

# Coal Newsletter

Number 54

June 2004

ISSN 1175-3463

## Air standards soon to be law

By Wayne Hennessy, CRL Energy Ltd.

The Ministry for the Environment (MfE) is likely to receive Cabinet approval by the end of June for its package of proposed national environmental standards (NES) for air quality. Ambient air standards have been proposed for carbon monoxide, particles less than 10 microns in diameter (PM<sub>10</sub>), nitrogen dioxide, sulphur dioxide and ozone. There is also a new emission standard for domestic solid fuel burning appliances and prohibitions on various dioxin producing activities. MfE has summarised for Cabinet the results of its consultation at the end of 2003, proposed some changes and expects regulations to be completed around October, although many of the measures will have long transition periods.

The main issue of concern to industry, business and community groups and many councils are the measures being proposed to manage the PM<sub>10</sub> problems identified in several locations throughout New Zealand. The existing guideline value (a 24 hour average) of 50 micrograms per cubic metre has been exceeded at 36 sampling locations and it is estimated that five centres (Alexandra, Christchurch, Nelson, Richmond and Timaru) are likely to exceed this level more than 50 times a year. It is proposed that all councils responsible for air quality will have to monitor and report their PM<sub>10</sub> concentrations (as most currently do) and comply with a "proxy air plan" to not exceed limits by more than one 24 hour period in a year by 2013.

The regulatory teeth will be in the requirement that if this is not achieved by 2013, no new resource consents will be granted where that consent "is the primary source of exceedances". In the draft standard, five annual exceedances were proposed as in Australia (more are allowed in the EU), but as the Coal Association submission noted, the Australian standard applies to residential or neighbourhood sites away from major sources that are intended to represent pollution levels over the larger urban airshed. MfE has proposed the approach of monitoring peak concentration sites is more appropriate for New Zealand because it is more equitable, precautionary and protective. The Coal Association challenged this assumption and suggested monitoring should instead focus on a wide range of typical sites. No justification was presented for lowering the threshold to one

exceedance and there appears to be no assessment of whether this is a practical goal.

MfE has failed to provide a robust analysis to justify punitive policies towards regional councils rather than encouragement and education. In May, MfE published its cost benefit analysis of the proposed NES. The Coal Association submission in 2003 opposed the imposition of the standards on a number of grounds, a key one being the absence of a cost benefit analysis. The paper claimed that total costs of the NES package to 2020 would be \$111 million compared with \$318 million benefits (both in net present value) from reductions in premature deaths, hospitalisations and reduced activity days off work.

The paper assumed on the basis of a brief survey that costs to industry would be \$100,000 at each of 10 industrial sites each year. The benefits from industrial measures have not been separated from emissions improvement benefits from home heating and transport, a new wood burner standard and prohibitions on various dioxin producing activities. It is reasonable to assume that because home heating has been identified as the major contributor to PM<sub>10</sub> (fine particulate) pollution situations, further reductions in industrial PM<sub>10</sub> emissions would be shown to be extremely costly for any benefits achieved. In deciding the most appropriate policy instrument option, the paper used a "very much simplified multi-criteria analysis", which gave equal weight to nine criteria thus diluting the impact of the crucial cost effectiveness criterion.

Domestic heating has been shown to be the main source of PM<sub>10</sub> problems and many councils are already undertaking sensible measures to restrict open fires and older, smoky enclosed burners while encouraging low emission burners. The NES risk to industrial coal users is that councils may be under pressure from constituents to blame industrial PM<sub>10</sub> emissions when these are already well controlled through resource consent processes. As 2013 approaches, industries will be left in a state of uncertainty as to how MfE and individual non-complying councils will interpret the requirement that no new resource consents will be granted where a plant is considered a primary source of PM<sub>10</sub> emissions.

*Vision:* Coal is accepted as a secure, competitive and environmentally sustainable energy resource contributing to New Zealand's prosperity

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This Newsletter is published for the Coal Association by CRL Energy Ltd.

