



**Breakaway  
Research**

# Magnetic Resources (MAU)

*Exploration for magnetite iron ore in WA*

**Recommendation: Speculative BUY**

1<sup>st</sup> June 2011

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## Company Information

ASX Code	MAU
Share Price A\$	0.19
Ord Shares	67.5m
Options	4.1m
Partly Paid Shares	17.4m
Market Cap A\$	12.8m
Cash A\$	3.4m
Total Debt A\$	-
EV A\$	9m

Source: Magnetic Resources

## Directors

Non-Exec Chairman	Peter Thomas
Managing Director	George Sakalidis
Exec Director	Roger Thomson

Source: Magnetic Resources

## Company Details

Address	Level 2, 16 Ord Street, West Perth, WA 6005
Phone	+618 9485 2410
Web	www.magres.com.au

Source: Magnetic Resources

## One year Price Chart



Source: Bloomberg

## Key Points

- Seven identified project areas in over 8,400km<sup>2</sup> of tenure
- Jubuk drill program identifies low impurity magnetite deposit
- Drilling of newly identified extensions about to commence
- Scoping study underway at Jubuk
- Mineralisation suggests a superior concentrate quality is achievable
- Project location supported by well-established infrastructure
- Discussions with possible corporate partners ongoing

Magnetic Resources is a company focused on exploration for magnetite iron ore deposits located in Western Australia. The company has identified a number of Banded Iron Formations which have the potential to lead to a significant resource close to existing infrastructure. Early drilling results demonstrate magnetite mineralisation with low impurity levels amenable to low cost beneficiation techniques. A maiden resource on just 1 of 7 project areas is expected in the coming months

## Company Overview

Magnetic Resources (ASX: MAU) has been an early mover in identifying prospective tenements close to WA's existing rail network and now has a tenement area covering over 8,400km<sup>2</sup>.

Through the use of aeromagnetic data, the company has identified a number of iron rich anomalies which, in many cases, lie under shallow cover and have been ignored by other explorers. Magnetic Resources have now grouped these iron rich anomalies into 7 key project areas.

The most advanced project in the company's portfolio is 'Jubuk', which is situated approximately 150km east of Perth. A detailed aeromagnetic survey in the Jubuk area identified 5 distinct Banded Iron Formation (BIF) targets with a total exploration target tonnage of between 50-100Mt.

An initial drilling campaign over Jubuk has now been completed and a second is planned prior to a maiden Inferred Resource estimate is undertaken. Magnetic has also carried out ore characterisation studies which suggest the ore contains coarse magnetite grains with low impurity levels and should be amenable to cost effective processing techniques. High purity magnetite concentrates typically command premium prices.

The outlook for the iron ore sector remains robust. The World Steel association is forecasting a 5.9% increase in steel production for 2011 followed by a further 6% increase in 2012. Longer term growth is likely to be compounded by continuing industrialising economies such as India and China.



## Investment Review

*BIF strike length increased to 6.7km*

*Mineralisation is coarse grained and has low impurity levels*

*The market appears to be underestimating the potential size of Jubuk*

*A defined 50-100Mt resource could significantly re rate the company*

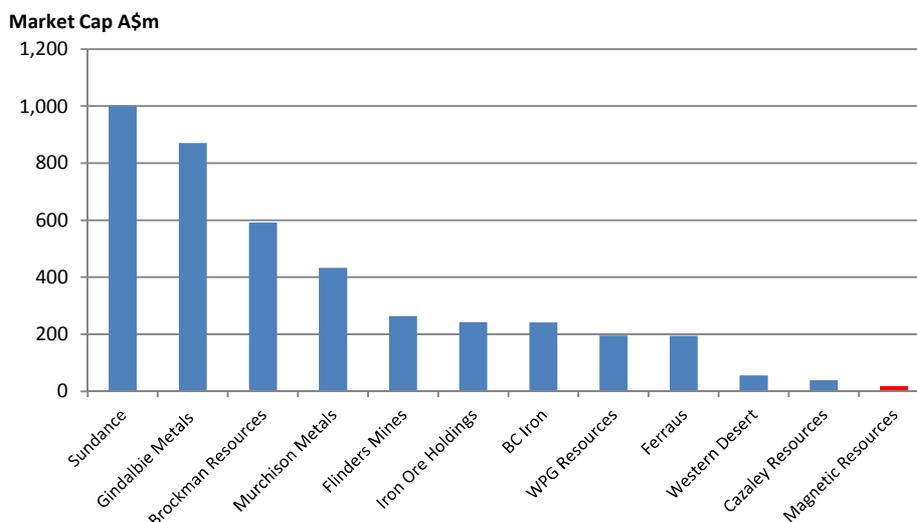
*Discussions relating to possible partnerships and off take agreements are ongoing*

