Kerosene Vale Stage 2 Ash Repository Area Submissions Report

June, 2008

Delta Electricity

Parsons Brinckerhoff Australia Pty Limited ABN 80 078 004 798

Ernst & Young Centre,
Level 27, 680 George Street
Sydney NSW 2000
GPO Box 5394
Sydney NSW 2001
Australia
Telephone +61 2 9272 5100
Facsimile +61 2 9272 5101

NCSI Certified Quality System ISO 9001

2115206A PR_8053 RevA

Author: ..... Emma Dixon / Nigel Buchanan

Signed: .....

Reviewer: ..... Carlos Olles

Signed: .....

Approved by: ..... Carlos Olles

Signed: .....

Date: 11June 2008

Distribution: .....

Contents

Contents (continued)

Page Number

List of tables

List of figures

List of appendices

1. Introduction and background

The Kerosene Vale ash repository was originally constructed between 1960 and 1990. During this time it was filled with a combination of by-product ash from the Wallerawang Power Station and mining spoil. The ash repository was capped around 1990.

In 2001, Delta Electricity determined that there was an operational need to change from wet to dry ash-producing activities at Wallerawang Power Station. As a result of this decision, it was necessary to identify an area for the placement and storage of by-product ash. Owing to its historic use for this purpose, the Kerosene Vale ash repository area was identified as a suitable site. A limited area over the Kerosene Vale ash repository area has been used for ash placement and site management activities associated with operation of the Wallerawang Power Station (see Figure 1-1) since 2002 when approved for this activity was obtained. This ash placement activity is known as the Stage 1 placement area and included the transport and placement of ash in limited area of the Kerosene Vale ash Repository shown in Figure 1-1.

The proposed Stage 2 activities would use the extended area of the Kerosene Vale ash repository, covering the area from the open face of the Stage 1 area to the edge of the Kerosene Vale Ash repository (see Figure 1-1). The Ash placement strategy in the Stage 2 area was detailed in Chapter 3 of the *Kerosene Vale Stage 2 Ash Repository Area Environmental Assessment* (the Environmental Assessment; PB, 2008) but has been subsequently modified to address received submissions in relation to potential coal reserves under the proposed placement area. Proposed modifications to the operations are discussed further in Chapter 5 of this Submissions Report.

