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**MANAGEMENT AND
MARKETING PLAN FOR
COAL WASH 2002**



Carbon Steel Materials

Illawarra Coal

Management and Marketing Plan for Coal Wash

May 2002

CONTENTS

Contents	2
At a glance	2
Vision	3
Objectives	3
Situation as at 2001	3
How Did We Get Here?	3
Planning Horizon, Scope and strategies	4
Management and Marketing strategies	4
1. Top up existing Coal Wash Emplacement Areas	4
a. Huntley Mine Site	4
b. Madden’s Plains Emplacement Area	4
c. Wongawilli Emplacement Area	5
2. Other Emplacement Areas	5
a. Yallah Residential Area	5
b. Unspecified Potential Emplacement Areas surrounding West Cliff	5
a. Excavate West Cliff Coal Wash Emplacement Area for Sandstone	5
b. Stage 11 of West Cliff Emplacement Area	6
3. Underground Emplacement	6
4. Divert Coal Wash to Coal Products	6
a. Coking Coal	6
b. Energy Coal	7
5. Power Stations	7
a. Newcastle	7
a. Western Districts	8
6. Use In B.O.O. (Build, Own, Operate) On Site Power Station	8
7. Brick Manufacturers	9
8. Soil Manufacturing	9
9. Civil Works	9
a. Illawarra	10
b. Sydney	11
Interest and Public Body support	11
Key Performance Indicators	12

AT A GLANCE

- Large-scale sales into the civil market possible. Utilising existing participants, as partners will provide market entry knowledge. Whilst large sales may be possible in the Sydney region, sales into the smaller Illawarra area provide much higher potential to reduce road transport in the Illawarra area.
- Use of Coal Wash in Newcastle Power Stations is currently uneconomical; Western Districts will be determined in mid 2002.
- Markets for fine Coal Wash (brick making and soil manufacturing) have high potential.

- A dedicated West Cliff power station consuming Coal Wash has the highest single potential to reduce emplacement and will require an extensive investigation to determine feasibility and manage risks.
- Topping up some existing Emplacement Areas is possible.

VISION

Our vision is to maximise the life cycle of Coal Wash in an environmental, economic and sustainable fashion.

OBJECTIVES

1. Extract the maximum value from all our products
2. Minimise the impact of Coal Wash on the environment
3. Find alternatives to valley-filling of coal wash that support the vision statement
4. Provide sustainable strategies for Coal Wash allowing the continued life of our operations

SITUATION AS AT 2001

- Few or small scale identified alternatives to emplacement
- Resistance to future valley-filling activities at West Cliff
- Resistance towards valley-filling of coal wash by government and community representatives leading to reputation impacts on the Company
- Wongawilli Emplacement Area closing within 3 to 4 years
- Other emplacement alternatives in Illawarra disappearing
- Total Illawarra Coal - Coal Wash production levels increasing with the commencement of Dendrobium mine
- Stage 111 of West Cliff Emplacement Area requiring detailed study of alternatives to emplacement as part of the Dendrobium approval

HOW DID WE GET HERE?

- Long history of coal mining in Illawarra.
- Topographical features directed Coal Wash emplacement toward coastal plain.
- After more than 100 years of coal mining, suitable emplacement areas on the coastal plain are disappearing.
- Wongawilli Emplacement Area was established taking advantage of the back hauling of Coal Wash on the Elouera Mine to Port Kembla Steel Works rail link.
- Commission of Inquiry into Wongawilli emplacement lead to significant resistance by government and the community towards the continued use of Wongawilli for emplacement.
- Elouera Mine will close in 2004/5, at the same time Wongawilli Emplacement Area will cease operations.
- Dendrobium Mine will open in 2004/5 with Coal Wash produced by the Port Kembla Coal Preparation Plant being road hauled to the West Cliff Mine Emplacement Area.

- The Dendrobium Mine Development Approval and our stated objectives necessitate a detailed review of alternatives to the emplacement of Coal Wash.

PLANNING HORIZON, SCOPE AND STRATEGIES

A key component of Illawarra Coal's Coal Wash management and marketing strategy is the appointment of a Coal Wash Business Manager.