The recently completed drilling campaign at Jubuk targeted a BIF covering a strike of approximately 4km however since the first round of drilling was completed, Magnetic has increased the total strike by a further 2.7km to a total of 6.7km through the use of a detailed gravity survey. Further drilling is about to commence to test these new strike extensions. Magnetic has also commenced scoping level studies which will be completed on estimation of the maiden resource.

Drilling so far has intersected coarse grained magnetite rich horizons ranging in thickness from 3-36m with up to 12 magnetite rich horizons evident. Davis Tube Recovery (DTR) test work demonstrated the coarse grained magnetite is amenable to lower cost concentration techniques i.e. low cost crushing and low intensity magnetic separation. With a coarse grain size, high iron content and low impurity levels, the concentrate is likely to attract a premium price.

Each iron ore project is different including variations in their degrees of advancement, size, ore quality, capex/opex and access to infrastructure. However, Breakaway Research estimates that on average, the market currently values early stage companies' resources at around A\$ 0.50 per tonne of resource on an undeveloped basis. Magnetic Resources has a Market Cap of A\$17m and using this value metric, the market is valuing the company on a resource base of comprising just 34Mt. A resource estimate is currently underway, covering just 60% of Jubuk.

### ASX listed iron ore focused companies - market capitalisation comparison



Source: Bloomberg

The chart above highlights the relative size of Magnetic Resources relative to its, predominantly WA based peers. Should Magnetic deliver a resource in line with its exploration target of 50-100Mt in the Jubuk area, Breakaway would expect significant re rating in the company valuation.

Magnetic is also in discussions with several parties interested in the Jubuk iron project and other of Magnetic's iron projects in the south west. The aim of the discussions is to examine options for the acceleration of exploration and possible development of these strategically located assets.