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# The case for coal

*By Chris Baker, Chairman, Coal Association of New Zealand Inc.*

## Energy

In the 21<sup>st</sup> Century, energy is an essential building block and driver of economic development. Affordable energy contributes directly to the quality of life in developed and developing countries. The World Bank states, "Reliable energy is a key component of economic and social development...lack of energy is among the key forces slowing down poverty reduction and growth of the rural sector."



*Chris Baker*

## International Coal Use

Throughout the world, coal continues to meet a major proportion of our energy demands. In 2002, total world production of coal was approximately 4.8 billion tonnes. This coal produced 23% of the world's primary energy, 39% of the electricity, and 70% of the steel.

In many nations, coal's contribution to electricity generation is currently irreplaceable: Australia, 79%; USA, 50%; Germany, 52%; China, 76%; India, 78%; Poland, 95%.

Coal is abundant, affordable, safe and secure and reserves are widely distributed internationally. Coal is easy and safe to transport, and the international market is intensely competitive – leading to an overall reduction, in real terms, of greater than 1% per annum in the price for coal over the last 30+ years. Reserves are sufficient to supply the world's energy needs beyond the foreseeable future.

## IEA Projections For Future Coal Use

The International Energy Agency (IEA) projects that the global primary energy supply will grow 62% to 2030, and that coal will maintain its contribution, in percentage terms, over that time. This means that coal production will grow from the current 4 billion tonnes, to 6.5 billion tonnes in 2030. The key drivers for this growth will be demand in China and India in particular, as the quality of life in these countries closes the gap with developed countries.

## Environmental Considerations

Coal is a transition fuel. There is no "silver bullet" technology that allows the world to move smoothly to zero emission energy supply while maintaining and improving current standards of living and reducing poverty. There are a number of technologies that will play a greater or lesser role over the medium term. However, until new, zero emissions and environmentally sustainable technologies are developed and broadly deployed – perhaps over the next 40 to 80 years – coal will remain a major contributor to energy supply globally.

Clean Coal Technologies (CCT) can deliver energy in an environmentally sound and sustainable manner. Current technologies mean that any new coal plant, be it electricity generation or process energy, can meet current

international emissions standards in terms of sulphur oxides, nitrogen oxides and particulate emissions. These technologies are also improving coal plant energy efficiency towards 50% and beyond, and reducing capital costs.

Near zero emissions technologies that capture and store CO<sub>2</sub> have been developed but are as yet too expensive for significant deployment. This will change over the next 15 to 20 years as major research investment into zero emissions technologies in the US, Australia and elsewhere bears fruit.

IEA projections also consider the role other technologies will play as the international community develops and deploys technologies that make deep cuts in greenhouse gas (GHG) emissions. The IEA states "Zero emissions technologies for fossil fuels have a key role to play in any GHG mitigation strategy that attempts to economically stabilise atmospheric concentrations of CO<sub>2</sub> and secure a sustainable energy future".

The labelling of coal as "last century's fuel" simply doesn't fit. In fact, the IEA's projections place Clean Coal and Zero Emissions technologies as vital contributions to international initiatives to achieve deep cuts in CO<sub>2</sub> emissions over the "transition" period.

## Coal in Australia

Australia is our closest neighbour, largest trading partner and, along with New Zealand, regards energy as a key comparative advantage for its economy. Coal generates 79% of Australia's electricity and is the largest export earner. Industry, Government and the research community have formed a partnership, COAL21, aimed at reducing GHG emissions from coal. This partnership, launched in March 2004, creates "a national plan to scope, develop, demonstrate and implement near zero emissions coal based electricity generation that will achieve major reductions in GHG emissions over time while maintaining Australia's low cost electricity advantage."

## The New Zealand Economy

The New Zealand economy is one of the most energy intensive in the world. New Zealand has historically been blessed with abundant, relatively low cost energy resources – hydro capability and the Maui gas field in particular. The use of energy in our economy reflects this cost advantage - from 1970 to 2002, average annual GDP growth was 2.3% and consumer energy growth was 2.8%. No other OECD country had energy growth higher than GDP growth over the same period.