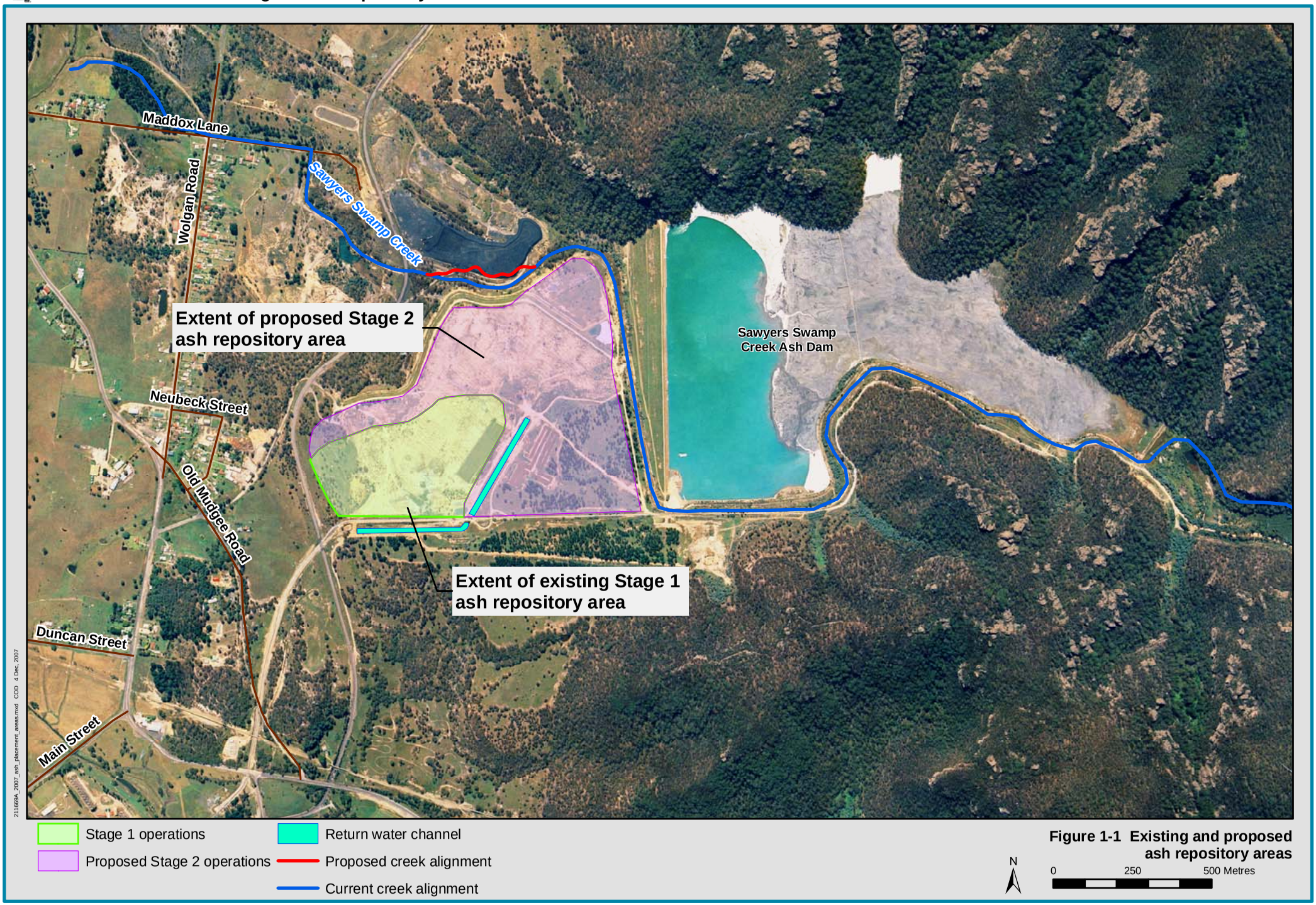


Figure 1-1 Existing and proposed ash repository areas

In order to enable the proposed Stage 2 placement activities to be completed safely, a number of engineering works would be required at various stages of the development. These works, which would be undertaken in parallel with ash placement activities to meet operational requirements, would include:

- realigning a section of Sawyers Swamp Creek
- constructing a stabilisation structure on the northern embankment
- developing surface water retention structures
- relocating the existing water transfer system from Sawyers Swamp Creek Ash Dam and its associated retention canal
- removal of clay capping material from the pine plantation area.

1.1 Purpose of this report

The project is being assessed under Part 3A of the New South Wales (NSW) *Environmental Planning and Assessment Act 1979*. In accordance with the requirements of the Act, an Environmental Assessment was prepared to assess the potential impacts of the project.

The Environmental Assessment was placed on public exhibition from 2 April to 5 May 2008 at the locations listed in Section 2.1.1. During this period, submissions were invited in response to the exhibited Environmental Assessment.

The Department of Planning provided Delta Electricity with copies of the submissions received on the proposed Stage 2 ash repository expansion, which are detailed within this report. Under Section 75(h) of the *Environmental Planning and Assessment Act 1979*, Delta Electricity is required to prepare and submit a response to those submissions together with a revised Statement of Commitments to reflect any proposed changes to the project as a result of addressing received submissions.

This Submissions Report documents and considers the submissions received on the Environmental Assessment (PB, 2008) and outlines Delta Electricity's responses to these submissions.

Following the consideration of submissions, no significant changes to the project as described in the Environmental Assessment are proposed. Minor amendments to address specific issues raised in submissions are described in Chapter 5, but do not affect the Environmental Assessment or the overall intent and merit of the proposed project, other than to modify the staging of activities.

1.2 Need for the project

The need for the development of the Kerosene Vale ash repository was identified in 2001 in order to maintain efficient power generation operations at the Wallerawang Power Station, as the existing wet ash storage area approaching its design capacity. Dry ash placement at the Kerosene Vale ash repository was identified to meet this need. This approach was split into two stages.

The Stage 1 dry ash placement at the Kerosene Vale ash repository area was designed to operate for a period of 5 years, and is now reaching its design capacity. Current estimates indicate that Stage 1 capacity will be reached by July 2008.

In the absence of any immediately viable reuse options for the ash produced as a by-product of power generating activities at Wallerawang Power Station (see Section 2.3 of the Environmental Assessment and the response to Submission 10 in this Submissions Report), or the identification of alternative repository areas at the end of Stage 1 area operations, Stage 2 placement activities would be important to maintain the efficient operation of Wallerawang Power Station. The Environmental Assessment determined that the use of an area previously used for ash placement was the preferred option for the continuing efficient operation of the Wallerawang Power Station. In this respect, Stage 2 dry ash placement at the Kerosene Vale ash repository area would fulfil the second phase of the original proposal development.

The proposed Stage 2 expansion would provide for continued placement of ash over the Kerosene Vale ash repository for 11 more years, by which time it is anticipated that alternative ash use options would have improved.

This project would enable Delta Electricity to store ash by-products from coal-fired power production to maintain efficient power production at Wallerawang Power Station and maintain base-load power supply to the NSW electricity grid. As such, it would provide a significant benefit to ongoing electricity demands in NSW, and to NSW Government revenue.

1.3 The determination process

Delta Electricity has considered and responded to the issues raised by submissions to the Environmental Assessment in this Submissions Report (see Chapter 3). This Submissions Report represents the next step in the approval process under the Part 3A determination. The process from this point is summarised as follows:

- Following the lodgement of this Submissions Report with the Department of Planning, the Director-General of the Department of Planning will prepare an Assessment Report for the project (under section 75I of the *Environmental Planning and Assessment Act 1979*).
- The Assessment Report, including a copy of the Environmental Assessment, this Submissions Report and any advice provided by public authorities, will be submitted by the Director-General to the Minister for Planning for the purpose of the Minister's consideration as to whether to grant approval under Part 3A.
- The Minister will then consider the Director-General's Assessment Report and determine whether to give approval for the project and any conditions that may apply to the approval.
- The determination and the Assessment Report will be published on the Department of Planning's website. The Submissions Report will also be available on the Delta Electricity website (www.de.com.au).

