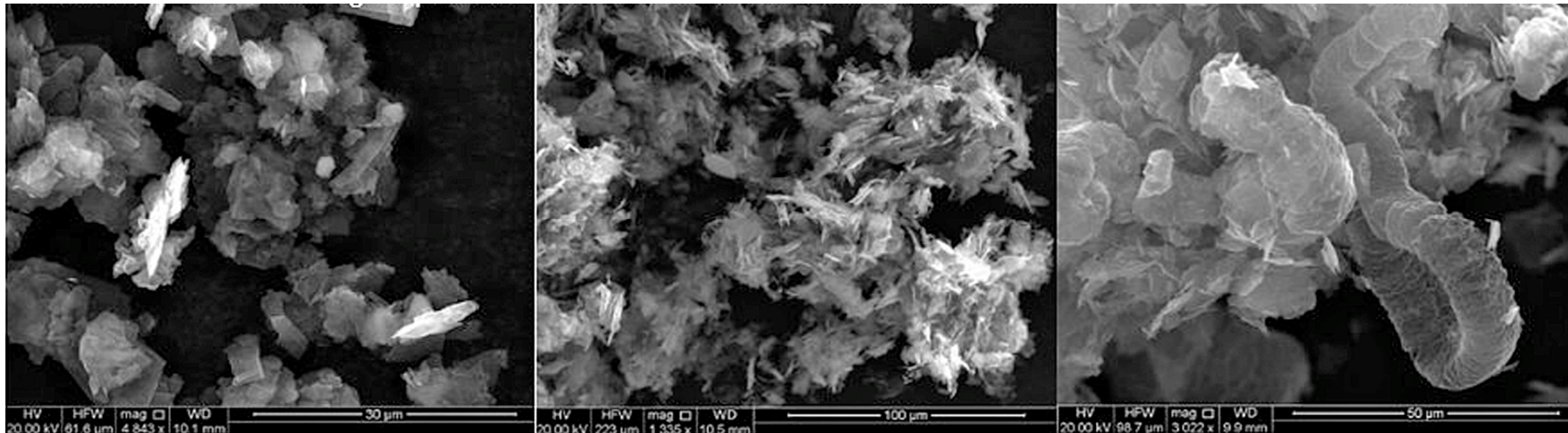
Task	Work undertaken to date	Work in progress
<b>Ecology</b>	Spring & Winter baseline surveys Impact assessment	✓ Completed ✓ Completed
<b>Air quality</b>	Project reviewed & GAP analysis	✓ Modelling being finalised
<b>Hydrogeology</b>	Desktop study completed	✓ Completed
<b>Geochemistry</b>	Draft report completed	✓ AMD testing underway
<b>Socio-Economic &amp; Community Consultation</b>	Stakeholder engagement plan Community newsletters Bi-Monthly CCC meetings	✓ 5 x bi-monthly newsletters ✓ 5 x CCC Meetings completed ✓ Community open days planned
<b>Surface Water</b>	Desktop study	✓ Completed
<b>Visual Amenity</b>	Fieldwork completed	✓ In progress
<b>Tailings Management</b>	Tailings workshop Tailings Option Assessment	✓ Tailings Option Assessment ✓ Characterisation in progress
<b>Mine Closure Plan</b>	Information review & gap analysis	✓ Mine plan outstanding
<b>MLP &amp; PEPR</b>	Kick-off meeting Table of Contents	✓ Awaiting final mine plan and tailings review
<b>Regulator Liaison</b>	Meetings with government stakeholders undertaken	✓ Regular meetings
<b>Permitting Review</b>	Draft Permit Register completed in February 2014	✓ Completed
<b>Cultural Heritage</b>	Desktop cultural heritage study	✓ Completed
<b>Noise</b>	Review of various project documents and gap analysis	✓ Desktop modelling and reporting in progress
<b>Traffic</b>	Desktop traffic study	✓ Completed



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## *Progress graphite prospects*

- Market engagement commenced for Campoona graphite for off-take and/or JV partners
- Flake graphite recovery tests
- Complete Scoping Study
- Drill out of graphite deposits and prospects to increase resources
- Near-term monetisation of non-core projects
- Progress research into specific graphite/graphene agricultural and environmental remediation products with a view to commercialisation



