



Coal Ventures Limited

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## Restructuring of Australian Export Coal Industry Exposed to an Increasingly Volatile Coal Market

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This Foresight Study examines the dramatic changes in the second half of 2016 in the Australian export coal industry which will be played out further in 2017.

- In 2016 Australia exported 184Mt metallurgical coal used for steelmaking and 202Mt thermal coal primarily used in power generation, cement and chemical manufacture.
- The substantial price upswing in both metallurgical and thermal coals over the second half of 2016 has levelled out into 2017 and is returning the Australian coal industry into profitability after four turbulent years where producers incurred financial losses.
- Excess global coal supply in 2012 resulted in a dramatic collapse of US\$ coal prices. The financial impact on Australian producers was compounded by a high A\$ exchange rate and escalating operating costs as a result of the mining boom. Coal companies incurred financial losses over the four years 2012 - 2016, precipitating idling mines, mine closures and asset sales.
- Divestment of ownership from multinational resource corporations, who had dominated and consolidated Australian coal assets ownership for three decades, is creating a new disaggregated industry dynamic with emerging new players.
- The announcement by Rio Tinto on 24 January 2017 of a binding agreement with Yancoal Australia for sale of Coal & Allied Industries Limited Hunter Valley thermal coal business warrants examination of how China Coal Market Volatility impacts on Australia.

Contents		Page
1	Coal Market Volatility is driven by China and to an emerging extent India	2
2	The convergence of three trends is boosting coal industry profitability	5
3	Restructuring of Australian Coal Industry with New Entrants	8
4	Sale of Coal & Allied thermal coal business by Rio Tinto to Yancoal Australia	10
5	Timing of NSW Brownfield Expansion Projects	11
6	Timing of Queensland New Projects	12
	About the Authors	13



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ACN 146 251 827

Specialist Support for Coal Asset Acquisitions  
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Directors  
George Edwards | Bede Boyle | David Barnett

## 1 Coal Market Volatility is driven by China and to an emerging extent India

**CHINA** Coal Market Volatility is primarily driven by Chinese domestic production / demand dynamics and Government policies. China coal imports are a small margin of China's very large domestic production base. In 2016 China imported 57Mt of metallurgical coal and 156Mt thermal coal which totals only 5.7% of China domestic production of 3.7billion tonnes (installed capacity exceeds 4btpa).

**China's 2016-2020 Plan will lift production from 3.7billion tonnes in 2015 to 3.9billion tonnes by 2020.** New mine developments will mainly be located in Inner Mongolia and in Western and Central China, at considerable distances to the major Eastern China markets.

The China Import price [Newcastle FOB plus shipping] to coal based power stations in Eastern China is determined by China coal mine costs, plus rail and road haulage costs from Central China to power station. Also from 1 January 2017, the current China import tax of 2% on Australian thermal coal will be lifted.

The JFY 2017 [April 2017 to March 2018] benchmark price is anticipated to be settled with Japanese power utilities at a minimum of US\$75/t [A\$100/t] which is the price threshold referenced in the Rio Tinto sale agreement with Yancoal Australia.

In 2016 80% of China coal producers were losing money due to oversupply. In April 2016, to curb financial losses, the Chinese Government directed a reduction in annual coal production working days to 276, from 330, to raise coal prices. In mid-November 2016, China Government allowed all mines that meet safety standards (over 1,00 mines) to produce at the rate of 330 working days in a year until end-March 2017, an exemption from the originally enforced 276 days, to meet peak winter thermal power demand and also to try to keep thermal coal prices within the Government target of around US\$70 to US\$85/t.

China Government policies to restrict domestic production boosted prices in January 2017 for standard Newcastle 6,322 kcal/kg (gar) coal to US\$85/t [A\$113] and 5,500 kcal/kg (gar) high ash coal to US\$65/t [A\$86]. Newcastle prices have softened from late January 2017 to within \$82/t to \$84/t range – however this is more than \$30/t higher than 12 months ago.

**In 2017 the Chinese Government has conflicting objectives:**

**Firstly** to close unsafe and smaller coal mines, which will decrease production, and

**Secondly** to lower prices to domestic users, without increasing coal production.

How these conflicting China Government policies are implemented will impact China Domestic Prices which will determine the competitive Price threshold for Imports.

While China's imports only account for around 5-6% of its total thermal coal demand, its import activities have a significant impact on seaborne prices as China's thermal coal imports account for around 15% of total seaborne trade.