1.4 Structure of this report

This report comprises the following Chapters and Appendices:

- Chapter 1 – Introduction and background: which outlines the purpose and structure of this report, and details the determination process.
- Chapter 2 - Consultation: which provides an overview of the consultation and public display activities undertaken during and following the public exhibition of the Environmental Assessment.
- Chapter 3 - Consideration of submissions: which reviews the submissions received during and following the exhibition period and outlines Delta Electricity's responses to issues raised.
- Chapter 4 - Additional investigations: which summarises the additional investigations undertaken since the Environmental Assessment was finalised, including investigations in response to submissions received.
- Chapter 5 - Modifications to the Environmental Assessment and proposed activity: which describes and justifies any proposed modifications to the project and the Statement of Commitments in response to received submissions.
- Chapter 6 - Conclusions and next steps: which provides overall conclusions and outlines the process from here.
- Chapter 7 – Revised Statement of Commitments: which outlines the commitments made by Delta Electricity to manage residual impacts associated with the proposal.
- Chapter 8 – References.
- Appendix A - Received submissions.

2. Consultation

2.1 Consultation during the exhibition period

2.1.1 Exhibition venues

The Environmental Assessment was placed on public exhibition from Wednesday 2 April to Monday 5 May 2008 at the following locations:

- Nature Conservation Council of NSW
- Lithgow City Council
- Lithgow Library Learning Centre
- Wallerawang Branch Library
- Mount Piper Power Station information centre.

2.1.2 1800 project information line, project email and website

The 1800 project information line (1800 817 711) and project email address (kerosenevale@pb.com.au) were monitored throughout the exhibition period. No calls or emails were received during this period, nor were any received between the end of the exhibition period and the date of submission of this report.

The Environmental Assessment was also available on the Department of Planning's website and on the project web page on the Delta Electricity website.

2.1.3 Advertisements

The Department of Planning advertised the public exhibition of the Environmental Assessment. Advertisements were placed on Wednesday 2 April 2008 in the *Sydney Morning Herald* and on Thursday 4 April in the *Lithgow Mercury*.

2.1.4 Community newsletters

Approximately 100 community update newsletters for the project were distributed in April 2008 to residents in the area surrounding the proposed ash repository expansion (Lidsdale). The newsletter described the Environmental Assessment and informed the community about the progress of the project. The newsletter provided information on the dates and venues of the public exhibition and invited submissions to be sent to the Department of Planning.

2.2 Consultation following the exhibition period

Following exhibition, consultation has continued via the 1800 number, project email address and meetings as described below. The 1800 number and project email will continue to be available for the community to contact the project team with any questions or concerns until a determination on the project has been made, at which time alternative arrangements for comments and feedback following approval, should it be granted, will be integrated with Delta Electricity's wider information and communication systems for existing operations.

The following meetings were held post-exhibition:

- meeting between Delta Electricity, Centennial Coal and Parsons Brinckerhoff (PB) to discuss the issues in the Centennial Coal submission on Wednesday 14 May 2008 at Delta Electricity's head office
- meeting between PB and the Department of Planning to discuss the Centennial Coal submissions issues on Friday 16 May 2008 at the Department of Planning.

These meetings aimed to provide clarification to the issues identified in relation to coal resources in the area. The outcomes of these meetings are incorporated into the detail in responses to Submissions in Chapter 3.

3. Consideration of submissions

3.1 Approach

A total of 10 submissions were received following the exhibition period as summarised in Table 3-1. Each submission was reviewed individually and issues extracted. Due to the limited number of submissions received, it was determined that an individual response would be provided to each submission.

Table 3-1 Summary of submissions

Submission number	Organisation
1	Department of Primary Industries (Fisheries)
2	Local resident
3	Department of Primary Industries (Coal Advice and Resource Assessment)
4	Sydney Catchment Authority
5	Local resident
6	Centennial Coal
7	Lithgow Environment Group
a	Aargus P/L
b	Environment Defender's Office
8	Department of Environment and Climate Change
9	Department of Water and Energy
10	Department of Planning

Delta Electricity considered the issues raised in each submission and a written response is provided in the following sections. Full copies of each submission are provided in Appendix A.

3.2 Responses to submissions

3.2.1 Submission 1 (Department of Primary Industries (Fisheries))

Issues and response

- **The Environmental Assessment adequately describes the potential impacts on aquatic habitat and measures to manage and mitigate these.**

Noted

- **The Department of Primary Industries (Fisheries) supports the recommendations set out in the Draft Sawyers Swamp Creek Rehabilitation Plan for the management, monitoring and restoration of Sawyers Swamp Creek.**

Noted

- **The Department recommends conditions of approval for the project (refer full submission in Appendix A for details).**

Delta Electricity acknowledges the proposed conditions of approval and notes that the majority of these issues are addressed in the Statement of Commitments (see Chapter 7) and draft Sawyers Swamp Creek Rehabilitation Plan (PB, 2008) for the creek realignment. Delta Electricity anticipates that the rehabilitation plan would be finalised prior to realignment of the creek, which is now proposed to be undertaken in the second half of 2010 as described in Chapter 5.

