



# Carpentaria Exploration Ltd

*We find it. We prove it. We make it possible.*

**11<sup>th</sup> SA Exploration and Mining Conference**

**5 December 2014, Adelaide**



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# CARPENTARIA

## Company Snapshot



**ASX Code :** CAP

**FLOATED :** Nov 2007

**CASH:** AUD 4.7 million (Sept. 30 2014)

**QUOTED SECURITIES:** 124 m shares

**SHARE PRICE :** \$0.04

### Top Shareholders:

Silvergate:	18.2%
Conglin Group:	11.4%
Directors & Management:	5.3%

- Strong cash position
- History of good capital management
- Major asset Hawsons Iron Project 60%
- Focussed on development of Hawsons



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# Company Focus



## Company Aim

- Become a long term, low cost producer of premium iron products

## In response to tight market conditions

- Balance protecting and promoting Hawsons
- Significant cost reductions across the company

## Company near term goals

- Build a platform for further investment in Hawsons with targeted work programmes to increase certainty of key project aspects by end 2014 and get the project BFS ready
- Attract additional investment/project partners to advance Hawsons BFS and grow value for shareholders leveraging off
  - Increasing trend of higher premiums for high quality iron products and
  - Recent metallurgical results confirming high grade product
- Realise value from other tenements

# Balanced and Experienced Board and Management



## ***Dr Neil Williams – Chairman***

- 40 years experience
- Australia's Chief Government Geologist 1995 - 2010
- One of Australia's eminent geoscientists



## ***Mr Bob Hair***

- 30yrs experience as a lawyer
- Former General Manager Commercial MIM holdings
- Former CEO of AIM listed Ferrum Crescent



## ***Mr Paul Cholakos***

- 25 yrs experience in resources
- Mining Engineer
- Current Executive General Manager Project Development – Oil Search



## ***Mr Quentin Hill – Managing Director***

- 18 yrs experience in exploration, development and management
- Part of Hawsons discovery team
- Geologist



## ***Ray Koenig - Hawsons Technical Director***

- 45 years experience
- Chief Metallurgist Savage River Magnetite Mines
- Business Group Leader Mining and Metals for GHD
- Magnetite due diligence as a consultant



## ***Mr Bin Cai***

- Conglin Australia representative
- 18 years experience investing in emerging resource companies

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# Hawsons Iron Project Concept



- Deliver 10 million tonnes per year of “best quality” pellet feed magnetite concentrate at premium prices to end users needing high purity feed over the long term
- Exploit very large resource with favourable mining and processing attributes and achieve very low cost production
- Use the existing, high capacity, power, water, rail, and workforce all less than 90km from site and existing port to achieve very competitive low capital and operating costs



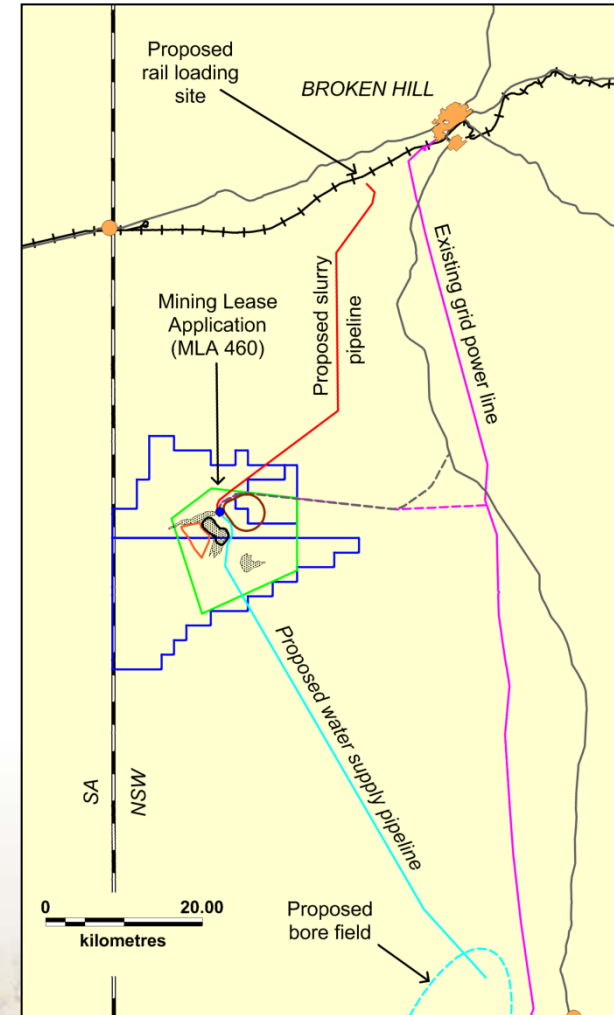
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# Project Concept –Transport logistics



- Location is everything
- Mine to rail head via new slurry – 50km
- Existing open access rail to new stockpile at Port Pirie – 360km
- New stockpile to existing port berths via new conveyor
- Barge transport to 180,000t vessels – 15-30km



