



# IRON ORE IN SOUTH AUSTRALIA



Government  
of South Australia

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Middleback Ranges. Photography above and front cover by Sean Kelly, Arrium Mining.

# IRON ORE ADVANTAGE AND OPPORTUNITY IN SOUTH AUSTRALIA

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## **Prospective Geology**

14 billion tonnes of Identified Resources

## **Infrastructure Advantages**

Global advantages in logistics and sea freight costs

## **Low Jurisdictional Risk**

South Australia - a track record of mining investment

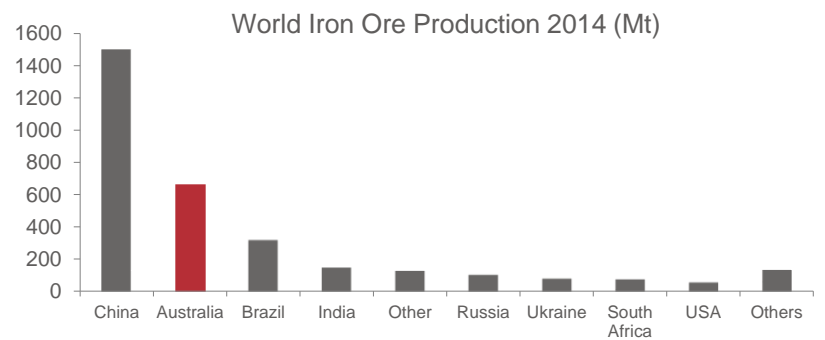
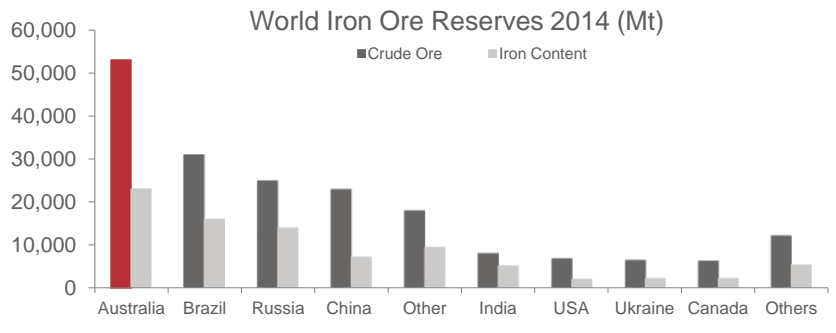
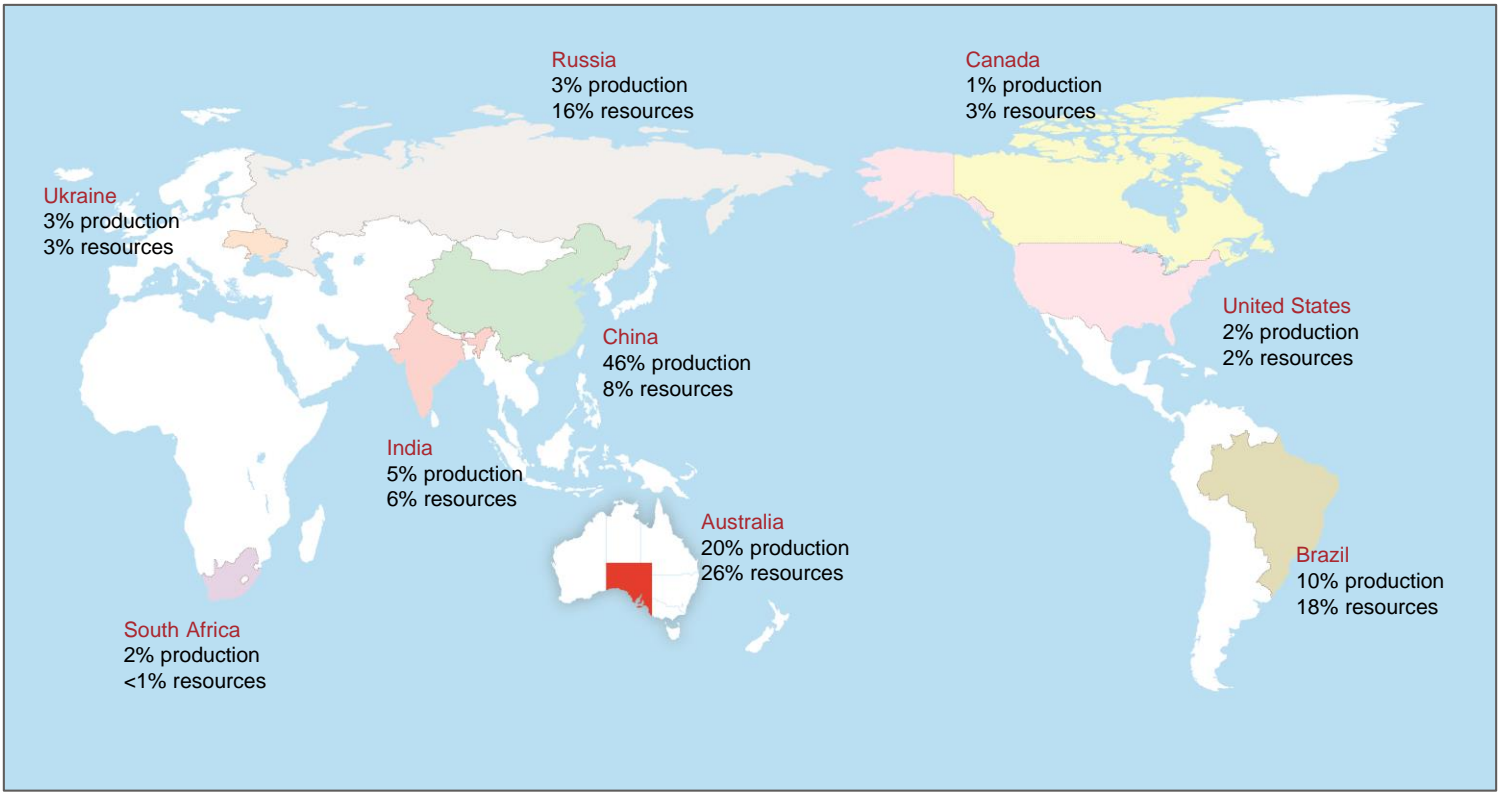
## **World-Renowned Research and Collaboration**

World's best-supported independent research initiative in mineral exploration

## **Ease of Access to Information and Online Data Delivery**

SARIG, Drill Core Library, direct access to key decision makers

# WORLD IRON ORE PRODUCTION & RESOURCES



4 Source: Geoscience Australia - Australia's Mineral Resource Assessment 2014, US Geological Survey, Mineral Commodity Summaries 2015

# IRON ORE IN AUSTRALIA



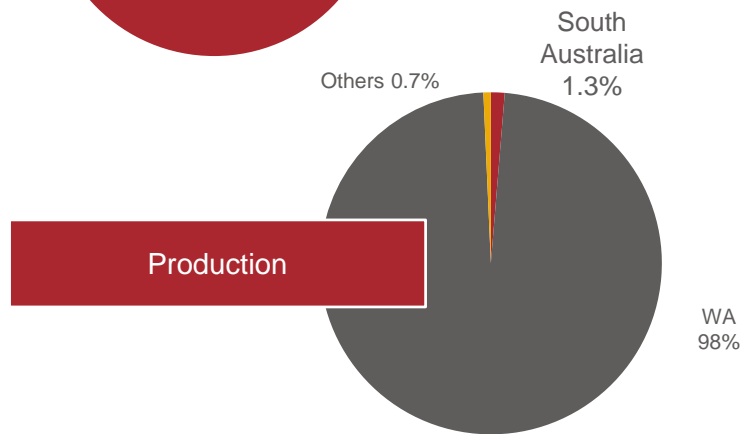
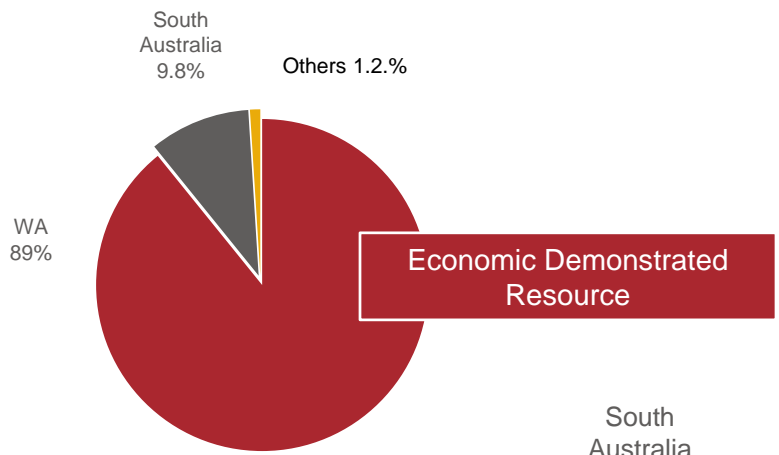
**774 million tonnes**  
2014 production

**54 billion tonnes**  
2014 economic resources

The Australian iron ore mining sector had total revenue of \$54 billion in 2014-15.

