



# ASX ANNOUNCEMENT

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We make it possible*

23 May 2011

## ABOUT CARPENTARIA:

Carpentaria is an exploration company focused on discovering base, precious metals and bulk commodities in eastern Australia. The company currently has interests in iron ore, tin, gold, copper and coal exploration projects.

## CARPENTARIA'S AIM:

With a strong geo-scientific team discover and build a strong cash flow generating mining operation.

## DISCOVERIES TO DATE:

Hawsons Iron Project - NSW  
Euriowie Tin Project - NSW

## Capital Structure:

Ordinary Shares 94,171,301

## Major Shareholders:

|                            |        |
|----------------------------|--------|
| Conglin In't Invest' Group | 11.11% |
| Atlas Iron Limited         | 9.08%  |
| Mr. Conglin Yue            | 3.89%  |
| Management, Including      |        |
| Unlisted Options           | 9.47%  |

## Financial

Cash and deposits on hand as at 23/05/11  
A\$ 10,129,000

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## POSITIVE PRE-FEASIBILITY STUDY FOR HAWSONS IRON PROJECT JV

### Highlights

- **Pre-Feasibility Study (PFS) outcomes generate positive results for large scale magnetite project at Hawsons to ultimately produce 20 million tonnes p.a. of high grade iron ore concentrate (69.9%) to mine gate**
- **Planned start-up mine of 5-6 Mtpa of iron concentrate using existing transport and port facilities**
- **Mine life of at least 20 years after an initial ramp up**
- **Initial Inferred Resource of 1.4 billion tonnes underpins the PFS outcomes with further significant tonnage potential**
- **Additional pits or deeper single pit to have a 50 year plus total mine life**
- **Project development capex estimated at A\$2.8 bn**
- **Forecast site cash operating cost at mine gate of A\$35.75 per tonne of concentrate**
- **Positive NPV after tax of A\$2.8 bn and IRR of 21.3% forecast**
- **Well located to existing key project infrastructure.**
- **The life of project strip ratio of 0.26 : 1**
- **The ore has a very low bond work index of 6.3 kwh/t**
- **The positive result from the Pre-Feasibility Study provides confidence to proceed with the Definitive Feasibility Study for the Hawsons Iron Ore Project**

**(All currency in Australian \$ unless otherwise defined.)**



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Carpentaria Exploration Limited (ASX: CAP) is pleased to announce the completion of the Pre-Feasibility Study of the Hawsons Magnetite Iron Project in which it currently owns 60%. JV partner Bonython Metals Group (BMG) has the right to earn an 80% equity in the Project at which point Carpentaria will be free carried up to the targeted production of 20 Mtpa of iron ore concentrate.

The Study shows an outstanding NPV and solid internal rate of return based upon the assumptions outlined in section below. The capital cost estimate to achieve 20 Mtpa iron ore concentrate is A\$2.8bn including all mining, processing and infrastructure requirements. The Project is expected to produce a very high grade concentrate of 69.9% Fe with low deleterious elements at a grind of 38 microns. This will make it suitable for low cost slurry pipeline transport to port and also be ideal for pelletising.

The results in this Study are based on work completed by independent consultants GHD as part of their preparation of the Pre-Feasibility Study for Carpentaria.

Given the other potential producers on the Braemar Iron Formation Trend, it is intended to minimise costs to the Project by using common usage infrastructure including transport and port. It is intended that third parties will be invited to tender for and build the required infrastructure. Importantly, existing rail and port infrastructure is capable of servicing the initial 5-6 Mtpa of concentrate production from Hawsons.

The Project is held by a joint venture between Carpentaria and a private company Bonython Metals Group (BMG), the joint venture transaction being summarised as follows:

- Stage 1 – Exploration and Pre-Feasibility Stage
  - BMG pays Carpentaria A\$5.0m for the option to undertake and fund exploration and prefeasibility work to define 1 billion tonnes of inferred resource within two years (estimated cost A\$8.0m).
  - On payment of these funds, BMG acquired a 40% stake in the JV.
- Stage 2: Earn In
  - BMG must pay Carpentaria A\$25.0m by 15<sup>th</sup> May 2012, at which time it will have 51% in the JV.
- Stage 3: Bankable Feasibility Study
  - BMG to fund a Bankable Feasibility Study (estimated cost A\$20.0m and within two years of the completion of Stage 2 – 15<sup>th</sup> May 2014).
  - On completion and payment of a further A\$23.0 to Carpentaria, BMG will hold 80%.
- Stage 4:
  - On a decision to mine, Carpentaria retains a 20% stake free carried up to the targeted production of 20 Mtpa of iron ore concentrate.

