

# GRAPHITE IN SOUTH AUSTRALIA



Government  
of South Australia

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Above: Uley graphite shipment in Port Lincoln. Source: Valence Industries



Kookaburra Gully. Source: Lincoln Minerals  
Cover image: Lower Eyre Peninsula Graphite. Source: Lincoln Minerals

# GRAPHITE ADVANTAGE AND OPPORTUNITY IN SOUTH AUSTRALIA

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A window of opportunity exists to capture South Australia's natural flake graphite potential.

## **Rising Demand from New Technologies**

Growing end-user markets to underpin flake graphite demand

## **Transforming Global Market Favours New Supply**

Chinese cuts to output to favour new flake graphite projects

## **Highly Prospective Geology**

61% of Australia's JORC Graphite Resources

## **Research and Collaboration**

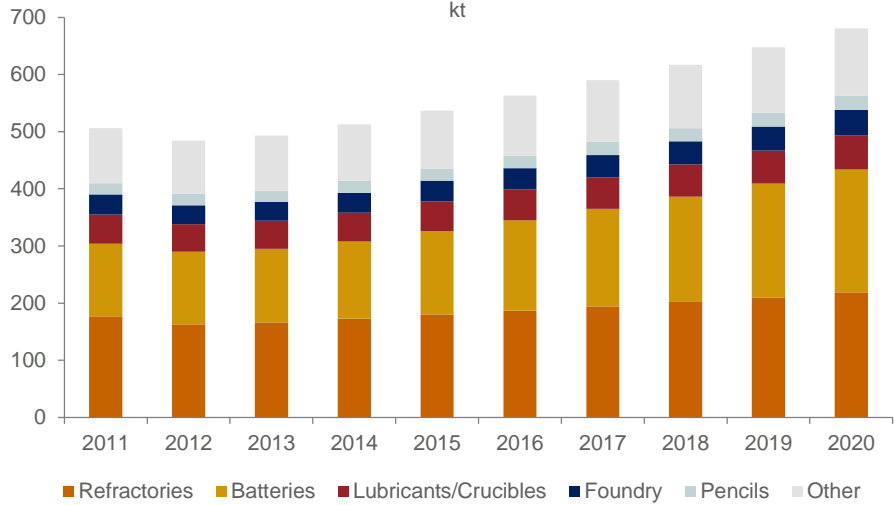
R&D to fast-track graphite and graphene commercialisation

## **Low Jurisdictional Risk**

South Australia - a track record of mining investment

# GRAPHITE DEMAND GROWTH DRIVING OPPORTUNITY

Flake Graphite Demand Projections by Application



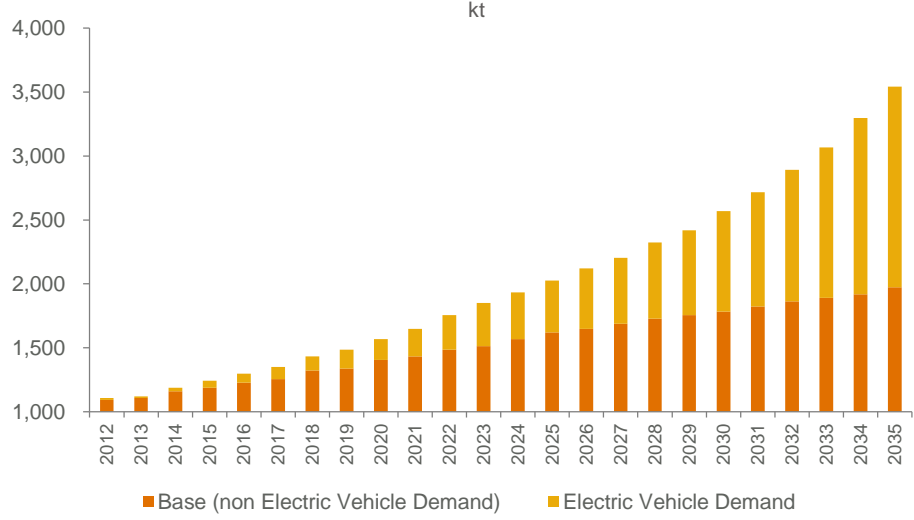
## GRAPHITE IS A CRITICAL RAW MATERIAL

- Graphite has been officially declared a Critical Raw Material by the US State Department, British Geological Survey and the European Commission.
- Graphite is expected to continue being a key commodity in existing industries such as steel refractories, battery manufacturing and lubricants.

## ELECTRIC VEHICLES TO DRIVE DEMAND GROWTH

- With recent announcements by global vehicle manufacturers committing to mass production of electric vehicles, the demand for graphite - a key material in the lithium-ion batteries that power them - is also increasing.
- As each battery produced requires 10-15 times more flake graphite than lithium, the production of electric vehicles creates an ideal opportunity for producers of high quality, coarse-flake graphite.