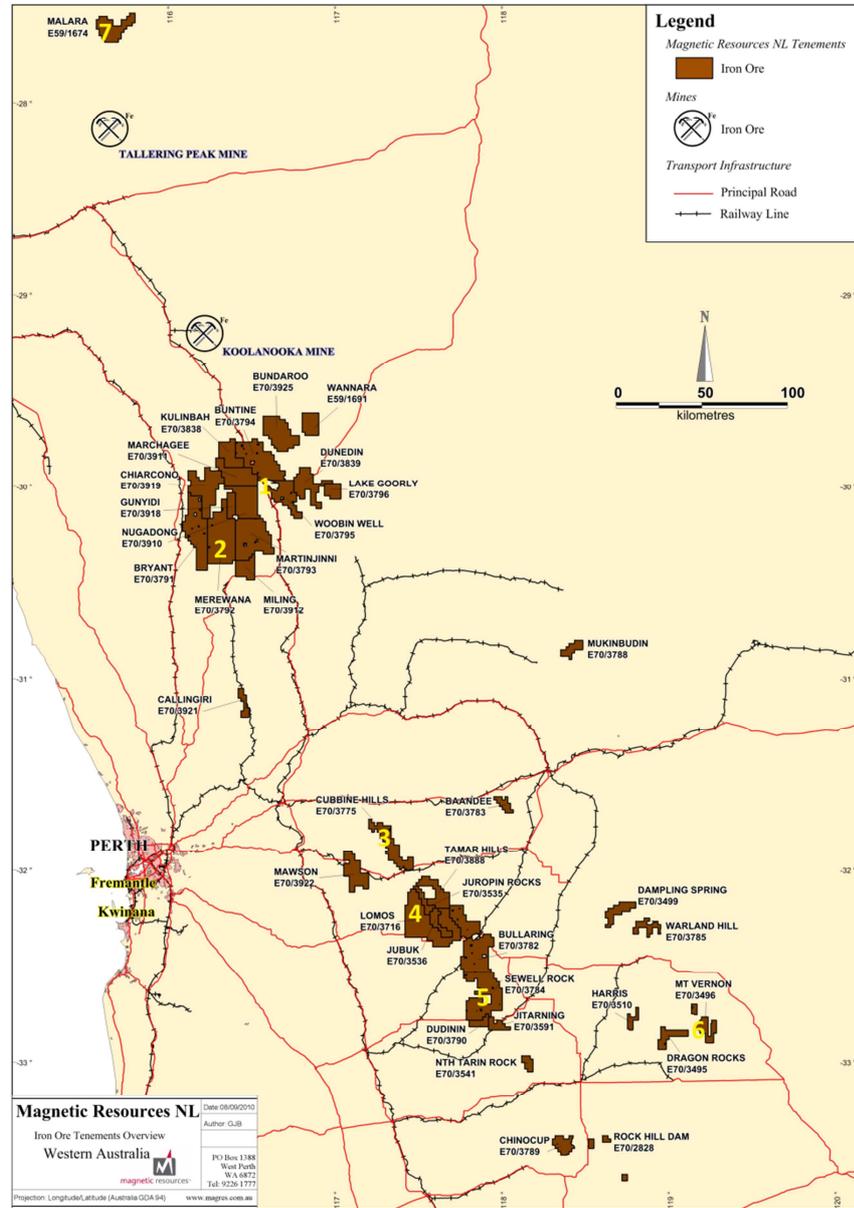


## Project Review

Magnetic Resources tenure is concentrated over the South West Region of WA where there are existing interlinking railway networks and several ports. The tenure is divided up into 7 distinct project areas.

### Magnetic Resource Tenement Position

7 defined project areas



Source: Magnetic Resources

### Iron Ore Project Summary Table

Additional projects provide further opportunity

Project Area	Name	Target Tonnage
1	Wubin	500 - 1,000Mt BIF and 50 - 100Mt DSO
2	Dalwallinu	360 - 720 Mt BIF
3	Quairading	50 - 100Mt BIF
4	Jubuk	50 - 100Mt
5	Sewell	110 - 220Mt
6	Mt Vernon	50 - 100Mt
7	Marla	250 - 500Mt

Source: Magnetic Resources



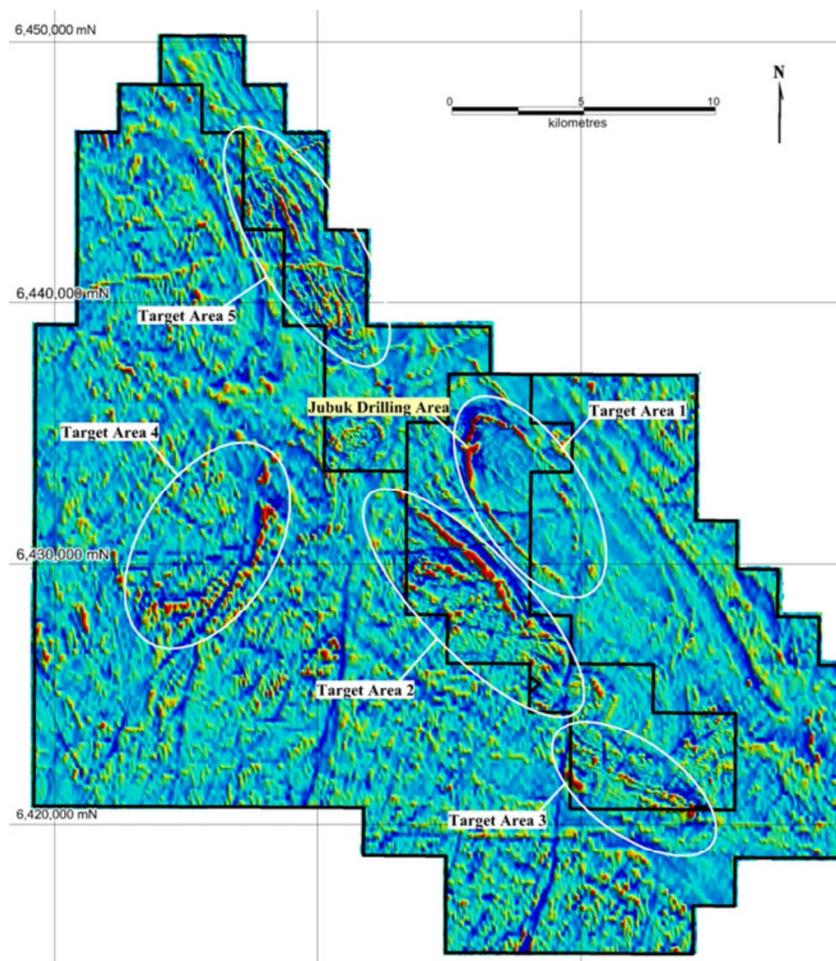
## Jubuk Iron Ore Project

*Jubuk is the most advanced target*

The most advanced target in the Magnetic Resources portfolio is the Jubuk Iron Ore Project located near Corrigin, WA. Using the detailed aeromagnetic survey, Magnetic has identified 5 prospective horizons which could have a total target tonnage of 50Mt-100Mt.

