

## Metals & Mining

### Speculative Buy

5 March 2008

Upcoming Events:  
Initial JORC Resource April 2008

Market cap	£40.47m
Ticker	CHL LN
Price	62p
Shares in issue	65.28m
Fully diluted	79.00m
3M avg daily vol (000)	212.8
3M avg daily val (£000)	110.0
52-week range	
High	68p
Low	8p
Top shareholders	
GLG Partners	12%
Fidelity	10%
JO Hambro	9%
AMP Henderson	5%

Share Price Performance (p)



Source: Fidessa

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## Churchill Mining

### Timely Development of Coal Resource

**Churchill is progressing an intensive drill campaign to define a substantial thermal coal resource in Kalimantan, Indonesia.** The 75%-owned East Kutai flagship project should have an initial JORC resource in 2Q08. The company is flagging a 2008 year-end resource target of 500Mt, including a 100Mt reserve. This appears achievable on the basis of the reported steady increase in Churchill's internal volume calculations, which are currently at 135Mt. There are already initial local off-take agreements, which give confidence that the product has good commercial qualities.

**Churchill considers its Sendawar coal project to be a potential Coal Bed Methane proposition.** This could be a joint venture with the government and specialist groups. It has selected to maintain an Indonesian focus, with the divestment of its South Woodie Woodie manganese project in Western Australia into a new company – Spitfire Resources.

**Kalimantan is the dominant driver in the rapid production growth of Indonesia's massive coal resources.** Indonesia produces over 150Mtpa and recently overtook Australia as the world's largest exporter of thermal coal. Demand for thermal coal is growing rapidly, driven by Asian energy consumption and export constraints in China, South Africa and Australia. This has left global utilities urgently needing to secure long-term contracts from diversified sources.

**Coal price escalation is also a key driver.** The agreed price for Asian thermal coal in 2007 was US\$55.65/t and as recently as 3Q07 analysts were still forecasting an average price range of US\$59-70/t for 2008. Spot prices for thermal coal have now reached US\$130/t and contract prices are now forecast at US\$110/t. Coking coal is predicted to hit US\$200/t. Although these high levels may not last, the market has permanently changed.

**Churchill's internal coal resource estimates are currently valued by the market at around US\$0.80/t.** However, East Kutai is not yet sufficiently developed to be accorded a definitive valuation; the rapidly developing asset, strategically strong location and good profit margins should support expanding sales. By year end there should be a sizeable JORC resource and a 2010 production target which should provide value uplift. **We rate Churchill a SPECULATIVE BUY.**

## Summary

### Strategy

Churchill Mining plc was admitted to AIM in April 2005. The company targeted quality coal projects in Australia and Southern Asia. This declared strategy was based on recognition of the potential opportunities in high-quality coal due to the unprecedented demand in Asian growth areas, aided by local government mandates to substitute oil-fired power stations with coal. The company has focused on the high-quality thermal coal deposits in Kalimantan, Indonesia, where there is a well established infrastructure for the industry.

### Projects

**East Kutai** – Following an Exclusivity Agreement signed in March 2007, Churchill acquired a 75% beneficial interest, via its wholly-owned Indonesian subsidiary, in the East Kutai Coal Project (EKCP) in Kalimantan from PT Techno Coal Utama. The 25% balance is held by Indonesian partners. The current tenement area is 575km<sup>2</sup>, comprising four KP coal concessions (exploration/exploitation mineral licences which must be held through a 100% Indonesian shareholding).

Work conducted by consultants prior to the acquisition had identified numerous outcrops of coal in the area. The coal shows commercial quality ratings of calorific value, low moisture and sulphur, plus high fixed carbon levels. Churchill is conducting an aggressive drilling programme and has released a series of non-JORC coal volume measures, which had reached 135-140Mt by end-January 2008, based on 5,800m of drilling to date. An initial JORC resource estimate is expected in 2Q08.

EKCP is located 110km north-west of the main population centre of Sangatta. The major Pakar discovery, currently still being developed 55km to the south-west, currently has a JORC-compliant reserve of 270Mt thermal coal.