Total Graphite Demand Projections

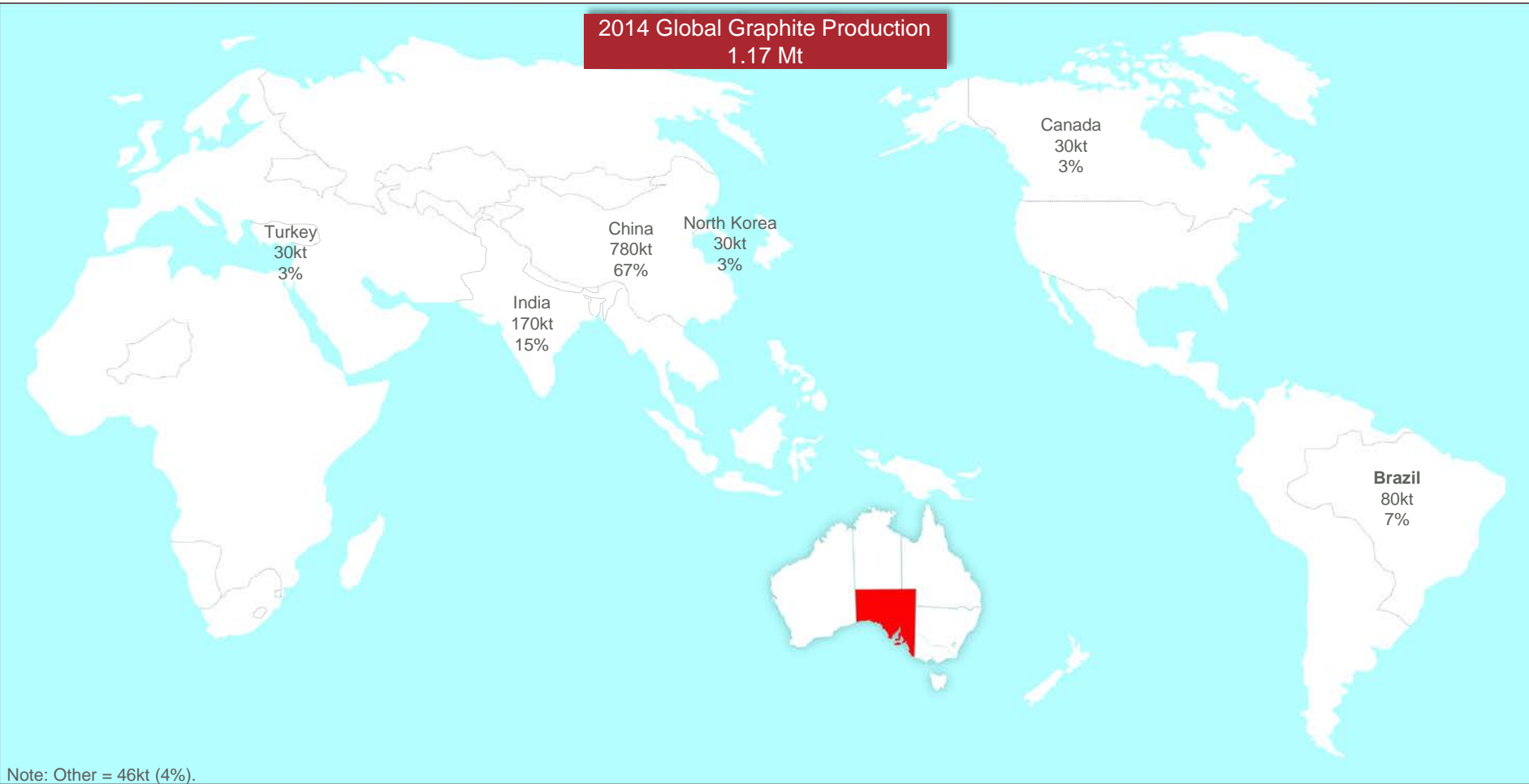


## FLAKE GRAPHITE MOST SOUGHT AFTER

- Future demand growth is expected to be most prominent for graphite with larger/coarser flakes as it can be processed to high purity at a lower cost with fewer steps.
- Recent graphite discoveries across the southern Eyre Peninsula indicate potential for significant large and jumbo-sized flake graphite.

# SUPPLY SHIFTS TO BRING NEW ENTRANTS

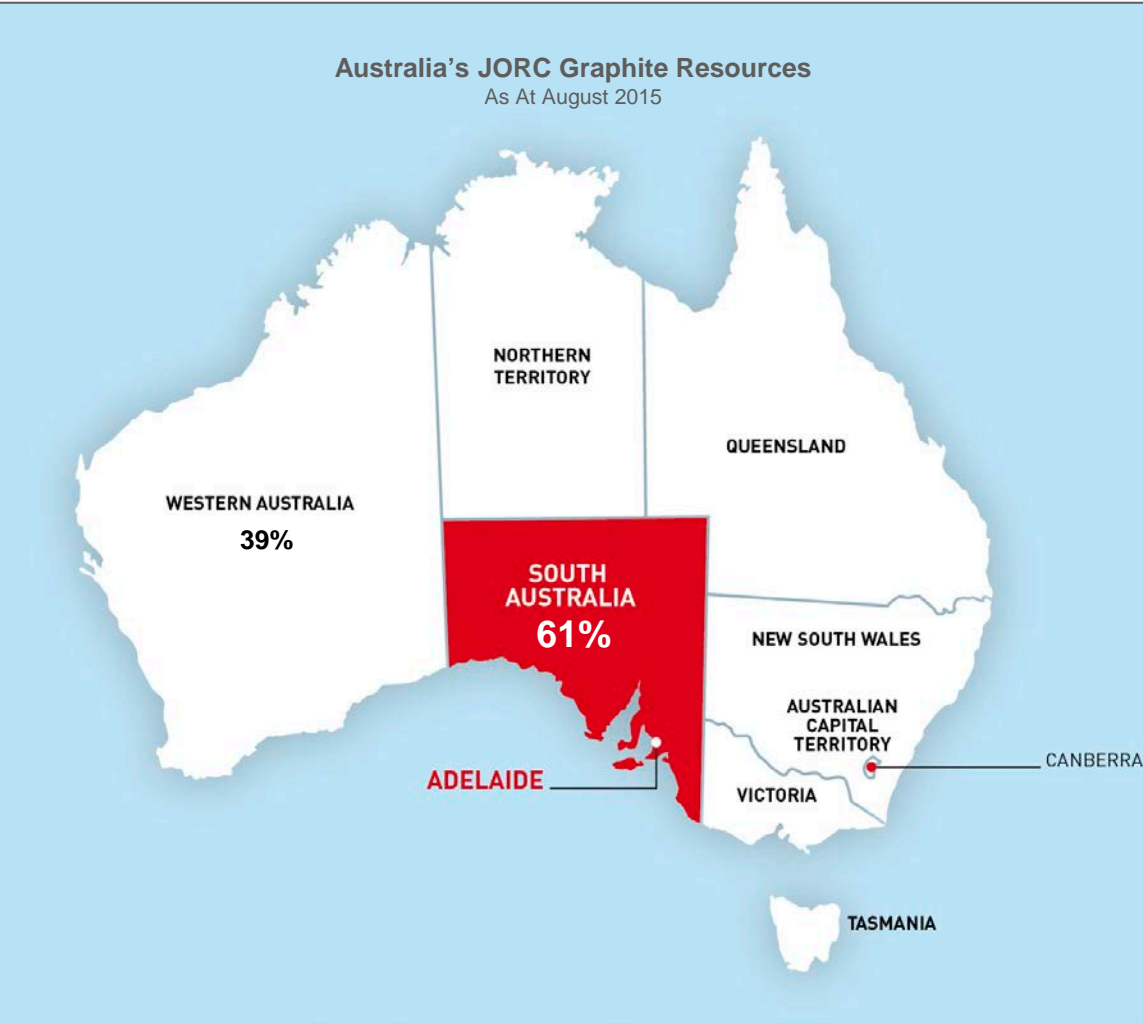
- The world's current supply of graphite is heavily skewed towards China, supplying two thirds of the global market in 2014.
- An estimated 29% of global graphite production is concentrated in China's Heilongjiang Province, the world's largest flake graphite producing region.
- In April 2014 the Heilongjiang Province announced plans to shut down polluting flake graphite operations and to start consolidating graphite mines.
- This shift in global supply presents an opportunity for new producers to enter an expanding graphite market.