The Department of Primary Industries (Fisheries) has also identified the potential loss of habitat in relation to realignment of the creek. Delta Electricity believes its commitment to reinstate the creek in a manner that would result in an improvement in the creek's current condition (as described in the Environmental Assessment) means that, in the long term, no aquatic habitat loss would occur in association with the creek realignment. As acknowledged in the Environmental Assessment, there would be a short-term impact on the creek during its realignment and rehabilitation, but this would be compensated by Delta Electricity through its investment in the rehabilitation of the realigned creek, as described in the Environmental Assessment and the Draft Sawyers Swamp Creek Rehabilitation Plan. As a result, Delta Electricity believes that no additional compensation should be required.

3.2.2 Submission 2 (private submission)

Issues and responses

- **Existing Stage 1 operations are associated with noise from ash trucks, earthmoving equipment and haul trucks changing gears and using exhaust brakes (on hill).**
- **Lack of consultation/information with regard to Stage 1 operations.**
- **Management of haul truck contractors.**
- **Operating hours.**

A number of issues raised in this submission relate to the existing Stage 1 operations at the site, which were approved previously and do not form part of the current proposal. It is noted, however, that some of the issues in relation to noise and truck movements are also relevant to the proposed Stage 2 activities and further clarification is provided below.

The Stage 2 activities constitute a continuation of existing activities; however, as part of the Environmental Assessment of the proposed Stage 2 activities, certain changes to the operations are proposed to address some of the historical issues associated with Stage 1. Delta Electricity has recently completed the development and commissioning of a second ash storage silo, which will give Delta Electricity greater flexibility in relation to its truck haulage and associated management of ash placement. This change in operation will enable its ash placement activities to operate within the proposed hours of 7 am to 10 pm, other than in emergency or abnormal situations.

Chapter 11 of the Environmental Assessment addresses truck movements and noise issues in detail, and is based on the proposed hours of operation. The project was assessed as being in accordance with Department of Environment and Climate Change guidelines for noise. Ash truck operators would be required to comply with these operating hours as part of their contract conditions. Noise associated with earthmoving and construction equipment was considered in the noise assessment completed for the Environmental Assessment. Further clarification on noise studies is provided in the response to Submission 10.

- **Lack of response to complaints.**

Complaints are managed through Delta Electricity's Corporate Standard of Procedures (DES BM 016), which requires all complaints to be recorded, including the nature of the complaint, the validity and the resolution. This register is regularly reported to Delta Electricity's Compliance Manager, the Delta Electricity Executive and the Board OHS&E subcommittee.

This process ensures that complaints made are acted on in a timely manner or extraordinary circumstances are reported to explain non conformance with the process.

Delta Electricity has received a number of repetitive complaints from a single complainant in regard to the current placement of ash for Stage 1. In an attempt to address these complaints Delta Electricity has commissioned a noise survey from the residence of the complainant. The results of this survey indicated compliance with relevant guidelines.

Further to the above, there have been several visits to the complainants by Senior Managers of Delta Electricity. As part of these visits, a review of surrounding residences was carried out, at which it was determined that the source of most of the noise was, in fact, from a local haulage firm and not from Delta Electricity operations.

- **Copies of the Stage 1 review of environmental factors (REF) were not provided when requested and were also not provided to the City of Lithgow Council.**

The Stage 1 REF was part of an approval obtained in 2002 under Part 5 of the *Environmental Planning and Assessment Act 1979*. Authority consultation, including with the City of Lithgow Council, was undertaken during that approval process, which is now completed.

Delta Electricity has incorporated relevant information from the Stage 1 REF into the Environmental Assessment for the Stage 2 activities, where appropriate, for the purposes of this application.

- **Delta Electricity has undertaken noise monitoring on the resident's property, but no results were provided when requested.**

The results of the noise monitoring undertaken at residential properties near the ash repository are included in Chapter 11 in Volume 1 and Technical Paper 5 in Appendix I in Volume 2 of the Environmental Assessment, which is a publicly available document. The document (including the relevant sections) is available for download on the major projects register on the Department of Planning website (www.planning.nsw.gov.au) and the project page on the Delta Electricity website (www.de.com.au).

- **The validity of noise monitoring Is questionable considering climatic conditions at time of monitoring.**

The NSW *Industrial Noise Policy* Section 3 'Determining Existing Noise Levels' recommends noise monitoring should not be undertaken during periods where average wind speeds over 15 minute periods or shorter at the microphone are greater than 5 metres per second or during periods of precipitation.

Meteorological conditions for the periods of attended and unattended noise monitoring were obtained from the Mount Piper Power Station meteorological station.