As would be expected in an economy with such an energy advantage, of our top 15 export sectors, 11 are energy intensive primary products – dairy(1), meat(2), forestry(3), fish(5), fruit(6) etc.

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This high energy use should not be considered good, or bad – and is not a reflection of inefficiency. Energy is a “derived” demand and efficiency is an economic concept. New Zealand’s relatively high demand is simply because energy has been a key comparative advantage on the world stage for the New Zealand economy. Efficiencies are always available, and of course more become available as the cost of energy increases – because energy is an economic concept, not an end in itself.

### Energy Sector Overview

Primary energy in New Zealand is 756PJ (2002). This converts to consumer energy of 505PJ, losses being incurred principally through transmission and conversion. Electricity is 25% of consumer energy.

Coal’s contribution to the energy sector is: electricity generation 4%; primary energy 7% and consumer energy 6%. Cheap Maui gas has capped coal use in the North Island in these sectors. In the South Island, coal plays a vital role in providing process energy – with or without the proposed emissions charge. Coal is significantly cheaper than any available alternative fuel. For a 10MW standard industrial boiler plant, comparative costs are: Coal, \$6.8/GJ; Gas, \$8.6/GJ; Diesel, \$16.7/GJ; Electricity, \$22.5/GJ.

### Electricity Sector Overview and Projections

Electricity supply and demand are currently close to being in balance, Maui’s dry year reserve capability is historical, a number of smaller generation projects are proposed or mooted, but New Zealand faces an energy crisis. The large, base load generation projects so necessary to underpin investment in the New Zealand economy are not being developed.

Projections for future demand and new generation requirements vary widely, based particularly on differing assumptions for energy efficiency, GDP growth, and new gas discoveries: The Ministry of Economic Development has assessed that 2900MW of new generation is required by 2020 – assuming high energy efficiency and renewable energy uptake and 2.5% annual GDP growth. Projections of new generation requirements (by 2020) that assume a higher GDP growth (4%), lower gas discoveries, and a conservative energy efficiency uptake range up to 6000MW.

### Options For Meeting Demand

A range of options exist for meeting the demand for primary and electrical energy in New Zealand. These include demand and supply side solutions and the spectrum of available fuels and technologies – hydro, geothermal, wind, gas, biomass, coal and energy efficiency. A strategic plan for New Zealand’s energy future would include all of these options.

Coal, however, has three specific and compelling advantages in New Zealand:

- **Certainty:** Coal reserves are KNOWN. These reserves are far in excess of foreseeable requirements and tonnes, quality, location, costs, and environmental issues are KNOWN and

favourable. No accelerated drilling programme is required.

- **Security:** Coal provides base load, cost effective, indigenous energy supply that provides protection from international events for the New Zealand economy, security of supply and allows New Zealand to maintain an energy-based competitive advantage in the primary production sectors that make up such a significant proportion of export earnings
- **Cost:** Typical costs for coal sold as energy to large scale users are: West Coast coal <\$2/GJ or, delivered to the North Island, »\$3/GJ, North Island coal, »\$3/GJ (compare with gas rising to \$5 or more per GJ). Southland lignite can be delivered, ex mine, at <\$1/GJ. Coal-based generation using South Island coal costs are in the range 5.5 to 6.5c/kWh, using North Island coal costs are in the range 6.0 to 7.0c/kWh.

These costs, while higher than historical, are internationally competitive. This, along with coal’s security of supply and base load capability, can provide the confidence to attract investment and drive economic growth.

### The Coal Association

The Coal Association is working actively to ensure coal continues to contribute to New Zealand’s prosperity. Our vision is based on the development and deployment of new technologies.

New technologies offer a number of pathways to a zero emission future - one of these pathways is to a hydrogen energy economy. The Coal Association is an active supporter of a \$6 million Foundation for Research Science and Technology research programme “Hydrogen Energy for the Future of New Zealand” as a first step in New Zealand’s transition towards a hydrogen energy economy. The Association has invested in related areas of advanced technological and environmental issues, including the development of a Hydrogen Roadmap for the coal industry and technologies and options for sequestration of the CO<sub>2</sub> by-product of hydrogen production from coal.