*Archer graphite concentrates*

*Chemically intercalated graphite*

*Thermally intercalated graphite*

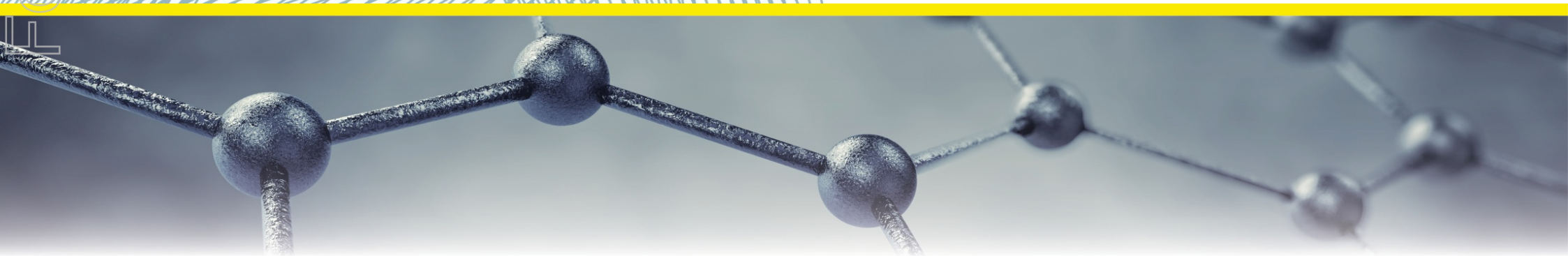
- 1 Track record of identifying resource projects and creating value**
- 2 Portfolio of high quality assets**
- 3 Australia's largest graphite resource with growth potential**
- 4 Low sovereign risk and access to infrastructure**
- 5 Well funded**

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## *APPENDIX*

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## Progressing the development of a potential new high purity graphite and graphene supply source

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### Resource & Mining

- Define Resource
- Mining
  - Open cut mining
  - Predominately free dig
  - Low overall strip ratio
- Mining Lease Proposal to be submitted Q4 2014



Campoona diamond drill hole CSDD12\_003 sump showing graphite mineralisation.

### Processing & Testing

- Conduct metallurgical test work
- Processing
  - Crushing and grinding
  - Flotation
  - ± Acid treatment
  - Drying
  - Bagging

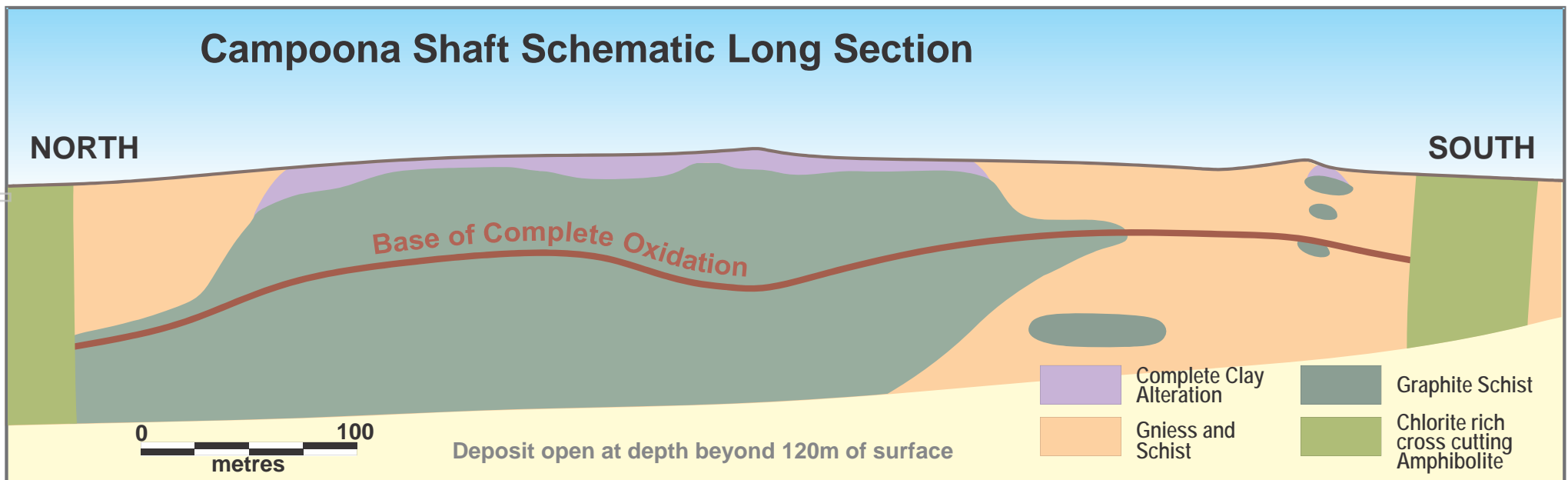


### Marketing & Export

- Engage with customers
- Truck to nominated port
- Supply feed for advanced graphene / graphite production