## Hawsons Iron Project

### Background

The Hawsons Iron Project is located approximately 60 km south-west of Broken Hill. It is situated approximately 35 km south of the Broken Hill railway line, and about 30 km west of the Silver City Highway and grid electricity transmission lines (Figure 1). The project is contained within three contiguous Exploration Licences (EL), EL 7208 (Act 1992) – “Burta” to the south, EL 6979 (Act 1992) – “Redan” to the north and EL 7504 (Act 1992) – “Little Peak” to the northeast. The westernmost boundary of the tenement holdings coincides with the South Australian - New South Wales border.

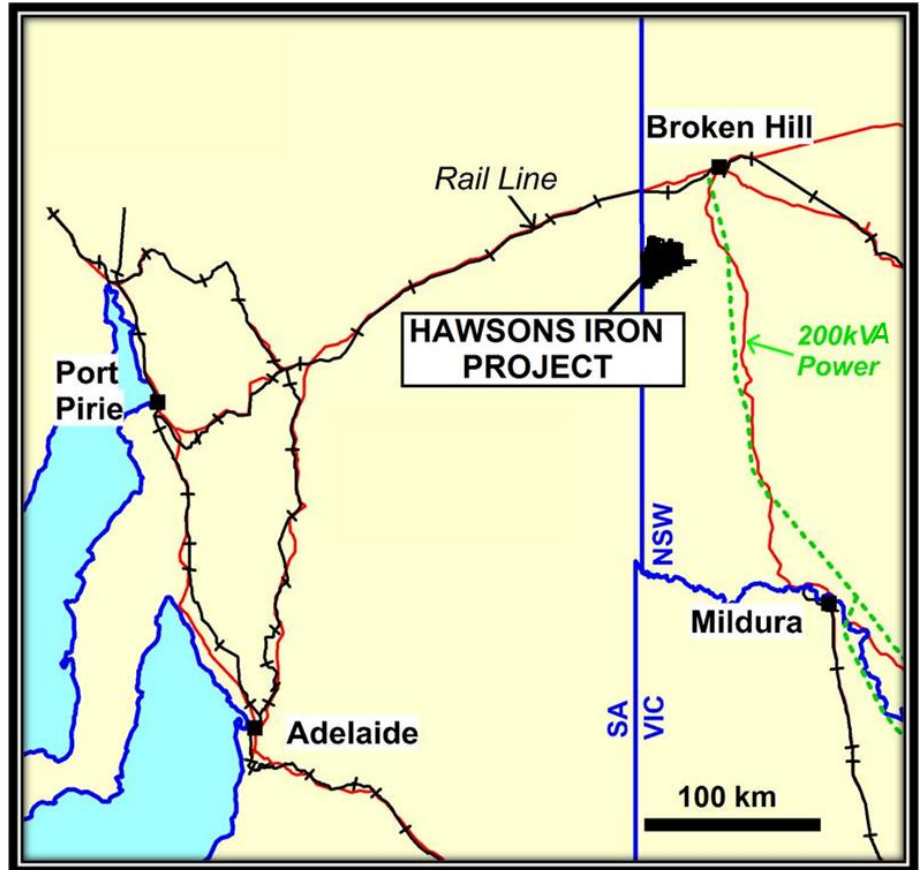
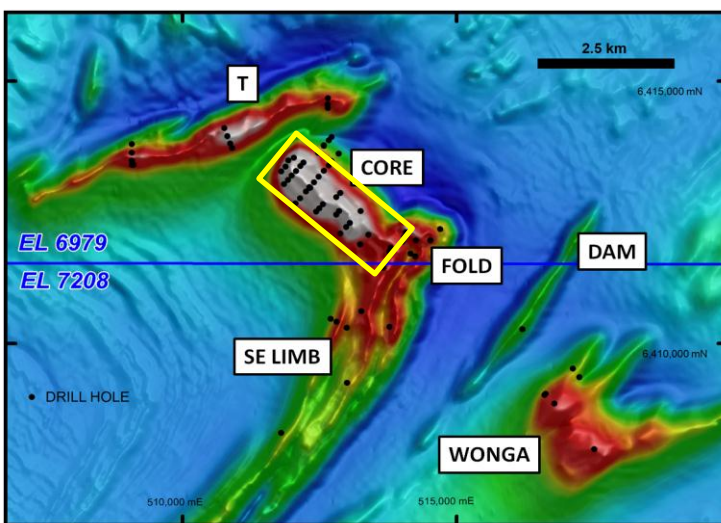