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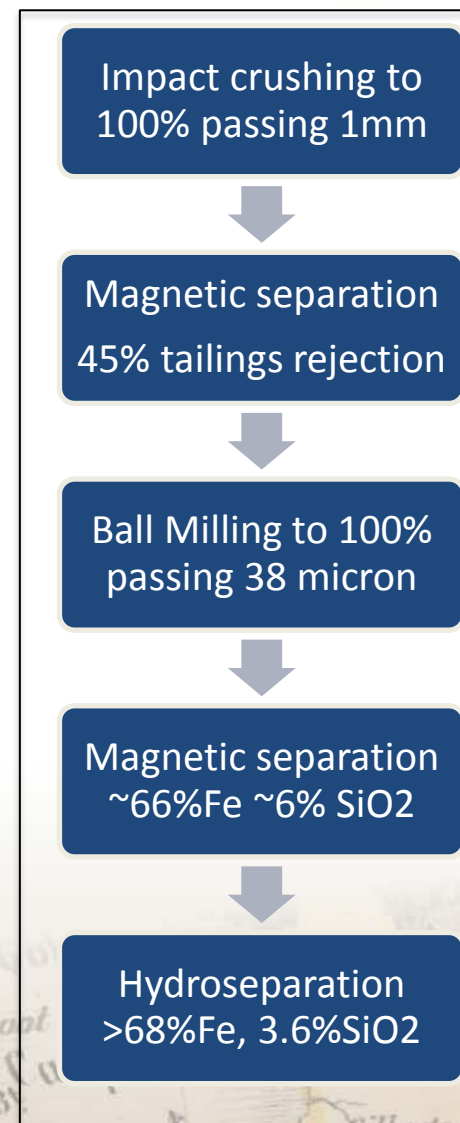
# Recent Results

## Pilot plant achieves high grade



	Fe%	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	P%	S%
Hawsons flow sheet pilot plant test concentrate	68.3	3.56	0.39	0.007	<0.001
Hawsons floatation bench test concentrate	69.1	1.19	0.54	0.025	NA

- Tested new flow sheet at Iron Ore Technical Centre (ALS Ammtec, Perth)
  - Increases confidence in flow sheet assumptions and cost estimates
  - Confirms low energy, single stage ball milling can meet grain size and grade targets
  - Upgrading with Hydroseparator
- Separate floatation test work results from South Africa open new opportunity for direct reduction iron (DR) feed potential – recoveries very good
- Results being finalised
- Over 1 tonne of concentrate to be produced for future test work
- Allows planning of larger pilot plant run





# Key achievements last 12 month (cont.)



*Technical Director Ray Koenig and the cleaner magnetic separator top, Hydroseparator column right*



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# Current and future work



Current program designed to get all project elements BFS ready and

Build a platform for further investment  
Complete December 2014

- Finalise process test work
- Rail – port -marine prefeasibility study
- Power network capability study
- Detailed BFS work schedule
- Optimise business case based on new test work opportunities and traditional markets





# Rail-Port-Marine Pre feasibility Study Port Pirie



Jointly funded with Flinders Ports

10-30mtpa export solution with multi user capability

Goal – is a profitable, sustainable supply chain that is environmentally sound and supports Port Pirie

- Conveyor to berths – pipe conveyor has lowest dust and noise and greatest flexibility
- Transshipment
  - Self propelled, self unloading barges
  - Potential for capacity well over 20Mtpa
- Other options being finalised



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# Other key project elements

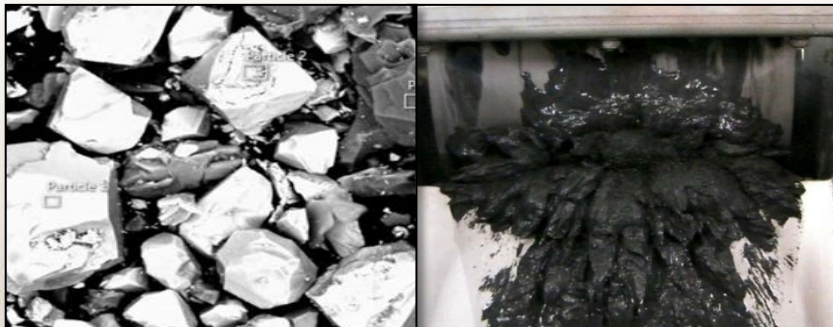


## Resource

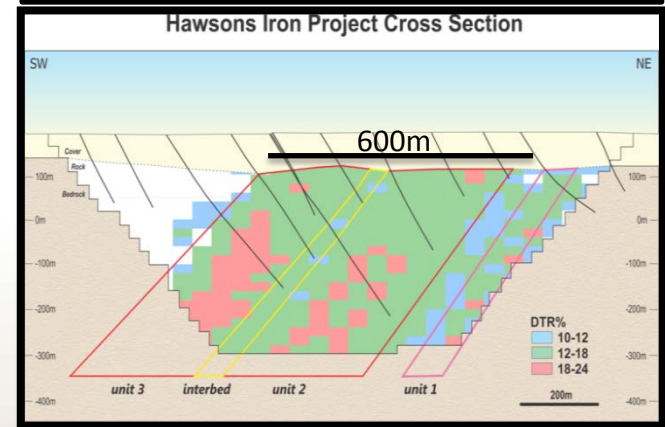
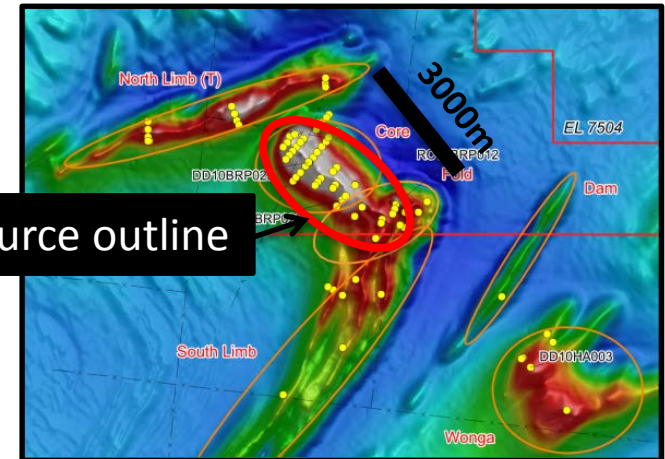
- JORC\* resource 1.8 Billion tonnes at 15% mass recovery for 263Mt of 69.7% Fe, 2.9% SiO<sub>2</sub> concentrate (mine 100t to produce 15t concentrate)