**Sendawar** – This was Churchill's first coal project, acquired in April 2006. The 800km<sup>2</sup> tenement area is located in an established production region of East Kalimantan. However, accessible coal was not in economic quantities. The region is now thought to contain sufficient deep resources to be a Coal Bed Methane proposition. A CBM Joint Evaluation Agreement (JEA) licence was granted in September 2007 and a joint evaluation study will be completed in 1H08. If positive, a Joint Operating Company (JOC) will be formed by Churchill (70%) with a 30% Indonesian partner, PT Ridlatama Mining Utama (RMU). The JEA could then be converted into a Production Sharing Contract. A third-party partnership is likely to be concluded should the project prove to have serious longer-term commercial parameters.

**South Woodie Woodie** – This is a 490km<sup>2</sup> manganese project located some 400km south-east of Port Hedland in Western Australia. An 80% interest (with an option to purchase the balance) was vested in Spitfire Resources, which then listed on the ASX in December 2007. Churchill now owns 40.1% of Spitfire, with (Churchill executives) Paul Mazak as Chairman and James Hamilton MD. The project is early-stage, having been subjected to geophysical surveys, but is close to the Woodie Woodie manganese mine which was developed by Consolidated Minerals.

## East Kutai

### Promising Initial Analysis

Coal occurrences in the project area are sub-bituminous with low ash, low sulphur, moderate moisture content and acceptable energy values. It has been estimated that there are 750Mt of coal resources within the planned drilling area. The continuity of the interpreted coal sequence should allow additional resources in other areas.

Churchill's initial drilling programme has been highly encouraging, with over 250 coal outcrops mapped and coal thicknesses of up to 20m identified. The coal seams are relatively flat on the western side of the concession areas, but steeper to the east. The area chosen for initial drilling is defined by coal seams dipping at up to 10°, extending southwards for 10km.

### Early Off-take Interest

In June 2007 Churchill signed a Heads of Agreement with Indonesian power utility company PT Ridlatama Bangun Mandiri (PT RBM) to supply 840,000tpa at a 5% discount to the price prevailing at the time of sale for 30 years for two planned local power stations that the utility is building near the project. This demonstrates that the coal is of good marketable quality. PT RBM is also investigating the potential of building other (and larger) plants within Kalimantan. This Heads of Agreement will convert into a final purchase agreement once a minimum mining reserve has been defined.

### Potential for a Large Resource

There is potential to define a substantial high-quality coal resource in multiple seams, accessible by open-cast mining with an average 3.5:1 stripping ratio. Positive results from the first 4,000m of the initial 10,000m drill campaign triggered the decision to expand the drill programme massively to 65,000m. There are currently three drill rigs operating on the property, targeting a 10x4km area, to a depth of 150m, initially on a 500m grid.

Churchill has released a series of non-JORC coal volume measures, which had increased to 135-140Mt by end-January 2008 (based on 5,800m of drilling). An initial JORC resource estimate is expected in 2Q08. The company has sufficient confidence in results to date to target a JORC resource statement by end-2008 of 500Mt, including a reserve of 100Mt. This could support a BFS for a +10Mtpa mine and a production schedule with an initial output rate of 5Mtpa is envisaged for mid-2010.

### Location and Infrastructure

The exploration camps and facilities host a 200+ field team, including 25 geologists.

The crucial factor, as with most thermal coal projects, is economic transportation to the customer power stations. East Kutai is 95km from the Mahakam River, which is extensively used for coal transportation. However, given the equal proximity to the coast, there is the potential to direct truck or establish a conveyor system, which removes the requirement to double handle (eg, at the Pakar discovery).

## Kalimantan

Kalimantan is part of Borneo, which is the third largest island in the world. Borneo is divided into the Indonesian provinces of East, South, West and Central Kalimantan, the Malaysian states of Sabah and Sarawak, and the independent country of Brunei (which occupies the north and north-west coastline). East Kutai is located in East Kalimantan and is 220km north of the major coastal city of Balikpapan (the oil industry centre), 130km north-west of the Sangatta coalfields, and 250km by road from the provincial capital of Samarinda.