### Jubuk Iron Ore Project: Detailed Aeromagnetic

*5 prospective horizons identified*



Source: Magnetic Resources

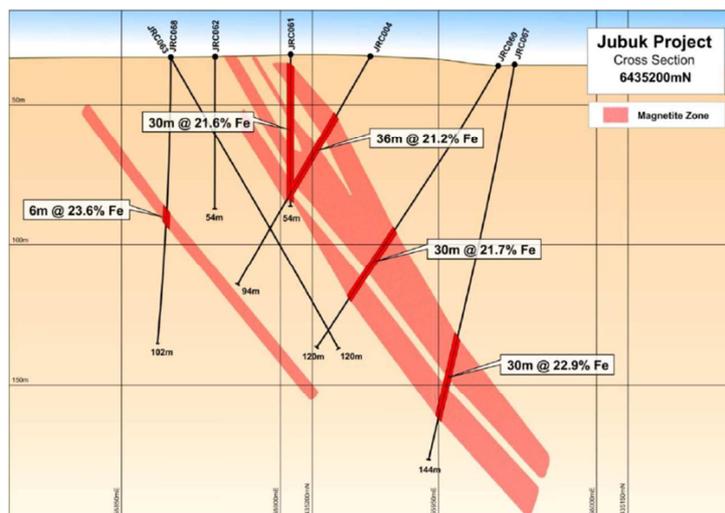
*First round of drilling*

Magnetic Resources has now completed 2 separate RC drilling campaigns over the tenement area comprising a total of 74 holes for 8,408m over a 4.1km strike length. The aim of the campaigns was to define an initial Inferred Resource however Magnetic is testing the recently identified BIF extensions prior to completing the resource estimate.

**The drilling has shown the BIF's to comprise of multiple coarse grained magnetite-rich horizons ranging in thickness from 3m to 36m with up to 12 magnetite-rich horizons evident.** Significant intersections include 20m @ 25.1% Fe from 22m in JRC005, 32m @ 28%Fe from 63m in JRC006 and 21m @ 30.8% Fe from 72m in JRC049. Drill intersection widths appear to average 12-15m.



## Jubuk Cross Section



Source: Magnetic Resources

*Mineralisation responds well to DTR and should produce a high grade concentrate*

Recent work by metallurgical consultants Engenium Pty Ltd has confirmed that the Jubuk banded iron formation responds to conventional treatment and is capable of beneficiation to produce a premium product. Magnetic has now completed 193 Davis Tube Recovery (DTR) determinations. The table below summarises the weighted averages of the feed and concentrate grades as well as the recovery rates.

### Davis Tube Recovery – Weighted average summary table

Rock Sample	Feed Grades %				Concentrate Grades %				Rec % Fe
	Fe	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	P	Fe	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	P	
Weathered	21.7	51.4	9.1	0.02	68.9	1.4	1.1	0.01	<b>61.3</b>
Fresh	24.5	49.1	6.4	0.03	69.7	1.1	1	0.00	<b>77.7</b>

Source: Magnetic Resources

Industry benchmarks for magnetite concentrates are generally considered to be <2% SiO<sub>2</sub> for the Direct Reduction (DR) concentrate and <5% SiO<sub>2</sub> for Blast Furnace (BF) grade. Pure magnetite has a grade of 72.4% Fe, but is more conventionally sold as a ~68% Fe product. The results above show that the Jubuk samples could produce an excellent quality magnetite concentrate.

*Gravity survey highlights further exploration potential*

**Exploratory work is still ongoing at Jubuk.** A recently commissioned gravity survey over the project area highlighted numerous strong responses and indicates the magnetite zone could extend a further 600m to the south of the drilled area. Further to this, the gravity survey also highlighted the potential of a second prospective parallel zone called 'Marriotts' to the south of Jubuk.