## Mining – detailed study work

- 3000m x 600m ore body –low mining costs
  - bulk mining methods
  - waste : ore 0.3 : 1
  - material movement and mining costs comparable to higher grade projects
- Potential for large resource extensions and long life
- Siltstone rock very soft - easy on mining equipment



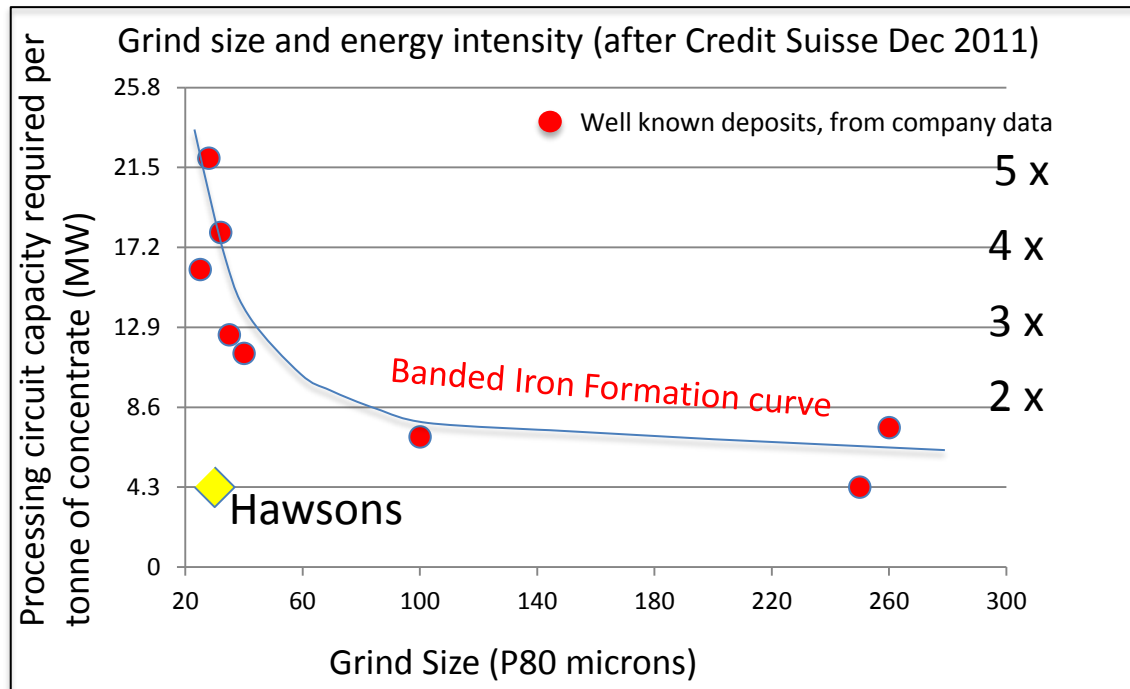
Resource outline



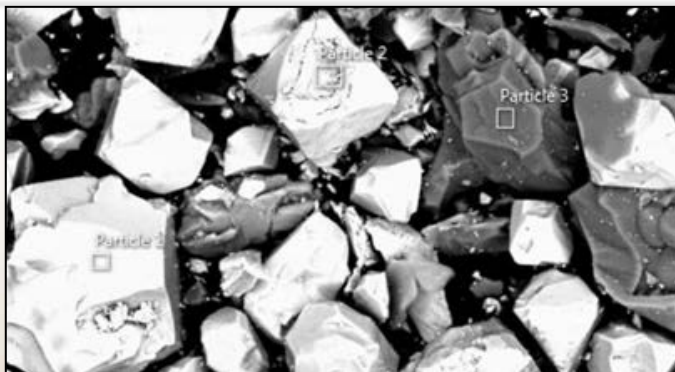
\* Refer Appendix 1

# Project key elements (cont.)

## Siltstone ore is different to typical iron formations



- very different ore - soft
- natural grain size 10-50 microns, don't break the crystals
- ~ one quarter energy use of typical magnetite ores per tonne of concentrate (BWI 6-7)
- produces high purity concentrate
- large processing cost savings up to \$5-15/t concentrate
- Comparatively low technical risk
- Its about costs and quality not head grade



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# Project pathway is clear and achievable

## Differentiates Hawsons from others



		Hawsons	Others
resource	>250Mt concentrate potential for much more	✓	most
mining	standard and in pit crush and convey	✓	most
water	does not use sea water, high yield water source	✓	few
processing	one stage of grinding, no regrinding	✓	few
	two stages magnetic separation	✓	few
	DR feed option	✓	v.few
power	low cost grid power available	✓	few
transport	existing open access rail line	✓	few
	existing port access secured	✓	few
permitting	No Native Title	✓	few
	EIS seasonal surveys complete	✓	few
	Mining Lease Application lodged	✓	some
	Government support-State Significant Development	✓	most
	Stable low risk country	✓	some



