DEPARTMENT OF
PRIMARY INDUSTRIES

Brown Coal

Victoria
Rediscover the Potential

Victoria, Australia
A principal brown coal province

Victoria, Australia, offers investors the opportunity to develop low-cost brown coal projects from one of the world's largest, high-quality coal resources, located close to potential geological carbon storage sites.

With an abundance of brown coal occurring in thick seams close to the earth's surface, Victoria is home to one of the largest and lowest cost energy sources in the world.

More recently, rising global energy prices and low emissions technology developments have created new, non-power related investment opportunities for the Victorian brown coal industry.

Proven resource potential

The 430 billion tonnes of brown coal located in Victoria represents a significant proportion of the world's brown coal endowment.

More than 80 per cent of Victoria's resource is located in the Gippsland Basin (South East Victoria), with seams in the Latrobe Valley region containing an estimated measured resource of 65 billion tonnes. Approximately half of this has been identified as 'potentially economic', of this 13 billion tonnes are yet to be allocated to prospective developers by the Victorian Government.

Victorian brown coal resources	
Total estimated in situ brown coal in Victoria	430 billion tonnes
Measured brown coal in the Latrobe Valley	65 billion tonnes
Potentially economic brown coal in the Latrobe Valley	33 billion tonnes

State Government Victoria AUSTRALIA

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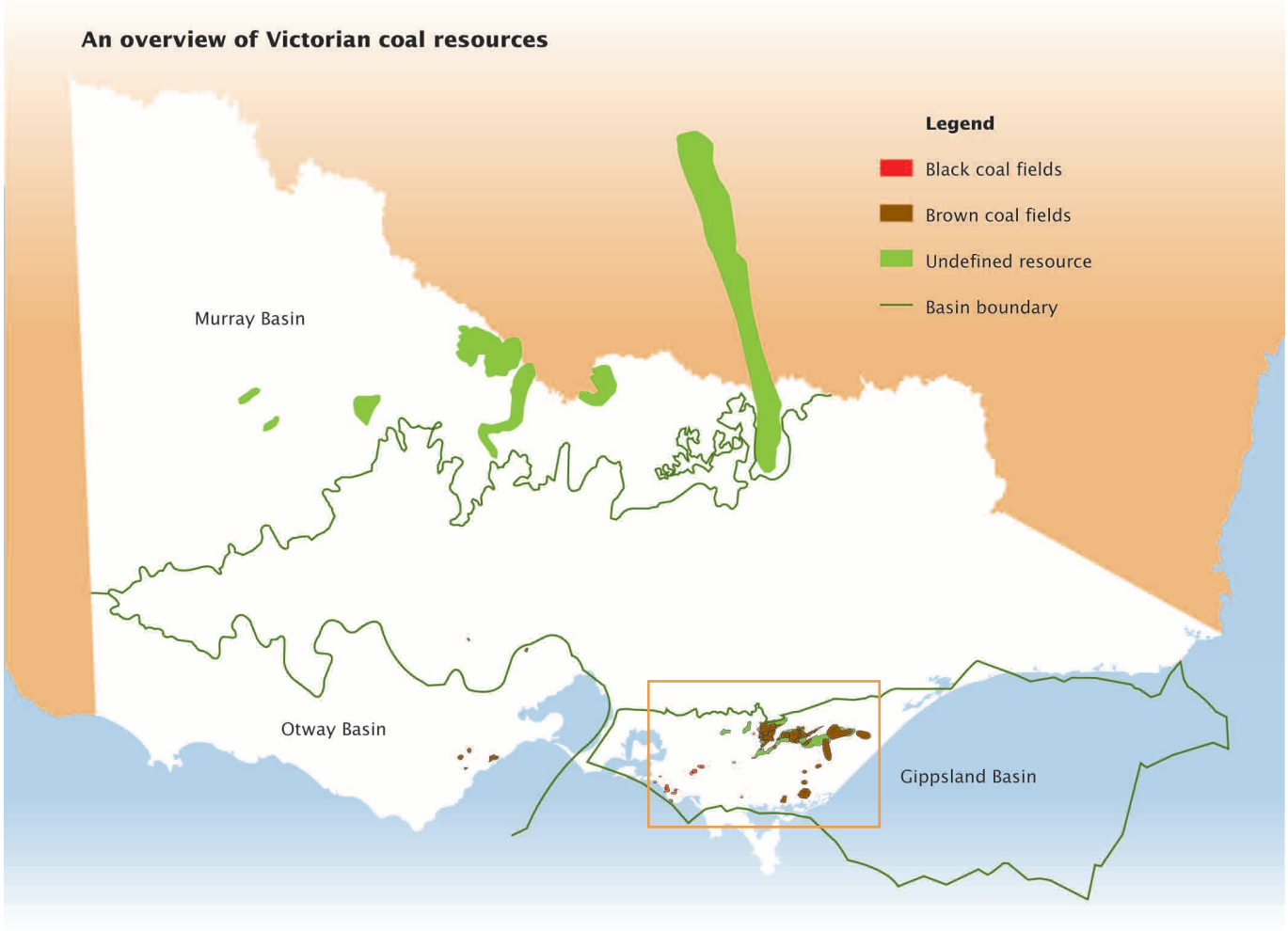
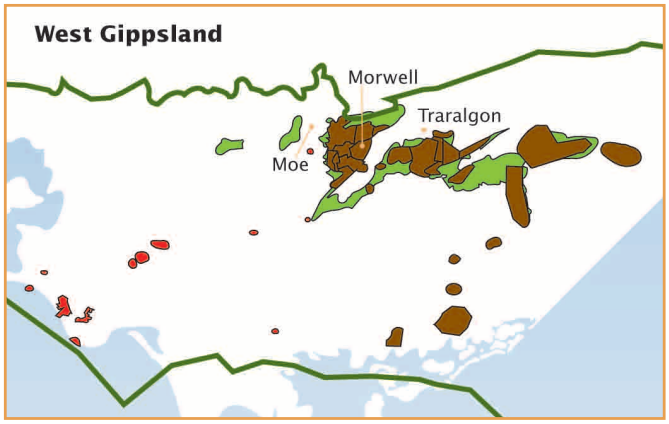
Found near the surface in thick seams, the resource lends itself to low-cost, large-scale open-cut mining. Brown coal seams in the Latrobe Valley are up to 100 metres thick, with multiple seams often giving virtually continuous brown coal thickness of up to 230 metres. Seams are typically located under only 10-20 metres of overburden.