Of the initial strategies identified, it is expected that some of these will be deemed not viable due to environmental, logistical or financial factors. New strategies may emerge however, that have not been identified at this time.

As these changes occur this Plan will need review and modification to take account of new opportunities and minimise risk where appropriate.

The planning horizon considered here is 4 years with reviews considered appropriate at 6 monthly intervals.

The Plan is intended to cover technical and commercial aspects of options for the management of Coal Wash.

MANAGEMENT AND MARKETING STRATEGIES

1. TOP UP EXISTING COAL WASH EMPLACEMENT AREAS

Under some circumstances it may be environmentally, financially or strategically attractive to add Coal Wash to an existing or previously operated Coal Wash Emplacement Area. Sites identified are:

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a. Huntley Mine Site

Coal Wash would be transported to this site by road; the majority of the journey being on Freeway type conditions with noise attenuation barriers. Part of the journey however is via residences with no noise attenuation. Resistance to the truck movements would be high.

The site itself would require Wollongong City Council development approval to receive Coal Wash from Port Kembla.

The cost of transport to Huntley exceeds the cost of transport to West Cliff.

Given that these factors and the relationship of the two transport costs are not expected to change, this is not considered a viable alternative now or in the future.

b. Madden's Plains Emplacement Area

This site is subject to court action over its use. It may be an option in the future dependent upon the outcome of the court action and the existing user.

This option should be reviewed annually.

c. Wongawilli Emplacement Area

Expansion of this site is possible either by raising the profile height or development of the further stages originally considered for the Area – expansion to the east.

The encroachment of residential areas would increase the impact of the Emplacement Area. Opposition to further use beyond the closure of the Elouera Mine is high. When Elouera Mine Closes in 2003/4-rail transport of Coal Wash will no longer be available. Road transport to the site is not a viable option. It is unlikely that approval for any extension to the site would be given.

This is not considered a viable option now or in the future.

1. OTHER EMPLACEMENT AREAS

a. Yallah Residential Area

As of January 2002 approximately 500,000 tonnes of fill was required to complete this development.

The site is accessible on noise attenuated Freeway type roads and has Wollongong City Council development approval with appropriate environmental control conditions.

This may be a viable option and will be subject to ongoing review and development.

b. Unspecified Potential Emplacement Areas surrounding West Cliff

As part of the Dendrobium Mine approval process, the land near to the West Cliff mine site was examined to determine if there were any potential Coal Wash Emplacement Areas that would have lower environmental impacts than Stage 111 of the West Cliff Emplacement Area.

The impact of the following factors was considered: -

- Water Catchment Areas
- Aboriginal Lands
- Residential areas
- Flat topography
- National Parks
- Waterways

The risks and/or impacts associated with the above factors deemed the surrounding areas to be not viable for emplacement. The Dendrobium Commission of Inquiry accepted this.

a. Excavate West Cliff Coal Wash Emplacement Area for Sandstone

A proposal to excavate the West Cliff Coal Wash Emplacement Area to produce saleable sandstone products has been reviewed. The excavation would allow additional placement of Coal Wash within the same land area. The operation would have serious environmental impacts particularly the release of leachate from the excavated sandstone.

Another significant issue prohibiting this option is logistics. The West Cliff Mine Site will have in excess of 11,000,000 tonnes pre annum of truck movements on the site when Coal Wash deliveries from the Port Kembla washery commence. There are significant safety issues associated with introducing this process onto the site in terms of truck and rubber tyred vehicle movements.

This option is not considered viable now or in the future.

b. Stage 11 of West Cliff Emplacement Area

An initial review has indicated it may be feasible to top up the existing Stage11 Emplacement Area. This would defer the West Cliff Stage 111 development. Further work is being undertaken to determine feasibility.

1. UNDERGROUND EMPLACEMENT

Illawarra Coal's Dendrobium Mine Development Team commissioned a report by the Consultant Group – Mamie Pty Ltd to examine this option. The report concluded that in addition to significant operational, technical and design difficulties, costs for this option were too high. This finding was accepted by the Commission of Inquiry into the mine's development.

2. DIVERT COAL WASH TO COAL PRODUCTS

a. Coking Coal

It is possible for Washeries to adjust their operations to deliver a higher ash and higher yield coking coal product. It should be noted however that this does not necessarily reduce the amount of Coal Wash produced but rather the mix of the yields of Coking and Energy coal, with the total yield of both products remaining the same.