Adopting the Mount Piper meteorological data, the measured unattended noise levels were filtered for periods where wind speeds were greater than 5 metres per second and during precipitation. Accordingly, any meteorological conditions that had the potential to influence measured noise levels were discounted from the assessment procedure.

The climatic conditions that were used to assess noise impacts were valid and complied with the Industrial Noise Policy.

- **Noise barriers, if provided, would not reduce noise levels received at residences.**

Whilst the noise assessment determined that noise barriers would not be required for the control of potential noise impacts from the operational haul road, road traffic noise barriers may provide a reduction in received noise impacts, depending on the interaction of a number of discrete source and site-specific conditions.

No potential acoustic benefits of noise barrier placement were identified in the Environmental Assessment or in Technical Paper 5 when compared to relevant guidelines.

- **Concern over air quality, human health and environmental issues associated with dust in the atmosphere.**

Issues associated with dust from the ash repository are addressed in Section 2.2.3 (Potential environmental and human health impacts) and Chapter 10 (Air quality) in Volume 1 and Technical Paper 4 in Appendix H of Volume 2 of the Environmental Assessment.

- **The site is too close to the Lidsdale community.**

The use of the site for ash storage activities was reviewed as part of the Environmental Assessment (refer Section 2.4 of Volume 1) and alternative sites and options were considered. Based on the existing and historical use of the site for similar activities, it was concluded that this is the most appropriate site for ongoing ash storage in association with the ongoing operation of the Wallerawang Power Station.

The proposed Stage 2 activities are also geographically more distant to the residents of Lidsdale than the current activities that form part of Stage 1.

- **Request that Delta Electricity purchase house if project approved.**

The direct property impacts of the project would be confined to land owned by Delta Electricity. The Environmental Assessment undertaken for the project indicates that the potential indirect impacts of the project fall within the relevant guidelines/criteria for each issue and, as such, Delta Electricity does not believe there is an argument for acquisition in relation to the proposed development.

3.2.3 Submission 3 (Department of Primary Industries (Coal Advice and Resource Assessment))

Issues and responses

- **The Department notes previous comments have been incorporated.**

Noted

- **There is ambiguity in the environmental assessment with regard to the calculated royalties payable to the State. Calculated royalty costs have no bearing on extraction costs.**

Delta Electricity acknowledges that the potential calculated royalties payable to the State identified by the Department are not tied to extraction costs and any ambiguity in relation to this in the Environmental Assessment was unintentional. Further information in relation to this issue is provided in the response to Submission 6.

Delta Electricity notes that the extraction of coal in some areas would require access to Delta Electricity property, and Delta Electricity as the party responsible for assets in the area would need to be convinced that these activities do not present a risk to its existing assets — in particular the bund wall on the Kerosene Vale ash repository and the Sawyers Swamp Creek Ash Dam, which is a prescribed dam.

The issue of coal reserves is further discussed in the response to Submission 6. Delta Electricity, despite stated concerns, remains committed to facilitating these activities (if approved) and is modifying its proposed staging (as described in Chapter 5) to provide time for Centennial Coal to address these issues and obtain approval.

- **Delta Electricity must consider coal sterilisation.**

Delta Electricity is currently working with Centennial Coal to address the issue of potential coal resources in the area. Delta Electricity reconfirms its commitment to stage the operation of the proposed Stage 2 facility (pending approval) to provide time, within its operational constraints, for Centennial Coal to undertake the necessary investigations and seek relevant approvals for removal of coal resources in the project area. This is further discussed in the response to Submission 6.

3.2.4 Submission 4 (Sydney Catchment Authority)

Issues and responses

- **The project is within the Upper Cox's River subcatchment, so should be constructed and operated in a manner that does not adversely affect surface and groundwater quality beyond the site boundary.**

Noted.

As indicated in Chapter 7 (Groundwater) and Chapter 8 (Surface water) of Volume 1 of the Environmental Assessment, the proposal would be unlikely to have adverse effects on groundwater and surface water beyond the site boundary.

- **A number of issues raised by the Sydney Catchment Authority were not addressed, or have not been adequately addressed, in the environmental assessment.**

The Environmental Assessment was prepared in accordance with the Environmental Assessment requirements as issued by the Director-General of the Department of Planning on 22 February 2007. The Environmental Assessment was submitted to the Department of Planning for adequacy review on 31 January 2008, and was declared to adequately address the Environmental Assessment requirements on 17 March 2008. As the project is subject to assessment and approval under Part 3A of the *Environmental Planning and Assessment Act 1979*, Delta Electricity is required to address only those issues identified in the Environmental Assessment requirements issued by the Director-General. While it is common practice for the Department of Planning to seek input from regulators and stakeholders on the key issues for a project, the final contents of the Director-General's Environmental Assessment requirements are at the discretion of the Department of Planning.

- **The project is likely to achieve a neutral or beneficial effect on water quality, provided the issues outlined in the Sydney Catchment Authority submission are addressed (refer Appendix A for details).**

Noted.

Individual issues are addressed below.