Note: Other = 46kt (4%).

# SOUTH AUSTRALIA'S RESOURCE POTENTIAL

Australia's JORC Graphite Resources  
As At August 2015



South Australia is home to 61% of Australia's JORC graphite resources with **1.8 million tonnes of contained graphite.**

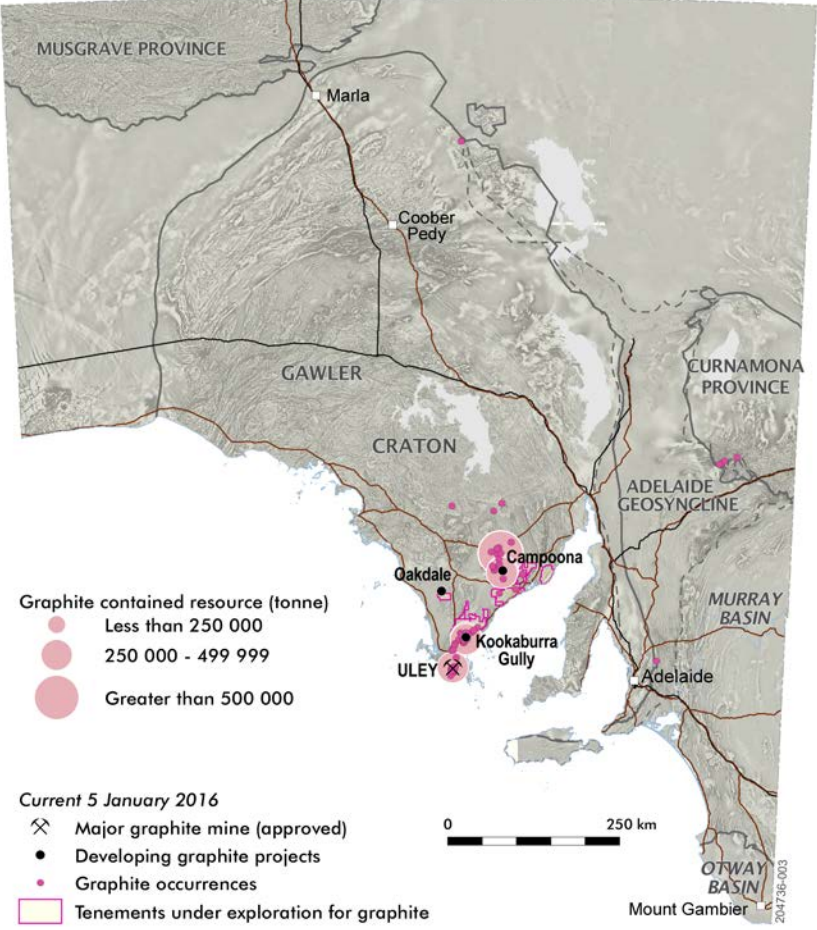
Due to South Australia's highly prospective geology there are substantial opportunities to discover further deposits.

South Australia is home to the highly prospective Eyre Peninsula graphite region, which contains Australia's only operating graphite mine.

There are currently 6 graphite projects and prospects operated by four companies.

# GRAPHITE PROJECTS IN SOUTH AUSTRALIA

South Australia's Eyre Peninsula region is host to six graphite projects operated by Archer Exploration, Lincoln Minerals, Oakdale Resources and Valence Industries at various stages of development.



## OPERATING MINES

PROJECT	OPERATOR	JORC RESOURCE	CONTAINED GRAPHITE (tonnes)
Uley	Valence Industries	4.54Mt @ 11.63% TGC	528,002

## DEVELOPING PROJECTS

PROJECT	OPERATOR	JORC RESOURCE	CONTAINED GRAPHITE (tonnes)
Eyre Peninsula	Archer Exploration	8.55Mt @ 9.0% TGC	770,800
Kookaburra Gully	Lincoln Minerals	2.2Mt @ 15.1% TGC	331,778
Oakdale	Oakdale Resources	6.22Mt @ 4.8% TGC	

## PROSPECTS

PROJECT	OPERATOR	JORC RESOURCE	CONTAINED GRAPHITE (tonnes)
Gum Flat	Lincoln Minerals	109Mt @ 24.8% Fe (No JORC graphite resource)	-
Koppio	Lincoln Minerals	1.85Mt @ 9.76% TGC	180,733

# GRAPHENE – CHANGING THE DEMAND FOR GRAPHITE?

Investment in South Australian graphite provides potential upside exposure to future developments in the commercialisation of graphene.