The iron ore industry is highly concentrated in the Western Australian Pilbara region however there are a number of iron ore export projects within South Australia.

Key export markets include China, Japan, South Korea and Taiwan with a growing interest from India.



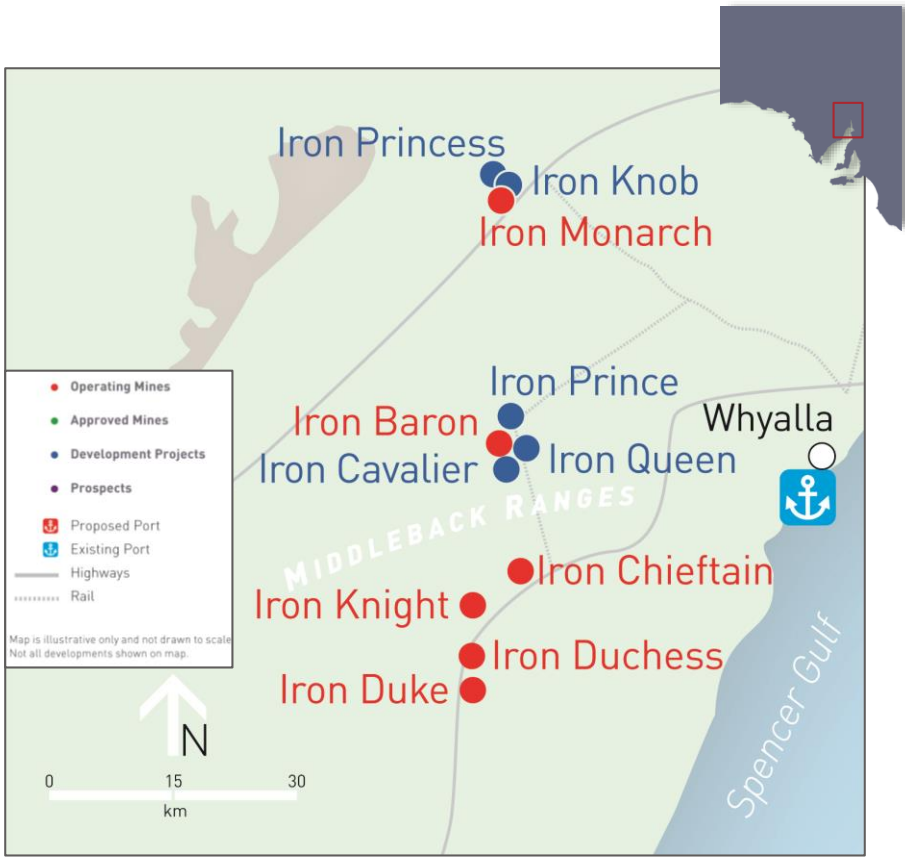


# IRON ORE IN SOUTH AUSTRALIA – MIDDLEBACK RANGES

## MIDDLEBACK RANGES

Included within the South Gawler Craton is the Middleback Ranges. The residual deposits within the Middleback Ranges are massive hematite deposits (i.e. direct shipping ore) with the larger deposits at Iron Monarch, Iron Baron and Iron Duke having collectively yielded more than 200 million tonnes in **100 years of mining**.

The DSO deposits occur in a discontinuous series of north–south-orientated hills and ridges on north-eastern Eyre Peninsula, 40km west of Whyalla (population 23,000, Arrium steelworks facility with capacity of 1.2 Mt per annum). These extend for 40km from Iron Knob in the north to Iron Duke in the south, and rise to a maximum height of 250m above the surrounding plains.



# IRON ORE IN SOUTH AUSTRALIA

## OPERATING MINES

PROJECT	OPERATOR	JV Partner	LOCATION	TYPE	JORC RESOURCE	PRODUCTION	ESTIMATED LIFE	PORT
Middleback Ranges	Arrium	-	South Gawler	Hematite	171Mt @ 56%Fe	7.5 Mtpa	10 years	Whyalla
				Magnetite	182Mt @ 34%Fe			
Southern Iron (Peculiar Knob)	Arrium	-	North Gawler	Hematite	38Mt @ 60%Fe	5 Mtpa	-	Whyalla
<i>[Care and Maintenance]</i>								
Cairn Hill	-	-	North Gawler	Magnetite	11.4Mt @ 49.5% Fe			
Total Operating Mines					364.4	12.5		

## APPROVED MINES

PROJECT	OPERATOR	JV Partner	LOCATION	TYPE	JORC RESOURCE AMOUNT	ESTIMATED PRODUCTION	ESTIMATED MINE LIFE	PORT OPTIONS
Wilcherry Hill	Tyranna Resources		South Gawler	Magnetite	69.3Mt @ 25.9%Fe	1-2 Mtpa	5+ years	Lucky Bay Whyalla
Wilgerup	Centrex Metals	-	South Gawler	Hematite	13.3Mt @ 57%Fe	1-1.5 Mtpa	5 years	Port Spencer
Total Approved Mines					82.6			

# RESOURCE STATISTICS – IRON ORE

## DEVELOPING PROJECTS

PROJECT	OPERATOR	JV PARTNER	LOCATION	TYPE	JORC RESOURCE AMOUNT	ESTIMATED PRODUCTION	ESTIMATE D MINE LIFE	PORT OPTIONS
Bungalow	Centrex Metals	Baotou Iron & Steel Co. Ltd	South Gawler	Magnetite	338 Mt @ 29.6% Fe	5 Mtpa	-	Port Spencer
Central Eyre Iron Project	Iron Road	-	South Gawler	Magnetite	4510 Mt @ 16.0% Fe	21.5 Mtpa	25 years	Cape Hardy Port Spencer
Fusion	Eyre Iron Centrex Metals	Wuhan Iron & Steel (Group) Co	South Gawler	Magnetite	969 Mt @ 25.6% Fe	5 Mtpa		Port Spencer
Gum Flat	Lincoln Minerals	-	South Gawler	Hematite Magnetite	2.1 Mt @ 49.8% Fe	0.25 Mtpa	4-5 years	Port Lincoln Port Spencer Cape Hardy Lucky Bay
Maldorky	Havilah Resources	-	South Gawler	Magnetite	147 Mt @ 30.1% Fe	2.4 Mtpa	8 years	Port Adelaide
Mutooro Magnetite	Minotaur Exploration	Sumitomo Metal Mining Oceania P/L	Braemar	Magnetite	2.2-4.2 Bt @ 15%-18% Fe DTR and 70% Fe			
Olary Creek	Lion One Australia	Yukang Australia (WA) Resources P/L	Braemar	Magnetite	214 Mt @ 26.3% Fe			Port Pirie Myponie Point Port Bonython
Razorback	Magnetite Mines		Braemar	Magnetite	2,732 Mt @ 18.2% Fe	8.2 Mtpa	65 years	Myponie Point Port Pirie Port Bonython
Snaefell	Cu-River Mining		North Gawler	Magnetite	569 Mt @ 27.1% Fe		4 years	

# FOREIGN INVESTMENT IN SOUTH AUSTRALIAN IRON

## FOREIGN INVESTMENT IN SOUTH AUSTRALIAN IRON ORE

INVESTOR	ORIGIN	PROJECT	SHARE	AMOUNT	DETAIL
Wuhan Iron & Steel (Wisco)	China	Fusion Carrow Greenpatch Bald Hill Port Spencer	60%	\$153m	JV with Centrex Metals (Mining projects and development of deep sea port at Port Spencer). Wisco shareholding in Centrex totals 12%.
Baogang Group	China	Bungalow Minbrie	30%	\$24m	JV with Centrex Metals along with 6% shareholding in Centrex.
Sinosteel Corporation	China	Curnamona Province	60%	-	JV with PepinNini Minerals. Acquired PepinNini's remaining stake in Sep 2014.
Sumitomo Metal Mining	Japan	Mutooroo	59%	-	JV with Minotaur Exploration
Lion One Metals	Canada	Olary	47%	-	JV with Henan Yukuang
Henan Yukuang	China	Olary	53%	-	JV with Lion One Metals
INVESTOR	ORIGIN	SHARES IN	SHARE	DETAIL	
Sentient Group	Cayman Islands	Iron Road Ltd	73%	Portfolio Investment	
Poan Group	Hong Kong	Lincoln Minerals	14%	Portfolio investment	
China Armco Metals	China	Apollo Minerals	6%	Portfolio investment	
Jindal Steel & Power	India	Apollo Minerals	5%	Portfolio investment	
Government of Singapore Investment Corporation	Singapore	Arrium	3%	Portfolio investment	

## 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)

# 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.

# IRON ORE IN SOUTH AUSTRALIA

## INFRASTRUCTURE ADVANTAGES

In comparison to other global iron ore regions, South Australia has advantages in logistics and sea freight costs.

### LOGISTICS

Many of the iron ore regions in South Australia have access to an open access rail network with direct route to major ports.