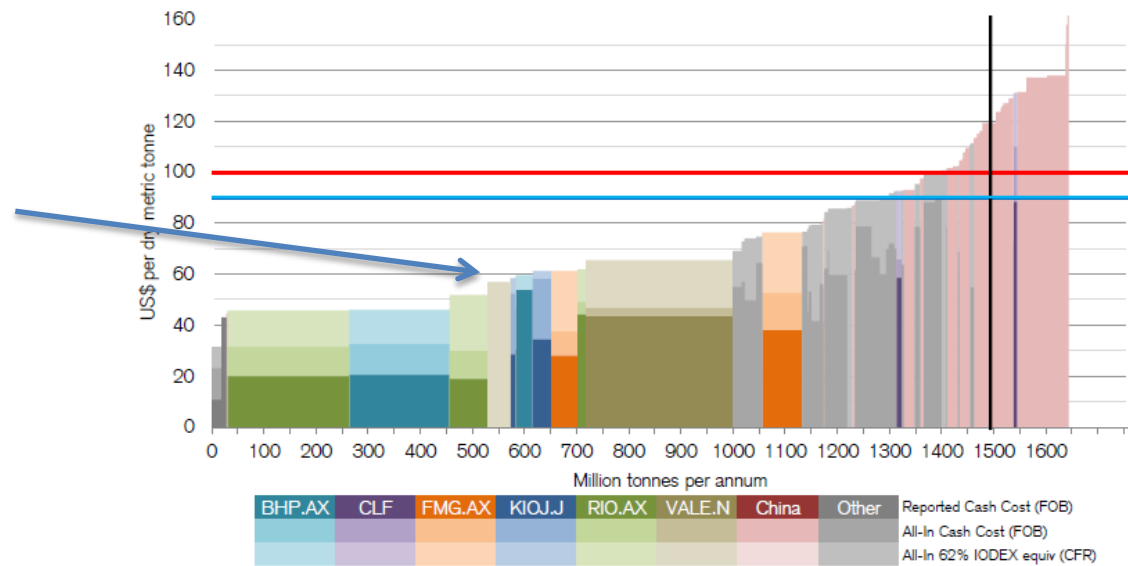
# Targeted CFR China Costs



- Carpentaria is targeting the second quartile of the all in CFR China cost curve indexed to 62% Fe
  - Approx. US\$56
  - Approx. US\$64 (69% basis)
- Withstand price fluctuations
- Premium price expected

**Exhibit 2: 2016 curve (China: 250mtpa, excl domestic freight)**

*Blue = CS price fcst, Red = consensus price, Black = demand*



Source: Company data, Credit Suisse Securities Research & Analytics and Commodities Research estimates.

Source - After Credit Suisse 21 August 2013

1 Reported cash costs are C1 costs

2 all-in cash costs include royalties, sustaining capital, corporates costs but not finance costs

3 includes a freight adjustment to CFR China and indexed to a 62% product

4 exchange rate 0.85USD = 1.00AUD

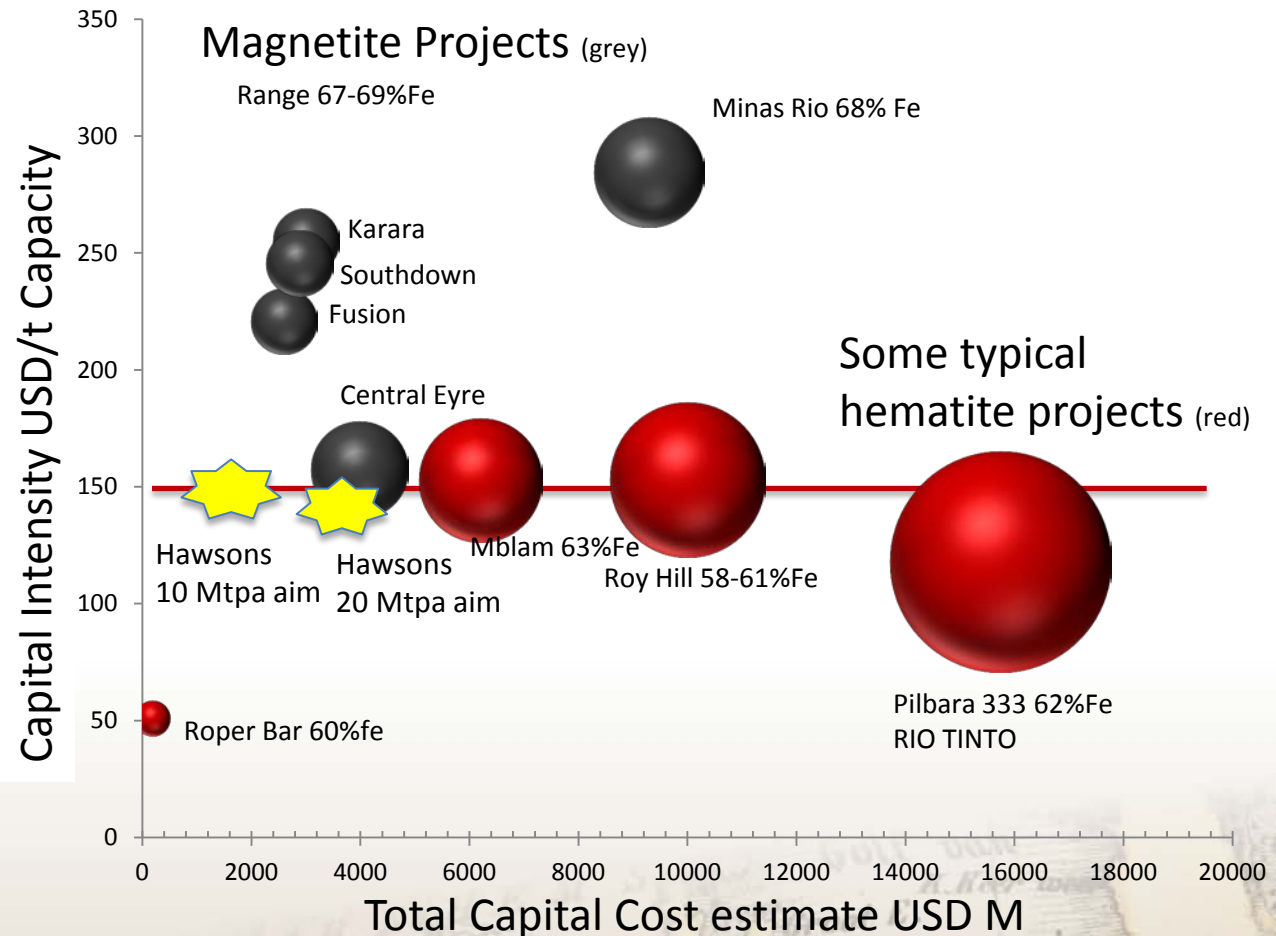
# Capital Intensity – benefits of existing infrastructure