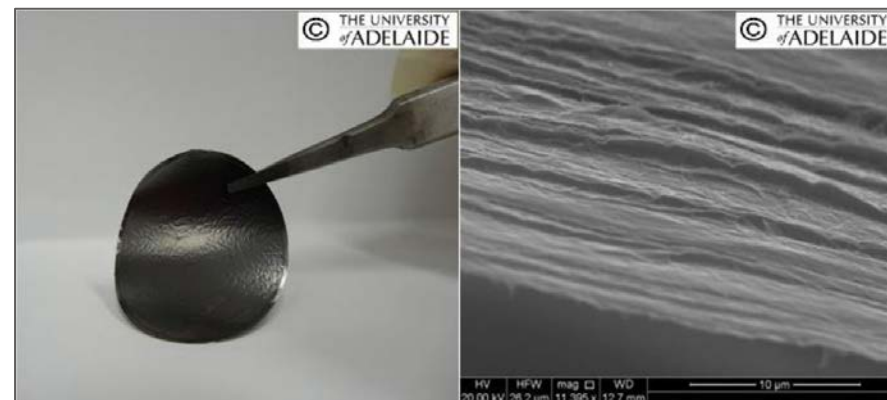
## WHAT IS GRAPHENE?

- Graphene is a single layer of carbon packed in a two-dimensional, hexagonal lattice. It is the first 2D organic crystal with unique electronic, optical, mechanical and thermal properties.
- Graphene can currently be produced synthetically, but in small quantities and at prohibitively high costs.

## GRAPHENE'S UNIQUE PROPERTIES

- The thinnest material known to man
- 200 times stronger than steel
- The world's first 2D material
- 100 times better heat and electric conductivity than copper
- Stretchable, transparent, flexible and impermeable
- Can be used as a protective coating
- Graphene anodes and cathodes can significantly improve the current density of capacitors and lithium-ion batteries.
- Can be used as an additive in metals and plastics to form stronger and lighter composite materials.

Research is currently being undertaken in South Australia to develop scalable, cost-effective technologies for extraction of graphene from natural South Australian graphite and graphite concentrates.



Prepared filtration membrane of graphene sheets extracted from raw graphite from Archer's Campoona deposit. This electroconductive membrane can be used for filtration separation and as an electrode for batteries and supercapacitors. Source: The University of Adelaide



# RESEARCH AND DEVELOPMENT

South Australian graphite companies have formed research and development partnerships with the world-class University of Adelaide, focused on commercialising the production of graphene from graphite in South Australia's Eyre Peninsula.



## ARCHER EXPLORATION

- In March 2014 Archer Exploration partnered with the University of Adelaide's School of Chemical Engineering for a two-year \$200,000 research program.
- Archer's research is focused on the development of scalable production of graphene from its South Australian graphite deposits and graphene's broad industrial, environmental and agricultural applications.



## LINCOLN MINERALS

- Researchers at the School of Chemical Engineering at the University of Adelaide recently produced graphene and graphene products from Lincoln's Koppio graphite mine.
- Lincoln Minerals has also formed a graphene research cooperation agreement with Monash University and Guangdong University of Technology.



## VALENCE INDUSTRIES

- In March 2014 Valence Industries signed a Joint Research, Development & Commercialisation Agreement with the University of Adelaide for the development and commercialisation of all new graphene research and for the development of a new Australian Graphene Research Centre to be based in South Australia.
- The Company is allocating \$800,000 over 3.5 years to the research program.

# RESEARCH AND DEVELOPMENT

## MINING AND PETROLEUM SERVICES CENTRE OF EXCELLENCE

The South Australian Government has committed **\$10 million over five years** as innovation seed funding toward the development of strategically important capabilities in areas such as:

- Deep resource exploration and deep mining
- Next generation minerals processing
- Leading practice in mine rehabilitation and environmental protection
- Mine to mill optimisation, ore selection and pre-concentration, mine logistics
- Automating the resource sector through innovative ICT applications across the entire mining lifecycle
- Leading practice in multiple land use policy and community engagement
- Deep gas well operations and training.

## CASE STUDY: REMOTE OPERATIONS CENTRE (ROC)

- An eight month study for a collaborative Remote Operations Centre (ROC) for the minerals and energy sectors in South Australia was successfully completed in 2014 and has set the foundation for an information and communications technology (ICT) innovation platform for remote applications.
- The ROC is a collaborative innovation project between OZ Minerals, the University of South Australia, IPACS Power and the State Government.
- The ROC project looked at how remote vibration analysis of important equipment at a distant mine site can indicate impending problems and future failures, providing the opportunity for equipment to be repaired ahead of failure and allows it to be used more intensively for longer periods of time.

## PARTNERS INCLUDE:

- OZ Minerals
- BHP Billiton
- Institute for Mineral and Energy Resources at the University of Adelaide
- Ian Wark Centre at the University of South Australia
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- Deep Exploration Technology Cooperative Research Centre



# RESEARCH AND DEVELOPMENT



## DEEP EXPLORATION TECHNOLOGIES COOPERATIVE RESEARCH CENTRE (DET CRC)

- Established in 2010, the DET CRC is the **world's best-supported independent research initiative in mineral exploration** with \$145m of cash and in-kind funding from the Commonwealth Government of Australia and its Participants  
The DET CRC will deliver **research programs in more successful, cheaper and safer ways to drill, analyse and target deep mineral deposits**
- Industry participants include BHP Billiton, Heathgate Resources, Paladin Energy, Vale
- The DET CRC will deliver research programs in more successful, cheaper and safer ways to drill, analyse and target deep mineral deposits.



