



TRARALGON BYPASS SUPPLEMENTARY INQUIRY

SUBMISSION

Minerals Council of Australia, Victorian Division

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1. THE MINERALS COUNCIL OF AUSTRALIA

1.1 Introduction

The Minerals Council of Australia (MCA) is the peak industry association that represents the corporate minerals companies in Australia. The members of the MCA are engaged in mineral processing, mining, exploration, or the provision of services to the industry and account for more than 85 percent of mineral industry output in Australia. The Victorian Division of the MCA represents the interests of members operating in Victoria.

The minerals sector accounts, directly and indirectly, for around 8.0 per cent of the Australian economy. In 2006-07 the industry is projected to generate exports of around \$89 billion, representing approximately 50 per cent of Australia's total merchandise exports and over 39 per cent of total exports of goods and services.

Victoria's minerals and petroleum sector accounts for \$3.5 billion of the Gross State Product (GSP) or about 2%¹ and increasing. Investment in the Victorian minerals sector is at a record high and increasing. The investments are in the brown coal sector, the gold sector and the mineral sands sector. In addition, private industry expenditure on exploration is at a record high of \$84.5 million per annum to December 2006.

As with elsewhere, further investment in the minerals industry in Victoria, is influenced by the identification of viable mineral resources, access to the land occupied by those mineral resources, financial resources, the support of the community, and the availability of a skilled workforce.

1.2 Sustainable Development

The Australian minerals industry is one of the most technologically advanced in the world and is also at the forefront of new investment in Australia. It is a highly capital intensive industry. In 2005/06 the Australian minerals industry accounted for around 28 per cent of total private new capital investment in Australian industry. At December 2006, it accounted – on estimates from Access Economics – for some 14 per cent (or \$20.6 billion) of national capital investment proposals in the pipeline (i.e. committed and under consideration). There is a further \$37 billion in minerals projects under consideration.

Clearly these new investments will bring new greenhouse emission sources, which need to be managed if the twin objectives of improved environmental outcomes and economic development are to be met. Such investment is essential to Australia's economic development – including expansions in the alumina, iron ore, coal and nickel sectors on the basis of very strong demand, particularly from Asia. In the absence of investment in these activities in Australia (with appropriate focus on greenhouse emission challenges), these activities may be established elsewhere, possibly in locations with less focus on the need to minimise greenhouse emissions.

The MCA's strategic objective is to advocate public policy and operational practice for a globally competitive industry that is safe, profitable, innovative and environmentally and socially responsible. To this end, the MCA considers the minerals industry can and must contribute directly to the development of global solutions to the

¹ ABS Catalogue No. 5220.0, Australian National Accounts, 2005/06.

challenges imposed by human induced climate change, within a strategic framework for collective and collaborative action as a partnership program between the Australian Government, and through it overseas governments, and Australian industry.

The minerals industry has been a strong supporter of the Greenhouse Challenge Plus Program and its precursors since inception (some ten years ago) and, taken together, the Australian government and industry are committing some \$3.5 billion to abatement and adaptation activities. The Australian minerals industry is committed to playing its role in translating these activities into meaningful action and particularly to contributing to necessary technology developments.

The MCA considers technologies developed in parallel with, and subsequently integrated in, a suite of policy measures, to be the key to achieving consistent, large-scale emission reductions. To this end the industry is investing heavily in individual projects. In addition there are various Commonwealth and State Government initiatives, including those in consort with industry and with other countries, to stimulate Research, Development and Demonstration (R, D & D) of low emission technologies and to develop a coordinated international approach to stimulating technology development relevant to climate change.

The minerals industry's commitment to continuous improvement in minimising and remediating its environmental impact is a fundamental plank of the industry's broader commitment to sustainable development. This is demonstrated by the MCA's requirement that member companies are signatories to *Enduring Value – the Australian Minerals Industry's Framework for Sustainable Development*². In addition, the MCA advocates the shared responsibility of all participants in the value chain or life cycle of a product in mitigating any negative environmental and/or social impacts and in optimising societal values, consistent with the MCA's position on sustainable development.

The philosophy of *Enduring Value* is consistent with the COAG regulatory principles. Signature to *Enduring Value* is a condition of membership to the Minerals Council of Australia. However all exploration, mining and minerals processing companies and contractors are eligible to become signatories to *Enduring Value*, provided that they commit to meeting the *Enduring Value* obligations.

Enduring Value provides a program of continuous improvement and encourages companies to achieve sustainable development performance outcomes beyond the minimum standard set by regulation. The overall strategic objective is for continuous improvement in financial, social and environmental performance in exploration and mining projects that is attuned to community expectations and, hopefully in the future, recognised and rewarded in statutory approval processes that are nationally consistent and efficient.

² *Enduring Value, The Australian Minerals Industry Framework for Sustainable Development*, Minerals Council of Australia, June 2005.