## Low capital intensity

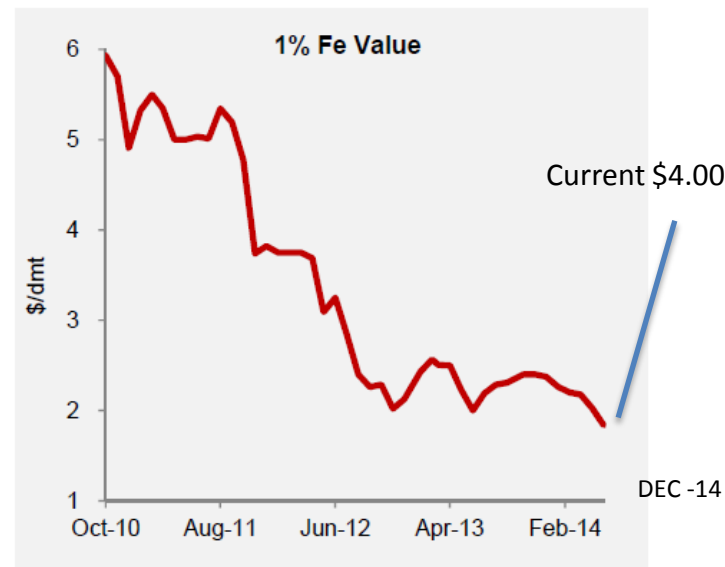
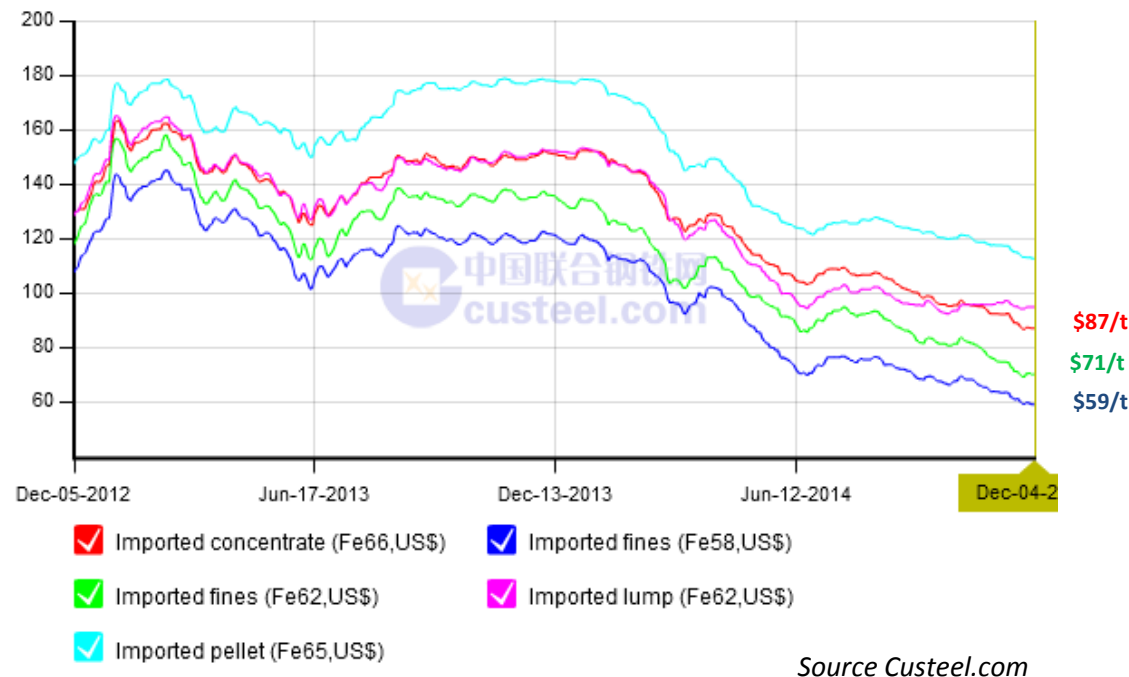
10Mtpa start up case  
utilising existing  
infrastructure targets:

- Low capital cost per tonne of capacity (capital intensity ~\$140-150USD)
- Capital intensity similar to hematite projects
- Lower than comparable magnetite projects
- Low capital service costs



Source - refer Appendix 4

# Pricing premium approx. \$20/t



Premium currently \$4.00/%Fe (16/4%)

**At 69% Fe reasonable to expect \$2.50-\$3.50/%Fe**  
**Or \$17-\$25/t above 62% price**

Discounts for lower grade are similar so conceivably a \$38 difference in 69%Fe price and 58%Fe

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Premiums driven by

- Efficiencies using higher grade
- Environmental pressures becoming stronger (long term trend)
- Lump and Pellets perform even better