Favourable coal to overburden ratios (between 0.5:1 and 5:1) in the Latrobe Valley area of the Gippsland Basin indicate a high tonnage of coal for every cubic metre of non-coal material mined. This combined with the easy digging characteristics of the coal make it some of the lowest-cost coal in the world.

Beyond the Gippsland Basin, other brown coal deposits can be found in the Otway Basin (mainly within the Bacchus Marsh, Altona and the Anglesea coalfields) and across the Murray Basin[1]. Access to all sites is subject to the appropriate exploration and mining licences.



Traralgon South - reclaimed area. *Photo courtesy of Powerworks*



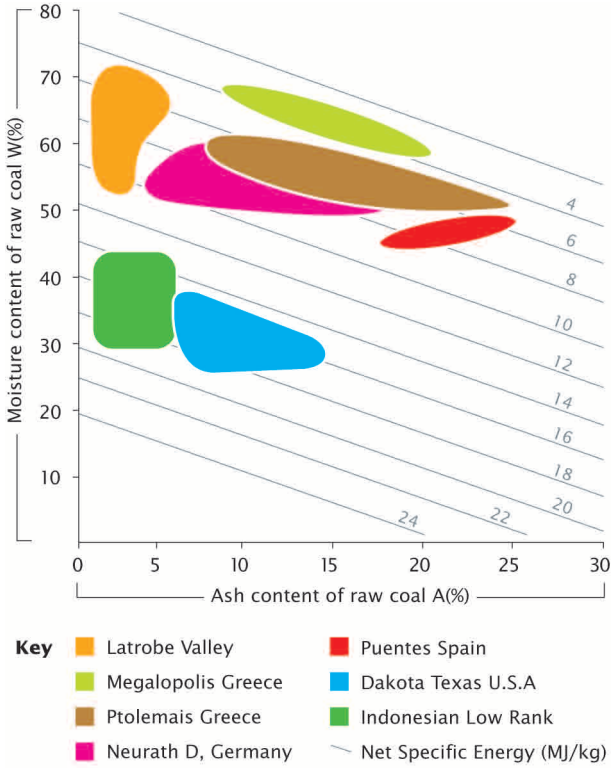
[1]2006 Coal resources inventory, GHD Pty Ltd.

Brown coal basics

Victoria's brown coal is typically low in ash, sulphur, heavy metals and nitrogen, making it very low in impurities by world standards. However, its high moisture content - which ranges from 48-70 per cent reduces its effective energy content (average 8.6 MJ/kg on a net wet basis or 26.6 MJ/kg on a gross dry basis).