## THE IAN WARK RESEARCH INSTITUTE

- Established in 1994, The Ian Wark Research Institute at the University of South Australia, holds a prominent place in the Australian research landscape with high-end research facilities and instrumentation.
- Applied research is focused on chemistry and physics at interfaces, covering a wide range of mineral processing applications.



## RESEARCH PARTICIPANTS:

- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- The University of Adelaide
- Curtin University (Western Australia)

## AREAS OF RESEARCH:

- Energy Materials
- Minerals Processing
- Functional Coatings
- Lubrication
- Nanomedicine and biopharmaceuticals

# SOUTH AUSTRALIA – THE LOW-RISK MINING JURISDICTION

## ROBUST GROWING ECONOMY

- South Australia has experienced **22 years** of uninterrupted annual growth.

## GOVERNMENT SUPPORT

- Opening up new areas for exploration.
- World leading geoscientific data.
- World class drill core library.
- Co-funding for exploration drilling.
- Mining Industry Participation Office.
- *PACE* Copper



## MINERALS COUNCIL OF AUSTRALIA 2012 SCORECARD

- Scorecard results for 2012 (released in June 2013) reveal that **South Australia leads all jurisdictions in Australia and New Zealand** for the majority of mining approval, environmental assessments and land access policies and regulation.



## FRASER INSTITUTE SURVEY OF MINING COMPANIES

- South Australia continues to perform well across key metrics in the Fraser Institute's survey, placed in the **top quartile in 13 out of 19 categories** and indices assessed in 2014 in a growing field of 122 jurisdictions.
- South Australia ranks second in the Oceania region for investment attractiveness, and for the last five years South Australia has ranked in the top 20 jurisdictions globally in the survey's Investment attractiveness index.



## RESOURCESTOCKS MAGAZINE WORLD RISK SURVEY

- **South Australia was ranked 11<sup>th</sup> in the world for lowest risk resource investment destination.**
- The survey asks global investors, executives and brokers around the world to rate various mining jurisdictions based on factors like red and green tape, infrastructure, sovereign risk and land access.

# SOUTH AUSTRALIA'S EXPLORATION ADVANTAGES

## EXPLORATION ADVANTAGES

South Australia leads the nation in providing potential investors with the latest exploration information and has in placed streamlined approval processes.

### PACE

A decade of investment in the Plan for Accelerating Exploration (*PACE*) has leveraged a return of 20:1 on geoscience expenditure, creating new opportunities for exploration and mining in South Australia.

The Sought Australian Government's new investment of \$20 million in *PACE* Copper will build on this foundation while responding to the current challenge facing the resources sector.


*PACE* Copper will lead the transformation of the South Australian mineral exploration industry over the next two years.

The initiative will provide the necessary information and opportunity to bring forward new discoveries and set the foundations for the next generation of mineral industry growth and job creation in the services, supplies and manufacturing sectors.

#### *PACE* Copper seeks to:

- Generate over \$400 million in private mineral exploration return for South Australia
- Drive the exploration investment and discovery of the new high-quality copper resources required to meet the copper production goal of 1Mtpa by 2030 (see South Australia's copper strategy)

### CASE STUDY: PACE FRONTIERS MINERAL SYSTEMS DRILLING 2015



The Department of State Development in partnership with the Deep Exploration Technologies Cooperative Research Centre (DET CRC) is embarking on a mineral systems drilling program in the southern margin of the Gawler Range Volcanic Range.

The program is well-advanced and will map minerals systems under cover.

The aim of the program is to map various components of mineral systems below cover, with the potential to identify regional vectors to preferred sites for metal concentration.

- More drilling metres for funds expended
- Drill-rig mobilisation
- Collection of multiple streams of data at the rig, allowing for real-time decision making and potential for follow-up during the drill program
- Utilisation of Solids Removal Unit allowing a significant reduction to environmental impact.

**UNLOCKING NEW AREAS FOR EXPLORATION**

**STREAMLINING APPROVAL PROCESSES**

**PROVIDE WORLD LEADING DATA**

# INFORMATION RESOURCES

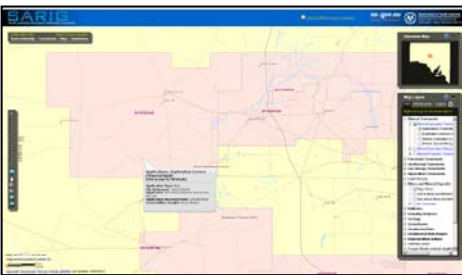
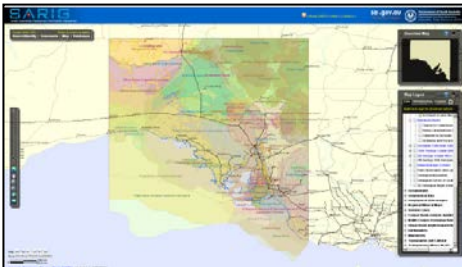
## INFORMATION ADVANTAGES

WORLD LEADER IN ONLINE DATA DELIVERY

The South Australian Resources Information Geoserver (SARIG)

### KEY FEATURES OF SARIG

- Search and identify mineral, petroleum and geothermal geoscientific information
- Overlay data across 400 spatial layers including geophysical data, logistics and land access
- Save and download maps for customised use
- Instant access to petroleum and geothermal well completion reports, current and historical company reports.



[www.sarig.pir.sa.gov.au](http://www.sarig.pir.sa.gov.au)



## WORLD CLASS DRILL CORE LIBRARY

- Drilling samples from companies required to be retained and stored under legislation
- Core library holds representative samples of all petroleum cores and cuttings
- Available for inspection and sampling in modern viewing facilities



## FREE SMART PHONE APP: SOUTH AUSTRALIA MINING

Designed for investors, this free app highlights real-time investment opportunities within the state's mineral and energy resources sector.

Available as a free download on Apple iPhones, iPads and iPad minis through the App Store and on Android smart phones and tablets through Google Play.