Previous drilling within the Marriotts area did not intersect significant grades of magnetite however the new gravity data will allow the company to better position drill holes as it continues to test this anomaly.

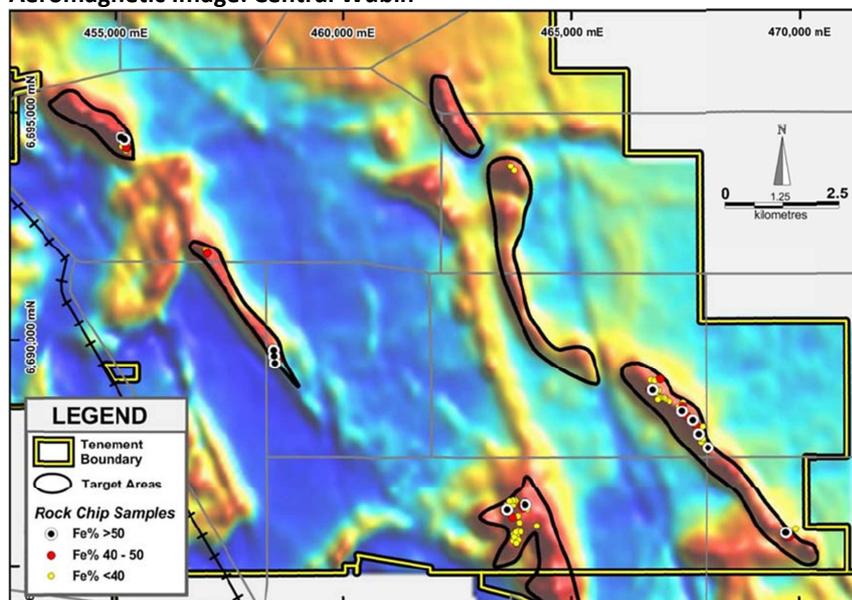
The new gravity data however has extended the total Jubuk target zone to 6.7km (from 4.1km) along strike and further drilling will be required to test the mineralisation of this new zone. On completion of this drilling campaign, a maiden Inferred Resource estimate is expected.



## Wubin Iron Ore Project

An aeromagnetic survey over the Wubin Project area has identified a number of large magnetic anomalies which have been interpreted to be Banded Iron Formations.

### Aeromagnetic Image: Central Wubin



*A planned gravity survey at Wubin will assist in understanding the magnetic anomalies*

Source: Image Resources

Magnetic has carried out initial rock chip sampling over a number of the areas where outcrops occur. Encouragingly, ~13% of the samples assayed contained greater than 50% Fe with a maximum value of 59.5% Fe recorded.

A follow up 147 hole, 2,528m air-core drilling campaign has recently been completed in which Magnetic Resources aims to test the near surface hematite-goethite targets identified. Early assay results suggest that no substantial near surface intersections have yet been identified however further gravity surveys are planned to better understand the magnetic anomalies. The air core program was only the first pass wide spaced program and many targets have not yet been adequately tested. The RC drilling intersected significant mineralisation of 12m @ 38.9% Fe from 12m in BRC01 and 12m @ 36.6% Fe from 64m in BRC02 at the Cheeseman prospect

## Mt Vernon

*Mt Vernon demonstrates strong potential*

The Mt Vernon Iron Ore Project hosts ten identified magnetic anomalies. Test work on the project from surface samples on seven of the target sites and surrounding area have iron contents ranging from 22.8% Fe to 50.6% Fe. The company recently completed an initial RC drill campaign to test the shallower targets and intersected substantial widths of low grade magnetite bearing gneiss. The most significant was 132m @ 13.3% Fe from 18 to end of hole in MVRC11.

Magnetic now plans to conduct a detailed gravity survey in an effort to better identify specific drilling targets within the magnetic anomalies. This is likely to be followed up with further RC drilling to follow up the significant thicknesses of mineralisation intersected.



## ***Additional Projects – Early stage exploration***

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- **Sewell Rock** – A 60 hole shallow air core drilling program has been completed. Samples returned values up to 50% Fe. Further results pending. Follow up drilling expected.
- **Dalwallinu** – Land access agreements have been signed. Initial magnetic surveys underway.

