NEW DEVELOPMENTS IN AUSTRALIAN COAL PRODUCTION

Ken Talbot[1]

ABSTRACT: With Austalia as the largest exporter of coal in the world, the challenge for the mine developers is to develop a mine which can be profitable. Coal reserves, market demand and capital, forms the basis for successful mining development.

INTRODUCTION

It is important that the fundamentals for a new mine development are right. The mine developer then has the best likelihood that the development will be economic.

Marshall (1974) stated that the old age of mining was based on the following three criteria:

- Reserves;
- Market; and
- Capital.

All three above stated criteria are a prerequisite to a successful mine development.

HISTORY OF THE INDUSTRY

The Australian Coal Industry today is the largest export industry in the world.

From an export perspective, the industry has a relatively young history as follows:

Phase 1

Serious development of the export market occurred during the 1970's, led principally by Kembla Coal and Coke in New South Wales and Utah Development Company in Queensland. The exports of significant volumes primarily coincided with the development of coking coal products suitable for use in the Japanese steel mills.

Phase 2

The industry was influenced by world oil shocks, which occurred 1974 and 1979. As a consequence the attitude of customers changed. No longer was the supply of raw materials guaranteed.

Phase 3

During the 1980's customers were increasingly seeking security of supply of relevant raw materials. It was common for customers and trading related companies to actively participate in development of production capacity. Long-term contracts were introduced to further encourage mine development. Unfortunately many operations were over capitalised and were only justified in the context of an ever-increasing coal price scenario.

Phase 4

During the 1990's the coal price reality did not meet the expectations of the 1980's. The industry was forced to rationalise in an effort to provide a satisfactory economic result for its shareholders. Further the industry has undergone a significant ownership consolidation phase also driven by the requirement for improved economics. As an example, Coates (2002) advised that in respect to thermal coal or steaming coal, four major exporters

[1] Macarthur Coal Ltd

accounted for about 42% of supply from Australia. Coates (2002) further advised the same four global suppliers in 2002 were responsible for 70% of Australia's supply capacity.

TODAY'S INDUSTRY STATUS

The Australian Coal Industry in calendar year 2002 exported approx 200 million tonnes of coal. Approximately half of the export tonnage was thermal or steaming coals and the other half was coking coal products. The industry trend is quite different for both market segments as follows:

Thermal or Steaming Coals

Thermal or steaming coal is mainly used for electricity generation. The coals are rated primarily on energy content for pricing purposes. The steaming coal market has become a commodity driven market.

With the increasing exports of steaming coal from countries such as China and Indonesia, the additional supply has provided a competitive environment to the pricing and utilisation of Australian based coals. Customers to date in this decade have tended towards shorter term purchasing arrangements as a consequence of having multiple sourcing options for coal supply.

Coking or Metallurgical Coal

The driver of the worlds steel industry at this time is the growing industrial demand occurring within China. China's industrial growth has been significant over the last 5 years and the crude steel production capacity is now a reported 180 million tonnes. China's increasing industrial growth has now resulted in boom times for consequential supply of raw materials to the steel sector.As a comparison the crude steel production capacity for the Japanese steel mills is approximately 100 to 110 million tonnes per annum. Currently, demand is exceptionally strong for:

- Iron ore;
- Coke;
- Coking coals; and
- Coals suitable for the Pulverised Coal Injection process.

Most observers around the world are now predicting a sustainable growth scenario for China's industrial sector.As a consequence customers are again seeking security of supply of raw materials similar to the 1980's.

FACTORS AFFECTING MINE DEVELOPMENT

Development of a new mine represents a rare opportunity for the mine developer to apply latest thinking in working practices, method of mining, industrial and employee agreements together with the way the company chooses to do business. =Factors affecting mine development include:

Access to Viable Reserves

Marshall (1974) reported that the old age of mining was to mine the best coal first, in order to repay capital.

From the viewpoint of the Bowen Basin, its best and most economic coal has been mined to date. The reality is today's viable reserves generally are at greater depths of cover.

A challenge to open cut operators in the Bowen Basin in the early 1980's was to extend their operations beyond a threshold of 60 meters depth of cover. Today it is common for open cut miners to be operating at 100 meters to 200 meters depth of cover. Similarly, companies are forced to undertake underground mining at increasing depths of cover. This trend is occurring not only in the Bowen Basin but in New South Wales as well.

Changing Coal Market

In relation to thermal coals, the ultimate use of coal continues to be constrained by the greenhouse gas debate, despite being the cheapest form of fossil fuel available to an overseas power station. In the future, customers will favour coals with an improved environmental status; that is, relatively low emissions of oxides of nitrogen and sulphur.

In relation to the steel industry, customers are expanding the use of poor grade coking coals and increasing the use of pulverised coal injection technology. As a consequence, mine developers are being encouraged to give priority to the establishment of production capacity for these coal types.

Market Pricing Volatility

If it was a perfect world conceivably business could be based on a fixed price in Australian Dollar terms. It would allow for business to be planned with a satisfactory risk profile, having a cost base in the same currency. The price of coal historically has fluctuated in US Dollar terms by as much as +/-20%. Some companies operating in Australia are global companies that have a preference for US dollar income, which provides a natural hedge for their respective global business. Other companies operating in the Australian Coal Industry are Australian companies whereby they report to their shareholders in Australian Dollar terms. During calendar year 2003 the Australian Dollar exchange rate relative to the US currency has appreciated by in excess of 30%. Such fluctuations in revenue provide an added challenge to mine operators to develop viable operations with a risk profile that is acceptable to investors.