## PACE

The South Australian Government's *PACE* initiative (Plan for Accelerating Exploration) is tasked with showcasing South Australia internationally as a premier minerals and energy resources investment destination.

Follow Twitter account “@PACE\_sagov” for more details.

# LEGISLATION & REGULATION

## LEGISLATION & REGULATION

Exploration and mining in South Australia is governed by the **Mining Act 1971** and **Mining Regulations 2011 amendments**.  
The Act and the Regulations require licenses for both exploration and mining prior to any work being commissioned.  
Considerations must be included for each approval type.



Further detail regarding legislation and regulation including contact details can be obtained by visiting the South Australian minerals website:

[minerals.statedevelopment.sa.gov.au](http://minerals.statedevelopment.sa.gov.au)



### FOREIGN INVESTMENT REVIEW BOARD

The Foreign Investment Review Board (FIRB) examines foreign investment proposals to ensure the investment is in Australia's interest.

FIRB must be notified on certain acquisitions, irrespective of the value or the nationality of the investor. All other acquisitions which do not require notification must meet certain thresholds.

One important threshold for an interest in an Australian business is an investment with a value less than \$252 million (as at 1 January 2015).

Other exemptions and thresholds apply including a lower threshold for real estate assets and certain investment types.

Further information can be found at [www.firb.gov.au](http://www.firb.gov.au)

# RESOURCES TAXATION

## AUSTRALIAN RESOURCES TAXATION

### STATE BASED

#### STATE – MINERAL ROYALTIES

Royalties are payable to the State on minerals recovered. South Australia offers a competitive graphite royalty scheme.

### FEDERAL

#### FEDERAL - COMPANY TAX

A Federal company tax rate of 30% tax rate applies to taxable income after a deduction for State royalties.

STATE	ROYALTY
South Australia	2% for the first 5 years, 3.5% thereafter
Western Australia	7.5% for bulk material. 5% for concentrate material. 2.5% for metal.
Tasmania	1.9% of net sales plus profit subject to a maximum of 5.35% of net sales. A rebate of 20% is available for the production of a metal within the State.
Northern Territory	20% of net value of the saleable mineral where the net value is equal to:  [[Gross sales – allowable deductions) – (Operating + exploration costs + capital deductions + other costs)]
New South Wales	4% of ex-mine value
Queensland	4% of ex-mine value





# **OPERATING GRAPHITE MINE**

## OVERVIEW

Located 23km from Port Lincoln, the Uley mine was formally re-opened in November 2014 after ceasing production in 1993 and is currently Australia's only operating graphite mine.

Valence Industries re-commenced graphite production in 2014 by bringing its existing 14,000tpa manufacturing and processing plant off care and maintenance (Phase I) with full production rates are expected by September 2015. In January 2015 Valence released its Bankable Feasibility Study (BFS) for the Phase II expansion of its currently operating Phase I graphite mining, processing and advanced manufacturing capacity. The expansion will provide additional processing capacity in 25,000tpa increments to reach a total of 64,000tpa.

New infrastructure in the feasibility study includes on-site supporting civil infrastructure, haul road upgrades, power upgrades and supplemental water supply. In December 2015, Valence Industries has advised it is ceasing processing activities at its Uley site.

## STATUS

Operating, Phase II BFS Released

## OWNERSHIP

Operator Valence Industries 100%

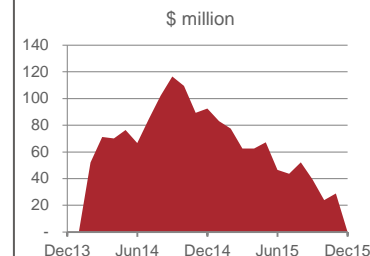
## OPERATOR DETAILS

Headquarters Adelaide, Australia  
 Key Executives Mr Graham Spurling AM, Chairman  
 Mr Christopher Darby, CEO  
 Website [www.valenceindustries.com](http://www.valenceindustries.com)  
 Contact Details +61 8 8418 8564

## LOCATION MAP



## MARKET CAPITALISATION



## DEPOSIT DETAILS

Total Resource (Mt)	4.54
Grade (% TGC)	11.63
Contained Tonnes	528,002
Total Reserve (Mt)	2.92
Grade (% TGC)	12.1
Contained Tonnes	353,618
Exploration Target	9-12Mt, 9-12% TGC

## MINE DETAILS

Style	Open pit
Mine Life	8+ years
Concentrate Grade	94% TGC
Forecast production	Phase I: 14,000 tpa  Phase II: 64,000 tpa

## EXPENDITURE

Phase II est. Capex (A\$m)	37
Phase II est. Opex (A\$/t FOB)	750-950

## PORT DETAILS

Port options	Port Adelaide (~660km)
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## SHARE INFORMATION (31.12.2015)

Listing Details - ASX	VXL
Market Capitalisation	AUD\$22.9m
Cash	AUD\$1.6m
Top 20 Shareholders	27.09%
Significant Shareholders	Strategic Energy Resources 10.95%



# **DEVELOPING GRAPHITE PROJECTS**

# CAMPOONA

## OVERVIEW

Archer's Eyre Peninsula Graphite Project encompasses deposits across several tenements covering the Campoona Shaft, Central Campoona and Waddikee, collectively representing the largest JORC 2012 graphite resource in Australia.

Waddikee hosts the Wilclo South flake graphite deposit (6.38Mt grading 8.8% Cg) and 7 additional drilled graphite prospects (Wilclo, Cut-Snake, Ridgestone, Francis, Lacroma, Balumbah and Argent).

Archer submitted its Draft Campoona Mining Lease Proposal (MLP) in May 2015. The MLP covers the mining of the Campoona Shaft graphite deposit and ore processing at the Company's Sugarloaf site located near Darke Peak on the Eyre Peninsula.

Due to the deep complete oxidation profile of the deposit mining will be largely free-dig. The MLP outlines that 1.65 million tonnes of graphite will be mined over approximately 14 years.