## ***Characteristics and perceptions of Iron Ore***

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*Most common use for Iron is in the production of steel.*

Iron is the fourth most abundant element in the Earth's crust and is usually found in ore deposits as an oxide. There are many iron minerals but the only ones of worldwide importance are hematite ( $\text{Fe}_2\text{O}_3$ ), magnetite ( $\text{Fe}_3\text{O}_4$ ) and limonite ( $\text{FeOOH}$ ). Other ores such as chamosite or pyrite are no longer important for iron production.

Typically, it takes 1.5 tonnes of iron ore and 450kg of coke (an almost pure form of carbon processed from coking coal) to produce a tonne of pig iron, the raw iron that comes out of a blast furnace. Pure iron is quite soft however adding a small amount of carbon makes it significantly harder and stronger.

### **Magnetite vs Hematite**

**Hematite ( $\text{Fe}_2\text{O}_3$ )** is an iron oxide mineral that contains 70% Fe. Hematite deposits vary widely in grade and until recently, most deposits needed to have an average grade of more than 60% to be economic. However some deposits can now have iron grades of 56-59% and can be commercially viable.

*Magnetite requires beneficiation however it usually commands a premium in price*

**Magnetite ( $\text{Fe}_3\text{O}_4$ )** is also an iron oxide mineral containing 72% Fe. Magnetite ore however has a lower iron content than that of hematite and must be upgraded to make it suitable for steel making.

Processing involves crushing, screening, grinding, magnetic separation, filtering and drying. The final product is a high iron grade magnetite concentrate (+65% Fe) with typically low impurities. Further processing involves the agglomeration and thermal treatment of the concentrate to produce pellets which can be used directly in a blast furnace.

The additional processing cost for the magnetite concentrate can generally be offset by the premium price which it attracts from steel mills due to the high iron content.

### **Market perception of magnetite**

Traditionally, Australia has associated 'iron ore' with DSO quality hematite, which has been underpinned by emergence of the Pilbara region as one of the world's great iron ore provinces. As a result, magnetite has been greatly misunderstood and undervalued by the market.

*Magnetite is becoming a more sort after product*

Magnetite projects today are capable of producing high-quality concentrate grading up to 68-69% Fe, which is higher grade than many of the Pilbara hematite lump and fines ores currently being produced.

It is also well established that hematite grades are generally declining globally and impurity levels are rising while the demand for quality, premium steel from China and India is continuing to increase. **With hematite grades declining, high-grade magnetite concentrate is becoming an increasingly sought-after product.**



## The outlook for Iron Ore

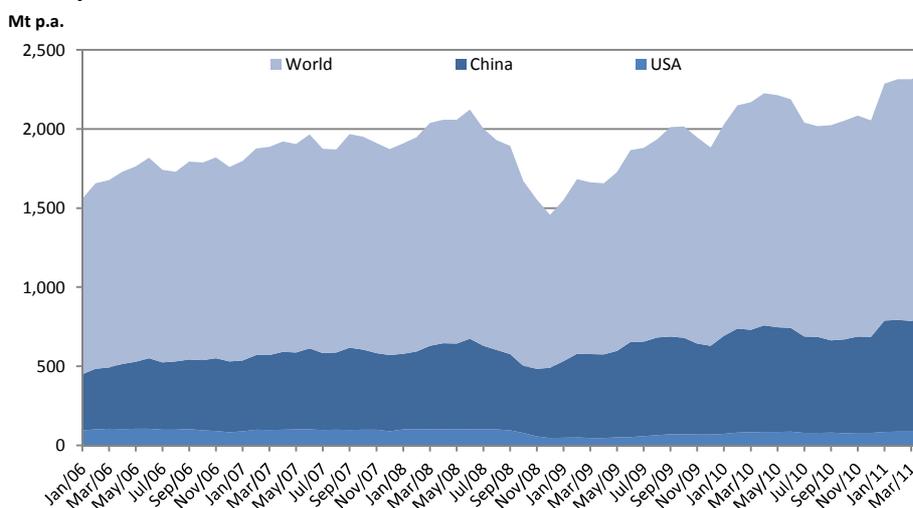
About 98% of world iron ore production is used to make an iron alloy in the form of steel. Steel is the most useful metal known to man and is used 20 times more than all other metals put together.