2. THE MINERALS INDUSTRY

2.1 Minerals and the Australian Economy

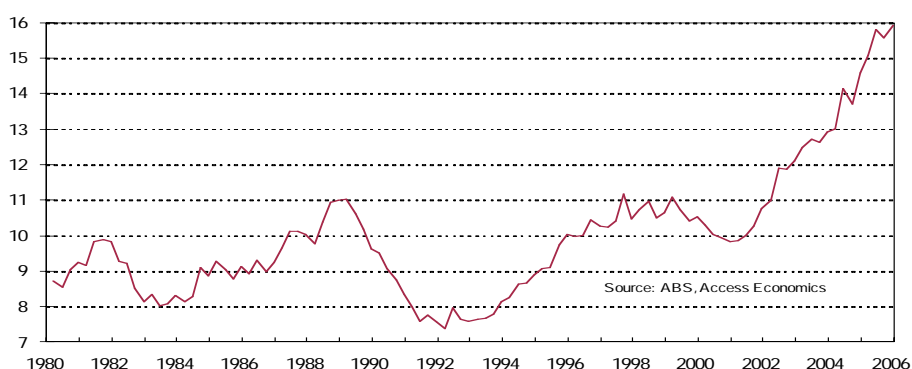
The Australian minerals sector is undergoing a period of strong expansion. Production, investment and employment are all increasing, driven by strong demand from key markets, especially in East Asia. Minerals exports (excluding oil and gas) are expected to reach \$89 billion in 2006-07, an increase of 18 per cent on the 2005-06 financial year – which was in turn up 37 per cent on 2004-05. Commodity prices are also buoyant, with the Reserve Bank of Australia's commodity index at its highest level for decades.

Strong demand and record profits is underwriting the biggest lift in business investment spending Australia has ever seen. As **Chart 1.1** shows, the share of business investment in total output is steadily climbing contributing to significant 'capital deepening'. There has also been a notable lift in infrastructure spending by State Governments: viz the Victorian budget data (which reports for general Government only rather than the whole State sector) shows \$3.3 billion of spending, up 15 per cent on 2005-06 and up 31 per cent over two years.

The MCA's 2006 Minerals Industry Survey³ shows that the amount of net cash used for minerals industry investing activities increased by 29 per cent in 2005-06 to \$10,122 million. Reflecting expected future growth; a significant number of new projects were commissioned in 2005-06. These new projects continue the levels of investment expenditure by the industry since the mid-1990s, and should underpin future expansions in industry production and exports.

While investment activity in the industry is expected to moderate slightly in 2006-07, it will remain at a high level, reflecting the range of new investment projects under development in the industry, as Asia's major 'industrialising economies', China and India, continue to fuel demand for mining and downstream processing of our resources.

CHART 2.1: REAL BUSINESS INVESTMENT SPENDING AS A SHARE OF THE ECONOMY



Investment in new production projects across Australia (net of related infrastructure projects) can be categorised as follows:

- > a record number of projects – 35 in minerals – representing \$5.5 billion, have been completed/commissioned over the 12 months to October 2006.

³ Minerals Industry Survey Report 2006, Minerals Council of Australia, December 2006

- > a further 158 projects (**Table 1.1**) accounting for around \$59 billion and some 18 per cent of national capital investment proposals⁴ are in the immediate pipeline, of which:
- 52 projects representing \$20.7 billion are **under construction**, which is nearly 16 per cent of all such projects in Australia;
 - 12 projects representing \$1.6 billion are **committed**, i.e. announced but not yet under construction; and
 - another 94 projects (or \$36 billion) are **under consideration** – representing 21 per cent of total projects that are still under consideration (i.e. it is yet to be determined whether to proceed or not).

TABLE 2.1: MINERAL PROJECTS COMING ON-LINE IN AUSTRALIA

Sector	Under Construction (\$m)	Committed (\$m)	Under Consideration (\$m)
Coal	2,841	790	4,666
Metal ores	12,968	811	21,457
Other	1,226	54	126
Total Mining	17,035	1,601	26,249
Metal products (refining & smelting)	3,672	41	10,010
Total Minerals	20,707	1,642	36,259
Percentage of all projects	16.3	6.9	21.0

Source: Access Economics, Investment Monitor, September 2006

The total mining capital expenditure in Victoria for the 12 months to September 2006⁵ reached \$1.76 billion (8.9% of the total for Australia) - the highest annual expenditure in the state on record and placing Victoria third after the resource-rich states of Western Australia and Queensland. Victoria's share of the total value of committed projects located outside WA is now a remarkable 34 per cent.

In summary, the level of government and private sector expenditure on infrastructure has lifted markedly, partly in response to the commodities boom. Both industry and Governments have committed substantial investment in related physical infrastructure including in export transport corridors and in water and energy utilities:

Official data from the Australian Bureau of Statistics⁶ shows that Australian minerals industry exploration expenditure rose by 20 per cent between 2004-05 and 2005-06, but still remains lower in real terms when compared to the most recent peak in 1996-97. However, the Victorian private sector expenditure on mineral exploration was a record of \$84.5 million during calendar year 2006 and the December quarter was the highest recorded.

Australia's mining sector (including oil and gas) is leading the way in terms of job creation as a result of the lift in productive capacity stimulated by the industrialisation of China and India. Over the past three years employment in mining (using the narrow ABS definition⁷) has grown by 48,300 people nationally – a striking 57 per cent. Over

⁴ Access Economics, *Investment Monitor*, September 2006.

⁵ Australian Bureau of Statistics, *Private New Capital Expenditure and Expected Expenditure Australia*, Sept 2006, Report 5625.0, Nov 2006.

⁶ Australian Bureau of Statistics, *Mineral and Petroleum Exploration, Australia*, Dec 2006, Report 8412.0, 14 March 2007.

⁷ The ABS definition of mining excludes most smelting and refining activity (eg the entire alumina and aluminium sectors). It includes the oil and gas sector (but not downstream processing).

the same time period, the farm sector shed 25,700 jobs, or 7 per cent of its national workforce. In Victoria the Department of Primary Industries (DPI) recorded in its annual report⁸ that in 2005–06 there was an average of 8,200 Victorians employed in mining across the state, up from around 4,000 in 1999.