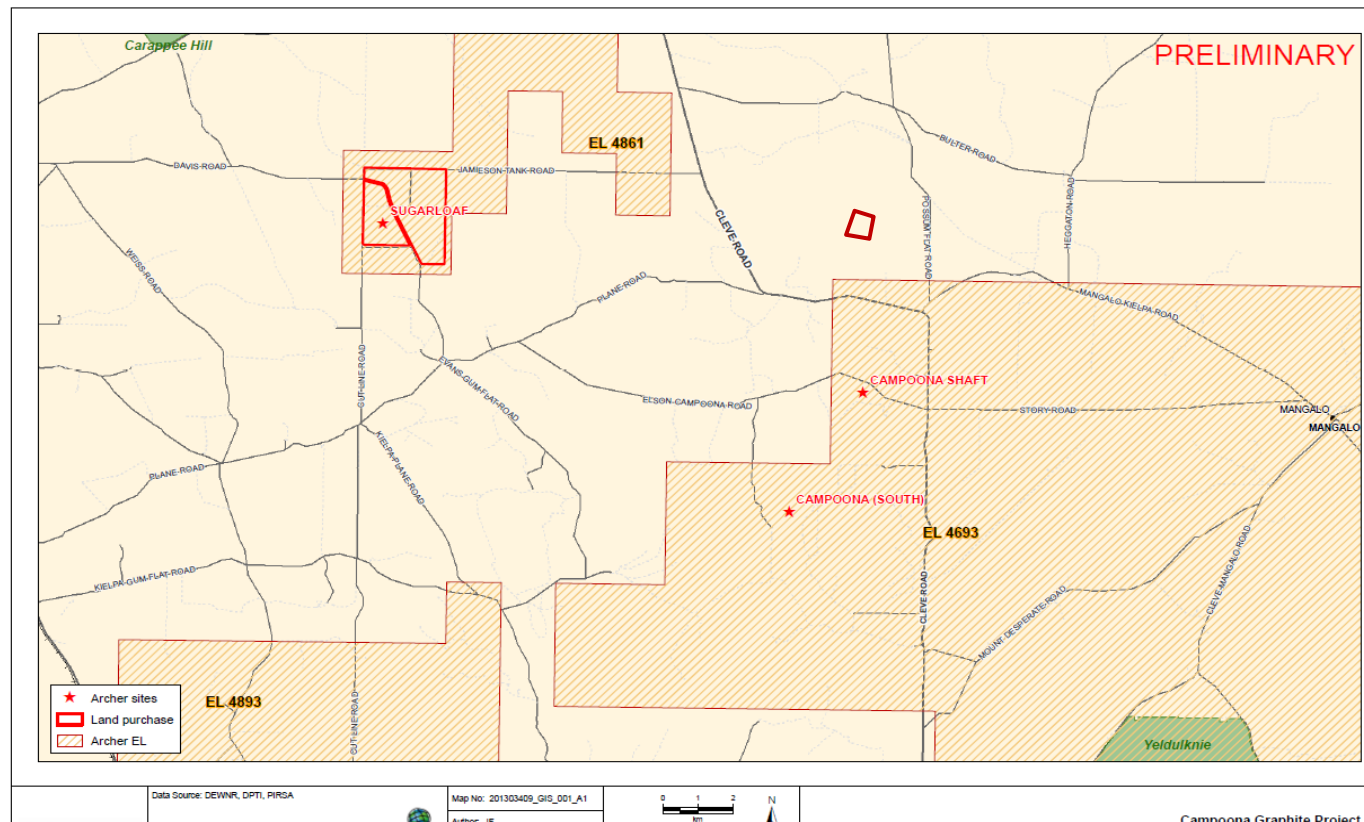
## Prospective graphite zones

- Graphite outcrops
- 10-50m thick highly graphitic schist
- Deep complete oxidation
  - **Upper Claystone** - ≈5m thick clay-rich highly graphitic zone of graphite + kaolin + quartz
  - **Upper BOCO** - porous graphite + quartz + kaolin + tourmaline ± garnet ± iron oxides ± sillimanite ± muscovite gangue. Feldspars all converted to kaolin and most removed. Some clay-rich zones occur as cavity fill.
  - **Lower BOCO** - Below ≈70m depth the graphitic schist becomes progressively more competent. Strong weathering persists to at least 100m depth. Feldspars all converted to illite ± kaolin with minor smectite below 80m.



## Archer owns the land needed for mining and mineral processing

- Campoona Shaft and Sugarloaf both occur on freehold pastoral land
- Archer owns Sugarloaf (1,403 acres) and has binding HoA over sufficient land at Campoona Shaft for mining to proceed
- Early land purchases has secured access and mitigated land risk associated with developing mining and processing operations



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## Competent persons statement

*The 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 2004 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 in this report that relates to the Campoona Shaft and Central Campoona JORC 2012 Mineral Resource estimation has been prepared by Mr B. Knell who is a Member of the AusIMM and peer reviewed by Dr. C Gee who is also a Member of the AusIMM (CP). Mr Knell is a full time employee of Mining Plus Pty Ltd and Dr. Gee is a full time employee of Mining Plus Pty Ltd., both have more than five years' experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Knell has consented in writing to the inclusion in this announcement of the Mineral Resource estimation information in the form and context in which it appears. This information was prepared and first disclosed under the JORC Code 2012.*

## 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.*



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