# Steel making trends new opportunity

## Increase in DRI demand to feed electric arc furnaces



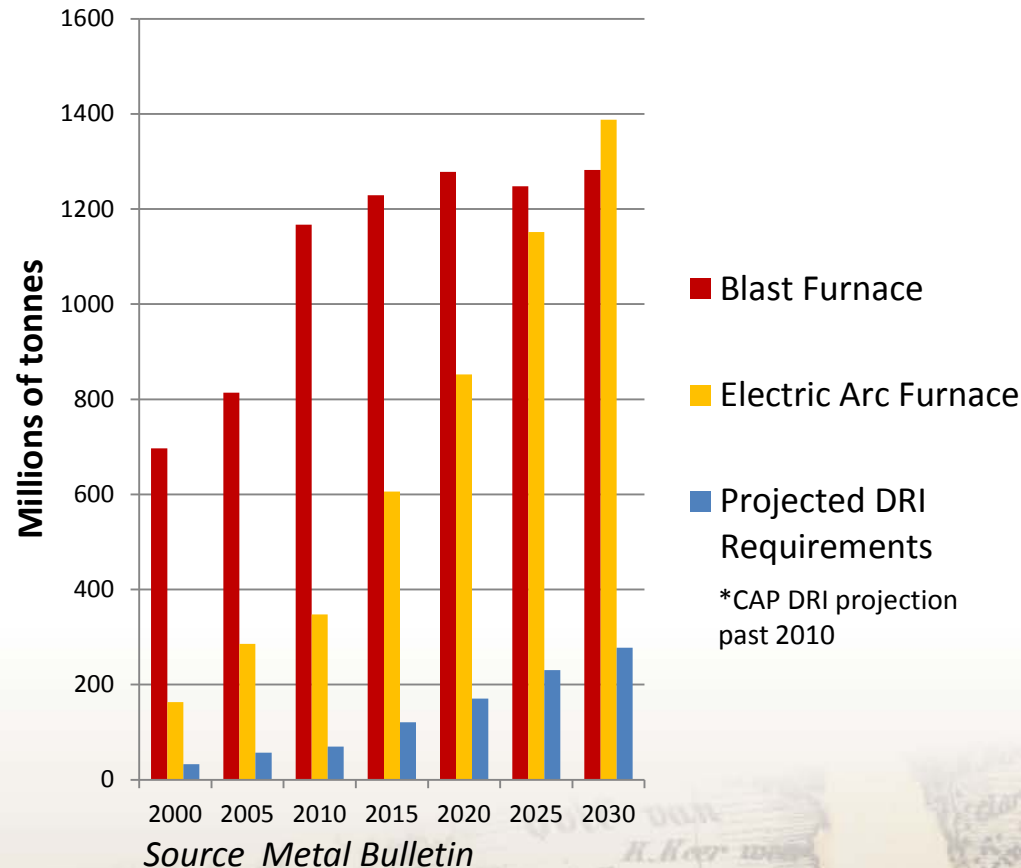
Electric Arc Furnace (EAF) steel making predicted to increase because

- more efficient
- lower energy requirements
- lower emissions
- esp India, Middle East

EAF feed

- EAF relies on high quality feed ( $\text{SiO}_2 < 2\%$ )
- Feed balance currently approx.
  - ~80% scrap metal
  - ~20% direct reduction iron (DRI)
- Demand for DRI feed set to increase
- DRI feed attracts added premium
- Few projects with a DR feed option
- New opportunity to explore for Hawsons

**Global crude steel production by type**



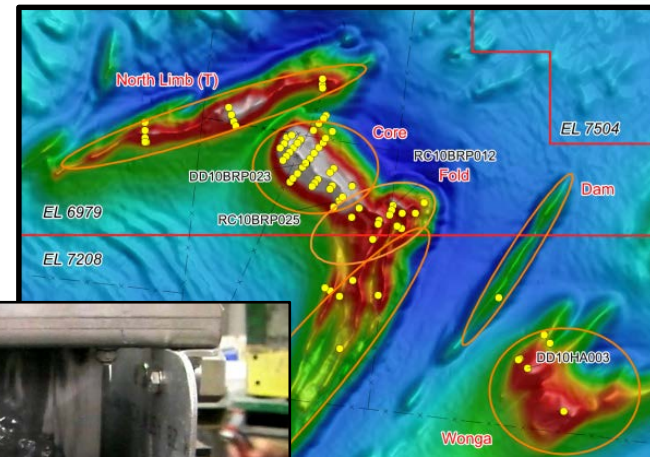
# Summary



Project pathway is  
clear and achievable

Potentially attractive  
returns at forecast long  
term Fe prices from  
high grade concentrate

Clear strategy to  
attract funding  
partners and grow  
value



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*The information in this presentation that relates to Exploration Results, Exploration targets and Resources is based on information compiled by Q.S. Hill, who is a member of the Australian Institute of Geoscientists and has had sufficient experience which is relevant to the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Q.S.Hill is an employee of Carpentaria and consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*