2.2 Victorian Minerals Industry

The Victorian Government initiative *Moving Forward: Making Provincial Victoria the Best Place to Live, Work and Invest*⁹ acknowledges the current surge in the resources sector and identifies the opportunities and possible impacts on regional communities. These include;

- > diversification of regional community industry bases leading to wider employment options and
- > high demands on existing infrastructure, construction capacity and labour supply.

Victoria is currently enjoying a modern day mining boom. Over \$A2 billion worth of new projects came on stream in 2006 while the state's resources industry turned over \$A4 billion. Corresponding strong exploration activity is also a feature of the industry in Victoria.

2.2.1 Victorian Metalliferous Mining Sector

The Victorian gold and metalliferous sector is dominated by four gold mines and a mineral sands mining operation.

The major mines are:

- > New Bendigo Mine - Bendigo Mining - Gold
- > Ballarat Gold Mine – Ballarat Goldfields - Gold
- > Fosterville Mine - Perseverance Corporation - Gold
- > Stawell Gold Mine - Perseverance Corporation (formerly owned by Leviathan Resources) - Gold
- > Douglas Mine – Iluka Resources – Mineral Sands

There are additional exploration and smaller scale gold operations.

2.2.2 Victorian Coal Mining Sector

The three Latrobe Valley coal mines (Loy Yang, Hazelwood and Yallourn) collectively constitute the largest brown coal mining operation in the southern hemisphere, and second only to the large brown coal mines in Germany. The three Victorian mines deliver about 68.5 million tonnes of coal per year to the five power stations relying on their coal. Those power stations are Loy Yang A, Loy Yang B, Hazelwood, Yallourn W and Morwell. In addition, the Anglesea mine to the west of Melbourne supplies about 1 million tonnes of brown coal a year to Alcoa's Anglesea Power Station. At an annual production of 31.5 million tonnes of coal, Loy Yang is arguably the largest coal mine in Australia and one of the largest in the southern hemisphere.

⁸ Department of Primary Industries Annual Report 2005-06, Victorian Government, 2006.

⁹ Moving Forward: Making Provincial Victoria the Best Place to Live, Work and Invest, Victorian Government Regional Development Victoria, November 2005

The three Latrobe Valley mines directly employ a total of approximately 580 people with another core 150 maintenance contractors.

Victorian brown coal is approximately 60 to 65% water. This has three profound impacts. The process of generating electricity from brown coal is more complex than a similar black coal fired power station as there is a distinct additional process of drying the coal before burning. Secondly, the weight of the water in the coal ensures that it cannot be economically transported over long distances. Power stations are situated beside the open cut mines in the Latrobe Valley and at Anglesea. And thirdly, the high moisture content determines that more coal is required to be burnt which generates more carbon dioxide.

Brown coal's high water content places it at a disadvantage when compared to the harder and dryer black coal with regards to export capacity and environmental effects. The brown coal industry is limited to delivering coal to adjacent clients; the power stations, briquette (compressed dried brown coal) plant and potential liquid fuel plants. There is little scope therefore, to grow the mining operation via export or by sale of raw coal to other domestic customers in the absence of commercial de-watering technologies. Small volume production of briquettes is the exception to this situation. The mines are therefore operated as cost centres, with significant pressures to limit all unnecessary expenditure, thereby keeping the fuel input costs as low as possible. Opportunities have been identified by new entrants to the Latrobe Valley for plants to convert the lignite to either liquefied fuels or metallurgical quality coal for export and sale beyond Gippsland.

The most efficient mechanism for transporting coal to the power stations is a system of large conveyors between each mine and power station. Large bucket wheel excavators ('dredgers') have traditionally been used for removal of both overburden and coal in the Latrobe Valley mines. Yallourn uses a combination of dredgers and huge dozers pushing to feeder breakers and hoppers. Anglesea is a more traditional 'truck and shovel' type mine operation.

2.3 Impact on the Latrobe Regional Economy

In 2006 the MCA engaged the Economic Research Unit of La Trobe University in Bendigo to undertake a study of four regions of Victoria to determine the economic impact of the minerals industry. The study used the predictive modelling tool - REMPLAN.

The reports covered the following defined regions:

- > Melbourne – as defined by the boundaries of the Melbourne Statistical Division.
- > Latrobe Valley Coal Fields – as defined by the local government area boundaries of the City of Latrobe
- > Goldfields – as defined by the boundaries of the Province of the Victorian Goldfields which encompasses the local government areas of City of Greater Bendigo, Central Goldfields Shire, Mt Alexander Shire, Hepburn Shire, City of Ballarat; plus the Northern Grampians Shire.
- > Mineral Sands Province – as defined by the local government area boundaries of Horsham Rural City and Southern Grampians Shire.

The study found that the minerals sector contributes significantly to the economy of the Latrobe Valley region¹⁰. The combined, coal mining and electricity supply activities contribute more to the Latrobe Valley Coalfields Region's total economic output, regional exports, and add more value to Gross Regional Product than any other industry sector. Total expenditure by coal mining and electricity supply activities on intermediate goods and services from within the region is estimated at \$420 million per year. In direct terms the coal sector is estimated to generate 6.9 per cent of total output. Once flow-on impacts are taken into consideration, it is estimated that the sector stimulates up to 10.4 per cent of regional output. For the 'electricity supply' sector this is estimated to be as high as 38.4 per cent.

¹⁰ La Trobe University, Regional Resources: Mining – Economic Impacts for the Latrobe Valley Coalfields (VIC), Economic Research Unit, August 2006.

3. LV2100 STUDY

3.1 Regional Minerals Program

The Latrobe Valley 2100 Coal Resources Project (LV2100 Project) was commissioned by the Victorian Department of Primary Industries (DPI) under the Australian Government's Regional Minerals Program.¹¹ The objective of the Regional Minerals Program is to work in partnership with industry, and State/Territory and local governments to encourage regional economic development and promote employment opportunities by facilitating the growth of the mining and minerals industry.