By way of illustration if an ash level for coking and energy coal (say 9.5% and 23%) gave a total yield of 90%, this total yield would not change if the ash level for the coking coal was changed to 10.5%. In practice due to the Coal Washability, the energy coal ash and yield would decrease while the coking coal yield would increase and the total yield would remain at 90%.

The rule of thumb for ash in coal is that every 1% increase in coal ash will increase Blast Furnace costs by US\$6.00 per tonne of hot metal in the Blast Furnace. There is an insignificant benefit in terms of cost saving to the customer and the amount of Coal Wash diverted to coal. For example as little as 8274 tonnes of Coal Wash at 70% ash increases 5,000,000 tonnes of coking coal from 9.5 to 9.6% ash for a coal price saving of US\$0.07 per tonne to the customer – not enough to offset the ash impact of US\$0.60/tonne in the Blast Furnace.

Customers would not accept any increase in ash for this small financial offset and their operations would suffer placing them at a financial disadvantage to their competitors.

Increasing Illawarra Coal's coking coal product ash is not considered a viable option now or in the future.

b. Energy Coal

Similar to Coking Coal, it is possible for Washeries to adjust their operations to deliver a higher ash and higher yield Energy Coal product. It should be noted however that this does not necessarily reduce the amount of Coal Wash produced but rather the mix of the yields of Coking and Energy coal, with the total yield of both products remaining the same.

With the commencement of production at Dendrobium Mine (above the current levels of Elouera Mine), the production of Wongawilli Seam energy coal increases to around 1,000,000 tonnes per annum from the current 400,000 tonnes per annum.

Illawarra Coal's Wongawilli seam energy coal ranks amongst the highest in terms of ash levels and the lowest in terms of volatile matter of coals marketed overseas from Australia. In the current periodical of Australian coal marketing – the Australian Coal Report – there are only three coals exported from Australia with similar ash levels.

Developing a market for the Dendrobium production of energy coal at its currently planned ash will require a substantial and difficult marketing effort. This task would be exponentially more difficult if the ash of the product were to be increased.

In addition there is an insignificant benefit in terms of cost savings to the customer and the amount of Coal Wash diverted to coal. For example – as little as 11000 tonnes of Coal Wash at 70% ash increases 500,000 tonnes of coking coal from 23 to 24% ash for a saving of US\$0.60/t. This increase in ash puts the product outside of market acceptability with an insignificant impact on Coal Wash production.

Increasing Illawarra Coal's energy coal product ash is not currently considered a viable option. Changing market conditions in the future may see some acceptance in the market. This option will be reviewed annually.

1. POWER STATIONS

a. Newcastle

NSW power stations pay about AUS\$1.00 per mega joule for energy derived from coal. The equivalent cost of Coal Wash transported from Port Kembla to Newcastle is AUS\$1.45 per mega joule based on

- Nil cost for purchase of the Coal Wash

- Approximately 8 giga joules per tonne energy value in Coal Wash
- \$13.20 per tonne plus GST rail freight cost to Newcastle based on a 1430 tonne per trip load and an annual task of at least 300,000 tonnes - quoted by National Rail Corporation in October 2001 (which required an equivalent amount of freight to be back hauled).

Even if the costs of transport and emplacement at West Cliff were used to offset the freight (\$13.20 - \$3.75 = \$9.45 per tonne or \$1.18 per giga joule), the cost of Coal Wash would still exceed the cost of coal. In addition, this does not consider the additional cost of fly ash disposal or environmental impacts from emissions.

Whilst this situation is not expected to change, it will be revisited periodically. Without a substantial reduction in the freight rate this option will remain uneconomic.

a. Western Districts

Of the two operating power stations – Mt Piper and Wallerawang – only Mt Piper currently has a rail receival facility. To make the Coal Wash competitive to coal energy costs, the transport costs will need to be very low. Utilising a back haul freight arrangement may achieve this.

There is a significant amount of rail traffic flowing from the area to Port Kembla. It may be feasible with a back haul arrangement to achieve an acceptable freight rate and therefore sale price. The downside is the capacity of the rail network within the Port Kembla Steelworks, which will cause delays in loading.