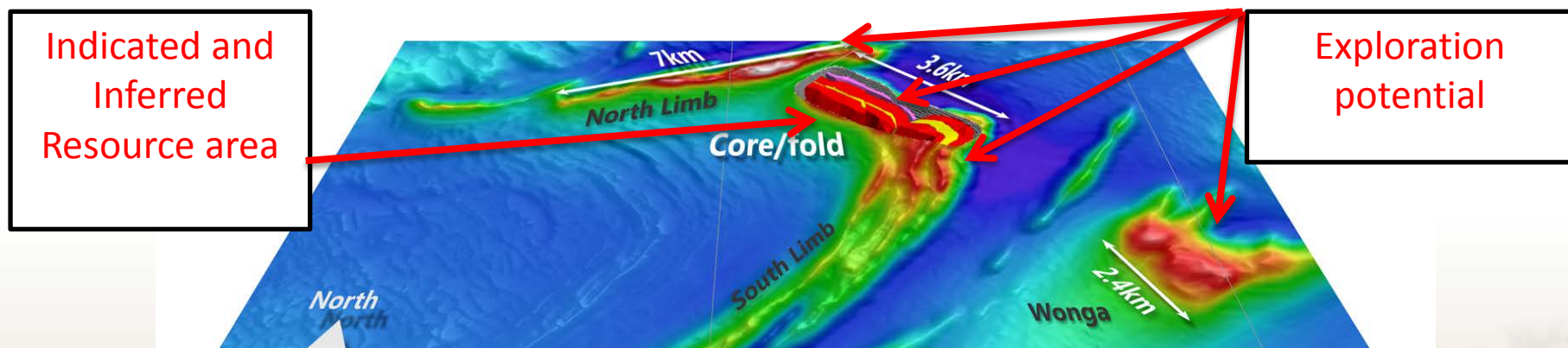


# CARPENTARIA

## APPENDIX 1 – Resources



			Concentrate Grades					
Category	Billion Tonnes	Magnetite DTR%	Fe%	Al <sub>2</sub> O <sub>3</sub> %	P% <sup>1</sup>	SiO <sub>2</sub> %	LOI%	Contained Concentrate Million Tonnes
Inferred	1.554	14.7	69.6	0.20	0.004	2.9	-3.0	228
Indicated	0.215	16.2	69.8	0.20	0.005	2.8	-3.0	35
<b>Total</b>	<b>1.769</b>	<b>14.9</b>	<b>69.7</b>	<b>0.20</b>	<b>0.004</b>	<b>2.9</b>	<b>-3.0</b>	<b>263</b>



Reported under JORC 2012 – no material change since first published 26 March 2014

The Company is not aware of any new information or data that materially affects the information included in the relevant market announcement and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

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# CARPENTARIA

## APPENDIX 2

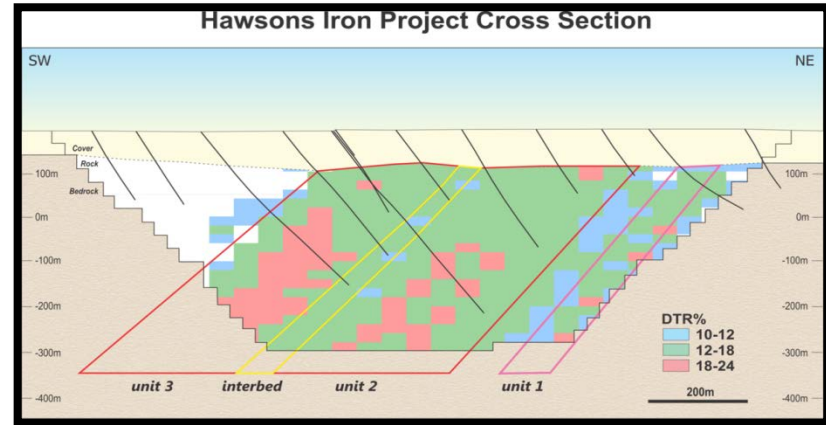


### Mining

- low strip ratio 0.3:1 waste to ore falling to 0.1:1 by year 4
- Low cost bulk mining methods- in pit crush and convey
- 600m mining widths
- UCS 50-90Mpa cf 350Mpa

### Processing

- simple flow sheet
- very low energy
- Don't break the magnetite
- very high grade product
- Bond Work Index 6-7Kwhr/t (cf 18-40)