Samarinda is accessed by commercial flights and fronts the Mahakam River, 48km from the mouth, where it flows into the Makassar Strait. There is a tropical climate with a wet season between October and May. The land use has historically been for timber, but this is now dominated by palm oil and coal mining.

Location Map for the East Kutai Coal Project in Kalimantan, Indonesia



Source: Google maps

## Coal

Coal is a fossil fuel created from preserved plant remains. The layered seams – transformed by the combination of heat, pressure and time – are graded on ‘organic maturity’ or ‘coalification’ into peat then brown coal (lignite), and subsequently into a range of sub-bituminous or ‘soft coals’, then bituminous or ‘hard coals’, and finally anthracite. Lower-quality coals are characterised by high moisture content and low carbon and, therefore, have a low energy content. Higher-quality coals have a black, vitreous lustre, high carbon, low moisture and high energy content. Bituminous coals are subdivided into ‘Thermal’ (Steam Coal), primarily used for power generation, and ‘Metallurgical’ (Coking Coal), primarily used in the Iron and Steel industry. Thermal coal is cheaper than Metallurgical coal and in certain circumstances can also be used in steel production when blended with coking coal as pulverised coal injection (PCI) to reduce costs.

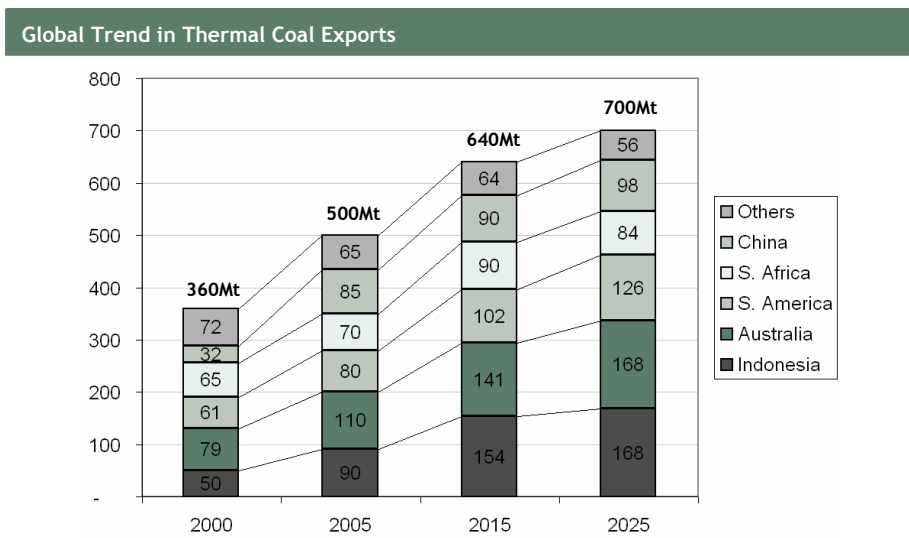
It has been estimated that there are nearly a thousand billion tonnes of global coal reserves and that annual consumption is about 5.5bn tonnes. The main sources are the US, Russia, China, India, Australia, Indonesia, Germany, South Africa and the Ukraine.

Coal is mined by underground and open-cast methods, determined by economic considerations, depth, overburden and the dimensions of mineable deposits. Consumers require coal of consistent quality and treatment of run-of-mine product may be subject to beneficiation, which can include crushing, washing and dense media separation (in a suspension of finely ground magnetite), centrifuging and flotation to upgrade the product.

Transportation to major distribution facilities is then by truck, train, conveyor or slurry pipeline. Ships commonly used for international transportation are classified by size: Handymax (40->60,000 DWT); Panamax (60-80,000 DWT); and Capesize (+80,000 DWT).

### Thermal Coal Exporters

This is to illustrate a trend rather than give precise estimates. It does demonstrate how Indonesia has emerged as a leader in this area (in 2007 it overhauled Australia).