- **Use of alternate water quality guidelines other than ANZECC Guidelines.**

The existing condition of the Sawyers Swamp creek does not meet the criteria specified by the Sydney Catchment Authority due to historic realignments and degradation. This is outlined in the Environmental Assessment and associated appendices. As such, conditioning of these stringent water quality criteria as described in Sydney Catchment Authorities submission would not be consistent with the existing creek condition.

As part of this proposal, Delta Electricity plans to realign a section of Sawyers Swamp Creek and subsequently rehabilitate the realigned sections of the creek to an improved condition. Given the historic degradation of the creek, the use of fixed criteria as specified by the Sydney Catchment Authority would be inconsistent with the proposed efforts to improve the creek condition in the sections being realigned.

Delta Electricity would prefer to see a requirement to improve the realigned sections relative to their current condition, as outlined in the draft Sawyers Swamp Creek Rehabilitation Plan. This is because water quality can be affected by catchment parameters from upstream and downstream activities beyond Delta Electricity's control. The conditioning of responsibility beyond areas of Delta Electricity's control would be onerous. Delta Electricity is committed to improving the condition of the creek and demonstrating a geomorphically stable creek. Ongoing monitoring is considered likely to demonstrate an improvement in condition of this section of the creek. Delta Electricity has outlined its proposal to demonstrate this improvement relative to reference creeks in the area in the draft Sawyers Swamp Creek Rehabilitation Plan, which would be finalised prior to the realignment.

- **Qualitative data on water monitoring between January 2006 and January 2008 has not been included in the environmental assessment.**

Qualitative data on water monitoring from January 2006 to January 2008 is included in Appendix B to Technical Report 2 - Surface Water in Volume 2 of the Environmental Assessment.

- **Wet weather monitoring is appropriate and should be included in the surface water monitoring plan.**

Delta Electricity commits to wet weather monitoring in the Statement of Commitments in Chapter 15 of the Environmental Assessment under surface water commitments and this is reiterated in the revised statement of commitments in Chapter 7 of this report.

- **Dissolved oxygen and turbidity monitoring (NTU) should be included.**

Delta Electricity's proposed monitoring for the Stage 2 activities is consistent with historical monitoring in relation to the Stage 1 activities. Delta Electricity would prefer to maintain this monitoring regime; however, if required by Department of Planning as part of this approval, Delta Electricity will accommodate this request.

- **Management response to exceedances of surface water quality criteria.**

As documented in Section 7.5.2 and Section 8.4.3 in Volume 1 of the Environmental Assessment, the proposed groundwater and surface water monitoring programs would be established as part of the operational management plan (OEMP) for the Stage 2 ash repository and would be consistent with the existing monitoring currently undertaken for Stage 1. Details of the management responses would be documented within the OEMP, prior to the commencement of Stage 2 activities. Appropriate responses would be specific to the exact nature of the exceedance identified during monitoring, and depending on the nature and scale of any exceedance, may include:

- increased monitoring regularity
- review of the OEMP and implementation of additional controls
- in the case of a major exceedance, stopping placement activities until such time as the cause of the major exceedance can be identified.

Delta Electricity notes that it has undertaken monitoring for the Stage 1 placement activities for several years. To date, no major exceedances have been identified and continuation of the current monitoring and placement approach should ensure these events are unlikely to occur in future. This is consistent with the outcomes of investigations documented in the Environmental Assessment.

The OEMP would detail appropriate notification and reporting procedures to relevant regulators in response to any event in which an exceedance of trigger values is found. This would include reporting of the management measures that were taken to specifically deal with the nature and scale of any identified exceedance.

- **Copies of the following are requested for review:**
  - **Final Sawyers Swamp Creek Rehabilitation Plan.**
  - **Construction and Operation Environment Management Plans, when available.**

Delta Electricity will issue a copy of the Final Sawyers Swamp Creek Rehabilitation Plan and CEMP and OEMP for comment to the Department of Planning, once prepared. If the Department believes it is appropriate to distribute this to the State Catchment Authority for

comment, Delta Electricity has no objection to this request. However, it is important to note that the rehabilitation document will not be finalised until prior to commencement of construction of the creek realignment. Due to amendments to operational staging outlined in Chapter 5 (refer response to Submission 6), the creek realignment would now not be required until after mid 2010.

- **Proposed Conditions of Approval.**

The Sydney Catchment Authority has suggested a number of conditions to address the issues described above: in particular, suggested conditions for surface water and groundwater monitoring. Delta Electricity would prefer monitoring is consistent with parameters outlined in the Environmental Assessment and current operations. Delta Electricity would prefer to see all issues addressed in the OEMP and Final Sawyers Swamp Creek Rehabilitation Plan, rather than in multiple management documents, but realises that ultimate discretion on these issues lies with the Direct-General and the Department of Planning once they have given due consideration to the submissions and associated responses

- **Construction of the stabilisation berm — concern that ash should not be used in strengthening the bund.**

Delta Electricity notes the Sydney Catchment Authority's comments in relation to the use of bottom ash and clinker in the stability structure. Delta Electricity would prefer to be able to re-use material generated by its operations in site structures in order to increase the life of placement areas and to be consistent with objectives to re-use material in the longer term. Any structure would be a combination of reuse materials and other materials, such as concrete, to ensure that ash and clinker materials are encapsulated to avoid the risk of leachate entering surface water or groundwater bodies.