## STATUS

Scoping/Mining Lease Proposal

## OWNERSHIP

Operator Archer Exploration 100%

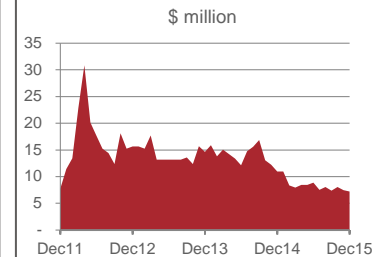
## OPERATOR DETAILS

Headquarters Adelaide, Australia  
 Key Executives Mr Greg English, Chairman  
 Mr Gerard Anderson, Managing Director  
 Website [www.archerexploration.com.au](http://www.archerexploration.com.au)  
 Contact Details +61 8 8272 3288

## LOCATION MAP



## MARKET CAPITALISATION



## DEPOSIT DETAILS

Total Resource (Mt)	8.55
Grade (% TGC)	9.0
Contained Tonnes	770,800
Total Reserve (Mt)	-
Grade (% TGC)	-
Contained Tonnes	-
Exploration Target	24-37Mt, 10-12% TGC

## MINE DETAILS

Style	Open cut
Mine Life	14 years
Concentrate Grade	93-99% TGC
Forecast production	10,500 tpa

## EXPENDITURE

Estimated Capex (\$m)	-
Estimated Opex (\$/t)	-

## PORT DETAILS

Port options	Port Lincoln (23km) Whyalla (280km) Port Pirie (450km) Port Adelaide(660km)
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## SHARE INFORMATION (31.12.2015)

Listing Details - ASX	AXE
Market Capitalisation	AUD\$7.6m
Cash	AUD\$1.7m
Top 20 Shareholders	36.09%
Significant Shareholders	Gregory David English 10.70%

# KOOKABURRA GULLY

## OVERVIEW

Lincoln Minerals' Kookaburra Gully project is located on the southern Eyre Peninsula approximately 35km north of Port Lincoln, containing one of the highest grade graphite deposits in the world at 15.1% total graphitic carbon (TGC).

In January 2016, Lincoln reported that the project does not require further Commonwealth assessment and approvals. Metallurgical studies have shown that a high grade 93%-98% TGC graphite concentrate can be extracted with 80%-90% recovery from a simple 4-stage flotation process. Scoping studies proposed processing of 200,000-400,000tpa of graphite ore with water piped from Tod Reservoir (10km).

Power is expected to be generated onsite (2-4MW) or from the adjacent high voltage power line if a substation is installed. Infrastructure includes a processing plant with an annual rate of between 25,000-55,000t of graphite concentrate. Exploration targets across Kookaburra Gully and Lincoln's nearby Koppio prospect are a combined 33-94Mt.

## STATUS

Mining Lease Application Lodged

## OWNERSHIP

Operator Lincoln Minerals 100%

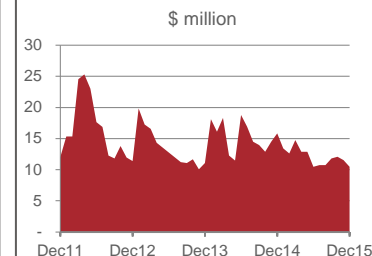
## OPERATOR DETAILS

Headquarters Adelaide, Australia  
 Key Executives Mr Jin Yubo, Chairman  
 Dr John Parker, Managing Director  
 Website [www.lincolnminerals.com.au](http://www.lincolnminerals.com.au)  
 Contact Details +61 8 8274 0243

## LOCATION MAP



## MARKET CAPITALISATION



## DEPOSIT DETAILS

Total Resource (Mt)	2.20
Grade (% TGC)	15.1
Contained Tonnes	331,778
Total Reserve (Mt)	-
Grade (% TGC)	-
Contained Tonnes	-
Exploration Target	33-94Mt, 7-15% TGC (inc. Koppio)

## MINE DETAILS

Style	Open pit
Mine Life	7.5 years
Concentrate Grade	>93% TGC
Forecast production (tpa)	25,000-55,000

## EXPENDITURE

Estimated Capex (\$m)	-
Estimated Opex (\$/t)	-

## PORT DETAILS

Port options	Port Lincoln (23km) Whyalla (280km) Port Pirie (450km) Port Adelaide(660km)
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## SHARE INFORMATION (31.12.2015)

Listing Details - ASX	LML
Market Capitalisation	AUD\$11m
Cash	AUD\$0.5m
Top 20 Shareholders	64.57%
Significant Shareholders	Poan Group Holdings 13.85% Ever Chance International 8.14% High Treasure 5.59%

**OVERVIEW**

The Oakdale graphite prospect is situated within Oakdale's Brimpton Lake tenement (EL 4537), located approximately 120km northwest of Port Lincoln in South Australia's Eyre Peninsula.

In February 2015 Oakdale Resources received approval to commence its drilling programme on the Oakdale prospect. An initial 10,000 metres of air core drilling is planned along with four diamond drill holes to collect in-situ metallurgical samples for further metallurgical testing.

Infill drilling commenced in July 2015 to calculate the initial JORC resource.

In October 2015, it was indicated that 5,650,000 tonnes of 4.7% TGC at a cut-off grade of 3% TGC is contained in an overall indicated and inferred resource of 11,850,000 tonnes at 3.3% TGC within the interpreted mineralised domains.