This ensures costly private rail lines may not be required leading to a significant cost saving for South Australian iron ore miners.

### SEA FREIGHT

South Australia has a location advantage to the Chinese export market relative to South Africa and Brazil given the distance between the key ports.

COUNTRY	PORT	DISTANCE TO SHANGHAI (NM)
Australia	Port Hedland (WA)	3,194
India	Mormugao	4,413
<b>Australia</b>	<b>Port Adelaide</b>	<b>5,265</b>
South Africa	Saldanha	7,710
Brazil	Ponta da Madeira	11,665



# 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'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

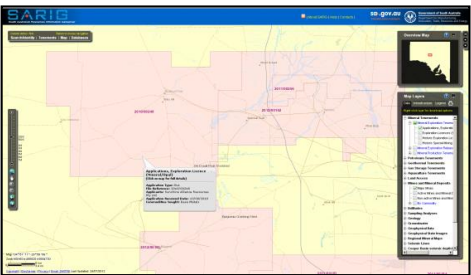
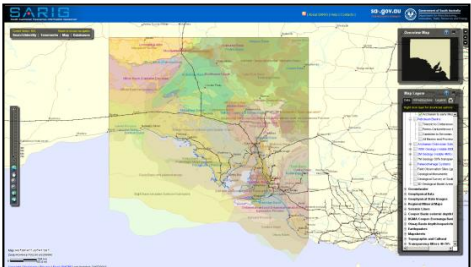
## INFORMATION ADVANTAGES

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.

# REGULATION IN SOUTH AUSTRALIA

## LEGISLATION & REGULATION

Exploration and mining in South Australia is governed by the **Mining Act 1971** and **Mining Regulations 2011 amendments**<sup>1</sup>.  
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)



<sup>1</sup> Uranium exploration and mining is additionally governed by the Radiation Protection and Control Act 1982 and the Environment Protection and Biodiversity Conservation Act 1999

# RESOURCE TAXATION

## AUSTRALIAN RESOURCES TAXATION

### STATE BASED

#### STATE – MINERAL ROYALTIES

Royalties are payable to the State on minerals recovered. South Australia offers a competitive 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, 5% thereafter
Western Australia	5% for beneficiated iron ore concentrate. 7.5% for lump and fines.
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:  $[(\text{Gross sales} - \text{allowable deductions}) - (\text{Operating} + \text{exploration costs} + \text{capital deductions} + \text{other costs})]$



# **OPERATING IRON ORE MINE PROFILES**

# MIDDLEBACK RANGES

**OVERVIEW**

Arrium's iron ore reserves and operating mines are developed across a number of deposits located in the Middleback Ranges. The mines are located 80km from the Whyalla Steelworks which manufactures around 65% of the company's annual raw steel production.

The ore is transported to the Company owned port and blast furnace by rail. Mixed oxide ore is sourced from the Iron Duke and Iron Duchess deposits with magnetite resources contained in the adjacent Iron Magnet deposit.

In January 2015 Arrium announced a re-design of its mining operations whereby its Southern Iron projects would be placed on care and maintenance by the end of June 2015 and the Middleback Ranges would target increased production of 9Mtpa.

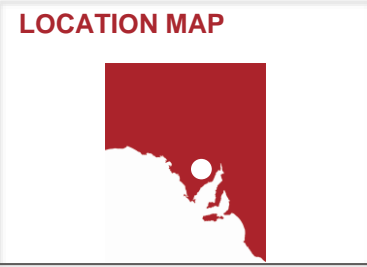
**STATUS** Operating

**OWNERSHIP**

Operator Arrium Limited 100%

**OPERATOR DETAILS**

Headquarters Sydney, Australia  
 Website www.arrium.com  
 Key Executives Mr Jerry Maycock, Chairman  
 Mr Andrew Roberts, CEO  
 Contact Details +61 2 9239 6666



**DEPOSIT DETAILS**

Deposit Type	Hematite / Magnetite
JORC Resources	
Hematite	183.3Mt @ 56.6% Fe
Magnetite	179.0Mt @ 34.8%Fe
JORC Reserves	
Hematite	23.1Mt @ 57.4%Fe
Magnetite	61.9Mt @ 38.5%Fe

**MINE DETAILS**

Style	Open cut
Estimated Life	10 years
Production	9Mtpa target

**EXPENDITURE**

Capex (A\$m)	-
Opex Guidance (A\$/t)	37

**PORT DETAILS**

Port options	Whyalla
Maximum vessel size	Barge to Capesize
Loading rate	4,200 tph
Distance to Shanghai	5,321nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	ARI
Market Capitalisation	AUD\$149.5m
Cash	AUD\$203.3m
Top 20 Shareholders	63.74%
Significant Shareholders	Allan Gray 15.57% Highclere Intl 5.26% GovSingapore 9.33%

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	7.5															Targeting 9Mtpa in FY16.

# SOUTHERN IRON (Peculiar Knob/Hawks Nest)

(Care and Maintenance)

## OVERVIEW

The Southern Iron projects incorporates the Peculiar Knob operating mine and Hawks Nest deposits (Tui, Buzzard & Kestral) acquired from WPG Resources Limited in 2011. The project is located in the North Gawler Craton, south of Coober Pedy.

The Peculiar Knob mine started production in October 2012. Ore is transported to the company owned port at Whyalla via the Darwin to Adelaide rail line with connection to Whyalla.

In January 2015 Arrium announced that the Southern Iron projects would be placed on care and maintenance by the end of June 2015 due to substantial declines in the iron ore price.

**STATUS** Care and Maintenance

## OWNERSHIP

Operator Arrium Limited 100%

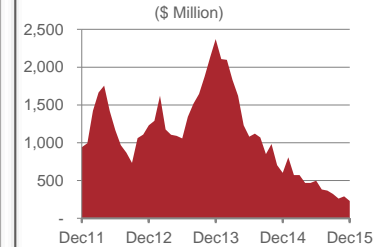
## LOCATION MAP



## OPERATOR DETAILS

Headquarters Sydney, Australia  
 Website www.arrium.com  
 Key Executives Mr Jerry Maycock, Chairman  
 Mr Andrew Roberts, CEO  
 Contact Details +61 2 9239 6666

## MARKET CAPITALISATION



## DEPOSIT DETAILS

Deposit Type	Hematite
JORC Resources	
Hematite	34.2Mt @ 60.7%Fe
JORC Reserves	
Hematite	19.7Mt @ 61.8%Fe

## MINE DETAILS

Status	Operating
Style	Open cut
Estimated Life	-
Production	3.8 Mtpa

## EXPENDITURE

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

## PORT DETAILS

Port options	Whyalla
Maximum vessel size	Barge to Capesize
Loading rate	4,200 tph
Distance to Shanghai	5,321 nm

## SHARE INFORMATION (31.12.2015)

Listing Details - ASX	ARI
Market Capitalisation	AUD\$149.5m
Cash	AUD\$203.3m
Top 20 Shareholders	63.74%
Significant Shareholders	Allan Gray 15.57% Highclere Intl % GovSingapore 5.26% 9.33%

## TIMESCALE

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	3.8															

No guidance – currently on care and maintenance



# **OPERATING IRON ORE MINES**

# WILCHERRY HILL

## OVERVIEW

The Wilcherry Hill Project is located in the South Gawler Craton, 30km north of Kimba and includes the Wilcherry Hill deposit and Hercules deposit.

Stage 1 has State Government approval and is expected to see production of approximately 2 Mtpa of DSO by year 2 from the Wilcherry Hill deposit with ore delivered via road trains to the Lucky Bay port (156km). Stage 2 will see the development of a beneficiation plant to upgrade ore that is non-DSO with Stage 3 including the exploration and development of the Hercules deposit.

The project will coincide with the development of the Lucky Bay Port.

Tyranna Resources is the result of the recent merger between IronClad Mining and Trafford Resources.

**STATUS** Approved

## OWNERSHIP

Operator Tyranna Resources

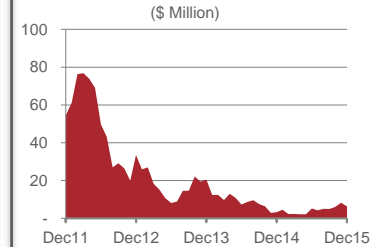
## OPERATOR DETAILS

Headquarters Perth, Australia  
 Website [www.tyrannaresources.com](http://www.tyrannaresources.com)  
 Key Executives Mr Ian Finch, Chairman  
 Contact Details +61 8 9485 1040

## LOCATION MAP



## MARKET CAPITALISATION



## DEPOSIT DETAILS

Deposit Type	Magnetite
JORC Deposit Size (Mt)	24.2
Resource Grade (Fe%)	40
SiO <sub>2</sub> (%)	18.4
Al <sub>2</sub> O <sub>3</sub> (%)	5.3
P (%)	0.05
S (%)	0.34
LOI (%)	6.29

## MINE DETAILS

Style	Open pit
Estimated Life	5+ years
Production	2 -5 Mtpa

## EXPENDITURE

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

## PORT DETAILS

Port options	Lucky Bay
Maximum vessel size	Barge to Capesize
Loading rate	-
Distance to Shanghai	5,260 nm

## SHARE INFORMATION (31.12.2015)

Listing Details - ASX	TYX
Market Capitalisation	AUD\$4.9m
Cash	AUD\$0.4m
Top 20 Shareholders	42.35%
Significant Shareholders	Trafford Resources 10.25% New Page Investments 8.73%

## TIMESCALE

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	●	1	2	4-5	4-5	4-5	4-5	Stage 3 mine life yet to be disclosed post year 5								

**OVERVIEW**

The Wilgerup deposit is located in the South Gawler Craton 83km southwest of Kimba on the Eyre Peninsula and has received mining approval from the South Australian Government.