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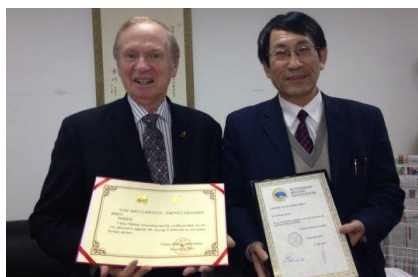
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### George Edwards has a +40 year history of engagement with China Coal Industry



Presentation of Certificate to George Edwards  
In Commemoration of 40 years of visiting China  
Industry made at the China Mining Conference,  
Tianjin, 22 September 2016



Certificate commemorating [B1][B2] George Edwards  
Appointment as First Senior Foreign Advisor  
to China Mining Association, November 2012

### However it is not all about China

Over half the world's population live in the area highlighted in red.



In the longer term the fundamental shift occurring in the world's economic activity from West to East, when by 2025 Asia as a whole is projected to account for almost half of the world's GDP, will sustain demand for Australian high quality metallurgical and thermal coals.

The following Table shows the top three countries in terms of GDP, projected to 2021, which shows China's GDP narrowing the gap with USA's GDP.

	Country	GDP - Billions of the United States Dollar ("USD")						
		2015A	2016E	2017F	2018F	2019F	2020F	2021F
1	United States	18,037	18,562	19,377	20,251	21,105	21,927	22,767
2	China	11,182	11,392	12,362	13,576	14,918	16,458	18,033
3	Japan	4,124	4,730	5,106	5,230	5,396	5,506	5,604

Source: World Economic Outlook Database (October 2016), International Monetary Fund



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**INDIA and Metallurgical Coal** India currently relies on about 50Mtpa imports of high quality metallurgical coal. India steel industry is expanding with blast furnace technology which will increase demand to over 90Mtpa.

Growth in imports is expected to be underpinned by the increased need for more metallurgical coal to support local steel production, given India's very small domestic coking coal reserves. The Indian Government's plans to attract more investment in the country and improve the domestic manufacturing industry, will require better domestic infrastructure and hence higher steel consumption. Source: Resources and Energy Quarterly December 2016

George Edwards observed to Coaltrans Australia delegates in August 2016 that "India is seen to be a strengthening market for Australian high quality metallurgical coals. Imported coking coal accounted for two-thirds of the total coal consumption by the India steel sector in 2015/16 and that percentage will increase, as domestic production cannot increase significantly and Indian quality is inferior to imported coals. India will need to increasingly rely on imported coking coals for its steel industry requirements, which means importing about 50Mtpa in calendar year 2016 [a 14 per cent increase over 43.7Mt imported in 2015] and increasing thereafter as steel production increases, to over 90Mtpa."

Amit Kumar, Head – Coal Sourcing and Power Trade, Jindal Steel & Power Limited, confirmed to Coaltrans delegates that India has no alternative than to import increasing tonnages of metallurgical coal. India buys the majority of its metallurgical coals from Australia, but it's diversifying its supply sources and currently includes supplies from USA, Canada, NZ and Mozambique.

**INDIA and Thermal Coal** India imported 160Mt Thermal Coal in 2016. India's thermal coal imports will be underpinned by nearly 100 new coal fired power plants currently under construction and scheduled to come online by the end of 2018. In November 2016, Coal India released a medium term strategy spanning to 2019–20 to Parliament. The plan highlighted the company's intent to increase its project numbers and employ mass production technologies. Source Resources and Energy Quarterly December 2016

#### **Opportunities for Australian Coal Industry with expansion of India Coal Production**

George Edwards has extensive experience in India Coal Imports for Steel and Power Generation. The India Minister of Steel and Mines confirmed in discussions with George that Coal India is seeking Strategic Alliances with Australian Coal Industry to produce 1Bt in 2019/20, up from +600Mt in 2015/16. There are three main areas of business opportunities:

##### **1 Underground Mining Technologies**

Continuous miners and longwall mining systems to increase % of underground mining with land use conflicts restricting development of open cut mines

##### **2 Coal Handling and Beneficiation**

Coal washing plants to increase energy of India high ash coals for power generation [India coals are low quality and average 4,000 kcal/kg (gad) and 40% Ash]

##### **3 Clean Coal Technologies**

CBM | CMM | VAM | UGG to capture and utilise coal seam methane

Adani plans to produce coal in Australia to ship to its Indian coal-fired power stations and is pushing ahead with government approvals for the \$22 billion Carmichael project which will be Australia's largest coal mine with six open-cut pits and five underground mines. [refer section 6]