The aim of the LV2100 Project was to present strategies and recommendations to avoid, mitigate, manage and action any issues and/or impediments that may impede the future development of the brown coal resources and encourage investment to the period 2100.

3.2 Process

The LV2100 Project commenced in April 2004 and was completed in November 2005.

The Principals of the study (each of whom contributed funds for the study) were represented on the Project Reference Committee. The Principals were:

- > Department of Primary Industries
- > Department of Industry, Tourism and Resources (Aus Government)
- > Department of Sustainability and Environment
- > Gippsland Water
- > HRL Developments
- > International Power
- > Latrobe City
- > Loy Yang Power
- > Monash Energy
- > TRU Energy
- > VEMCO Australia
- > West Gippsland Catchment Management Authority

The Chair of the Reference Committee was Mr C J Fraser of the MCA.

The Project was administered by DPI with Mr Guy Hamilton as Project Manager.

¹¹ Department of Industry, Tourism and Resources, Regional Minerals Program, www.industry.gov.au/

DPI engaged GHD in association with MMA to undertake the study. Mr Ted Waghorne of GHD was the project leader.

The Latrobe City was a Principal and was represented on the Project Reference Committee by Ms Elaine Wood. The Reference Committee reviewed and cleared the final report of the study for publication.

3.3 Findings

The final report was presented to the Principals by GHD in September 2005 and an executive summary was released to the public in November 2005.¹²

The study established a range of likely brown coal demand scenarios, identified the coal resources and land requirements in the Latrobe Valley to 2100 and the associated planning changes necessary to protect the highest value coal resources for future use.

The study findings anticipated that new clean coal technology will be more efficient, emit lower levels of greenhouse gases, use less water and that new projects will achieve environmentally acceptable impacts. Notwithstanding that the project did not discover any regional issue that would prevent the continued use of Victoria's brown coal resources it noted that each new project would have to meet contemporary environmental standards before being approved.

The GHD report recommends some changes to land zoning to protect access to high value coal resources and to remove inappropriate zonings from land not presently required for coal mining purposes. These recommendations require confirmation by local councils and the Victorian Government following appropriate community consultation.

The LV2100 project also found that the major infrastructure services that presently exist in the region are adequate for present use and are capable of meeting future requirements. However, if new technology development results in high demand for rail services some augmentation may be required.

A number of recommendations dealing with land use planning and coal resource issues, rehabilitation issues, water use issues, and strategic planning issues were also identified for action by the Latrobe City, Wellington Shire and the Victorian Government.

The following is a very broad summary of the findings:

Long term coal demand –

- > Coal has a long term role in the energy mix
- > Energy demand scenarios show that with only 50% of the Victorian electricity supply fuelled from brown coal the Latrobe Valley will still be required to produce at least 30 million tonnes per year (Mtpa).

¹² Latrobe Valley 2100 Coal Resources Project, Executive Summary, GHD Pty Ltd, November 2005.

- > At 70% coal in the energy mix the production is 40 Mtpa
- > At 80% coal in the energy mix the production is 50 Mtpa
- > Coal will be developed for uses in addition to electricity production.

Development and planning scenarios –

- > Ranking of coal fields according to simple geology, mining, environmental and social indicators
- > Development scenarios examined to meet the energy demand scenarios
- > Planning scheme amendments identified to facilitate and protect the high value coal resources
- > No new surface overburden dumps. Overburden to be placed into neighbouring voids
- > No requirement for Andersons Creek Overburden Dump

Water constraints –

- > Insufficient stream flows to fill voids
- > Some conjecture on potential to limit future coal developments
- > No major once only diversion of Morwell River warranted
- > Water factory and recycled water from Carrum Downs for industrial uses
- > Groundwater constraints identified
- > Water from coal drying a possibility

Mine rehabilitation –

- > No lakes or flooding of worked out mines
- > Backfilling of base of worked out mines
- > Lowered landscape returned to productive land use
- > Flatter batters on worked out areas of mines
- > Mining across Licence boundaries to avoid redundant coal wedges.

3.4 Action Plan

In June 2006 GHD prepared an action plan and implementation strategy for DPI. The recommendations were reviewed by the LV2100 project Principals and agreed. The implementation strategies looked at land use planning and coal resources issues; mine rehabilitation issues; water use issues; and regional mining and development issues.

The action plan included processes for the review of planning schemes following community consultation and consideration of the recommendations contained in the LV2100 report.

4. COAL IN A CARBON CONSTRAINED WORLD

4.1 Long-term Role for Coal in the Energy Mix

Australia has substantial economically demonstrated and reliable energy resources (over 290 years of thermal coal, over 800 years of lignite or brown coal, over 200 years of gas and over 68 years of uranium with renewed exploration interest in discovering more). This exceptional and secure endowment means Australia has a competitive advantage of relatively low cost energy that underpins a significant part of the economy – including metal processing (smelting & refining); founding, forging and die-casting and other metal fabrication; motor vehicle, communications, cement, paper, new materials and iron and steel manufacturing. It therefore also underpins Australia's quality of life. Coal provides the lowest cost and most secure source of electricity providing 85% of Australia's electricity requirements at present consumption levels. Although the share is projected to fall in the future, according to the Australian Bureau of Agriculture and Resource Economics, coal will remain the predominant fuel for electricity generation in Australia for the foreseeable future.