Figure 1: Location of Hawsons Iron Project



An initial Mineral Resource of **1.4 billion tonnes at a Davis Tube Recovery (DTR) of 15.5%** (12% DTR cut off) at the ‘Core’ magnetic anomaly (Figure 2) was estimated by independent geologists, Hellman and Schofield Pty Ltd (Table 1) within the Hawsons Magnetite Iron Project

Figure 2. Reduced to the Pole Magnetics depicting the magnetite sources in the Project, the drilling to date and the defined mineral resource area in yellow

The 1.4 billion tonne Inferred Resource contains **220 million tonnes of concentrate at a premium grade of 69.9% Fe and 2.5% SiO<sub>2</sub> with minimal impurities**. Figure 2 shows the aerial extent of the resource.

| Category | BTonnes | Magnetite<br>DTR % | Concentrate Grades |                                  |                                 |                    | LOI% |
|----------|---------|--------------------|--------------------|----------------------------------|---------------------------------|--------------------|------|
|          |         |                    | Fe%                | Al <sub>2</sub> O <sub>3</sub> % | P <sub>2</sub> O <sub>5</sub> % | SiO <sub>2</sub> % |      |
| Inferred | 1.4     | 15.5               | 69.9               | 0.22                             | 0.002                           | 2.5                | -3.0 |

Table 1. Hawsons Iron Project Resource Estimate

A table of Inferred Resources for a range of cut off grades is included below.

| DTR Mag Cut Off % | BTonnes | Mag Grade % | Fe Grade % |
|-------------------|---------|-------------|------------|
| 8                 | 1.8     | 14.3        | 16.828     |
| 10                | 1.7     | 14.8        | 16.765     |
| 12                | 1.4     | 15.5        | 16.969     |
| 14                | 1.0     | 16.7        | 17.313     |
| 16                | 0.5     | 18.2        | 17.843     |
| 18                | 0.2     | 20.3        | 18.858     |

*(The use of significant figures does not imply precision)*

Table 2. Inferred Resources estimates at different cut off grades

The Core Prospect resource (Figure 2) is open along strike to the south east as it passes into the Fold Prospect area where drilling has intersected similar mineralization. The Core resource is also open down dip. Given the observed continuity of mineralisation it is expected that upgrading the majority of the current inferred resource to the indicated category and increasing the resource base can be achieved efficiently with a relatively low number of additional drill holes.

Hawsons is the largest magnetite iron mineral resource in NSW and one of the largest resources of this type in Eastern Australia. A total Project exploration target<sup>1</sup> of 6 to 11 billion tonnes at 14-17% DTR, containing 1.0 to 1.7 billion tonnes of concentrate, is very well supported by initial drilling which returned very similar grades and recoveries from all other magnetic anomalies in the EL's. This has provided considerable confidence in estimating the exploration target<sup>1</sup> (Figure 2). These additional targets suggest the Project could have a mine life of in excess of 50 years, producing high grade, low impurity iron concentrates.

<sup>1</sup> The term "Target" should not be misunderstood or misconstrued as an estimate of Mineral Resources and Reserves as defined by the JORC Code (2004), and therefore the terms have not been used in this context. It is uncertain if further exploration or feasibility study will result in the determination of a Mineral Resource or Mining Reserve



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## Mining

The current mineral resource is capable of supporting a base case scenario of a relatively short construction phase followed by 3 years of production at a nominal 5-6 Mtpa of iron ore concentrate. This is then followed by at least 20 years of iron ore concentrate production at 20 Mtpa.