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## 2 The convergence of three trends is boosting coal industry profitability

1. 2016 saw the upswing for both Thermal and Metallurgical Coals from the bottom of the price cycle which is basically being sustained into 2017, although pricing futures show a declining trend through 2017.
2. By 2016 the Australian coal industry had successfully reduced its structural cost base by about 30% from 2012 levels.
3. Sustained reduction in the AUD/USD exchange rate from 1.05 in 2012 to 0.75 early in 2017 is boosting earnings for Australian coal produces with sales revenue in US\$ and FOB operating costs in A\$.

### Trend 1 Upswing in Thermal and Metallurgical Coal Prices

The price upswing is justifying reopening of closed capacity. Glencore announced the reopening of its Collinsville and Integra mines. The Integra mine has been on 'care and maintenance' since late 2015, and Glencore plans to restart the mine in early 2017.

**Thermal Coal** excess global supply capacity in 2014 and 2015 resulted in a collapse of thermal coal prices with FOB Newcastle 6,322 kcal/kg (gar) prices falling from US\$80/t in January 2014 to below US\$50/t in January 2016 and 5500 kcal/kg (gar) High Ash Coal falling to US\$39/t in January 2016.

The supply deficit that emerged in mid-2016 was largely driven by Chinese Government policies to restrict domestic production and boosted prices in January 2017 for Newcastle 6,322 kcal/kg (gar) coal to US\$85/t [A\$113] and 5,500 kcal/kg (gar) High Ash Coal to US\$65/t [A\$86].

In mid-April 2017 Standard Newcastle coal price is down to US\$81/t FOB level, in line with easing prices in China for domestic coals of the same quality.

The JFY 2017 [April 2017 to March 2018] benchmark price is anticipated to be settled with Japanese power utilities at a minimum of US\$75/t [A\$100/t], and probably over US\$80/t.



**Metallurgical Coal**, January - March 2017 quarter benchmark price for premium hard coking coal was settled with Japanese Steel Mills at US\$285/t [A\$380/t] a dramatic upswing from the price low of US\$88/t in 2015. Semi Soft Coking coal was settled at US\$130/t [A\$173].

In January 2017 spot prices for premium hard coking coal softened to US\$230/t and in early March were around US\$160/t and declining until Cyclone Debbie!

**Cyclone Debbie** impacted Queensland coastal regions on 28 March 2017 and spot premium coking coal prices nearly doubled to US\$300/t (FOB Australia). The repair estimates for coal railway infrastructure suggest that 13-17Mt of seaborne coking coal supply (~4-6% of global exports) may be lost this year. [Aurizon reduced its coal haulage guidance for 2016/17 by 14Mt.]

### CBA Spot premium coking coal prices (FOB Australia)



Source: TSI, Bloomberg, CBA estimates

Prices mid-April are about US\$250/t FOB, while forward prices for mid-May are US\$195-200 FOB, mid-June US\$175-180 FOB, Q3 US\$160-165 FOB and Q4 US\$155-160 FOB.

The JSM Benchmark Price from 1 April to 30 June 2017 seems likely to settle soon between US\$ 250 and US\$225 FOB. Prior to Cyclone Debbie JSM Benchmark pricing from 1 April 2017 was expected to settle around US\$160/t for the quarter to 30 June 2017. The timing of the cyclone has strengthened producers bargaining power as they negotiate prices with Japanese steel mills.

### Strengthening Market for Australian High Quality Metallurgical Coals

Australia exported 186Mt metallurgical coal in 2016 and is forecasted to reach 200Mt by 2022.

BHP Billiton CEO Andrew Mackenzie said in his 30 June 2016 report to shareholders that “the longer term outlook remains robust as the supply of premium hard coking coals is projected to become scarce and demand is driven by steel production in emerging markets, particularly India”.

India is currently the largest importer of Australian metallurgical coal and imported 51Mt in 2016. India is forecast to import 56Mt in 2017 and 72Mt by 2022.

Source: Resources and Energy Quarterly March 2017



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## **Trend 2 The Australian Coal Industry has successfully reduced its Cost Base**

The Australian Coal Industry has successfully reduced its structural cost base by about 30% from 2012, due to a relentless focus on onsite operation costs and deferral of expenditure.