Delta Electricity believes that such a design is consistent with sustainable reuse of material from coal fired generation and has significant advantages in relation to limiting importation of additional materials or alternate construction options.

- **Identified requirement for In-stream controls in the rehabilitation plan to ensure geomorphic stability.**

Delta Electricity has committed to the implementation of in-stream controls in the realigned section of Sawyers Swamp Creek to establish a more geomorphically stable creek. This commitment is outlined in the existing Statement of Commitments in Chapter 15 in Volume 1 of the Environmental Assessment and the revised statement of commitments outlined in Chapter 7 of this report.

3.2.5 Submission 5 (private submission)

Issues and responses

- **Health implications of ash in gutters and run-off flowing to local creeks.**

The potential environmental and human health implications of ash are discussed in Section 2.2.3 in Volume 1 of the Environmental Assessment.

- **Current operating hours.**
- **Noise from machinery, dozers and trucks in the early morning.**
- **Limited ash storage capacity.**

The completion of the new ash silo, along with the work undertaken as part of the Stage 2 works Environmental Assessment, have allowed Delta Electricity to increase its storage capacity and commit to reduced operating hours for the proposed Stage 2 works. Delta Electricity commits within the Environmental Assessment to reducing normal hours of operation at the ash repository to between 7 am and 10 pm; these operating hours would result in compliance with relevant criteria for noise levels received at residential receptors, as described within the Environmental Assessment. Delta Electricity notes that the restricted operating hours apply to ash haul trucks, the operation of coal delivery trucks is at the discretion of (and under a licence held by) Centennial Coal.

- **Lack of dust suppression, particularly with regard to dust generated by trucks leaving the site.**

Dust suppression measures undertaken at the site are outlined in Chapter 10 in Volume 1 of the Environmental Assessment. The air quality assessment indicates that once the outlined measures are implemented, air quality levels should comply with Department of Environment and Climate Change guidelines.

- **Delta Electricity communication and complaints procedures — complaints are not responded to.**

This issue was also raised in Submission 2. Complaints are managed through Delta Electricity's Corporate Standard of Procedures (DES BM 016), which is summarised under the response to Submission 2.

3.2.6 Submission 6 (Centennial Coal)

Issues and responses

- **If unmitigated, the extension of the ash repository poses a significant threat to extraction of coal resources in Centennial Coal's lease/title areas.**

Delta Electricity is currently working with Centennial Coal to address the issue of potential coal sterilisation. In response to this submission, Delta Electricity has undertaken several meetings with Centennial Coal to discuss modifications to the placement staging within its own operational constraints to enable Centennial Coal to seek a separate approval for the removal of coal resources.

In this respect, Delta Electricity reconfirms its commitment to stage the operation of the proposed Stage 2 facility (pending approval) to provide time for Centennial Coal to undertake the investigations and seek relevant approvals for extraction of coal resources remaining in the project area, subject to satisfying Delta Electricity's operational requirements as stated in the Environmental Assessment.

In order to facilitate a separate project approval(s) for Centennial Coal, Delta Electricity now proposes to amend the staging of its operations (as set out in the Environmental Assessment) to initially place ash in a north-east direction, prior to its placement in an easterly direction (see Chapter 5).

Additionally, Delta Electricity now proposes to postpone the realignment of Sawyers Swamp Creek to allow Centennial Coal as much time as possible to access areas identified in its submission and shown in Figure 3-1. Further detail on the proposed modifications to the project is provided in Chapter 5.