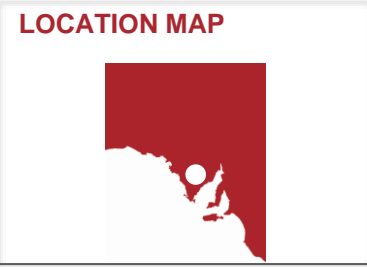
The proposed operation will consist of an open cut mine which will extract approximately 14 million tonnes of iron ore over a 5 year period.

The Wilgerup deposit has received all mining approvals and has off take agreements in place. Development of the mining will be in line with the related Port Spencer deep sea port project (50% Centrex Metals, 50% Wuhan Iron & Steel).

**STATUS** Approved

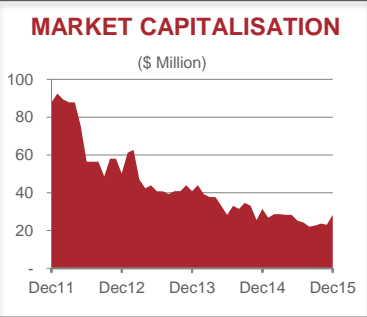
**OWNERSHIP**

Operator	Centrex Metals Limited	100%
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**OPERATOR DETAILS**

Headquarters	Adelaide, Australia
Website	www.centrexmetals.com.au
Key Executives	Mr David Klingberg, Chairman Mr Ben Hammond, CEO
Contact Details	+61 8 8100 2200



**DEPOSIT DETAILS**

Deposit Type	Hematite
JORC Deposit Size (Mt)	14.1
Resource Grade (Fe%)	57.7
SiO <sub>2</sub> (%)	4.8
Al <sub>2</sub> O <sub>3</sub> (%)	2.8
P (%)	0.51
S (%)	-
LOI (%)	5.0

**MINE DETAILS**

Style	Open pit
Estimated Life	5 years
Production	2.5 Mtpa

**EXPENDITURE**

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

**PORT DETAILS**

Port options	Port Spencer
Maximum vessel size	Barge to Capesize
Loading rate	

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	CXM
Market Capitalisation	AUD\$23.3m
Cash	AUD\$28.2m
Top 20 Shareholders	78.39%
Significant Shareholders	South Cove 25.69% Wuhan Iron & Steel 12.83%, SEL 5.19% Baotou Iron & Steel 6.96%, HSBC 5.19%

Distance to Shanghai 5,168 nm

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)																



# **DEVELOPING IRON ORE PROJECTS & PROSPECTS**

**OVERVIEW**

The Bungalow and Minbrie deposits are located in the South Gawler Craton on the Eyre Peninsula 10km from the town of Cowell and 100km north of the proposed Port Spencer. Ore would be transferred via slurry pipe to the proposed port which Centrex Metals have a 50% share in via a separate JV with Wuhan Iron & Steel.

Bungalow and Minbrie has the exploration potential to support a 5Mtpa magnetite concentrate operation.

JV partner Baogang Group can increase its share in the JV to 50% via a contribution to undertake the definitive feasibility study.

Centrex has signed an agreement with Baotou Iron & Steel Group until October 2016, under which Baotou will have an option to purchase Centrex remaining interest in Bungalow for a sum of A\$250,000. Alternatively, Baotou may choose to exit the project along with Centrex.

**STATUS** Feasibility

**OWNERSHIP**

Operator	Centrex Metals Limited	70%
JV Partner	Baogang Group	30%

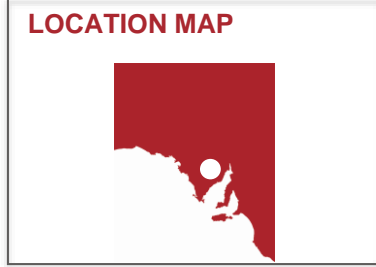
**OPERATOR DETAILS**

Headquarters Adelaide, Australia

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

Key Executives Mr David Klingberg, Chairman  
Mr Ben Hammond, CEO

Contact Details +61 8 8100 2200



**DEPOSIT DETAILS**

Deposit Type	Magnetite	
JORC Deposit Size (Mt)	239.1	
	Ore	Concentrate
Fe (%)	30.7	69.8
SiO <sub>2</sub> (%)	48.1	2.4
Al <sub>2</sub> O <sub>3</sub> (%)	-	-
P (%)	-	-
S (%)	-	-
LOI (%)	-	-

**MINE DETAILS**

Style Open pit

Estimated Life -

Production 5 Mtpa

Production estimates do not include an estimated start date.

**EXPENDITURE**

Estimated Capex (\$m) -

Estimated Opex (\$/t) -

**PORT DETAILS**

Port options Port Spencer

Maximum vessel size Barge to Capesize

Loading rate

Distance to Shanghai 5,168 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX CXM

Market Capitalisation AUD\$23.3m

Cash AUD\$28.2m

Top 20 Shareholders 78.39%

Significant Shareholders South Cove 25.69%  
Wuhan Iron & Steel 12.83%, SEL 5.19%  
Baotou Iron & Steel 6.96%, HSBC 5.19%

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	0															

# CENTRAL EYRE IRON PROJECT



**OVERVIEW**

Iron Road's principal project is the Central Eyre Iron Project (CEIP) located in the South Gawler Craton. CEIP is a collection of three iron (magnetite) occurrences (Warrambo, Kopi & Hambidge).

The Company recently announced the results from the Definitive Feasibility Study (DFS) which confirms the viability of the project to deliver high-grade and low impurity iron ore concentrate. The concentrates will be marketed as a high quality blending feedstock for sinter plants, which feed the majority of blast furnaces around the world.

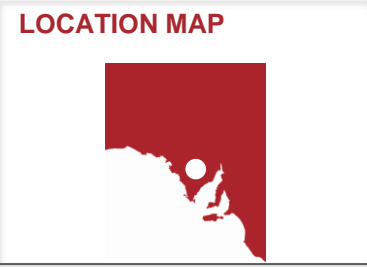
Included within the DFS is the development of a new port at Cape Hardy along with a new heavy gauge rail from mine to port to support the project. Significant progress of the project was achieved in 2015.

Iron Road has received \$2m in short term debt finance for project.

**STATUS** Feasibility Completed

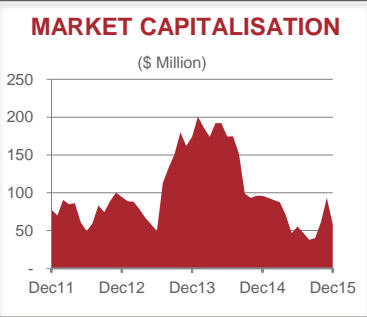
**OWNERSHIP**

Operator	Iron Road Limited	100%
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**OPERATOR DETAILS**

Headquarters	Adelaide, Australia	
Website	www.ironroadlimited.com.au	
Key Executives	Mr Peter Cassidy, Chairman Mr Andrew Stocks, Managing Director	
Contact Details	+61 8 8214 4400	



**DEPOSIT DETAILS**

Deposit Type	Magnetite	
JORC Deposit Size (Mt)	4,510	
Ore Concentrate		
Fe(%)	17	66.7
SiO <sub>2</sub> (%)	53	3.36
Al <sub>2</sub> O <sub>3</sub> (%)	13	1.90
P (%)	0.08	0.009
S (%)	0.055	-
LOI (%)	3.5	-

**MINE DETAILS**

Style	Open pit
Estimated Life	25 years
Production	21.5 Mtpa

**EXPENDITURE**

Estimated Capex (US\$m)	4,305.38
Estimated Opex (US\$/t)	37.72

**PORT DETAILS**

Port options	Cape Hardy
Maximum vessel size	Capesize
Loading rate	-
Distance to Shanghai	5,168 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	IRD
Market Capitalisation	AUD\$52.4m
Cash	AUD\$3.4m
Top 20 Shareholders	90.86%
Significant Shareholders	Sentient Group 72.80%



○ Exploration    ◐ Scoping Study    ◑ Pre-Feasibility Study    ◒ Definitive Feasibility Study    ◓ Application & Approvals    ● Mine Development

# COMMONWEALTH HILL

## OVERVIEW

The Commonwealth Hill tenements lie within the North Gawler Craton and are centred approximately 90km to the north of Tarcoola. The area is highly prospective for a range of targets including iron ore, copper, gold and uranium. The project is well positioned for access to key transport infrastructure including road, standard gauge rail and power. The proponent proposes to rail concentrate to Port Pirie.