In 2012 Australian coal lost its 2006 competitive advantage and was trapped in the savage jaws of a relentless cost / price squeeze. The fundamental problem was the convergence of:

- Global oversupply of both metallurgical and thermal coal depressing the US\$ sale prices, and
- Escalation of A\$ FOB cash costs in 2011 and 2012,

This was exacerbated by the persistent high AUD/USD exchange rate, which combined to erode Australia's competitive advantage. Coal companies incurred financial losses, precipitating idling capacity, mine closures and asset sales.

BHP Billiton CEO Andrew Mackenzie said in his 30 June 2016 report to shareholders that "New South Wales Energy Coal unit costs reduced to US\$41 [A\$54] per tonne despite lower volumes and are expected to decline a further seven percent to US\$38 [A\$50] per tonne in the 2017 financial year".

## **Trend 3 Sustained Reduction in AUD/USD Exchange Rate**

Sustained reduction in the AUD/USD exchange rate from 1.05 in 2012 to 0.75 in early-2017 is boosting earnings for Australian coal producers with sales revenue in US\$ and FOB operating costs in A\$.

Further reduction in the AUD/USD exchange rate is predicted with the US Federal Reserve increasing interest rates. The policies of President Trump may however create a weakness in the USD and the AUD/USD exchange rate may in fact increase again according to some financial observers.



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### 3 Restructuring of Australian Coal Industry with New Entrants

#### 3.1 Divestment of ownership from multinational resource corporations, who had dominated and consolidated Australian coal assets ownership for three decades, is creating a new disaggregated industry dynamic with emerging new players.

The sale of Anglo American's Foxleigh metallurgical coal mine to Taurus Funds Management is the latest acquisition to highlight appetite for strategic acquisitions by emerging players in Australian coal assets, which are being divested by multinational resource corporations.

Stanmore Coal illustrates the successful strategic acquisition by an ASX listed junior explorer of Isaac Plains metallurgical coal resource from Vale & Sumitomo in July 2015 and rapid recommencement of production, in less than 12 months, with first shipments to Asian steel mill customers in May 2016.

#### Recent M&A Activity in Australian Coal Industry - Updated August 2016

Mine	State	Purchaser	Seller	Price Announcements
Isaac Plains	QLD	Stanmore Coal ASX Code: SMR	Vale & Sumitomo	Settlement Nov 2015 First product coal April 2016 [2]
Wilkie Creek	QLD	Exergen	Peabody Energy [1] Terminated Sales Process in March 2016	US\$20m plus US\$55m in liabilities
Callide	QLD	Batchfire Resources Private Investment Company	Anglo American	Undisclosed price Closure delayed to Q4 2016? [1]
Foxleigh	QLD	Taurus Funds Management	Anglo American	Closure September 2016 for \$43.7m plus bank guarantees [3]
Moranbah North and Grosvenor	QLD		Anglo American	Sale process announced early 2016 [1]
Dawson	QLD		Anglo American	Sale process announced [1]
Bengalla	NSW	New Hope Well established QLD Mining Company	Rio Tinto	\$865m Reached settlement
Dartbrook	NSW	Australian Pacific Coal	Anglo American	\$25m plus \$7.7m Assurances Delay in closure [1]
Mt Pleasant	NSW	MACH Energy Indonesia Salim Group	Rio Tinto	US\$224m plus 2% FOB royalty Reached settlement [1]

Source: AFR 9-10 April 2016

Note 1: Update Australian Coal Report 10 August 2016

Note 2: Stanmore Coal illustrates the successful strategic acquisition by ASX listed junior explorer of Isaac Plains metallurgical coal resource in July 2015 and rapid recommencement of production, in less than 12 months, with first shipments to Asian steel mill customers in May 2016.

Source: Nick Jorss, Managing Director, Stanmore Coal, ASX Announcement 6 April 2016

Note 3: Australian Financial Review 5 September 2016



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South32 has withdrawn its \$200m deal for Peabody Energy's Metropolitan coking coal mine due to competition concerns about South32 controlling too high a proportion of metallurgical coal supplies to the local steel industry.

**3.2 The costly and torturous path with community and political impediments to development of new coal mines in NSW and Queensland is creating uncertain outcomes for investors and is stimulating interest in the comparative advantages in acquisition of existing mines with Development and Environmental Approvals in place.**

In 2016 the NSW Government made the unprecedented move to buy back the Caroono license for \$220 million, after strident community and political opposition to the project. The concession had been bought by BHP from the state government in 2006 for \$100m, with the company having invested over a decade in exploration and development approval processes.