Typical Characteristics of Victorian Brown Coal	
Energy value (net wet)	5.8 to 11.5 MJ/kg
Energy value (gross dry)	25 to 29 MJ/kg
Overburden thickness	10 to 20 metres
Strip ratio (coal: overburden)	0.5:1 to 5:1
Water	48 70%
Carbon	65 70%
Oxygen	25 30%
Hydrogen	4 5.5%
Ash	<4%
Nitrogen	<1%
Sulphur	<1%

Low rank coal comparative



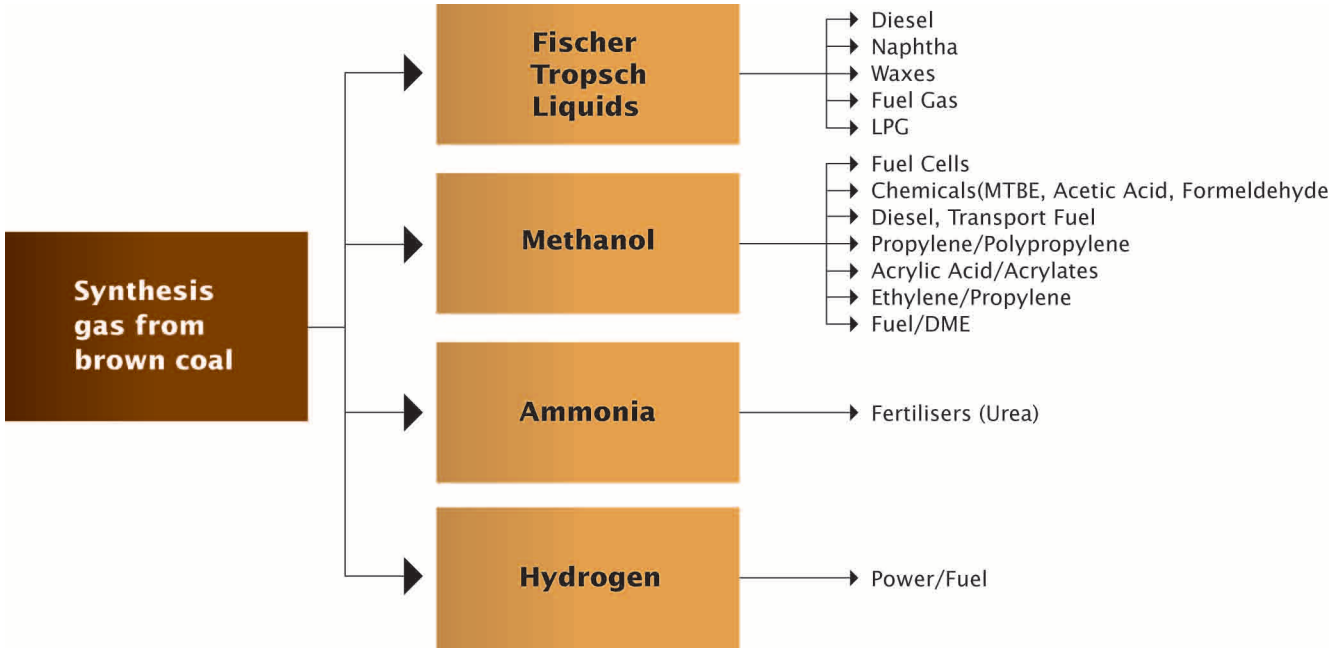
Source: Allardice Consulting Ltd

Future uses for coal

The high water content and reactivity of Gippsland brown coal has to date precluded it from coal export. However, with the development of new drying, gasification and liquefaction technologies, brown coal may have the potential for direct export. The coal could be used as feedstock for a variety of exportable commodities (including diesel, fertilisers and methanol – see diagram below).

Victorian coal represents a significant opportunity to supply energy and other products to the expanding markets of Asia.

In addition, recent exploration activity also suggests opportunities for coal seam gas (methane) and possibly even underground coal gasification industries in Victoria.



Key reasons to invest in Victoria:

- Victoria has one of the world's largest brown coal resources
- Brown coal is a low-cost and secure energy source and an alternative to oil, gas and black coal
- Victorian brown coal is low in impurities like ash, sulphur and heavy metals
- Mining costs are low with abundant brown coal resources close to the surface
- Brown coal resources are in close proximity to Australia's largest potential geological carbon storage sites in Bass Strait
- The Victorian Government is committed to investing in and facilitating low emissions technology research and development
- A highly-integrated infrastructure and competitive energy costs
- Low sovereign risk and economic stability providing security to investors
- A skilled workforce and established mining services sector.

DPI offers advice and information to assist investors

DPI provides the following services to potential investors in coal:

- Free access to DPI's knowledge, advice and expertise in relation to approvals processes and the business environment
- A comprehensive inventory of Victorian coal resources, including quantity and quality data, and a threedimensional-model of the Latrobe Valley's coalfields. Mapped Victorian coal data is accessible through GeoVic's Explore Victoria Online tool: www.dpi.vic.gov.au
- Coal inventory reports outlining all available coal data www.dpi.vic.gov.au

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