The Sequoia deposit has a JORC measured resource of 72 Mt however the project has an exploration target of 300-550 Mt @ 25-35% Fe.

**STATUS** Scoping

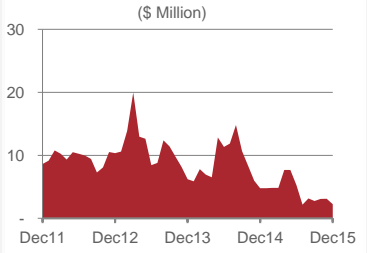
**OWNERSHIP**  
Operator Apollo Minerals 100%

**OPERATOR DETAILS**  
Headquarters Sydney, Australia  
Website [www.apollominerals.com.au](http://www.apollominerals.com.au)  
Key Executives Mr Richard Shemesian, Chairman  
Contact Details +61 2 9078 7665

## LOCATION MAP



## MARKET CAPITALISATION



## DEPOSIT DETAILS

Deposit Type	Magnetite	
JORC Deposit Size (Mt)	72.0	
	Ore	Concentrate
Fe(%)	25.9	69.4
SiO <sub>2</sub> (%)	46.6	2.3
Al <sub>2</sub> O <sub>3</sub> (%)	6.1	0.36
P (%)	0.06	0.01
S (%)	0.10	0.01
LOI (%)	1.3	-

## MINE DETAILS

Style	Open pit
Estimated Life	17 years
Production	2.5 Mtpa
Production estimates do not include an estimated start date.	

## EXPENDITURE

Estimated Capex USD\$m)	433
Estimated Opex USD\$/t)	70

## PORT DETAILS

Port options	Port Pirie
Maximum vessel size	Barge to Capesize
Loading rate	-
Distance to Shanghai	5,339 nm

## SHARE INFORMATION (31.12.2015)

Listing Details - ASX	AON
Market Capitalisation	AUD\$1.7m
Cash	AUD\$0.8m
Top 20 Shareholders	46.12%
Significant Shareholders	Citicorp 6.91%

TIMESCALE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	0															

# CURNAMONA PROVINCE PROJECT



**OVERVIEW**

PepinNini Minerals previously held a 40% interest in five granted tenements which cover approximately 3,778km<sup>2</sup> and contain numerous prospects that warrant further investigation to explore the potential for economic mineralisation.

The area is favourably located with regard to current infrastructure being between the towns of Broken Hill and Peterborough and 20kms to 40kms from the heavy duty trans-Australian railway and adjacent sealed Barrier Highway.

A Sale & Purchase Agreement was announced on 15 July 2014 whereby Sinosteel would acquire PepinNini's 40% share in the project. The sale was completed on 22 September 2014.

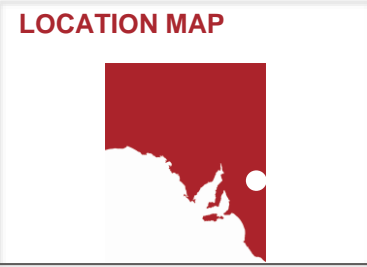
**STATUS** Exploration

**OWNERSHIP**

Operator Sinosteel Corporation 100%

**OPERATOR DETAILS**

Headquarters Perth, Australia  
 Website australia.sinosteel.com  
 Contact Details +61 8 9321 9966



**MARKET CAPITALISATION**

N/A (Private Company)

**DEPOSIT DETAILS**

Deposit Type Fe-IOCG  
 Total Resource (Mt) -

**MINE DETAILS**

Style -  
 Estimated Life -  
 Forecast Production (pa) -

**EXPENDITURE**

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

**PORT DETAILS**

Port options Adelaide  
 Maximum vessel size Panamax

**SHARE INFORMATION**

Listing Details Private Company  
 Market Capitalisation N/A

TIMESCALE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)																

# EYRE IRON JOINT VENTURE



**OVERVIEW**

The Eyre Iron project is a joint venture between Centrex Metals (40%) and Wuhan Iron & Steel (60%). The project includes the Fusion group of deposits (Koppio, Brennand, Kapperna and Iron Mount) as well as the Carrow and Greenpatch deposits.

The project will see onsite crushing and processing with concentrate transported via slurry pipeline to the Company proposed deep sea port at Port Spencer (Centrex Metals 50%, Wuhan Iron & Steel 50%). A new desalination plant is proposed at Port Spencer.

A Definitive Feasibility Study was being prepared however the Company announced in September 2013 that the project would be moved back to Pre-feasibility stage to assess an expanded project.

Drilling of the Bald Hill deposit commenced in January 2015.

**STATUS** Feasibility

**OWNERSHIP**

Operator	Centrex Metals Limited	40%
JV Partner	Wuhan Iron & Steel	60%

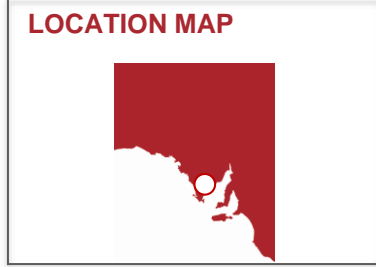
**OPERATOR DETAILS**

Headquarters Adelaide, Australia

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

Key Executives Mr David Klingberg, Chairman  
Mr Ben Hammond, CEO

Contact Details +61 8 8100 2200



**DEPOSIT DETAILS**

Deposit Type	Magnetite	
JORC Deposit Size (Mt)	894	
Ore	Concentrate	
Fe(%)	25.4	66.9
SiO <sub>2</sub> (%)	45.6	5.0
Al <sub>2</sub> O <sub>3</sub> (%)	-	-
P (%)	-	-
S (%)	-	-
LOI (%)	-	-

**MINE DETAILS**

Style	Open cut
Estimated Life	Under review
Production	Under review

**EXPENDITURE**

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

**PORT DETAILS**

Port options	Port Spencer
Maximum vessel size	Barge to Capesize
Loading rate	
Distance to Shanghai	5,168 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	CXM
Market Capitalisation	AUD\$23.3m
Cash	AUD\$28.2m
Top 20 Shareholders	78.39%
Significant Shareholders	South Cove 25.69% Wuhan Iron & Steel 12.83%, SEL 5.19% Baotou Iron & Steel 6.96%, HSBC 5.19%

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	0															

# GAWLER IRON PROJECT



**OVERVIEW**

The Gawler Iron Project is located in the North Gawler Craton region 200km southwest of Coober Pedy.

The project tenements are adjacent the Trans Australian Railway and are within 100km of the Adelaide-Darwin Railway.

The project area covers 3380km<sup>2</sup> and includes over ten areas of known iron occurrences, including the Mt Christie deposit.

A scoping study is currently underway.

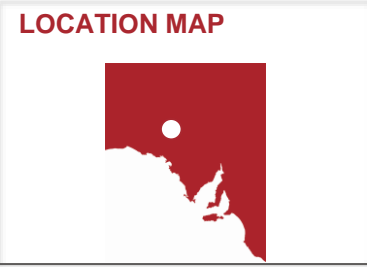
**STATUS** Scoping

**OWNERSHIP**

Operator	Iron Road Limited	100%
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**OPERATOR DETAILS**

Headquarters	Adelaide, Australia
Website	www.ironroadlimited.com.au
Key Executives	Mr Peter Cassidy, Chairman Mr Andrew Stocks, Managing Director
Contact Details	+61 8 8214 4400



**DEPOSIT DETAILS**

Deposit Type	Magnetite
JORC Deposit Size (Mt)	-
Resource Grade (Fe%)	-
SiO <sub>2</sub> (%)	-
Al <sub>2</sub> O <sub>3</sub> (%)	-
P (%)	-
S (%)	-
LOI (%)	-

**MINE DETAILS**

Status	Scoping
Style	-
Estimated Life	-
Production	1-2 Mtpa
Production estimates do not include an estimated start date.	

**EXPENDITURE**

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

**PORT DETAILS**

Port options	Cape Hardy
Maximum vessel size	Capesize
Loading rate	-
Distance to Shanghai	5168 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	IRD
Market Capitalisation	AUD\$52.4m
Cash	AUD\$3.4m
Top 20 Shareholders	90.86%
Significant Shareholders	Sentient Group 72.80%

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	⌚															

**OVERVIEW**

The Maosen project is a greenfield project, to be developed nearby Tarcoola, South Australia.

Giffen Well is located in the North Gawler Craton 120km south of Coober Pedy and 24km east of the Adelaide – Darwin railway line which links port facilities at Port Pirie or Port Adelaide.

The project is seeking to produce 5Mtpa of hot briquetted iron via an integrated iron making complex, including an 8Mtpa beneficiation plant and an 8Mtpa pelletising plant.