Source: Company reports, Ambrian estimates

Growth economies (mainly China and India) are largely responsible for this surge in consumption of thermal coal. Indonesia currently delivers 80% of its 170Mt production of thermal coal to Asia (Japan, Taiwan, South Korea, India and Hong Kong), which represented 26% of Asia's total imports. However, recent trends in China and South Africa are likely to skew these percentages in the short term. China has withdrawn from the export market due to poor weather conditions affecting production and generating pressure from domestic power suppliers. South Africa power shortages, blamed on low inventories at power stations, may limit exports.

## Quality Parameters

The classification of coals is generally based on the content of volatiles:

- **Carbon content**, the balance being mostly composed of water, air, hydrogen and sulphur.
- **Moisture content**, the inherent water content.
- **Ash content** is the non-combustible residue left after the coal is burnt and thus contributes to the slag.
- **Sulphur content**, a pollutant and therefore low values increasingly important.
- **Heat content**, the energy density, normally quoted in Kcal/kg.

Preliminary analysis of the East Kutai coal indicates acceptable commercial values for sub-bituminous coals and could thus be marketed as both primary coal and blending stock with modest pre-treatment requirements.

Selected Coal Operations Sorted by Falling Energy Content

Company	Moisture	Ash	Sulphur	Energy (Kcal/kg)
Sangatta Prima	11%	4%	0.70%	7,100
PT Arutmin Senakin	11%	12%	0.80%	6,700
Macarthur coal	9%	15%	0.40%	6,220
Gloucester coal	7%	22%	2.00%	6,000
Sangatta Melawan	23%	3%	0.30%	5,700
East Kutai	17%	4%	0.13%	5,400
PT Adaro	26%	2%	0.10%	5,200

Source: Company reports

## Coal Prices

**Thermal coal prices rose from US\$25/t in 2003 to US\$40/t in 2006 and are currently well over US\$100/t.**

In September 2007 it was reported that reduced Chinese exports and port restraints in Australia were driving international thermal coal prices sharply higher. The agreed price for Asian thermal coal in 2007 was US\$55.65/t and analysts were forecasting a range of US\$59-70/t for 2008. In February 2008 spot prices for thermal coal had reached US\$130/t and contract prices were forecast at US\$110/t. Coking coal was predicted to hit US\$200/t. Longer-term industry forecasts show thermal coal averaging around US\$70-80/t and coking coal at US\$100-120/t.

## Peer Group

Churchill does not have a comparable peer group. There is no other AIM company with Indonesian coal, but those below are useful as market illustrations.

### Selected Indonesian Coal Companies with Assets in Kalimantan

**Bumi Resources (PBMRF)** – Market cap equiv £8,600m. Owns two coal mining groups (Arutmin and KPC) and two dedicated deep seaports. Total reserves are 1.1bnt and resources 7.2bnt. (Production target 90Mt by 2010 at cash costs US\$25/t.) *Arutmin* operates four mines in south-east Kalimantan. Coal is transported to barge ports and then by larger barges direct to customers or to the North Palau Laut Coal Terminal which handles 14Mtpa. *Kalkim Prima Coal (KPC)* (the world's largest producer and exporter of thermal coal – 50Mtpa) is located at Sangatta on the east coast of Kalimantan, where there is a 10MW power station. Sangatta coals are shipped through the 1.0Mt capacity Tanjung Bara Coal Terminal which can handle vessels up to 220,000 DWT. Two new mines, Bengalon and Bendili, will add 8.5Mtpa and 8Mtpa respectively.

**Banpu plc (BPULF)** – Market cap equiv £2,200m. Operates five thermal coal operations (95% from Kalimantan) with a 250Mt reserve base. Sales are 20Mtpa, delivering mainly to Asian customers. Profit margins on coal in 2007 were about 37%.

**PT Adaro** – Operates in the Tanjung district of South Kalimantan, with three deposits having total resources of over 2bnt and reserves of 0.4Mt, with production of 35Mtpa (of which 24Mtpa is exported). It is Indonesia's largest producer from a single mine, with exceptionally clean product.