Shenhua acquired the Watermark license in 2008 through a NSW Government tender process with Shenhua paying \$300m upfront and committing to pay another \$200m once the Mining Licence was granted.

The Chairman of Shenhua Australia, Liu Xiang, is critical of the state and federal government approvals process. "The process has been challenging and we have faced many delays and changes to the approvals system which nobody could have foreseen when we first entered the tender process. As international investors, we have found this experience to be inconsistent with the often proclaimed enthusiasm for offshore investment in this country, particularly in the mining sector." Source AFR.



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## 4 Sale of Coal & Allied thermal coal business by Rio Tinto to Yancoal Australia.

**Coal & Allied** Industries Limited assets included in the announced sale comprise

- 67.6% interest in Hunter Valley Operations open cut mine,
- 80% interest in Mount Thorley open cut mine,
- 55.6% interest in Warkworth open cut mine,
- 36.5% interest in Port Waratah Coal Services terminal at the Port of Newcastle
- and other undeveloped coal assets and land holdings.

In 2016, Coal & Allied's share of combined production at the Hunter Valley Operations and Mount Thorley Warkworth mines was 17.1mt, of which 13mt was thermal coal and 4.1mt was semi-soft coking coal.

The \$2.35bn sale agreement provides for;

1. \$1.95bn initial cash payment at completion and
2. \$500m in deferred cash payments, as annual instalments of \$100 million over five years following completion which is anticipated in second half of 2017.
3. \$2/t quarterly coal price linked royalty payment of attributable saleable production for 10 years from completion of the sale – provided the Newcastle benchmark thermal coal price exceeds US\$75/t.

Source: Rio Tinto Media Release 24 January 2017; ACR 25 January 2017

**Yancoal Australia** was formed in 2004 with the acquisition of the Austar underground mine in the Hunter Valley and has subsequently built its business via strategic acquisitions to become one of the country's most innovative coal exploration companies.

Yancoal successfully introduced the pioneering LTCC coal mining method in 2006, following its acquisition of the former Southland Coal Mine in the Hunter Valley.

In 2009, Yancoal completed the successful takeover of Felix Resources, acquiring the leading edge Moolarben mine and becoming a key player within the NSW coal industry.

In 2012, Yancoal strategically merged with Gloucester Coal, listing with the Australian Securities Exchange as Yancoal Australia (ASX code: YAL), and becoming one of Australia's largest listed pure-play coal producers.

Yancoal's major shareholder is Yanzhou Coal Mining Company Limited (78%) in the People's Republic of China. Yanzhou is publicly listed on the Shanghai, Hong Kong and New York stock exchanges. Source: [www.yancoal.com.au](http://www.yancoal.com.au)

Acquisition of Coal & Allied by Yancoal Australia will make it Australia's largest pure coal producer, with expected ROM coal production of 71mt for the 2017 calendar year, according to the company. Yancoal said the deal will provide "greater diversity in thermal and coking coal products, which can be blended ... to achieve optimal pricing for Yancoal".

Source: ACR 25 January 2017



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## 5 Timing of NSW Brownfield Expansion Projects

Brownfield expansion projects will precede any financial commitment to new projects which will require the coal price to strengthen in 2017.

In the Hunter – Gloucester Coal Basins some producers can beneficiate coal to capture the ~ A\$30 price margin for Semi Soft Coking Coal and may commit to CHPP upgrading projects in 2017.

Also the A\$20/tonne price differential between Newcastle Thermal 6,300kcal and High Ash 5,500kcal may be the trigger for upgrading coal washing circuits in 2017 to capture higher prices for 6,300kcal.

The key factor in timing of NSW Brownfield Expansion Projects is Unused Take or Pay Rail and Port Commitments. Coal Producers have an economic imperative to use Take or Pay Commitments and there is Latent Hunter Valley Coal Chain Capacity with Development Approvals in place.

### Latent Hunter Valley Coal Chain Capacity

Name Plate [installed] Port Capacity	211Mt [PWCS + NCIG]
2016 Contracted Export Coal Volume	190Mt [ARTC]
2016 Port of Newcastle Actual Exports	<u>161Mt Actual Exports</u>

### Latent HVCC Capacity

**~30Mt Unused**

This 30Mtpa latent coal chain capacity can be absorbed by Brownfield capacity expansion projects with Development Approval in place, including Hunter Valley Operations, Narrabri and Moolarben. [Bede Boyle client study 2015/16]



## 6 Timing of Queensland New Projects

### Queensland Metallurgical Coal

Queensland is the largest global exporter of metallurgical coal, shipping more than 162 million tonnes in 2015-16.