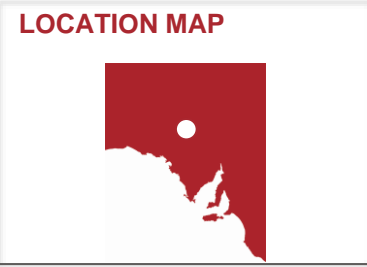
**STATUS** Feasibility

**OWNERSHIP**

Operator Maosen Australia Pty Ltd 100%

**OPERATOR DETAILS**

Headquarters Brisbane, Australia  
 Website -  
 Key Executives Mr Max Wu, Director  
 Contact Details +61 7 3711 6988



**MARKET CAPITALISATION**

N/A (Private Company)

**DEPOSIT DETAILS**

Deposit Type Magnetite  
 JORC Deposit Size (Mt) Refer note 1

**MINE DETAILS**

Style Open pit  
 Estimated Life 15 years  
 Production 5 Mtpa HBI  
 Production Start Date 2018-2019

**EXPENDITURE**

Estimated Capex (EURb) 2.507  
 Estimated Opex (US\$/tBI) 179.24

**PORT DETAILS**

Port options Port Bonython  
 Maximum vessel size Barge to Capesize  
 Loading rate -  
 Distance to Shanghai 6,131 nm

**SHARE INFORMATION**

Listing Details - ASX Private Company  
 Market Capitalisation -  
 Cash -  
 Significant Shareholders -

<b>TIMESCALE</b>	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)																

1. WPG Resources previously reported a mineral resource of 689Mt @ 31.4% Fe. Refer to <http://www.westernplainsresources.com.au/announcements/2013/2013-03-08%20Giffen%20Well%20-%20an%20affordable%20iron%20ore%20development.pdf>

**OVERVIEW**

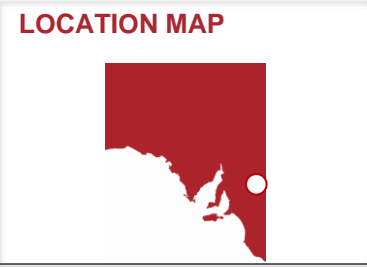
The Grants deposit is located in the Braemar Province. Havilah report that the deposit has no overburden and is only 8km from the Adelaide-Broken Hill rail line which operates with direct linkages to Port Pirie.

The deposit contains more than 100Mt of premium grade product (>60%Fe) with very low levels of impurity elements.

**STATUS** Exploration

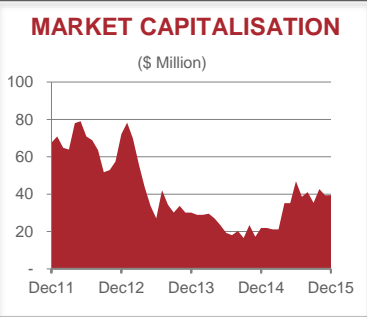
**OWNERSHIP**

Operator	Havilah Resources	100%
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**OPERATOR DETAILS**

Headquarters	Adelaide, Australia
Website	www.havilah-resources.com.au
Key Executives	Mr Kenneth Williams, Chairman Dr Chris Giles, Managing Director
Contact Details	+61 8 8338 9292



**DEPOSIT DETAILS**

Deposit Type	Magnetite
JORC Deposit Size (Mt)	304
Resource Grade (Fe%)	24
SiO <sub>2</sub> (%)	-
Al <sub>2</sub> O <sub>3</sub> (%)	-
P (%)	-
S (%)	-
LOI (%)	-

**MINE DETAILS**

Style	-
Estimated Life	-
Production	-

**EXPENDITURE**

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

**PORT DETAILS**

Port options	Port Adelaide
Maximum vessel size	Panamax
Rotainer loading facility	-
Distance to Shanghai	5,265 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	HAV
Market Capitalisation	AUD\$37m
Cash	AUD\$2.1m
Top 20 Shareholders	63.59%
Significant Shareholders	Mrs Selvie Tjowasi 10.61% IFG Trust 7.35% Glencore 6.18% Trindal 9.94%

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	○															

# GUM FLAT

**OVERVIEW**

Gum Flat is located in the South Gawler Craton 20km west of Port Lincoln.

Extending through the region is a railway line, major highway and high voltage power connecting the deposits to local infrastructure and a major shipping port.

Stage 1 proposes to export 250,000 tpa of hematite transported via road to Port Lincoln, Port Spencer or Cape Hardy. Stage 2 proposes the production and export of magnetite and lower grade hematite.

Total iron ore exploration targets for the Project are 250-750Mt.

In September 2014 Lincoln obtained a groundwater licence for the Barns iron ore deposit in Gum Flat for the extraction of up to 435ML pa.

**STATUS** Scoping


**OWNERSHIP**

Operator Lincoln Minerals 100%

**OPERATOR DETAILS**

Headquarters Adelaide, Australia  
 Website www.lincolnminerals.com.au  
 Key Executives Mr Jin Yubo, Chairman  
 Dr Allan Parker, Managing Director  
 Contact Details +61 8 8274 0243

**LOCATION MAP**




**DEPOSIT DETAILS**

Deposit Type	Mag.	Hem.
JORC Deposit Size (Mt)	104.7	4.2
Resource Grade (Fe%)	24.0	43.8
SiO <sub>2</sub> (%)	4.9	20.4
Al <sub>2</sub> O <sub>3</sub> (%)	0.52	2.4
P (%)	0.01	0.38
S (%)	0.11	0.03
LOI (%)	-	7.4

**MINE DETAILS**

Style	Open pit
Estimated Life	3-5 years (Stage 1)
Production	Stage 1 0.25Mtpa Stage 2 0.40Mtpa

**EXPENDITURE**

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

**PORT DETAILS**

Port options	Port Lincoln
Maximum vessel size	Panamax
Loading rate	-
Distance to Shanghai	5,168 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	LML
Market Capitalisation	AUD\$12.1m
Cash	AUD\$0.57m
Top 20 Shareholders	64.57%
Significant Shareholders	Poan Group 13.85% Everchance International Industrial Ltd 8.14% High Treasure International 5.59%

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	0															

# HERCULES

**OVERVIEW**

The Hercules deposit forms part of the Wilcherry Hill Project, located in the South Gawler Craton, 30km north of Kimba.

Stage 3 of the Wilcherry Hill Project includes the exploration and development of the Hercules deposit.

The project will coincide with the development of the Lucky Bay Port.

Production amounts shown below reflect both the Wilcherry Hill and Hercules deposits.

Tyranna Resources is the result of the merger between IronClad Mining Limited and Trafford Resources.

**STATUS** Feasibility

**OWNERSHIP**

Operator Tyranna Resources

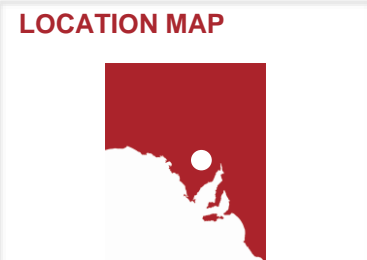
**OPERATOR DETAILS**

Headquarters Perth, Australia

Website [www.tyrannaresources.com](http://www.tyrannaresources.com)

Key Executives Mr Ian Finch, Chairman

Contact Details +61 8 9485 1040



**DEPOSIT DETAILS**

Deposit Type	Mag & Hem
JORC Deposit Size (Mt)	193.94
Resource Grade (Fe%)	27.11
SiO <sub>2</sub> (%)	44.70
Al <sub>2</sub> O <sub>3</sub> (%)	2.62
P (%)	0.19
S (%)	0.08
LOI (%)	4.83

**MINE DETAILS**

Style	Open pit
Estimated Life	-
Production	4-5 Mtpa

**EXPENDITURE**

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

**PORT DETAILS**

Port options	Lucky Bay
Maximum vessel size	Barge to Capesize
Loading rate	-
Distance to Shanghai	5,260 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	TYX
Market Capitalisation	AUD\$4.9m
Cash	AUD\$0.2m
Top 20 Shareholders	42.35%
Significant Shareholders	Trafford Resources 10.25% Admark Investment 8.79%

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	●	1	2	4-5	4-5	4-5	4-5	Stage 3 mine life yet to be disclosed post year 5								

**OVERVIEW**

The Kimba Gap iron ore project encompasses a 4km outcropping banded iron formation approximately 50km west of Whyalla in South Australia, adjacent to the existing iron ore mines of the Middleback Ranges.

High resolution magnetic and gravity surveys, rock chip sampling and an initial diamond drilling program was used to estimation and Exploration Target for the project. Preliminary DTR results show the potential to produce a very high-iron and very low-silica magnetite concentrate.

The deposit lies on one of 5 adjoining tenements in the Western Middlebacks all wholly owned by Centrex Metals

The Company announced the maiden mineral resource for the project in July 2014.