Latrobe Valley brown coal or lignite has been the primary energy source for Victoria's electricity generation needs for the majority of the 20th century. However, brown coal's continued role as the state's primary energy source faces major challenges on a number of fronts. For example, community concerns about greenhouse gas emissions; and population growth, and urban and rural development pose significant challenges, which will require careful planning to ensure Victoria's rich energy endowment continues to provide major community benefits out to 2100 and beyond.

Brown coal resources in Victoria, and in particular the Latrobe Valley, are vast and sufficient to meet energy demands well into the future. For example, within the Gippsland Basin, the Latrobe Valley contains 53,000 million tonnes of "economic" coal. To put this into perspective, the region annually produces 65 million tonnes of coal for electricity generation and conversion to briquettes and char. At this rate of annual usage there is over 800 years of economic prosperity in the region through brown coal mining and value added activities.

However, whatever Australia does must be part of a global solution. This is because, while the impacts of climate change due to human actions will be experienced locally, the greenhouse gas emissions that lead to the impacts are global. The local externality is caused by a multitude of global actions – not by the local actions in themselves. History shows that when acting alone, not one of government, industry, community or civil action groups has the definitive answer in addressing these challenges. What is required is a process that builds consensus about how Australian and global society should collectively respond within an acceptable global framework.

4.2 Greenhouse Gas Abatement

Managing climate change is a global challenge requiring a global solution. Unilateral action is not the answer and may undermine economic development and standards of living in Australia without any measurable impact on climate change.

The MCA advocates greenhouse gas abatement and adaptation policies that are consistent with three equal and fundamental high-level principles, viz:

- > **environmental effectiveness**, that is, ensuring that actions taken reduce the adverse effects of human influence on climate change;
- > **economic efficiency**, which itself requires that policies are as broadly based as possible — covering all greenhouse gases and all sectors. Policies must be multilateral or global in focus, take account of Australia's comparative advantage in energy intensive activities, and ensure energy security; and
- > **social acceptability**, which includes the equity aspects of any measures taken and the political acceptance of those measures.

The Australian minerals industry is absolutely committed to being part of a global solution to this global problem. However, there can be no global climate change solution without a clean coal strategy. Fossil fuels and coal in particular, will continue to be the world's primary energy supply for this foreseeable future.

The MCA accepts the precautionary principle underpinning the need for action now. That action must take the form of a comprehensive suite of policies for a long term integrated policy approach that is environmentally effective, economically efficient and socially acceptable.

Actions must be centred on:

- > a government-industry partnership in the development and deployment of step change abatement or low emission technologies – pre-competitive technologies rarely, if ever, have been driven by the market;
- > efficient market mechanisms to determine a carbon price in a future carbon constrained world – an emissions trading system can be such a market mechanism, provided it:
 - is part of a suite of measures and not considered a panacea;
 - is structured so that the disciplinary measures – the cap and the penalty price are aligned with the development and deployment of step-change technologies – ensuring there is capacity in the market to change industrial behaviour and not merely penalise it (and raise revenue);
 - accommodates the potentially long run competitiveness challenges faced by trade-exposed and energy intensive industries, to mitigate against distortions to resource allocation and “carbon leakage” (ie. an exodus of affected industries offshore without environmental benefit);
 - replaces the multitude of State and Territory differentiated policies and measures for national consistency across and within various jurisdictions, and
 - transitions to a global system progressively integrating national emissions trading schemes into regional and eventually more international systems.

Business certainty will not be delivered on the back of a future price on emissions, rather certainty will best be served by a clear and sound policy framework and “a reasonably bounded pathway” within which price risk can be assessed and managed.

4.3 Clean Coal Technologies

The Australian minerals industry and the Victorian and Australian Governments are committing significant sums of money to the development and deployment of clean coal technologies and improvements in energy efficiency and eco-efficiency, notably through:

- > The Energy Technology and Innovation Strategy (ETIS) – a Victorian Government initiative of direct spending of up to \$103.5 million to harness the Latrobe Valley coal resources through the development of new technologies.
- > The Low Emissions Technology Fund (LETDF) – an Australian Government initiative of direct spending of up to \$500 million on pre-competitive clean coal technologies in association with industry:
- > the first round of LETDF and ETIS projects represent a substantial commitment by both industry and governments working in partnership to reduce greenhouse gas emissions through a world class set of demonstration projects to support step-change technological solutions across a range of energy sources;
- > the COAL21 Program and the COAL21 Fund – a world-first whole of industry initiative in the development and deployment of clean coal technologies, expending in the order of \$300 million from industry over 5 years;
- > Cooperative Research Centres including the Coal in Sustainable Development CRC and the CRC for Greenhouse Gas Technologies; the Queensland Centre for Advanced Technologies; and the Centre for Low Emissions Technologies;
- > Greenhouse Challenge Plus Program (the MCA, Australian Coal Association and Australian Aluminium Council have been members since the inception of its precursor a decade ago); and
- > various in-house and external consultancies on energy efficiency initiatives by minerals companies.

In addition, the Innovation Road Map for Victoria's Earth Resources, prepared by the Victorian Government and the minerals industry in 2006 has identified the technology pathways for the long term development of Victoria's vast lignite resources.

The Innovation Road Map¹³ has identified the key innovation pathways for an emissionless brown coal economy. The pathways that were identified as critically important and which would only be driven by Victoria were:

- > Strategic plan for the long term development of the Latrobe Valley resource (systems innovation)
- > Dewatering and drying brown coal (technology innovation)
- > Carbon sequestration (technology innovation)
- > Develop infrastructure and regulatory framework for carbon capture and storage (systems innovation)
- > Increased community influence through collaboration (systems innovation)

Other technologies have been identified such as gasification technologies carbon capture technologies. Each was identified as important and each is being investigated by others. It is not seen as an imperative for Victoria to drive these technological advances. Research into combustion technologies was identified as needing to be driven by Victoria but was not identified as critically important as the other technologies.