MACARTHUR COAL STORY

Macarthur Coal undertook an Initial Public Offering (IPO) in July 2001. The purpose was to raise funds to grow the business.

Strategy

Macarthur Coal's strategy is to develop new coalmines within the Australian Coal Industry based on the identification of market segments that the company believes will grow faster than the general coal market. As part of the strategy the company has placed an important emphasis on exploration to identify new projects.

Market Segment

Macarthur Coal and its joint venture partners at the Coppa Bella and Moorvale mines supply approximately 40% of the global supply for low volatile coals, used for Pulverised Coal Injection (PCI) technology in the worlds steel mills. Australia and Queensland particularly remain the principal supply source.

The continued use of low volatile coal for pulverised coal injection represents an economic benefit to customers, whereby it reduces its dependency on coke. Low volatile coals are attractive due to their high carbon and energy content.

Assets

Macarthur Coal is the major joint venture participant in the Coppabella & Moorvale Joint Venture. Ownership is as follows:

- Macarthur Coal Limited 73.3%
- CITIC Australia Pty Ltd 7.0%
- Marubeni Coal Pty Ltd 7.0%
- Nissho Iwai-Nichimen Australia Limited 7.0%
- Kawasho International (Australia) Pty Ltd 3.7%
- Nippon Steel Trading Co Ltd 2.0%

Production capacity of the Coppabella and Moorvale mines is almost 6 million tonnes per annum. Both mines have been developed as stand alone mines with their own infrastructure comprising a coal preparation plant and a balloon loop. Both operations are open cut with substantial future underground resources.

Macarthur Coal believes that the fundamentals are right for both projects, whereby both projects are open cut, relatively shallow compared to other operations in the Bowen Basin, close to port and close to under utilised infrastructure. The company has sought to minimise its capital investment through the use of contractors, both in the mining and coal preparation plant process.

Exploration

Macarthur Coal has the rights to in excess of one billion tonnes of coal resources in the Bowen Basin (see Figure 1). The main centre of activity is the Coxendean sub-basin, which has been confirmed as a major extension to the Bowen Basin of Queensland. The Coxendean Sub-basin contains the Olive Downs, Codrilla and Wilunga Projects. The company has confirmed the existence of coal measures over 25 kilometres of strike length at less than 100 meters depth of cover within the Coxendean sub-basin. The priority is to identify open cut reserves at this time. However the company recognises the potential for the above coal measures to be mined by highwall underground techniques.

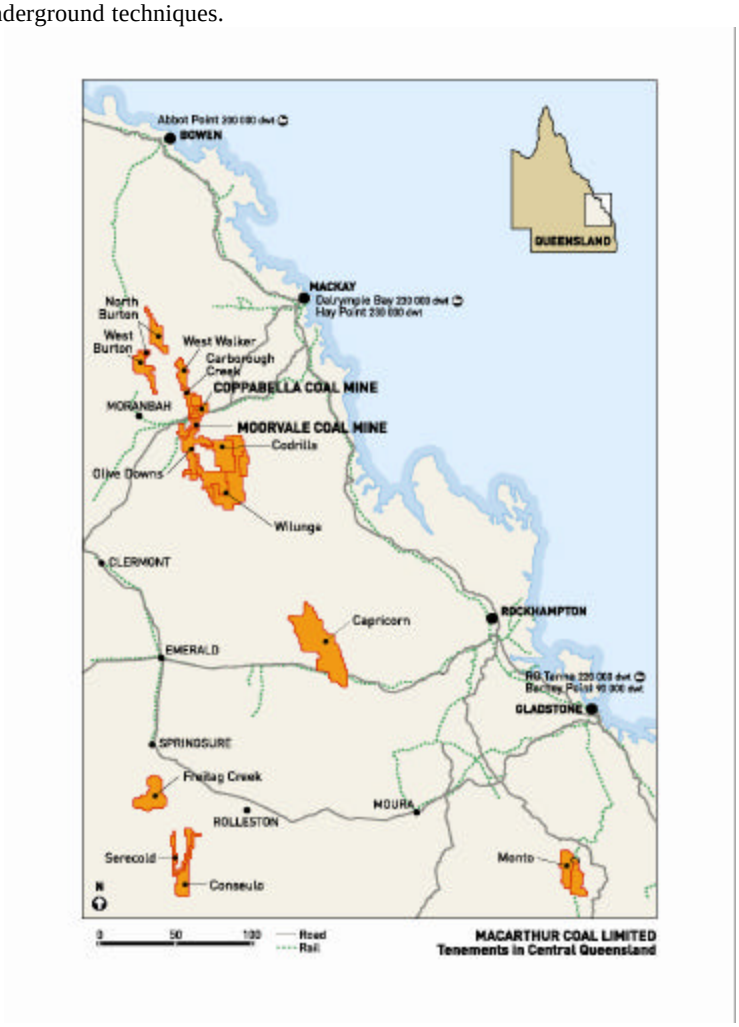

Fig 1 – Location of Macarthur Coal Mines

CONCLUSION

Mine development can be a rewarding and challenging experience. However, business is subject to substantial fluctuations in sales price and exchange rate. Under the circumstances, the overriding challenge for mine developers is to maximise competitiveness. The industry cannot rely on historical practices as a pre-requisite to competitiveness and must continue to develop new and more efficient ways to conduct our business.

REFERENCES

Coates, P, 2002, *Energy*, presented to the Australia Japan Joint Business Conference, Sydney.
Marshall, Roger, 1974, *Development of Coal Mines*, presented to the UNSW Mining Society, Sydney.