The key outcomes of the mining component of this PFS are:

- The open pit mining forecast for Hawsons will result in a deep pit to a maximum depth of 490m. The pit is currently planned to be 3.5 km long and 1.5 km wide at its extremes.
- To achieve the target concentrate production, significant mining tonnages (total material movement) will be required. The mine plans indicate that approximately 200 Mtpa of total material will be mined for the first 12 years with the requirement thereafter dropping to 150 Mtpa for the following 10 years.
- The DTR magnetite of the ROM feed averages 15.3% over the life of the project.
- The life of project strip ratio is 0.26 : 1 (Waste Tonnes : Mineral tonnes).
- The bond work index is very low at 6.3 kwh/t

## Processing

The concentrator design criteria are based on:

- The results of ore characterisation tests and simulations by JKTech covering autogenous milling and HPGR circuits that confirm that the HPGR circuit is expected to use less than half the energy of the autogenous grinding circuit.
- Nameplate plant design capacity of 20 Mtpa in four modules of 5 Mtpa.
- At full capacity, the Hawsons Magnetite Iron Ore project is to produce 20 Mtpa of saleable concentrate.
- Initial test work results that indicate the magnetite concentrate produced by magnetic separation was of suitable quality to be sold to the market.

The key assumptions used for the processing design include the following:

- The High Pressure Grinding Rolls recirculating load is 150%
- The rougher magnetic separation magnetite recovery is 95%
- The rougher magnetic separation mass recovery is 25%
- The ball mill recirculating load is 250%
- The cleaner magnetic separation magnetite recovery is 99%

All major processing will occur in a single magnetite concentrator at the mine site before transporting the concentrate to a port facility probably located on the Spencer Gulf in South Australia. The modular design of the processing plant allows for the initial production to use existing infrastructure. The modular design has been based on four modules producing 5 Mtpa of concentrate with only a single module required for the initial phase.



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The process plant consists of the following major elements:

- Primary crushing - Gyratory crusher
- Secondary crushing – Cone crusher
- Primary Grinding - High Pressure Grinding Rolls
- Primary Concentration - Rougher magnetic separator
- Grinding – Ball mills
- Hydro-separator (Thickener)
- Cleaner magnetic separation
- Concentrate washing
- Concentrate handling
- Tailings handling

## Infrastructure

The PFS includes preliminary designs of the five key elements of supporting infrastructure:

- Tailings Dam
- Building Infrastructure
- Power
- Communications
- Water Supply and Reticulation

The design of the tailings storage facility (TSF) is based on the preliminary mine production schedule, the process description and Scoping Study, proposed footprints of open pit, tailings dam and other mine infrastructure, previous experience in similar mining applications and hydrological parameters published by the Bureau of Meteorology.

The building infrastructure necessary to support the mining operations are based on mine and plant requirements that have been identified in the preparation of the Pre-Feasibility Study. The buildings include:

- Site administration and amenity buildings
- Workshops and warehouse facilities
- Accommodation for permanent and construction personnel

Accommodation for this project has been based on the majority of personnel residing in or around Broken Hill. Based on GHD's assessment additional accommodation facilities will be required in Broken Hill.

The power requirements to operate the Hawsons Magnetite Iron Ore Project can be sourced from the existing Mildura – Broken Hill transmission line. There will be two load centres; one at the mine and the other at the proposed bore field approximately 80km to the south.

The power transmission line is a 220 kV single circuit system. The load at Broken Hill peaks at about 50MW and little growth in the load is projected. The load demand for the Hawsons project is approximately 56



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MW for the initial 5-6 Mtpa (Stage 1) and 173 MW for full 20 Mtpa production (Stage 2) with the expected power consumption of the bore field being 14 MW which is the same throughout.

Water modelling indicates sufficient water supply is available from a deep, moderately saline aquifer of limited use to agriculture, approximately 80 km south-east of the project. Modelling has shown that the aquifer can support continuous pumping for 20 years giving acceptable water level drawdown.

Raw water pumped from the proposed bore field will be delivered to a process water dam at the mine site, and distributed to either the processing plant or product water treatment system. A preliminary route for the rising main was selected east from the bore field to the Silver City Highway, then following the Silver City Highway north to the Pine Creek crossing, before heading west to the site location. This gives a total length of 110 km and a static head of 124m.

## Initial Product Transportation

To move the Hawsons Magnetite Iron Ore Project into early production a temporary concentrate transport system will be required from the mine site to the existing trans-continental rail line to allow export through existing port infrastructure. Concentrate production will be up to 5-6 Mtpa at a specific gravity (SG) of 5 over the three year start-up period. The focus will be on supplying low cost temporary solutions where reuse of the infrastructure and easy tie in with the future 20 Mtpa system will be seen as advantageous.

Early production will have several benefits to the project including early revenue generation, introducing the Hawsons brand to the market assisting in gaining customer acceptance when full production commences and the ability to increase metallurgical and mining knowledge before full production.