Clean coal technologies provide another pathway to addressing environmental issues from coal utilisation and the Association is investing in research relevant to their application to New Zealand coals. Membership of key IEA R&D organisations allows the Association to be involved in international projects and informed on advances in coal-based energy production around the world.

### Conclusion

New Zealand has reserves of coal that can provide affordable, environmentally sustainable and secure energy over the foreseeable future.

Energy is important to the New Zealand economy and a key policy objective must be to deliver the lowest cost energy possible.

The need to maintain competitiveness and developing technologies demand that these coal reserves be part of New Zealand’s future energy portfolio.



## Climate change policy for SMEs

*By Wayne Hennessy, CRL Energy Ltd.*

The Coal Association is one of several industry and business groups participating in a two-year joint project with the Ministry for the Environment entitled 'Educating Business Energy Consumers in Climate Change Solutions' and co-ordinated by CRL Energy on behalf of the Energy Federation of New Zealand (EFNZ). The aims of a recent workshop were to provide group members with the opportunity to contribute to the Government's small to medium enterprise (SME) climate change policy. Feedback was also provided on the format and dissemination of an information kit to be produced as part of the project.

A Climate Change Office official outlined the Government's proposed SME climate change policy and stated he was seeking feedback from industry and business groups until the final policy paper was prepared for Ministers in late May. Rather than use SME definitions based on employee numbers or energy expenditure, he instead focused on non-NGA (Negotiated Greenhouse Agreement) businesses. He summarised the importance of this sector by showing that of New Zealand's 32 million tonnes (Mt) of CO<sub>2</sub> emissions in 2001, 5.4 Mt were emitted by companies likely to negotiate NGAs and a further 10.4 Mt were emitted by other industrial and commercial firms.

The proposed approach was that all businesses would be subject to the emissions charge, all actions would be voluntary and all measures would be available to all firms. These measures would be delivered by the Energy Efficiency and Conservation Authority (EECA) and consist of information provision, energy audits and financial grants for efficiency improvements. EECA currently assists with energy audits for the highest expenditure

firms but these would be made more widely available under this policy. The purpose of the grants would be to bring forward energy savings by shortening project payback periods (say from five years down to one to two years). There was concern in Treasury about such grants if the Kyoto Protocol does not enter into force. Treasury also needed evidence from a pilot study that the energy information would be targeted effectively.

Discussions on industry focused energy saving programmes were always focused on energy price and cost savings because greenhouse gas emissions reduction and other environmental benefits were not major considerations for most business owners. One participant noted the biggest barrier was that different companies have different internal rates of return criteria for projects. Some companies that know they are in the market for the long term will consider projects with three year paybacks while some (often overseas owned) will not act unless the payback is less than nine months. This created difficulties in designing schemes that would not unfairly benefit free riders.

It was agreed the intention was to supplement and enhance EECA's work and a tight focus was needed on identifying the target market before there was detailed discussion of an information kit format.

Annual energy expenditure	Number of firms
>\$5M	40
\$0.5-5M	300
\$100,000-500,000	1100
\$40,000-100,000	1800
<\$40,000	210,000

### Preliminary notice of the Coal Association's AGM

This year's Coal Association Annual General Meeting will be held in Wellington in late August. The date and accompanying programme of events will be circulated to interested parties as soon as they are finalised.

For any enquiries regarding the AGM please contact:

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*“ . . . of New Zealand's 32 million tonnes (Mt) of CO<sub>2</sub> emissions in 2001, 5.4 Mt were emitted by companies likely to negotiate NGAs and a further 10.4 Mt were emitted by other industrial and commercial firms.”*

## Solid Energy expands exports

Solid Energy has recently renewed a deal with India's largest integrated steel mill, the Steel Authority of India, to supply up to 1.5 million tonnes of coking coal over the next five years. The contract is worth in excess of \$120 million. As part of Solid Energy's market expansion strategies in India it also secured a new contract with Tata Steel, a subsidiary of India's largest private company, to supply 300,000 tonnes of coal, valued at \$24 million over three years.

