



# CARBINE RESOURCES LIMITED

ASX / MEDIA ANNOUNCEMENT

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## Carbine signs binding pyrite offtake agreement for Mount Morgan

*Contract with experienced Chinese trading house is a key step towards project finance*

**Carbine Resources Limited (ASX: CRB)** is pleased to advise that it has achieved another important milestone in its plan to develop the Mount Morgan Gold-Copper Project in Queensland by signing a binding offtake agreement for its pyrite production with Chinese Trading company IKing International Limited (**IKing**).

The agreement with IKing contains a guaranteed floor price for all the pyrite concentrate delivered with a profit-sharing mechanism for prices achieved greater than the floor price. The floor price will be negotiated on an annual basis and the agreement is for a minimum of 85% of the concentrate produced for the first three years. The detailed pricing terms associated with the IKing agreement remain confidential due to its commercial sensitivity. However, based on the current and forecast market conditions, the Company expects to receive at least \$US 50/t for the first two years of the project and greater than \$US 70/t for the remaining years. The pyrite price expected to be received will impact the AISC of \$A 549/oz achieved in the Feasibility Study (ASX: 8 December 2016) and the Company will provide further guidance on this once the FEED work has been completed (ASX: 9 May 2017).

Carbine Managing Director, Tony James, said the contract achieves one of the more significant milestones in Carbine's work to bring Mount Morgan into production. The focus on the Chinese pyrite market provides the Company with greater confidence in selling the entire pyrite concentrate production at a price beneficial to the project economics.

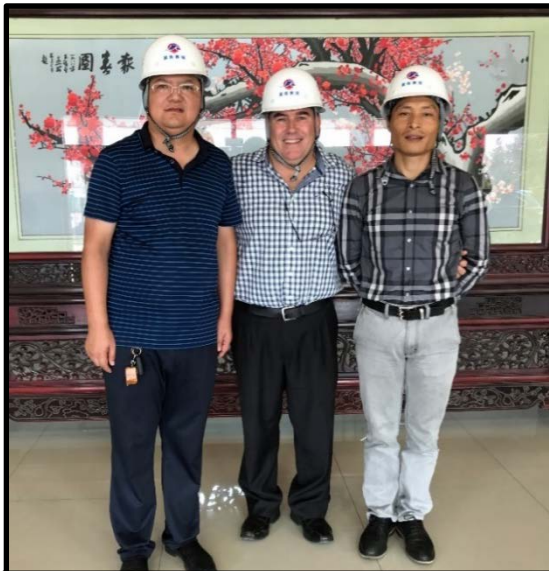


Figure 1 shows Carbine's Managing Director, Tony James, with Mr Lee (left) from Jiheng Chemical Company and Mr Zheng from Iking at the Jiheng Chemical Company's petrochemical site in Hebei Province.

"With the project approvals process now well advanced with two of the three major approvals completed, we are progressively ticking the boxes and gaining some momentum towards finalising project funding and start up," Mr James said.

Mr James said the Company had worked hard to build an extensive understanding of the pyrite market in China, culminating in this binding offtake agreement.

"China consumes approximately 16Mt of pyrite a year and the shipping distance from Australia makes it a logical destination for the Mount Morgan concentrate, which will initially start at 200,000tpa of premium unroasted iron pyrite," he said. China's 10 major pyrite-consuming iron and sulphuric acid plants have the capacity to consume more than 5Mt of pyrite concentrate on an annual basis. Two of those companies have already offered preliminary support to IKing by the way of letters of intent for the Mount Morgan concentrate following customer testing of supplied samples produced during the feasibility stage of the project.