At full scale production, the concentrate will be transported via rail or slurry pipeline to a port likely located on Spencer Gulf in South Australia.



## Project Capex/Operating Cost Estimates

### Capital Costs

Accuracy of the following cost estimates is  $\pm 25\%$  (Table 3).

The mining costs are based on owner operator in the Pre-Feasibility Study and includes all mining equipment.

The process cost estimate relates to all equipment required for the production process only. It includes comminution, concentration and filtration equipment, along with all pumps, pipe work, motors and electrical components.

The infrastructure cost estimate is based upon all supporting elements of the mining operation including water supply, high voltage power supply, tailings facility, road, drains and buildings.

| Description    | Cost Base   |
|----------------|-------------|
|                | A\$ million |
| Mining         | 485         |
| Processing     | 915         |
| Infrastructure | 1,128       |
| Contingency    | 281         |
|                |             |
| <b>Total</b>   | <b>2809</b> |

Table 3 Capital Cost Estimates

### Operating Costs

The forecast cash operating cost estimate (Table 4) relates to all costs required to produce 20 Mtpa of concentrate and includes process consumables and power consumption, separated into mining, processing and infrastructure operational costs and known royalties. These costs are to mine gate.

Power is expected to be sourced from the Broken Hill network, and a tariff of \$0.085/kwh was assumed. The power has been calculated on typical load factors based on 5 Mtpa over the first 3 years, increasing to 20 Mtpa for the remaining life of mine.

| Description               | Cost Base      |
|---------------------------|----------------|
|                           | A\$/Conc Tonne |
|                           |                |
| Mining                    | 19.58          |
| Plant                     | 9.44           |
| Infrastructure            | 3.10           |
| Admin including Royalties | 3.63           |
|                           |                |
| <b>Total</b>              | <b>35.75</b>   |

Table 4: Operating Cost Estimates

Transport costs from mine gate to Port will be better estimated during the early part of the Definitive Feasibility Study.

Scoping study estimates for transport costs for Hawsons used in the PFS were :

|                                                      |                 |
|------------------------------------------------------|-----------------|
| Stage 1 - Truck to rail, rail to Port Pirie, loading | \$25/conc tonne |
| Stage 2 - Slurry to new port                         | \$15/conc tonne |

For Stage 1 - total cash operating costs for FOB are estimated to be \$61/conc tonne and \$51/conc tonne for Stage 2 assuming a slurry pipeline option.



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## NPV / IRR

The base case financial model has been developed using the Macquarie Commodities Research estimates for iron ore prices which forecast a long term Australian iron fines (62%Fe) price of \$104 per tonne for magnetite concentrate (%Fe). This is based on an exchange rate of 0.85 for Aus\$:US\$. Results are set out in the table below:

| Pricing Model | Long Term Price |                | After Tax NPV<br>A\$ Million | After Tax IRR % |
|---------------|-----------------|----------------|------------------------------|-----------------|
| Macquarie 1   | 126.51          | US c/dmtu Fe   |                              |                 |
|               | 103.98          | A\$/tonne Conc | 2,809                        | 21.34           |

*Macquarie 1 – based on Macquarie Commodities Research dated 18 May 2011. Trend prediction used for concentrate prices between 2015 and long term forecast of USD 110 c/dmtu based on 62% magnetite concentrate FOB Australia.*

## Pellet Plant

To further add value to the project Carpentaria is considering development of a pellet plant onshore near the port as initial pelletising tests on the Hawsons magnetite have proved to be very positive. The results of the pelletising tests have confirmed that the magnetite concentrates are able to produce quality pellets and are able to use local bentonite in the pelletising process. Magnetite concentrates from Hawsons are therefore able to meet market requirements for pellet feed and also present opportunities for the establishment of pellet plants in South Australia.

## Conclusion

The PFS has shown that the Hawsons Iron Project has the potential to be a very robust project. This provides the Joint Venture partners with the confidence to proceed with the Definitive Feasibility Study which will involve further resource drilling and detailed design to improve the accuracy of the cost estimates. A key aspect will also be the determination of the most appropriate scenario for the development of key transport infrastructure and port facilities in South Australia to service not only the Hawsons project but other iron ore projects on the Braemar Iron Formation.

Nick Sheard  
Executive Chairman

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

*The information in this announcement that relates to Exploration Results and Resources is based on information compiled by S.N.Sheard, who is a Fellow 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 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. S.N.Sheard 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.*