The Steel Authority and Tata contracts represent 20 percent of Solid Energy's export programme.

Solid Energy has also recently concluded an \$80 million three-year "evergreen" contract and celebrated 25 years of continuous supply (4.5 million tonnes) to Mitsui Mining in Japan.

Sales of coal to steel manufacturers and coke makers account for more than 75 percent of the Solid Energy's exports, with

Japan remaining the company's largest international market - accounting for almost half of its sales. Since 1997 the company has supplied 2 million tonnes to Nippon Steel.

Its long-term contract with Mitsubishi Chemical Corporation has been extended to 2006, which will mark 30 years supply to Solid Energy's longest-term international customer. The company also long-term contracts for hard coking coals with steel makers Baosteel of China and ISCOR of South Africa, along with short-term contracts with two Brazilian steel makers.

Solid Energy exports its high quality coking coals for use in the production of steel to the world's leading steel manufacturers. By comparison, the company sells most of its thermal coals to New Zealand markets, particularly to Genesis Power Limited for the Huntly Power Station.

## \$30 million upgrade completed at Lyttelton Port

A recently completed \$30 million upgrade of Lyttelton Port should see the port company's coal handling facilities moving coal to a ship faster, minimising the amount of time coal is piled up at the port. Solid Energy sees the upgrade as an important step towards overcoming transport constraints for moving their coal.

Chief Executive of Solid Energy, Dr Don Elder, said that "International demand for New Zealand coal is high, driven by the need for raw materials and steel in China. The upgrade of coal handling facilities at Lyttelton will improve our competitiveness through a faster turnaround."

The port upgrade will help Solid Energy achieve its target of increasing coal exports to 4 million tonnes per annum over the next five years. However, Dr Elder says there are still a number of challenges to overcome. "In particular we are working with David Jackson and his team at Tranz Rail to improve reliability and upgrade capacity on the Midland Line between the West Coast and Lyttelton."

The coal upgrade has resulted in a bigger land area for the storage of coal, with improvements to coal dust suppression measures. Automated sprinkler towers located on the perimeter of the stockpile have increased from nine to 12, and a new

half-million dollar water cart was recently commissioned which is capable of spraying more than one thousand litres of water per minute over the entire stockpile.

Other environmental improvements include the construction of a permanent version of the stormwater treatment system to ensure that no adverse discharge runs into the harbour. The system has been on trial at the port for the last few years.

Most of Solid Energy's export coal comes from the company's Stockton opencast mine and from its newly developed Spring Creek Underground Mine near Greymouth which is scheduled to shortly reach full production. In 2003/04 Solid Energy produced more than 4.09 million tonnes, of which 2.13 million tonnes was exported, the majority through the Port of Lyttelton with a small amount barged to Australia from Westport.

Earlier this month, Solid Energy suggested that it may build three coal ships to more than triple the volume it can haul directly from its mines on the West Coast. Solid Energy has chartered all the barges in the country and hauls about 250,000 tonnes each year. The company has commented, "We've got the coal and the markets. It's all constrained by transport."

## Pike River Co works on access approval details

*The Pike River Coal Company Ltd says it is carrying out negotiations on detailed terms and conditions of access to its Pike River Coal field inland from Greymouth. This follows the conditional approval for land access to the proposed metallurgical coking coal mine by the Minister of Conservation in March.*

*Parent company New Zealand Oil & Gas Ltd said in its first quarter report for 2004 that international demand for coking coal increased during the first three months of 2004, with a tight market pushing up prices substantially.*

*Pike River coal is a coking coal with low ash and high fluidity properties. The company says it hopes the first coal will be delivered by the end of 2005. It plans to produce approximately 1.1 million tonnes a year for a period of 15 to 18 years. Coal would be trucked to Greymouth, then barged to a new facility at Shakespeare Bay, near Picton, where it would be loaded into coal transport ships.*

## The Lyttelton Port Upgrade

➤ *More Flexible stockpile layout. The coal receival area is now separate from the coal load-out area, creating a streamlined process and better utilisation of the stockpile area.*