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## IKing International Limited

IKing International Limited is a Shanghai-based trading company specialising in the Chinese import markets for iron ore and other specialised trading commodities. IKing's trading activities for the import of iron pellets into China has enabled the company to establish significant contacts and working relationships in the iron and steel industries. Iking provides a key pathway for commodity producers into the large domestic Chinese markets. Further information on IKing can be found at [www.ikingintl.com](http://www.ikingintl.com)

The pyrite concentrate offtake agreement with IKing has been established to enable the Company to:

1. Gain access to the largest pyrite roasting market in the world to ensure that all of the pyrite produced at Mount Morgan can be sold. With China consuming over 16Mt of pyrite on an annual basis and the largest 10 consuming roasting facilities processing over 5Mt of pyrite on an annual basis, the market presents itself as a logical entry point supported by lower shipping costs in direct comparison to the European market.
2. Establish a floor price to protect project risk associated with any economic down side potentially associated with declining iron, sulphur or sulphuric acid prices.
3. Allow participation in any upside pricing resulting from higher iron, sulphur or sulphuric acid prices.

A significant factor in establishing the agreement with IKing is to get direct access to the Chinese pyrite market where they determine their pricing and business models on the price of iron fines generated as a product from the pyrite roaster. The pyrite roasting companies in discussion with IKing are subsidiary companies or close neighbors of some of the largest steel manufacturers in the world. The iron residue (typically between 62-65% Fe) is sold to the steel manufacturers at a discount to the spot iron fines price. They also obtain power credits by utilising the heat generated from roasting the sulphur for the production of sulphuric acid to drive steam generators for the surrounding petrochemical and steel plants. From Carbine's perspective, this pricing model reduces the risk of being directly reliant on the sulphuric acid market.

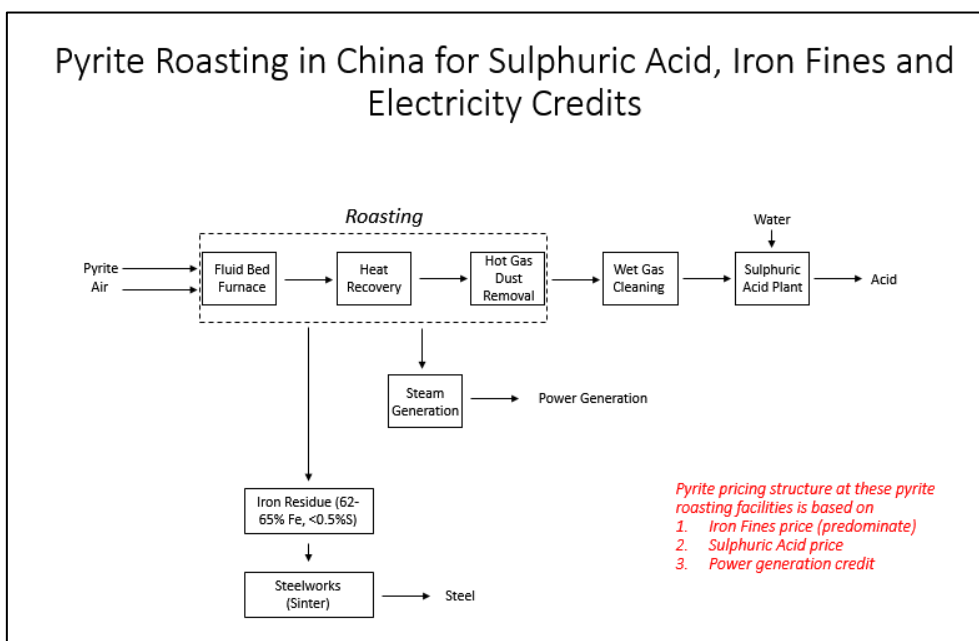


Figure 2 shows the flowsheets for a pyrite roasting facility producing iron fines, sulphuric acid and electricity generation.



## **CARBINE RESOURCES LIMITED**

### **Carbine China Marketing Specialist**

Carbine has also appointed Dr Li Cheng as its senior marketing consultant. Dr Li was educated in the United Kingdom and has worked in many senior roles including AVIC Shangda Superalloys Company, Shanghai Streamex Metal Processing Company, ELG Haniel Corporation, China Metallurgical Imports and Exports Corporation and Shanghai Non-ferrous Metals Research Institute. Dr Li's unique skill set and superior knowledge of the China trade markets and business culture provide a detailed understanding of Chinese metals and petrochemicals market and he will oversee the Company's relationship with Iking.