**STATUS** Exploration

**OWNERSHIP**

Operator Oakdale Resources Ltd 100%

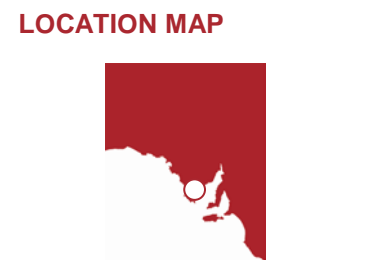
**OPERATOR DETAILS**

Headquarters Newstead, Australia

Key Executives Mr John Lynch, Managing Director

Website [www.oakdaleresources.com.au](http://www.oakdaleresources.com.au)

Contact Details +61 7 3624 8188



**DEPOSIT DETAILS**

Total Resource (Mt)	-
Grade (% TGC)	4.7
Contained Tonnes	6.31m
Total Reserve (Mt)	-
Grade (% TGC)	-
Contained Tonnes	-
Exploration Target	10-15Mt, 5-10% TGC

**MINE DETAILS**

Style	-
Forecast production (tpa)	-

**EXPENDITURE**

Estimated Capex (\$m)	-
Estimated Opex (\$/t)	-

**PORT DETAILS**

Port options	Port Lincoln (120km)
	Whyalla (280km)
	Port Pirie (450km)
	Port Adelaide 660km)

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	OAR
Market Capitalisation	AUD\$7.6m
Cash	AUD\$1.8m
Top 20 Shareholders	87.92%
Significant Shareholders	Matamin Pty Ltd 46.48%, Hackett CP Nominees Pty Ltd 14.24%



# GRAPHITE PROSPECTS

# GUM FLAT

## OVERVIEW

Lincoln's Gum Flat EL 4643 is approximately 2km north along strike from Valence Industries' Uley graphite project and is prospective for both graphite and iron ore resources.

Gum Flat contains the historic Plumbago graphite prospect and several exploration drill hole intersections.

Lincoln previously announced an Indicated and Inferred Mineral Resource of 109Mt at 24.8% Fe, predominantly containing magnetite ore.

Re-sampling of drill cuttings from Lincoln Minerals' exploration holes previously drilled with a focus on iron ore revealed significant graphitic intervals in the Gum Flat area, located about 10 km north and along strike from the Uley Graphite Mine, e.g. 13m @ 12% TGC from 57m depth.

**STATUS** Exploration

## OWNERSHIP

Operator Lincoln Minerals 100%

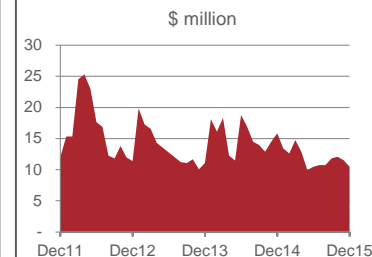
## OPERATOR DETAILS

Headquarters Adelaide, Australia  
 Key Executives Mr Jin Yubo, Chairman  
 Dr John Parker, Managing Director  
 Website [www.lincolnminerals.com.au](http://www.lincolnminerals.com.au)  
 Contact Details +61 8 8274 0243

## LOCATION MAP



## MARKET CAPITALISATION



## DEPOSIT DETAILS

Total Resource (Mt)	Refer Note 1
Grade (% TGC)	-
Contained Tonnes	-
Total Reserve (Mt)	-
Grade (% TGC)	-
Contained Tonnes	-
Exploration Target	-

## MINE DETAILS

Style	-
Forecast production (tpa)	-

## EXPENDITURE

Estimated Capex (\$m)	-
Estimated Opex (\$/t)	-

## PORT DETAILS

Port options	Port Lincoln (23km) Whyalla (280km) Port Pirie (450km) Port Adelaide(660km)
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## SHARE INFORMATION (31.12.2015)

Listing Details - ASX	LML
Market Capitalisation	AUD\$11m
Cash	AUD\$0.5m
Top 20 Shareholders	64.57%
Significant Shareholders	Poan Group Holdings 13.85% Ever Chance International 8.14% High Treasure 5.59%

1. Lincoln Minerals previously reported an iron ore resource for Gum Flat of 109Mt @ 24.8% Fe, with iron ore exploration targets of 250-750Mt.

Refer to [http://www.lincolnminerals.com.au/pdfs/2012-06-07-0337182012-06-07\\_New\\_Gum\\_Flat\\_Iron\\_Ore\\_Resource.pdf](http://www.lincolnminerals.com.au/pdfs/2012-06-07-0337182012-06-07_New_Gum_Flat_Iron_Ore_Resource.pdf)



## OVERVIEW

The historic Koppio Graphite Mine was intermittently mined from the early 1900's to 1944 and contains high grade lenses of coarse flake graphite. Up to 100 tonnes of graphite was mined from Koppio during the 1940s and processed in Port Lincoln.

The drilling program at Koppio has extended the extent of graphite mineralisation from a strike length of ca. 50m to over 525m and a depth extent of at least 100m below ground level at the site of the historic workings. The current strike length is still open to the north and south of existing drilling.

In July 2015 Lincoln announced a maiden Mineral Resource at Koppio of 1.85Mt at 9.76% TGC.

**STATUS** Advanced Exploration

## OWNERSHIP

Operator Lincoln Minerals 100%

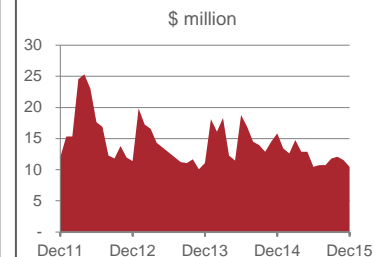
## LOCATION MAP



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## MARKET CAPITALISATION



## DEPOSIT DETAILS

Total Resource (Mt)	1.85
Grade (% TGC)	9.76
Contained Tonnes	180,733
Total Reserve (Mt)	-
Grade (% TGC)	-
Contained Tonnes	-
Exploration Target	1.1-4.8Mt, 11-15% TGC

## MINE DETAILS

Style	-
Forecast production (tpa)	-

## EXPENDITURE

Estimated Capex (\$m)	-
Estimated Opex (\$/t)	-

## PORT DETAILS

Port options	Port Lincoln (23km) Whyalla (280km) Port Pirie (450km) Port Adelaide(660km)
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## Further Information

Please contact Investment Attraction Agency for detailed investor-ready information across copper, gold, uranium, iron ore and resources infrastructure.

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