➤ *Increased ship-loading capability. This has risen from 18,000 tonnes per day to 25,000 tonnes per day (hourly rate has risen from 550 tonnes to 1,750 tonnes per hour).*

➤ *Improved coal train receival facilities, creating faster turn-around of coal trains. When combined with the more efficient stockpile layout, the time taken to unload trains at Lyttelton will reduce from up to two hours to approximately 40 minutes.*

➤ *Computerised control system. Coal handling is now controlled by a computerised system that provides information on the facility's function and performance.*

## Coal production over 5 million tonnes in 2003

*For the first time New Zealand coal production has topped 5 million tonnes. This is the culmination of two consecutive years of growth in production to meet rising overseas demand for coal, particularly through increased demand from China. The most significant increase was in the production of sub-bituminous coal, which reached 2,576,555 tonnes in 2003, representing a 30% increase on the previous year. The production and export of bituminous coal to foreign markets continued to grow, with production reaching 2,351,021 tonnes. Production of lignite also increased reaching 252,336 tonnes.*

*Increased world demand for coal and rising prices has led to a resurgence of interest in domestic coal resources. Crown Minerals has observed an increased demand for information on coal fields that are not currently in production, but presumably under present demand and prices have the potential to be developed to meet the increasing demand for New Zealand coal.*

## 'Environmental best practice' planned at new mine

Coal producer, Solid Energy New Zealand Ltd, has lodged resource consents to develop and operate the Cypress Mine which contains around nine million tonnes of economically accessible coal, primarily for export.

The opencast pit of approximately 105 hectares will be progressively mined and rehabilitated over the anticipated 10-year life of the mine.

The proposed project has not been without controversy, a resource consent joint hearing in Westport considered 350 submissions and objections to the new mine at upper Waimangaroa, and in April, university students from around the country staged a one week occupation of the proposed mine site, which is home to a colony of great spotted kiwi and giant snails.

However, early last month, Solid Energy's Chief Operating Officer, Barry Bragg told a joint Buller District and West Coast Regional Council hearing in Westport that the Cypress Opencast Mine, proposed in the Upper Waimangaroa Mining Permit area north east of Westport, will be operated "from day one in accordance with environmental best practice, utilising best practice mine management and rehabilitation procedures and methods."

Mr Bragg says that a number of submissions opposing the company's plans relate to its opencast mining operations at Stockton. "Because of past practices,

Stockton is a compromised site. It has delivered the mining industry some hard lessons in what not to do. And they are lessons that Solid Energy had taken on board," Mr Bragg said.

Mining had been carried out on the Stockton Plateau since the late 1800s. Solid Energy had taken over coal mining at Stockton from State Coal Mines in 1987 and inherited the mine in the state it was then. Some of the practices adopted by Solid Energy, or carried over from State Coal Mines' days had added to the environmental impacts, which the company openly acknowledged. "However we are working hard to make up for lost ground, in trying to identify ways of improving the current environmental status of the plateau."

By contrast, the Cypress mine would be operated with environmental best practice through careful mine management and site restoration. While it would have some short term adverse effects on the environment, in the medium to long term it will be able to be rehabilitated to a high standard. The company planned to re-establish kiwi living in the vicinity of the mine, protect the local land snail, *Powelliphanta "patrickensis"*, and undertake intensive predator control over a 1000 hectare area. Solid Energy said acid mine drainage into natural waterways was the most significant issue with opencast mining.

## Kenham Holdings expands to oil and coal seam gas

Kenham Holdings Ltd, which is undertaking a major coal seam gas exploration over coal fields throughout New Zealand, is also moving into oil exploration in Southland.

The Christchurch-based company, an associate of South Island gold mining company L&M Mining Ltd controlled by a London-based minerals investor, was last year granted a permit in Western Southland. The permit and a recent extension covers a 995 square kilometre area along the Waiau Basin from the coast towards Lake Manapouri and adjoins the Ohai coal seam gas permit also held by Kenham.