### **Unroasted Iron Pyrite Pricing Guidance**

Based on the new agreement with IKing, the Company recommends that for external evaluation purposes a minimum price of \$US50/t pyrite concentrate be used for the first two years of the project followed by \$US70/t for the remaining years. Prices quoted are on an FOB Gladstone basis. The pyrite price will impact the AISC of \$A 549/oz achieved in the Feasibility Study (ASX: 8 December 2016) and the Company will provide further guidance on this once the FEED work has been completed (ASX: 9 May 2017).

In the Feasibility Study (ASX: 8 December 2016), the payback was determined using a AUD/USD FX 0.75, and with commodity prices of US\$1,200/oz gold, US\$60/t unroasted iron pyrite for years 1 & 2 then US\$80/t for the remaining years and US\$5,800/t copper. Copper revenue is based on copper LME price for approximately 25% copper grade plus A\$ 500/t premium for copper sulphate.

The pyrite pricing used in the FS was based on a detailed evaluation of three specific export markets for unroasted iron pyrite, being:

1. Sulphuric Acid: Bulk supply of premium concentrate to China;
2. Sulphuric Acid: Bulk supply of premium product to Europe; and
3. Industrial Components: Specific small volume distribution to specific customers primarily in Asia.

Further detailed evaluation by the company of the Pyrite Market in China identified a lower risk opportunity to provide Mount Morgan concentrate initially into the China Sulphuric acid market, The reduced risk profile is underpinned by the reduced shipping distance, the price of iron ore fines and the ability to establish long term large volume arrangements.

As previously outlined in the FS, world trade figures show that the imports and exports of pyrite concentrate have been dominated on the supply side by the Pyhäsalmi Mine in Finland (First Quantum) and on the demand side by sulphuric acid manufacturing roasters in China. In 2015 China imported 859,000 tonnes of unroasted iron pyrite. Of this material, 72% (616,000 tonnes) came from the Pyhäsalmi Mine. The Pyhäsalmi Mine is a deep (1,400m) underground mine that produces copper, zinc and pyrite concentrate. The pyrite concentrate produced is very similar to the concentrate that will be produced from Mount Morgan. The Pyhäsalmi Mine is expected to commence closure in 2019 due to the lack of reserves.



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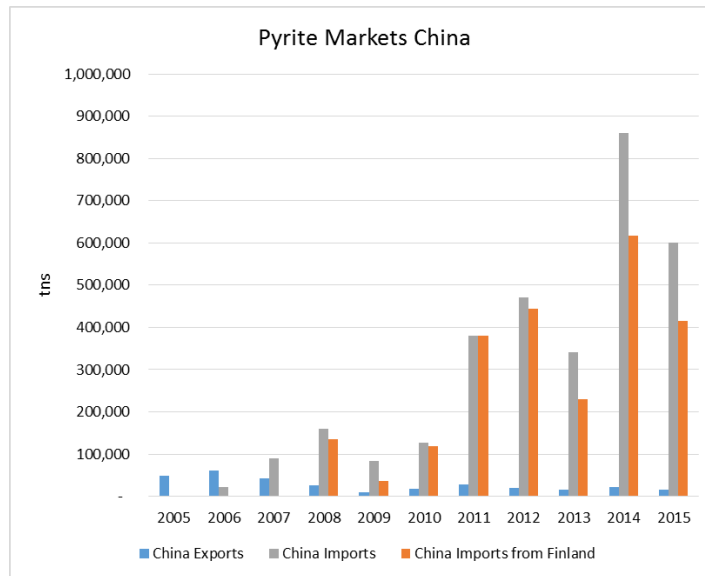


Figure 3 shows China Imports Pyrite Concentrate (t), 2005 - 2015



Figures 4 & 5 Show the 0.5Mtpa Pyrite roasting facility and the iron residue stockpiles at the Jiheng Lantian Chemical Company, in Hebei Province China.

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