This option will be reviewed before the end of calendar year 2002

1. USE IN B.O.O. (BUILD, OWN, OPERATE) ON SITE POWER STATION

The establishment of an on site (at West Cliff) Power Station consuming Coal Wash as its fuel source is a complex issue.

Investigation into the option is ongoing. It is expected that an external independent consultant review will be completed by April 2002 with BHP Billiton internal reviews to then commence. This review will establish conceptual viability. Whilst this option is considered high risk and is complex, it has the potential for significant Coal Ash consumption and is worthy of detailed pursuit.

Studies considered necessary to substantiate the potential are: -

- Disposal of Power Station ash above ground – options, environmental impacts and commercial viability
- Disposal of Power Station ash underground ground – options, environmental impacts and commercial viability
- An overall study (to BHP Billiton's Capital Project Concept Stage Tollgate detail level) to determine the Go/No Go aspects of the above and other environmental impacts and commercial viability.

Some of these reports have been commenced or are complete.

1. BRICK MANUFACTURERS

This is a nearby small market that can utilise Fine Coal Wash for brick manufacturing. West Cliff Coal Preparation plant and The Appin SADA Coal Washery produce fine Coal Wash. Port Kembla blends all of its Coal Wash products into one stream and therefore does not have a Fine Coal Wash product. Fine Coal Wash presents additional difficulties in disposal due to its resistance to compaction.

Three brick making facilities are the target market due to their proximity to the production source. The Coal Wash provides a valuable fuel additive replacing natural gas required in the brick kiln.

The cost of transport is AUS\$7.00 - 9.00 per tonne. Brick manufacturers pay approximately AUS\$4.00 per giga joule for natural gas. Coal fines at \$0.87 to \$1.12 per giga joule (8 giga joules per tonne) therefore offer substantial savings.

Brick manufacturers have used Coal Wash in the past but have generally not continued its use due to product variability. Fine Coal Wash ex West Cliff is uniform in quality. This market has good potential to take all of the fines production from West Cliff. From a marketing perspective however, a spread of market segments is preferable for security of delivery.

The strategy is to develop the customer's confidence in the product's performance, quality and cost savings ability and then increase the quantity over time.

Whilst this market is small it will rid West Cliff of a time and resource consuming activity.

2. SOIL MANUFACTURING

Fine Coal Wash is inert, has a high Ph balance and is low in plant nutrients. Its black colouring makes it an ideal blending agent or filler for high nutritional value products such as organic solid wastes.

Soil manufacturers that have low reserves of minable soil or who are looking to manufacture soil from components may be interested in the use of Coal Wash.

This market is large but the low cost of competition in the soil industry reduces the number and likelihood of customers able to utilise Fine Coal Wash. The market is therefore considered strategic compared to brick manufacturers and will be pursued only until such times as sales to brick manufacturers are established to receive all fine coal production.

Another option to be investigated is an alliance between Illawarra Coal and Sydney Water to combine fine Coal Wash and solid wastes from their Reverse Osmosis Plant to manufacture soil.

3. CIVIL WORKS

The bulk fill civil market in New South Wales is dominated by large scale quarrying companies such as Boral, PGH and Australian Steel Mill Services (ASMS). These companies utilise their marketing infrastructure for prime products (E.G. screened and sized road base, sand and soil) to market the low value, residual products (E.G. quarry fines, demolition materials).

Competition is fierce. By way of example, material from a Sydney building site can be transported to south west Sydney (\$8/t), the material crushed and screened (\$1.50/t) and blended with other material giving a delivered price of \$9.50 per tonne. The demolisher will pay for the material to be taken away thus improving the competitiveness of the product further. The transport cost alone from West Cliff to the South West of Sydney will approach this level.

Coal Wash in its raw form is a low performance material. Competitors have low value products that they must move off site and are able to balance their range of product prices to ensure a balanced product sales pattern sometimes taking a loss on the sale of these low value products.

In the south west of Sydney, West Cliff Coal Wash has the advantage of lower freight (depending on location), large volume availability and consistency as well as environmental acceptability. On the downside, Coal Wash does not have the high performance characteristics of other products and is therefore limited in its markets.