4.4 Development Time Frames

Continued, substantial investment in stationary energy infrastructure is necessary in Victoria to meet economic and societal development objectives. Moreover, electricity investment is highly capital intensive and long-lived (for 5 or more decades), meaning that new investment brings with it implications that last for decades. Similarly, coal conversion plants require significant capital investment and also have very long effective lives.

¹³ Innovation Road Maps for Victoria's Earth Resources, Final Report, STEM Partnership, August 2006, www.minerals.org.au/Victoria

Because of the amount of capital involved, investment decisions have very long lead times (several years) and project approvals by Government can also take several years.

In addition, before any investment decisions into major new stationary energy infrastructure can be taken there is a need to develop and prove new clean coal technologies for commercial viability. This could take 10 or more years.

Consequently, a long-term perspective is required when considering coalfield development options.

5. THE LATROBE VALLEY COAL RESOURCES

5.1 Coal Resources in the Latrobe Valley

The Latrobe Valley contains vast quantities of brown coal resources (53,000 million tonnes of 'economic' coal) and the region annually produces about 68 Mt of coal for electricity generation and conversion to briquettes and char. The brown coal contains low ash and sulphur, is readily mined and can be used as a feedstock for power generation or to produce solid, liquid or gaseous fuels. Carbons, fertiliser, agricultural products and other by-products are also possible. Basic and applied research is being carried out to develop more efficient and environmentally friendly methods of using the coal. Beyond the current mining areas, vast coal resources remain available for use. New coal projects are expected to result in economic growth for the region and provide opportunities for the local population whilst meeting all environmental standards.

The coal resources within the Latrobe Valley are well defined. Existing extensive borehole data has been applied to a three dimensional (3D) geological model of the Latrobe Valley by DPI. The 3D model of the Latrobe Valley coal resources identified 53,000 Mt of 'economic' coal. Considering less than 5,000 Mt has been mined in the last 80 years this represents a massive resource to meet Victoria's energy needs into the future.

The brown coal seams of the Gippsland Basin underlie most of the Latrobe Valley and even extend eastward at great depth into Bass Strait. Based on the current rates of consumption, 800 years of coal production appears feasible.

5.2 Ranking Coal Areas

To assess the better coal resource areas of the Latrobe Valley for future mine development, many criteria need to be considered. Of primary importance to project economies is the coal stripping ratio, as this determines how many tonnes of coal can be won for every cubic metre of overburden removed. Reducing this ratio rapidly increases coal mining costs. This initial assessment undertaken by GHD for the LV2100 study¹⁴ included all known coal resources without depth or thickness constraint and ignoring any coal quality variations. In the existing Latrobe Valley mines vertical stripping ratios (coal : overburden) of more than 4:1 have been mined but in the future, coal winning to 2:1 is likely to be necessary. The 2:1 strip ratio contour was used to define the better coal areas. These better coal resource areas are assumed at this stage to be potential mining zones recognising that other mining or planning constraints such as current land planning, community assets, environmental impacts and other land uses need also to be considered.

The LV2100 study considered each of the better coal resource areas and split them into likely mining areas. These represent areas that may be considered for single or combined mining operations after due consideration of all relevant issues and constraints. Figure 6.8 from the LV2100 report, attached, shows a layout of the Latrobe Valley with these possible future mining areas (rating 1 hatched in red and rating 2 hatched in green) .

Qualitative ranking for the LV2100 study followed an examination of each potential coal resource area against the following criteria: -