Results were still being evaluated from the first stage of the coal seam gas programme which comprises preliminary drilling in all 12 permits which Kenham holds. The Ohai permit was the most advanced with commercial production rates regarded as very achievable. In the case of the Hawkdun lignite field in central Otago, which was initially ranked as marginal, modelled gas flows indicate that production on a per-well basis may be achievable at similar rates to the Powder River Basin in the US where large-scale gas production from lower ranked coalbeds was first proven.

### Correction

*In the March 04 Coal newsletter, an article on Mines Rescues incorrectly identified David Stewart as CRL Energy's representative on the Mines Rescue Trust Board, he is in fact the Coal Association's representative.*

## Workshop tackles acidic problem

Acid Mine Drainage (AMD) is a significant environmental problem facing the coal mining industry in New Zealand. It occurs when sulphide-bearing minerals in rock are exposed to air and water, producing acid as a result of sulphide oxidation. This acid can mobilise arsenic and metals (e.g. aluminium, boron, copper, nickel and zinc) found in waste rock and tailings into ground and surface water. To make matters worse, types of bacteria that occur naturally can significantly increase the rate of sulphide oxidation given the right conditions. The resulting metal pollution can contaminate drinking water sources and detrimentally affect aquatic life and habitat.

This subject was the focus of a recent workshop in Greymouth, where CRL Energy Ltd presented their current research and findings as well as introducing a new six-year project focused on reducing water quality impacts from mining. This new programme is based at the abandoned Sullivan Mine, north of Westport.

Presenters from the University of Canterbury, West Coast Regional Council, Solid Energy and CRL Energy at the workshop identified a number of mine sites including the Stockton and Denniston Plateau as being in need of remediation

work, which could well continue for decades.

Solid Energy's Environmental Scientist, Phil Lindsay, said that the Stockton mine alone produces some 30,000 million litres of AMD per year. Solid Energy is currently working on environmental and water management strategies to improve the ecology of stream draining mines to acceptable levels, which are planned to be in place by 2006.

CRL Energy have been working closely with Solid Energy on a number of trials currently being carried out at Stockton and Sullivan including limestone dosing to treat acid seep, and an engineering wetland pilot scheme. Solid Energy is also working on the dilution of acid mine drainage to non-toxic concentrations.

Acid mine drainage can develop at several points throughout the mining process: in underground workings, open pit mine faces, waste rock dumps, tailings deposits, and ore stockpiles. It is a problem around the world, acid generation can last for decades, centuries, or longer, and its impacts can travel many miles downstream. Roman mine sites in Great Britain continue to generate acid drainage 2,000 years after mining ceased. That said, New Zealand is a leader in remediation research to help mitigate the problem.

## COAL21 - Aussie initiative

Australia's endowment of coal deposits has brought major economic and social benefits. Black coal is Australia's most important commodity export, and black (58 per cent) and brown coal (27 per cent) combined account for 85 per cent of Australia's electricity supply. The use of their abundant coal reserves is the reason why Australia's electricity prices are among the lowest in the world.

But the use of coal in electric power generation accounts for about 38 per cent of Australia's greenhouse gas emissions. Australia faces the challenge to reduce or eliminate these emissions, while maintaining the real benefits derived from continued access to Australia's most important energy resource.

Australia's coal industry believes that technological change will enable this challenge to be met. A collaborative partnership between Australia's Federal and State governments, the coal and electricity generation industries and the research community has resulted in the COAL21 programme. As well as reducing GHG emissions, the programme will also explore coal's role as a primary source of hydrogen

to power the hydrogen-based economy of the future.

The key objectives of COAL21 are to:

- Follow a national plan to scope, develop, demonstrate and implement near zero emissions coal-based electricity generation that will achieve major reductions in greenhouse gas emissions over time and maintain Australia's low cost electricity advantage.

- Facilitate the demonstration, commercialisation and early uptake of technologies identified in the plan.

- Foster greater public awareness of the role of coal and the potential for near zero emissions coal-based electricity generation to significantly reduce or eliminate greenhouse gas emissions and other environmental impacts associated with its use.

- Provide a mechanism for effective interaction and integration with other international zero-emission coal initiatives.