Substantial benefits would be derived if BHP Billiton were to develop a partnership with an existing player in the civil construction bulk material market. The partner would bring technical expertise, marketing infrastructure and synergies associated with existing business and/or products.

Another strategy to be progressed is generic marketing of Coal Wash via retail outlets such as soil and gravel suppliers and garden supplies.

The alternatives for an arrangement to market Coal Wash into the civil market are: -

- Specialist civil construction materials companies such as Boral – these have a significant conflict of interest in terms of marketing their own waste products
- Utilise existing partners such as South Coast Equipment (SCE) and Heggies Bulkhaul Limited (HBL), they being existing participants in the civil market albeit at a smaller scale.
- Generic marketing with all retail outlets albeit with some constraints on truck entry into the Steelworks.
- Establishing an in house marketing arm – this would require specialist knowledge in the market itself and in the products

a. Illawarra

The Illawarra area has the disadvantage of a small market, being a mature and topographically constrained residential area. The Port Kembla Coal Wash product itself has a history of variability due to the number of coal products washed by the plant and the variability of different size fraction feeds into the Coal Wash stream. When the plant is converted to a single Dendrobium Mine product this issue will disappear.

Pre Dendrobium and whilst Wongawilli Emplacement Area remains in operation, it would be inadvisable to develop a large market for Coal Wash in the Illawarra. Strategically it would be advisable to finish the profile of the emplacement area before Elouera mine closes.

This situation will change significantly when Wongawilli closes and Coal Wash from Port Kembla has to be transported to West Cliff. Developing this market now reduces the start up delay. The strategy is to develop a small market (10,000 to 100,000 tonnes per annum) and expand sales as the closure of Wongawilli approaches.

Illawarra Coal is progressing the development of a strategic alliance with an existing player in the civil construction market. A decision should be made by mid 2002.

b. Sydney

The market in this area is large with the south western area of Sydney being one of the highest residential growth areas in Australia. Competition is also high with Blast Furnace slag, demolition materials, quarry fines and mined sandstone offering into the market in some cases supported by large corporate structures and networks E.G. Boral and Pioneer as well as ersatz subsidies due to the alternative high cost of disposing of some of these materials in emplacement areas.

Heggies Bulkhaul Limited has existing marketing infrastructure in Sydney as a consequence of their involvement in earth moving and quarrying. In addition HBL's presence on the West Cliff site allows more effective management of offsite West Cliff Coal Wash movements.

HBL have agreed in principle to this arrangement.

Current market penetration is limited to less stringent performance segments such as landfill. Expansion into the high price/performance areas will require a blending facility where the Coal Wash can be blended with such materials as crushed demolition material. HBL do not currently have this ability. As market knowledge and penetration is achieved, opportunities with HBL or another company will need to be explored.

INTEREST AND PUBLIC BODY SUPPORT

The list of groups able to be lobbied for support includes: -

- Planning NSW (previously DUAP) – local and state level
- Environmental Protection Authority – Illawarra and South West Sydney branch
- City Councils – Wollongong and Campbelltown

Having established local awareness of Coal Wash usage within these organisations, the next step is to lobby support at the State level and for this support to be communicated to the local branches.

Support will be limited to the modification or inclusion of approval documentation to indicate a preference or allowance to use Coal Wash and a stated preference for the use of Coal Wash in certain applications.

KEY PERFORMANCE INDICATORS

Given that the outcome and success of the options cannot be determined the Key Performance Indicators are specified as time events.

Coal Wash Option	Action	KPI
Marketing and Management Plan	Review	August 2002
Divert to Energy Coal	Review	February 2003
Emplacement Options	Review viabilities	February 2003
Divert Coal Wash to Coal <ul style="list-style-type: none"> • Energy coal • Coking coal 	Determine feasibility	October 2001
Sell to Western Districts Power Stations	Determine feasibility	November 2002
On Site Power Station	Complete conceptual toll gate review	July 2002
Use by brick makers	Determine feasibility	May 2002
Use by Soil Manufacturers	Determine feasibility	June 2002
Civil Works	<ul style="list-style-type: none"> • Determine preferred marketing strategy and partners • Commence Sydney sales program 	<ul style="list-style-type: none"> • June 2002 • March 2002