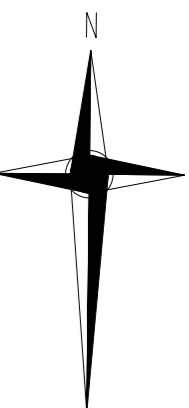
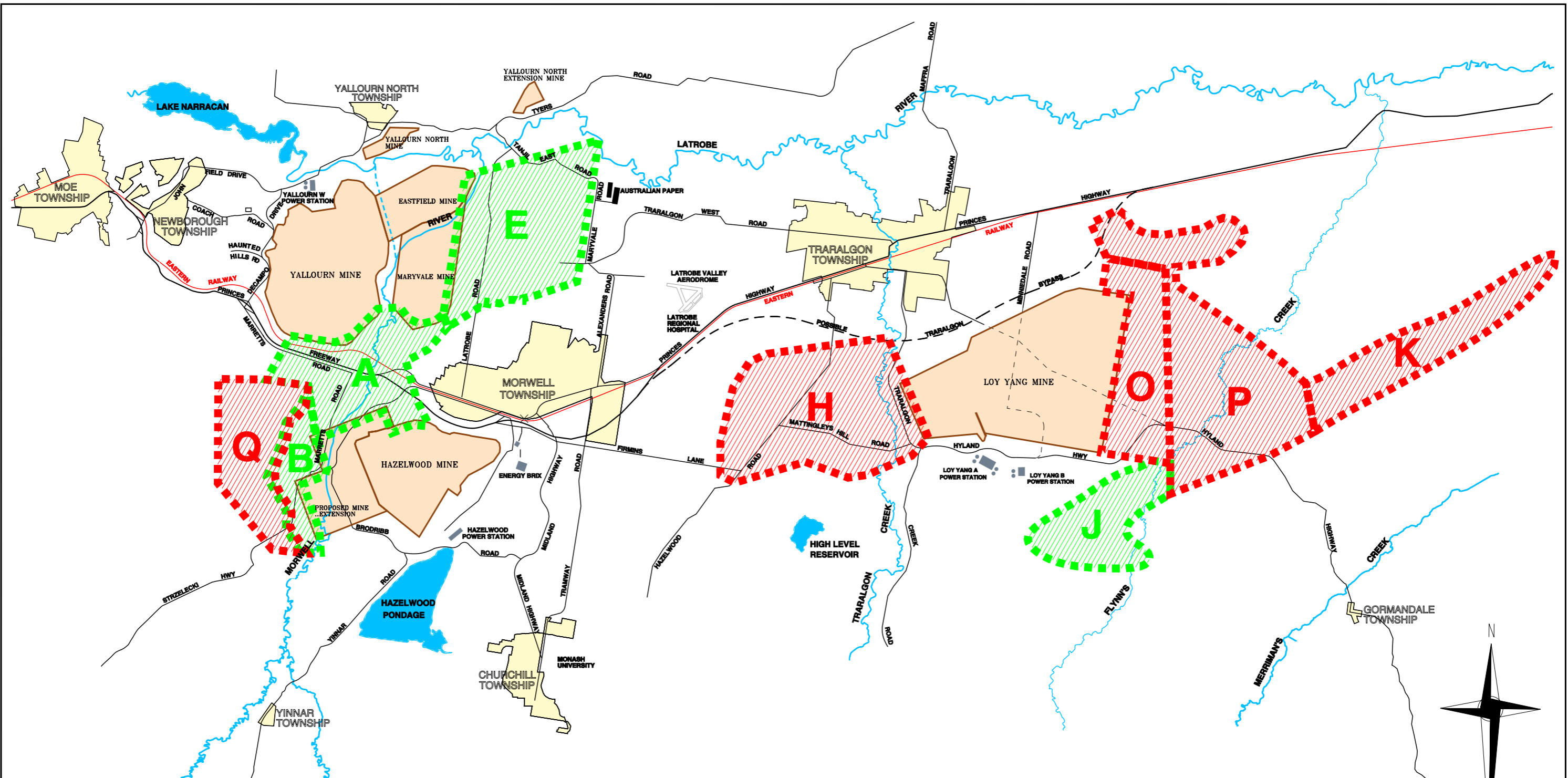
¹⁴ Latrobe Valley 2100 Coal Resources Project, Executive Summary, GHD Pty Ltd, November 2005.

- > Geology - strip ratio, resource size, geological knowledge.
- > Environment - issues of regional importance.
- > Community - impacting on the community.
- > Economics - costs associated with mining or regional infrastructure.

The LV2100 study identified 9 highly ranked areas (Ranked 1 ("most likely to proceed") & 2 ("likely to proceed")) that are expected to be developed before the other coal resources in the Latrobe Valley.

5.3 Coal Area H

Coal Area H was identified as one of the highest ranked coal areas that are yet to be allocated through the granting of an exploration or mining licence. Coal Area H is to the west of the Loy Yang mine & Traralgon Creek and contains possibly 5,300 Mt of coal. The LV2100 report noted that Coal Area H as "Very large, reasonably well defined coal resource; with great potential to find very economic mining areas. There seem to be few perceived issues for its development. Land zoning needs to be examined and Traralgon By-Pass alignment needs to avoid coal deposit."



LEGEND

	OPEN CUT COAL MINE		RATING 1 AREAS
	WATER SUPPLY		RATING 2 AREAS
	URBAN AREA		OTHER MINEABLE COAL RESOURCE AREAS HAVE A RATING HIGHER THAN 2.

MEASUREMENTS IN KILOMETRES

1 1/2 0 1 2 km

MAGNITUDE OF POSSIBLE RESOURCE AREAS

- RATING 1 AREAS -		- RATING 2 AREAS -	
AREA	COAL (Bt)	AREA	COAL (Bt)
P	4.5	E	4.7
Q	2.5	J	1.5
H	5.3	B	0.4
K	1.8	A	2.2

		Checked E. WAGHORNE	
Drawn P.R. CURRIE	14-4-04	Passed P.R. CURRIE	
Scale As Shown		Approved P.R. CURRIE	
Date 31-8-04			
Ref. No LV2030 C			

FIGURE 6.8
LATROBE VALLEY 2100
COAL RESOURCE PROJECT
HIGHLY RATED COAL AREAS

6. COMMUNITY INTERFACE WITH MINING DEVELOPMENTS

6.1 Building sustainable regional communities

The Australian minerals industry operates predominantly in rural and remote Australia, and is often the major economic activity in these communities. Accordingly, ensuring that the industry's operations build strong, stable and effectively functioning communities that are sustainable beyond the life of mine, is a key challenge for the industry.

The current peak in economic activity in the industry has provided a further catalyst to the need to address this challenge. Rapid growth in employment in the industry is putting pressure on local housing markets and leading to 'community stripping', where residents chose to transfer to roles in the minerals industry. Also, as more and more minerals projects are developed in closely settled areas around the country there is a growing conflict between mining and the competing need for population growth and housing and the growing community desire for quiet enjoyment of the neighbourhood.

The minerals industry is committed to developing its 'social licence to operate' as a complement to the regulatory licence issued by government. To the minerals industry, a 'social licence to operate' is about operating in a manner that is attuned to community expectations and which acknowledges that businesses have a shared responsibility with government, and more broadly society, to help facilitate the development of strong and sustainable communities.

The MCA is committed to the enhancement of regional level planning and community development and building sustainable communities through:

- > facilitating industry's contribution to strong and vibrant regional communities to ensure that industry does not distort, stress or strip community assets (physical and social) but is responsive to community expectations;
- > supporting regional employment and increased access to region-based training; and
- > enhancing the role of industry as a responsible community member, in establishing a framework for regional development that recognises the core responsibilities of governments, the private sector and communities.