The World Steel Association recently released a robust short term outlook for 2011 and 2012 global steel use. The forecast suggests a **5.9% global increase to 1,359Mt in 2011, which follows 13.2% growth in 2010. In 2012, the World Steel Association is forecasting steel use will grow by a further 6% to reach a new record of 1,441Mt.**

*Outlook for steel remains robust*

The 2012 steel use forecast suggests the developed world will still be at 14% below the 2007 record levels where as in the emerging and developing economies, steel use will be 38% above 2007 levels. In 2012, the emerging and developing economies will account for 72% of world steel demand in contrast to 61% recorded in 2007.

### Monthly Annualised Crude Steel Production Rate for China, USA and the World

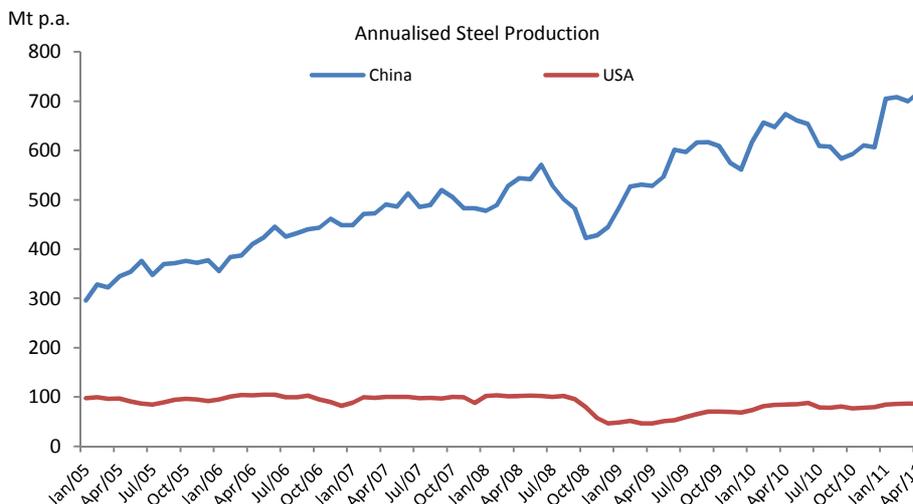


Source: World Steel Association and Breakaway Research

China remains the major consumer of steel and given the pace of initial production in 2011, China's total use for 2011 may exceed the 5% growth forecasted. The chart below emphasises the size and growth of China's steel production relative to the USA.

### Annualised Steel Production of China and the USA

*China is biggest end user of steel*



Source: World Steel Association and Breakaway Research



## ***Directors and Management***

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### **Non-Executive Chairman**

**Peter Thomas** is a lawyer and has specialised for over twenty years in the provision of corporate and commercial advice to ASX listed companies. He has been responsible for the structuring and restructuring of many companies, has been involved with the listing of and has served as director of a number of listed companies.

### **Managing Director**

**George Sakalidis** is an exploration geophysicist with over twenty years experience in gold, diamond, base metal and mineral sand exploration. He, with others, has compiled one of the largest aeromagnetic databases in Australia, which is now held by Image Resources. Mr Sakalidis has been involved in a number of discoveries including gold discoveries, such as the Three Rivers deposit and the Rose deposit in Western Australia. Mr Sakalidis is also a director of Image Resources NL, Meteoric Resources NL, Emu Nickel NL and Potash West NL.

### **Executive Director**

**Roger Thomson** is a geologist with more than thirty years experience in mineral exploration, mining geology and management in Australia, Africa, South America and SE Asia. Mr Thomson has held the positions of General Manager Exploration with Delta Gold Ltd and Sons of Gwalia Ltd and has been responsible for, or closely associated with, making economic discoveries of gold and tantalum in Australia. He successfully managed the programme that led to the discovery of the multi-million ounce Sunrise gold deposit, near Laverton in Western Australia. Mr Thomson is an Associate of the Royal School of Mines, a Member of the Australasian Institute of Mining and Metallurgy, a Member of the Australian Institute of Geoscientists and a Member of the Society of Economic Geologists. He is also a director of Image Resources NL, Meteoric Resources NL and Emu Nickel NL.

## ***Analyst Verification***

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We, Gavin Wendt and Andrew McLeod, as the Research Analysts, hereby certify that the views expressed in this research accurately reflect our personal views about the subject securities or issuers and no part of analyst compensation is directly or indirectly related to the inclusion of specific recommendations or views in this research.

### **Disclosure**

Breakaway Investment Group (AFSL 290093) may hold direct and indirect shares in Magnetic Resources. It has also received a commission on the preparation of this research note.

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