The strong long term demand fundamentals for metallurgical coal means a number of projects are in the planning / construction / ramping up production pipeline.

**Construction** Byerwen and Eagle Downs are in construction / early stages of production adding 14Mt of output together.

**Planning** Several other large projects including Anglo's Moranbah South mine and BMA's Red Hill are planned to produce approximately 14Mtpa.

Source: Queensland commodity profile – Metallurgical coal as at 27 February 2017

### Queensland Thermal Coal

The most advanced project is Adani Enterprise Limited Carmichael project in Queensland's Galilee Basin.

Adani is pushing ahead with government approvals for the \$22 billion project which will be Australia's largest coal mine with six open-cut pits and five underground mines.

Adani plans to produce coal to ship to its Indian coal-fired power stations. Adani claims that it is therefore not affected by the price of coal like most other coal exporting mines, giving them a unique advantage in the face of market price fluctuations.

Adani plans to oversee the complete value chain of the project from mine, to rail, port, shipping, power station and some of the transmission and distribution network in India.

"There is some debate as to whether or not Adani's Carmichael mine in the Galilee Basin will go ahead or not. In October 2016, the Queensland Government granted the Adani project 'critical infrastructure' status. According to the Queensland State Development Minister, this status entails less red-tape for the project, and permits the Coordinator General to sign off on approvals quickly. The Queensland Government still has to approve a water licence and minor applications for power and road access before construction can start. Adani is hoping to start work on the mine sometime in 2017. If the project were to go ahead it is expected to begin production in late 2022."

Source: Resources and Energy Quarterly March 2017

Jeyakumar Janakaraj, CEO & Country Head – Australia, Adani Enterprise Limited will provide an update on the Carmichael project to Austmine Brisbane Smart Mining Networking Event on Thursday 8 June 2017. [www.austmine.com.au](http://www.austmine.com.au)



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## About The Authors



**George Edwards** Director Coal Ventures Limited

George has been involved with coal for some 50 years and has part owned and operated three export coal mines. He was Director Marketing with Coal & Allied, Chief Executive in Australia for Consolidation Coal Company of USA and Chairman and General Manager of Gollin Wallsend Coal Company Limited.

George is currently Chairman of the Australian Mining Association and the Mineral Industry Consultants Association. He has over 100 clients worldwide and is involved in JORC evaluations, valuations (VALMIN), feasibility studies, project / mine sales and purchases as well as coal sales and purchases.

He has been President of the Australasian Institute of Mining and Metallurgy, Chairman of Standards Australia and the Energy Council of Australia and International Chairman of the Coal Preparation Congress.

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**Bede Boyle** Director Coal Ventures Limited

Bede has +20 years' experience in Coal Foresight Studies, acquisitions, divestments, mine, rail and port infrastructure developments.

He established HiValue Strategies in 1994 with clients including AGL, BlueScope Steel, Exxaro Coal, Elliott Management USA & HK, Genesee Wyoming Inc. USA, GVK Hancock Coal, OPG Power Ventures India, Port of Newcastle, Powercoal, PWCS and Xstrata Coal.

Powercoal Pty Ltd – Doubling Shareholder Value in four years

*“Bede’s support was a critical success factor during a very turbulent period and it is gratifying to note that the strategic initiatives we initiated have been continued by Centennial Coal as adding value to their portfolio and increasing their shareholder value.”*

P. J. McCarthy, former Managing Director, Powercoal Pty Ltd



Transforming Manufacturing

Bede is Chairman Manufacturship Group and assists firms achieve Strategic Business Growth in Mining and Diverse Markets.

Since 1994 he has led Business Development assignments for:

Major Contractors - Coffee Projects, Fluor, Leighton Contractors, Laing O'Rourke, WDS

Leading Consulting Firms - AMC Consultants, Renoir Consulting, SMEC Australia and India.

Bede was Manager Technical Services and Manager Mining Holdings with Coal & Allied. He was Chairman of C&A Major Projects Committee, Project Leader Liddell Longwall Project and Project Coordinator for Planning and Development of Hunter Valley No1 Mine, CHPP and Rail Loading infrastructure.

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