**STATUS** Exploration

**OWNERSHIP**

Operator Centrex Metals Limited 100%

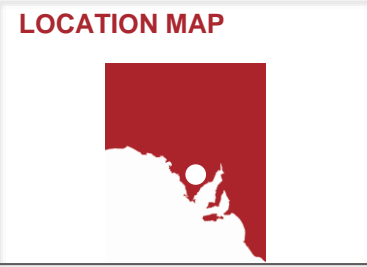
**OPERATOR DETAILS**

Headquarters Adelaide, Australia

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

Key Executives Mr David Klingberg, Chairman  
Mr Ben Hammond, CEO

Contact Details +61 8 8100 2200



**DEPOSIT DETAILS**

Deposit Type	Magnetite	
JORC Deposit Size (Mt)	487.1	
Ore Concentrate		
Fe(%)	24.7	68.6
SiO <sub>2</sub> (%)	53.8	2.9
Al <sub>2</sub> O <sub>3</sub> (%)		
P (%)		
S (%)		
LOI (%)		

**MINE DETAILS**

Style	-
Estimated Life	-
Production	-

**EXPENDITURE**

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

**PORT DETAILS**

Port options	Port Spencer
Maximum vessel size	Barge to Capesize
Loading rate	
Distance to Shanghai	5,168 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	CXM
Market Capitalisation	AUD\$23.3m
Cash	AUD\$28.2m
Top 20 Shareholders	78.39%
Significant Shareholders	South Cove 25.69% Wuhan Iron & Steel 12.83%, SEL 5.19% Baotou Iron & Steel 6.96%, HSBC 5.19%

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)																

**OVERVIEW**

The Lilydale deposit is located in the Braemar Province 173km southwest of Broken Hill. The deposit is near their Company owned Maldorky deposit and 50km from Yunta where the Adelaide-Broken Hill rail line operates with direct linkages to Port Pirie.

The estimated exploration target is 400Mt.

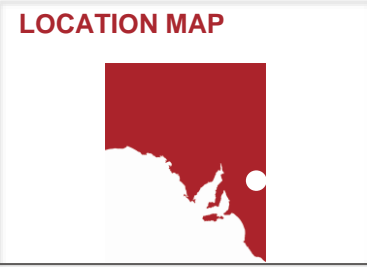
**STATUS** Exploration

**OWNERSHIP**

Operator	Havilah Resources NL	100%
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**OPERATOR DETAILS**

Headquarters	Adelaide, Australia
Website	www.havilah-resources.com.au
Key Executives	Mr Kenneth Williams, Chairman Dr Chris Giles, Managing Director
Contact Details	+61 8 8338 9292



**DEPOSIT DETAILS**

Deposit Type	Magnetite
JORC Deposit Size (Mt)	-
Resource Grade (Fe%)	-
SiO <sub>2</sub> (%)	-
Al <sub>2</sub> O <sub>3</sub> (%)	-
P (%)	-
S (%)	-
LOI (%)	-

**MINE DETAILS**

Style	-
Estimated Life	-
Production	-

**EXPENDITURE**

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

**PORT DETAILS**

Port options	Port Adelaide
Maximum vessel size	Panamax
Rotainer loading facility	-
Distance to Shanghai	5,265 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	HAV
Market Capitalisation	AUD\$37m
Cash	AUD\$2.1m
Top 20 Shareholders	63.59%
Significant Shareholders	Mrs Selvie Tjowasi 10.61% IFG Trust 7.35% Glencore 6.18% Trindal 9.94%

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	○															

**OVERVIEW**

The Maldorky deposit is located in the Braemar Province 89km southwest of Broken Hill.

The deposit has a flat, shallow, ore body covering only 62.4Ha requiring a simple open pit mine plan. The lack of overburden and internal waste material ensures minimal non-ore mining costs. Estimated transport costs are also minimised with the deposit being 26km from the Adelaide-Broken Hill rail line which has direct linkages to Port Adelaide.

The Company report reduced estimated capex and opex due to use of existing infrastructure and lack of overburden.

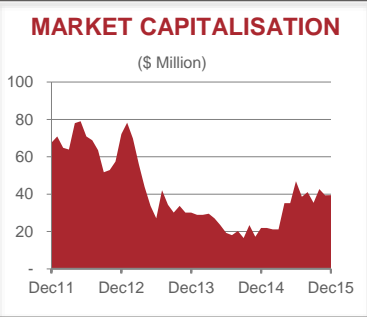
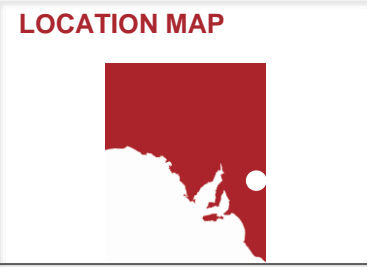
**STATUS** Advanced Exploration

**OWNERSHIP**

Operator Havilah Resources NL 100%

**OPERATOR DETAILS**

Headquarters Adelaide, Australia  
 Website [www.havilah-resources.com.au](http://www.havilah-resources.com.au)  
 Key Executives Mr Kenneth Williams, Chairman  
 Dr Chris Giles, Managing Director  
 Contact Details +61 8 8338 9292



**DEPOSIT DETAILS**

Deposit Type	Magnetite
JORC Deposit Size (Mt)	147
Resource Grade (Fe%)	30.1
SiO <sub>2</sub> (%)	-
Al <sub>2</sub> O <sub>3</sub> (%)	-
P (%)	-
S (%)	-
LOI (%)	-

**MINE DETAILS**

Style	Open pit
Estimated Life	23 years
Production	2.4 Mtpa
Production estimates do not include an estimated start date.	

**EXPENDITURE**

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

**PORT DETAILS**

Port options	Port Adelaide
Maximum vessel size	Panamax
Rotainer loading facility	-
Distance to Shanghai	5,265 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	HAV
Market Capitalisation	AUD\$37m
Cash	AUD\$2.1m
Top 20 Shareholders	63.59%
Significant Shareholders	Mrs Selvie Tjowasi 10.61% IFG Trust 7.35% Glencore 6.18% Trindal 9.94%

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	○															

**OVERVIEW**

The Mt Woods Magnetite Project is located 15km southwest of the Cairn Hill mine (previously operated by IMX Resources) and includes the Snaefell and Tomahawk deposits. IMX completed the sale of its Mt Woods tenements to Cu-River Mining Australia in November 2014 for \$3.68m.

The Scoping Study outlines that the project could utilise the existing infrastructure from the Cairn Hill mine and follow the same path to market. The study further outlines expansion options would could see the project utilise a redeveloped port at Port Pirie. The project has a global exploration target of 900-1,200Mt @ 20-32% Fe.

The scoping study includes a base case for production of 2.5Mtpa as well as alternative production amounts of 1.8Mtpa, 4.7Mtpa and 9.4Mtpa.

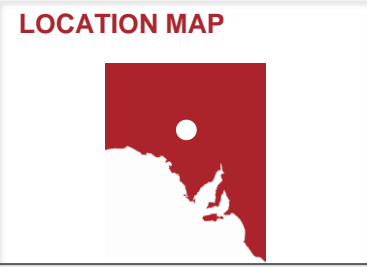
**STATUS** Scoping

**OWNERSHIP**

Operator	Cu-River Mining Australia	100%
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**OPERATOR DETAILS**

Headquarters	N/A
Website	N/A



**MARKET CAPITALISATION**

N/A (Private Company)

**DEPOSIT DETAILS**

Deposit Type	Magnetite
JORC Deposit Size (Mt)	Refer note 1

**MINE DETAILS**

Style	Open Pit
Estimated Life	25 years
Production	2.5 Mtpa

Scoping study includes analysis for production amounts of 1.8Mtpa, 4.7Mtpa and 9.4Mtpa.

**EXPENDITURE**

Estimated Capex (\$m)	294
Estimated Opex (\$/t)	77.4

**PORT DETAILS**

Port options	Port Pirie
Maximum vessel size	Barge to Capesize
Loading rate	-
Distance to Shanghai	5,339 nm

**SHARE INFORMATION**

Listing Details - ASX	Private Company
Market Capitalisation	Cash
Significant Shareholders	

<b>TIMESCALE</b>	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	⌚															

1. IMX Resources previously reported a mineral resource of 569Mt @ 27.1% Fe. Refer to [http://www.imxresources.com.au/\\_content/documents/1154.pdf](http://www.imxresources.com.au/_content/documents/1154.pdf)

**OVERVIEW**

The Mutooroo Magnetite Project is located 74km southwest of Broken Hill in the Braemar Province.

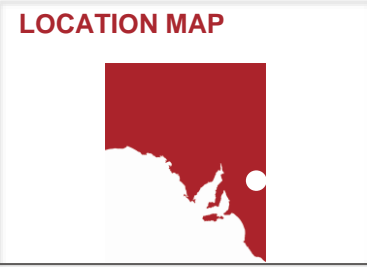
Nine significant magnetic anomalies have been modeled, Muster Dam, Muster Catch, Muster South, Duffields, Surrender Dam, Peaked Hill, Peaked Hill West, Pegline Dam and Red Dam. For the first five of these an exploration target of 2.2 to 4.2 billion tonnes within a strike extent up to 20 km has been identified.

An inferred resource of 1,500 Mt at a head grade of 18.2% Fe and 15.2% DTR (10% DTR cut-off) has been estimated for Muster Dam.