**Berau Coal** – Operates in East Kalimantan, located 300km north of the provincial capital Samarinda, with a 1.2bnt reserve and production of 12Mtpa. Product is transported by barge to Muara Pantai in the Sulawesi Sea, where it is transferred to Panamax and Capesize ships.

### Selected AIM Coal Companies

**Altona Resources** – Market cap £16m. Exploration licences in South Australia, three coal deposits with 7.85bnt non-compliant historic resources. Plans integrated 10mmbbl pa coal-to-liquid plant, incorporating a 560MW power facility. Agreed a staged £11.7m placement from end-February 2008 to Tongjiang Int.

**Bisichi Mining** – Market cap £34m. Black Wattle Colliery at Middelburg, South Africa, produces 1.2Mtpa thermal coal. Investigating other South African coal asset acquisitions.

**Caledon Resources** – Market cap £77m. Cook/Minyango mines, Queensland, with total resources 366Mt. Production start-up at Cook was announced in January 2008 with an initial production rate of 1.2Mtpa (80% coking/20% thermal).

**Coal International** – Market cap £25m. Gauley Eagle and Powellton, West Virginia, US. Production targets of 2.2Mtpa and 1.2Mtpa respectively. Reserves of 60Mt, mainly thermal coal.

**Coal of Africa** – Market cap £291m. Mooiplats, Halfontein and Thuli with attributable resources of 605Mt. Baobab resource awaited. All in South Africa.

## Valuation

Churchill is a developer without a compliant resource and, therefore, it is not relevant to apply a definitive valuation.

An initial JORC resource is due to be announced in April 2008. An attributable 100Mt would be equivalent to US\$0.80/t on the current market cap; the current market cap equates to less than 1% of the market value of a 100Mt attributable resource at current coal prices.

A JORC resource could be rated higher to support a modest uplift. The key value driver would be progress on feasibility studies, which provide a path to production.

Major drivers will be: (1) increases in JORC reserve/resource; and (2) locking in high coal prices (if this happens metrics will obviously change dramatically).

## Funding

A £10m equity issue (at 50p) in November 2007 was to fund exploration, drilling and feasibility studies at EKCP, plus the evaluation studies at Sendawar CBM and analysis of other projects.

## Management

**David Quinlivan, Chairman.** A Mining Engineer with almost 30 years' experience in projects throughout the world. He is familiar with all aspects of resource development from grassroots exploration through to bankable feasibility reviews and detailed mining programmes. He assisted the administrators with the operation and corporate reconstruction of Sons of Gwalia and is CEO of Mt Gibson and a non-executive director of Avoca Resources.

**Paul Mazak, Managing Director.** A business development specialist, responsible for leading and managing financial, investment, consulting and governmental teams across the globe. He has an in-depth knowledge of the mining business and has been involved in Indonesia for over 12 years. He was a director of ASX-listed Majestic Resources between 2001 and 2003 and has been MD of Churchill since 2005 and is responsible for procurement of the company assets. He serves in an honorary capacity to Dr Alwi Shihab, the Indonesian President's Envoy to the Middle East, in regard to mining investment in Indonesia. Paul is also Chairman of Spitfire Resources.

**James Hamilton, Non-executive Director.** Formerly a financial journalist with a specialisation in the resources sector. In that capacity, he has travelled extensively, analysing the full spectrum of projects and mineral commodities. He was editor of the leading sector periodicals, Australia's Mining Monthly and ResourceStocks, and was a founder of the news information service MiningNews.net. He was appointed Joint Managing Director of Churchill in 2005 and changed to Executive Director coincident with his appointment as Managing Director of Spitfire Resources.

**Faroek Basrewan, Non-executive Director.** He joined the board in October 2007 as a specialist in dealing with the various levels of Indonesian central, provincial and local government. He is a lawyer and has had a long and distinguished career in general mediation and dispute resolution, government and regulatory relations within Indonesia. He was Special Assistant to the first democratically elected Indonesian President, Abdul Rachman Wahid, and is currently Special Advisor and Special Assistant to Dr Alwi Shihab, the Indonesian President's Envoy to the Middle East.

## Notes

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