magnetite

quartz



Photomicrograph of rock

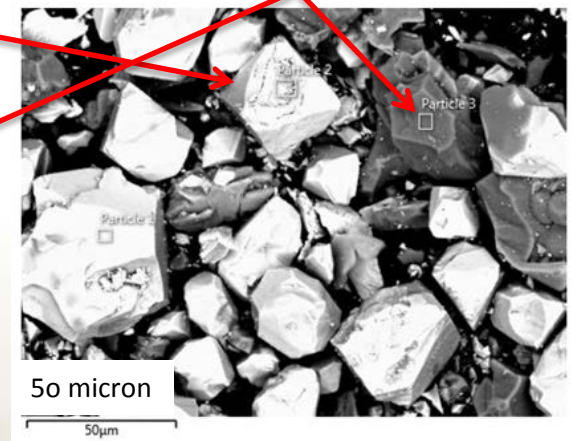
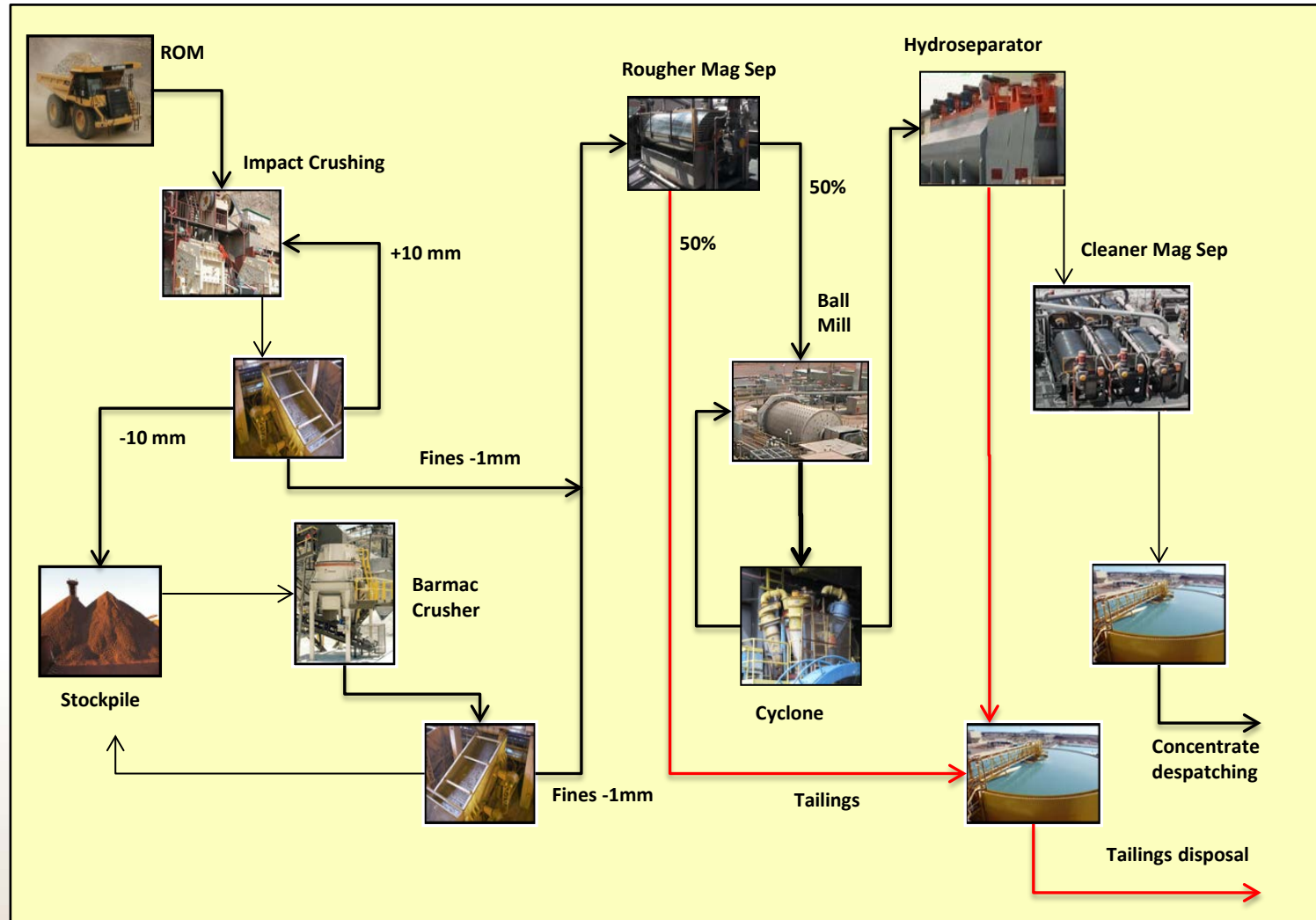


Image of concentrate

# CARPENTARIA EXPLORATION

## APPENDIX 3 – Processing Flow Sheet





# CARPENTARIA EXPLORATION

## APPENDIX 4 – Capital Intensity Chart



Project	Operator	Capex A\$M	Annual M Tonnes	Capex/Tonne A\$M	Product %Fe
Roy Hill <sub>1</sub>	Hancock	[10,000]	55	[180]	[55]
Karara <sub>2</sub>	Karara JV	3000	10	300	68
Central Eyre <sub>3</sub>	Iron Road	2590	12.4	210	67
Fusion <sub>4</sub>	Eyre Iron	2600	10	260	67
Mbalam <sub>5</sub>	Sundance	4700-7830	35	134-224	63
Southdown <sub>6</sub>	Grange	2885	10	289	69
Minas Rio <sub>8</sub>	Anglo	9300	26.5-30	350-310	68
Pilbara 333 <sub>9</sub>	Rio	15740	113	139	62
Roper Bar <sub>11</sub>	West Desert	180	3	60	60

<sup>1</sup> <http://www.royhill.com.au/sites/default/files/Tim%20Treadgold%27s%20article.pdf>

<sup>2</sup> <http://gindpublic.powercreations.com.au/images/gind---iebohvaiti.pdf>

<sup>3</sup> <http://www.ironroadlimited.com.au/images/files/projects/20110614%20Iron%20Road%20-%20CEIP%20Prefeasibility%20.pdf>

<sup>4</sup> <http://centrexmetals.com.au/wp-content/sharelink/20120503-mine-and-port-scoping-study-completed-and-dfs-commenced-87554443598698511.pdf>

<sup>5</sup> <http://www.sundanceresources.com.au/IRM/Company/ShowPage.aspx/PDFs/2675-51552764/PresentationResourcesRisingStars>

<sup>6</sup> [http://www.grangeresources.com.au/clients/grange/downloads/item150/southdown\\_dfs\\_presentation\\_-\\_albany\\_16\\_may\\_2012.pdf](http://www.grangeresources.com.au/clients/grange/downloads/item150/southdown_dfs_presentation_-_albany_16_may_2012.pdf)

<sup>8</sup> <http://www.angloamerican.com/business/ironore/projects.aspx>, <http://www.mining-technology.com/projects/minas-rio-iron-ore-brazil/>

<sup>9</sup> [http://www.riotinto.com/documents/110324\\_New\\_opportunities\\_for\\_industry\\_growth\\_Sam\\_Walsh.pdf](http://www.riotinto.com/documents/110324_New_opportunities_for_industry_growth_Sam_Walsh.pdf)

<sup>11</sup> [ASX550 : Investor Notice of Presentation 20 Sep 2013.pdf](#)

USD/AUD conversion at 0.94