**STATUS** Scoping

**OWNERSHIP**

Operator	Minotaur Exploration Ltd	40.9%
JV Partner	Sumitomo Metal Mining	59.1%



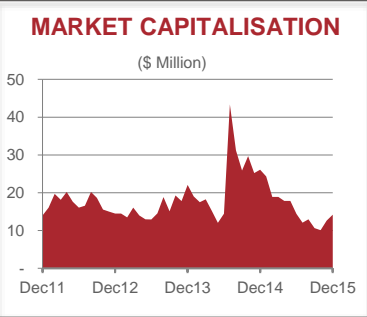
**OPERATOR DETAILS**

Headquarters Adelaide, Australia

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

Key Executives Mr Andrew Woskett, MD  
Dr Tony Belperio, Executive Director – Business Development

Contact Details +61 8 8133 5000



**DEPOSIT DETAILS (Muster Dam)**

Deposit Type	Magnetite	
JORC Deposit Size (Mt)	1,500	
	Ore	Concentrate
Fe(%)	18.2	69.8
SiO <sub>2</sub> (%)	49.7	2.8
Al <sub>2</sub> O <sub>3</sub> (%)	8.9	0.4
P (%)	0.2	0.002 (P <sub>2</sub> O <sub>5</sub> )
S (%)	0.03	0.002
LOI (%)	2.8	-3.3

**MINE DETAILS**

Style	Open pit
Estimated Life	25 years
Production	12.5 Mtpa
Production estimates do not include an estimated start date.	

**EXPENDITURE**

Estimated Capex (\$m)	4,200
Estimated Opex (\$/t)	75

**PORT DETAILS**

Port options	Myponie Point
Maximum vessel size	Capesize
Loading rate	-
Distance to Shanghai	5,267 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	MEP
Market Capitalisation	AUD\$12.6m
Cash	AUD\$4.2m
Top 20 Shareholders	32.05%
Significant Shareholders	Norilsk Nickel 5.99% Yarraandoo Pty Ltd 5.36%

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	12.5															

**OVERVIEW**

The Olary Iron Project is located 268 km northeast of Port Pirie and 35 km south of the Barrier Highway & the parallel Indian Pacific Railway Line.

Lion One Australia Pty Ltd was created in 2013 through the acquisition of Perth-based explorer Avocet Resources Limited.

**STATUS** Scoping

**OWNERSHIP**

Operator	Lion One Metals	47%
JV Partner	Henan Yukuang	53%

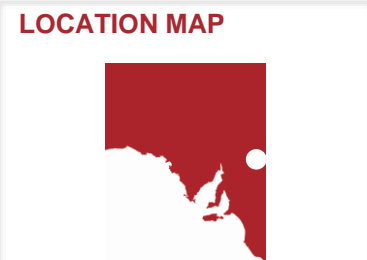
**OPERATOR DETAILS**

Headquarters Perth, Australia

Website [www.liononemetals.com](http://www.liononemetals.com)

Key Executives Mr Walter H. Berukoff, CEO, Chairman  
Mr Stephen Mann, Managing Director

Contact Details +61 8 9481 2243



**DEPOSIT DETAILS**

Deposit Type	Magnetite	
JORC Deposit Size (Mt)	510	
	Ore	Concentrate
Fe(%)	26.4	69.7
SiO <sub>2</sub> (%)	41.1	2.7
Al <sub>2</sub> O <sub>3</sub> (%)	6.9	0.2
P (%)	0.25	0.009
S (%)	0.028	0.009
LOI (%)	3.8	-3.1

**MINE DETAILS**

Status	Scoping
Style	Open Pit
Estimated Life	-
Production	-

**EXPENDITURE**

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

**PORT DETAILS**

Port options	Port Pirie
Maximum vessel size	Barge to Capesize
Loading rate	-
Distance to Shanghai	~5,300 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	LLO
Market Capitalisation	AUD\$21.5m
Cash	AUD\$1.6m
Top 20 Shareholders	-
Significant Shareholders	-

<b>TIMESCALE</b>	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)																

**OVERVIEW**

The Razorback Venture includes the Razorback Ridge and Ironback Hill projects which are located in the Braemar Province 160km east of Port Pirie.

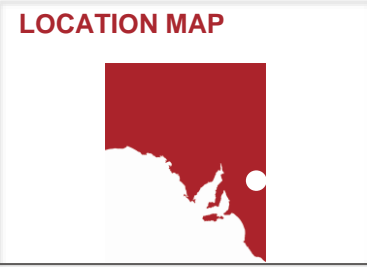
The mineralisation style is a bedded magnetite and significantly softer than banded iron formation ores. As a result the ore will be low cost to mine and beneficiate together with the proposed infrastructure, means a low capital cost compared to its peers.

Magnetite Mines (formerly known as Royal Resources) signed an MoU with Braemar Infrastructure Pty Ltd to use a new multi-purpose infrastructure corridor to transport concentrate via a new slurry pipeline to a deep water location at Myponie Point. The concentrate will be pumped by a sub-sea pipeline to a permanently moored dewatering transshipment vessel (floating port) for later transfer to a Capesize vessel. The infrastructure corridor will also include electricity transmission, fibre optic communication and water to support the mining and beneficiation operations.

**STATUS** Feasibility

**OWNERSHIP**

Operator	Magnetite Mines Limited	100%
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**OPERATOR DETAILS**

Headquarters	Adelaide, Australia
Website	www.magnetitemines.com
Key Executives	Mr Gordon Toll, Executive Chairman Mr Malcolm Randall, Non-Executive Director
Contact Details	+61 8 8427 0516



**DEPOSIT DETAILS**

Deposit Type	Magnetite	
JORC Deposit Size (Mt)	3,918	
	Ore	Concentrate
Fe(%)	19.7	67.4
SiO <sub>2</sub> (%)	46.8	4.74
Al <sub>2</sub> O <sub>3</sub> (%)	7.7	0.54
P (%)	0.18	0.016
S (%)	-	0.003
LOI (%)	-	-

**MINE DETAILS**

Style	Open pit
Estimated Life	65 years
Production	9.3 Mtpa

**EXPENDITURE**

Estimated Capex (\$m)	1,200
Estimated Opex (\$/t)	69

**PORT DETAILS**

Port options	Myponie Point
Maximum vessel size	Capesize
Loading rate	-
Distance to Shanghai	5,267 nm

**SHARE INFORMATION (31.12.2015)**

Listing Details - ASX	MGT
Market Capitalisation	AUD\$11m
Cash	AUD\$1.8m
Top 20 Shareholders	58.19%
Significant Shareholders	Coffee House 22.17%, Ragged Range mining 6.94%, National Nominees Ltd 5.96%

**TIMESCALE**

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	○	○	●													

# TARCOOLA IRON

## OVERVIEW

The Tarcoola Iron Ore project is located in the North Gawler Craton region and includes the Coolybring and Hicks Hill deposits.

Both deposits are within 10km of the Trans Australian Railway which links the project to the proposed bulk commodity terminal at Port Bonython.

**STATUS** Exploration

## OWNERSHIP

Operator Stellar Resources Limited 100%

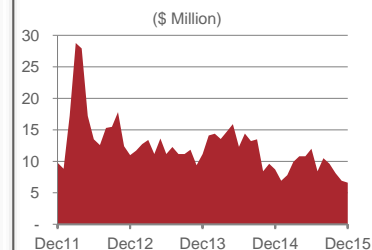
## LOCATION MAP



## OPERATOR DETAILS

Headquarters Melbourne, Australia  
 Website [www.stellarresources.com.au](http://www.stellarresources.com.au)  
 Key Executives Mr Phillip Harman, Chairman  
 Mr Peter Blight, Managing Director  
 Contact Details +61 3 9618 2540

## MARKET CAPITALISATION



## DEPOSIT DETAILS

Deposit Type Magnetite  
 JORC Deposit Size (Mt) -  
 Resource Grade (Fe%) -  
 SiO<sub>2</sub> (%) -  
 Al<sub>2</sub>O<sub>3</sub> (%) -  
 P (%) -  
 S (%) -  
 LOI (%) -

## MINE DETAILS

Style -  
 Estimated Life 36 years  
 Production 5 Mtpa  
 Production estimates do not include an estimated start date.

## EXPENDITURE

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

## PORT DETAILS

Port options Port Bonython  
 Maximum vessel size Capesize  
 Loading rate -  
 Distance to Shanghai 5323 nm

## SHARE INFORMATION (31.12.2015)

Listing Details - ASX SRZ  
 Market Capitalisation AUD\$4.8m  
 Cash AUD\$2.3m  
 Top 20 Shareholder Significant Shareholders 70.20%  
 Capetown SA 20.8%  
 Bunnenberg Family 14.9%  
 Resource Capital Fund 12%

## TIMESCALE

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total to 2050
Production (Mtpa)	○															

## Further Information

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

Investment Attraction Agency  
Level 9, The Conservatory  
131-139 Grenfell Street  
Adelaide 5000  
South Australia

T: +61 8 8303 2439  
E: [investinsa@sa.gov.au](mailto:investinsa@sa.gov.au)

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

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