The Australian Coal Association provides the secretariat for COAL21 through its Canberra office, in partnership with the Department of Industry, Tourism and Resources.

## Oz energy plan

On 15 June 2004, Australian Prime Minister, John Howard, unveiled a White Paper which establishes a long term policy framework for Australian energy. The new energy package promises \$A500 million to new low greenhouse gas emission technology and \$A75 million to encourage solar energy. The package also scraps excise on diesel and heating fuels for farmers and businesses, and stopped short of increasing the mandatory renewable energy target (MRET) - the amount of electricity retailers must source from renewable energy sources.

On announcing the paper, Prime Minister Howard said "Australia's energy resources and sector are a source of great wealth for the nation. Energy exports earn Australians more than \$24 billion annually, with coal being our single largest export earner. More than 120 000 Australians are employed directly in the energy sector. Australia's low-cost reliable supplies of energy deliver many hundreds of thousands more jobs and underpin a world competitive resource processing sector.

"Securing Australia's Energy Future recognises that we have a responsibility to develop Australia's resources in an environmentally sustainable way. It positions Australia to deliver better global outcomes by showing leadership with technological innovation in emission reduction."

White Paper details are available at [www.pmc.gov.au/energy\\_future](http://www.pmc.gov.au/energy_future)

### What's happening at your mine?

Tell the Coal Association newsletter what's happening at your mine. Contact either the CANZ secretary, Dr Trevor Matheson, or CRL Energy's Science Communications consultant Louise Thomas.

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# Coal Association of New Zealand Inc.

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Waituna Coal Mine

## Associate Members

A W Taylor Industrial Coal Ltd  
Alliance Group Ltd  
Bruce Grant Consultants  
Canterbury Health  
Coal Distributors (Auckland) Ltd  
Coal Marketing Services  
Coal Power Ltd  
Doug Hood Contractors  
GL Bowron Ltd  
Genesis Power  
Golden Bay Cement  
Heinz-Wattie Ltd  
Holcim (New Zealand) Ltd  
Huntly Retail Distribution Centre  
Kenham Holdings Limited  
Kenroll Industrial Coal Ltd  
Lincoln University  
Lion Breweries South  
Lyttelton Port Company Ltd  
McDonald's Lime Ltd  
Meridian Solutions

Meritec (Worley Consultants)  
Metso Minerals (New Zealand) Ltd  
Montgomery Watson Ltd  
National Institute of Water and Atmospheric Research (NIWA)  
Natural Gas WEL Energy  
NZMP (Edendale)  
NZ Steel Ltd  
Oderings Nurseries, Christchurch  
Otago Regional Council  
Phillips Fox  
Pike River Coal Ltd  
Port of Greymouth  
Robert H Hall Group Ltd  
Sea-Tow Ltd  
SGS NZ Ltd  
Shipherd Nurseries  
Sinclair Knight Merz  
Skellerup Industries Ltd  
University of Canterbury  
University of Otago Physics Dept.  
Valley Wood & Coal  
Websters Hydrated Lime Co Ltd

## Associate Membership

Did you know that you can join the Coal Association, even if you are not a coal producer, by becoming an Associate Member?

### Why should you join?

The coal industry is facing its biggest challenge in recent times. The Coal Association needs the support of Associate Members more than ever, if New Zealanders are to retain access to such a plentiful and economic fuel as coal. Your support could be vital, as the Association attempts to reduce the continuing threat of economic measures, designed to help meet New Zealand's Kyoto Protocol obligations. You can keep up to date with the efforts being made on your behalf, by reading the Coal Newsletter, which is sent out quarterly, and the Annual Review, which every Associate Member receives with an invitation to the Annual General Meeting.

### Other benefits of Associate Membership are:

- opportunities to participate in Coal Association activities;
- opportunities to make your voice heard through Coal Assn initiatives;
- free access to information held by CRL Energy Ltd;
- free short consultations with CRL Energy staff; and
- free updates of recently published coal information.

**What does it cost?** An annual fee of \$350 +GST.

**How do I join?** Ring CRL Energy 04 570 3715 for the details.



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