The MCA recognises that industry alone cannot achieve sustainable outcomes in this area. Strong support and engagement from governments at all levels and the community are critical in ensuring that regional development is undertaken within the principles of sustainable development (the triple bottom line) and that outcomes are sustainable in the longer term.

6.2 Land Use Conflicts

It is a fundamental tenet of Australian mining laws that all minerals - including coal - are the property of the Crown until extracted under the terms of a mining licence. At the same time the land over these minerals can be managed under a range of land management regimes, including freehold and various forms of Crown land.

It is also a fact of science that the geology of a mineral deposit dictates where the minerals exist and these cannot be relocated or shifted to more convenient locations to accommodate conflicting land uses.

When mining companies are granted a mining licence to access minerals there is invariably a conflict between competing land uses, as access to land is required to access the minerals below. This is particularly the case when the minerals are large tabular deposits near to the surface when open pit mining methods are applicable.

Generally speaking exploration and mining can be seen as a short-term land use as following rehabilitation of the mine site the land can be returned to other productive or community uses. However, the extent of the Latrobe Valley coalfields and size of the mines developed mean that they are long-term mines and rehabilitation back to the pre-existing landform is difficult and may not even be desirable in the decades to come.

In sharp contrast, land development for housing estates can generally be relocated to accommodate other conflicting land uses.

Once land is developed for residential housing it is socially very difficult for any mining company, or politically for any government for that matter, to relocate the population to enable access to minerals that may exist below. Whilst this has occurred in the past on a rare occasion, it is unlikely to occur in the future. In any case, housing developments tend to be long-term land uses.

Consequently it is far better to avoid land use conflict where options exist for any one party.

Whilst recognising the long-term economic benefits of 'protecting' coal fields for future development it is appreciated that neighbours to proposed mine developments have rights and interests and these must be considered. However, where coalfields are of State significance and their long-term development likely to impact on the economic and societal well being of all Victorians there is a broader community interest to be considered.

However, having said that, the minerals industry is very conscious of the need to reach a balance in the economic, environmental and societal impacts when considering new projects. However, as custodians of the mineral resources it falls on of the State Government to 'protect' the State's long-term interests and avoid conflicting land uses before they are permitted to develop.

6.3 The Traralgon By-pass and Land Development Options

Coal Area H has been identified as one of the most viable future options for development of the Latrobe Valley coalfields. Its location is fixed in space and cannot be repositioned. It was identified by all Principals as a valuable State asset. It has not been allocated to any particular development option at this stage.

The proposed Princes Highway by-pass of Traralgon has two alternate routes identified for the alignment to the west of Traralgon Creek. Route W4B traverses Coal Area H and permits an extensive residential housing development with rural allotments to the south of the by-pass. Route W2C sweeps to the north and has only a

minimal impact on Coal Area H but limits the scope for residential housing development and more scope for rural allotments.

Based on the route W4B of the by-pass the Latrobe City had planned a residential development to enable growth of Traralgon to the southwest. It is understood that there are limited growth options for residential property development around Traralgon.

It is also understood that it is this land use conflict between the State's need to 'protect' the Coal Area H for future development and the Latrobe City's desire to provide residential development options for Traralgon that is at the core of the Advisory Committee deliberations.

This is a classic land use conflict - the two uses are incompatible.

Table 6.1 attempts to identify the benefits and costs of the two possible land uses on a triple bottom line basis.

TABLE 6.1 – LAND USE OPTIONS

Land Use Option		RESIDENTIAL & RURAL DEVELOPMENT (Route W4B)	COAL FIELD DEVELOPMENT (Route W2C)
Timing		Now	Possible Future
Economic Impacts	Local economy	Modest gains	Huge economic impact
	State economy	Negligible gain	Substantial Impact on Gross State Product
Environmental Impacts	Local environment	Modest with permanent footprint	Significant. Large but finite footprint with a return to productive use
	Regional environment	Negligible impact	Modest impacts
Social Impacts	Local community	Options for rural & residential living	Significant positive and negative social impacts
	People of Victoria	Negligible impact	Negligible impact

The residential development option (by-pass route W4B) has immediate modest economic gains for the people of Traralgon and the land developers, a modest environmental footprint that is a long-term land use and provides the people of Traralgon with options for new housing developments. The option has negligible impacts on the state economy, the regional environment and the people of Victoria.

The coalfield development option (by-pass route W2C) may be implemented at some indeterminate time in the future. If developed it would have huge economic impacts on the local and State economies, a significant local environmental footprint that will require mitigation and management but is a transient land use (say 50 years) following which it will be rehabilitated for further productive use, and will have significant local community impacts both positive and negative. The option will have modest environmental impacts regionally and negligible social impact on the people of Victoria.

It is clear that protection of the coalfield is in the State's long-term strategic interest.

7. RECOMMENDATION

Given that:

- > coal will play a significant role in the long-term energy mix for Victoria;
- > decisions on future coal developments have a very long lead time;
- > Coal Area H is one of the highest ranked coal areas in the Latrobe Valley and consequently a valuable asset of the State and forecast to be developed in the future;
- > any new developments using Latrobe Valley coal will utilise new clean coal technologies;
- > there are options available for alternative residential and rural housing developments around Traralgon and no other option available for the long-term coal development plans if the land is used for residential development; and
- > the economic, environmental and social benefits from the coalfield development are significant to the entire State whereas the benefits from the residential development option are modest and local.

it is the MCA's view that the Coal Area H should be protected.