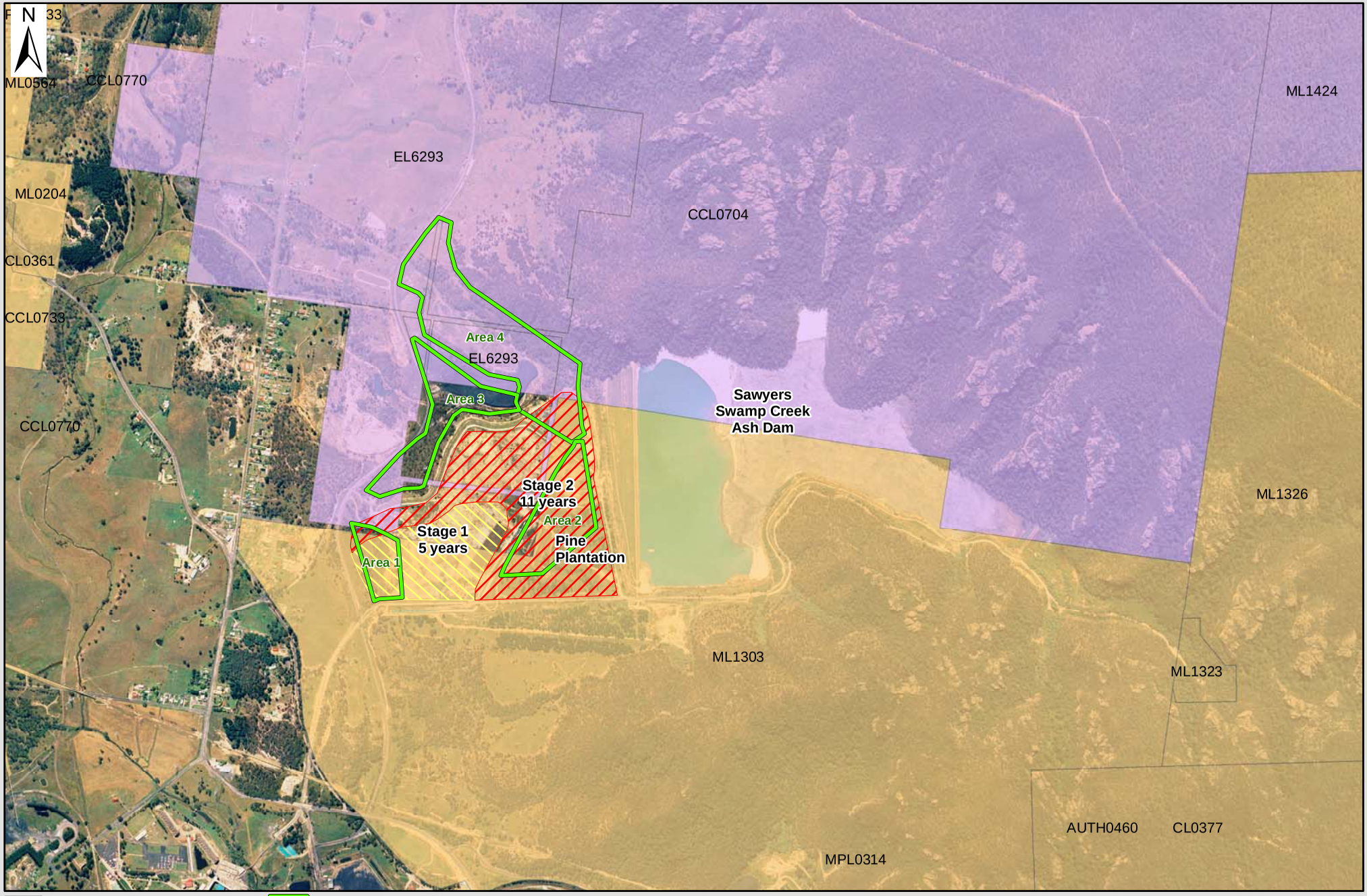


Figure 5-1 Coal leases in the Kerosene Vale area

Figure 3-1 identifies four areas that potentially contain viable coal reserves, each of which are addressed below.

Area 1

Area 1 is currently affected by the Stage 1 activities, which fall outside the current project. In meetings held since the receipt of this submission, Centennial Coal has indicated that it is no longer pursuing this area.

Area 2

The Area 2 coal reserves are beneath the initially proposed placement area, and as such, are the most time critical in relation to Delta Electricity's operations and the current Stage 2 proposal. On the basis of recent discussions with Centennial Coal, Delta Electricity now proposes to modify the initial staging of ash activities in this area, as described in Chapter 5, to place ash in a north-easterly direction (rather than the originally proposed easterly direction), thereby allowing Centennial Coal time to seek separate approval for its mining activities.

As part of Centennial Coal's assessment of this activity, Delta Electricity would expect Centennial Coal to satisfactorily demonstrate that mining in this area would not jeopardise existing Delta Electricity assets: in particular, that mining in Area 2 would not place Sawyers Swamp Creek Ash Dam — as a prescribed dam — at risk. Delta Electricity, as an active member of the NSW Dam Safety Committee, has advice that any mining activities within 100 meters of the toe of this dam would not be recommended. The potential for damage to the dam cannot be understated. Historic dam safety reports state:

"*The township of Lidsdale is less than 2 km downstream of the dam and possibility of loss of life is recognized (in the event of a flood from the dam).*"

"The dam break study undertaken in 1996 confirmed the possibility of loss of life" (Sawyers Swamp Creek Dam Five Yearly Surveillance report – Connell Wagner, 1996

Delta Electricity also notes that placement in a north-easterly direction would have a finite time window, prior to an operational requirement to move the placement in an easterly direction over the area Centennial Coal has identified as Area 2. However, as stated in the Environmental Assessment, Delta Electricity is committed to facilitating Centennial Coal's request and to maintaining an ongoing dialogue with Centennial Coal in relation to this issue.

In revising the staging as described, Delta Electricity will provide as much time as possible, within its own operational constraints, to enable Centennial Coal to seek approval and address the issues outlined above in relation to its proposed activities. This is likely to be between 9 and 12 months of the commencement of the Stage 2 placement, depending on ash production and power generation requirements over this time.

Areas 3 and 4

Areas 3 and 4 would primarily be affected by the proposed creek realignment. Delta Electricity, as a result of this submission, now plans to realign the creek in late 2010, in order to allow Centennial Coal time to seek approval to mine this area and to identify alternate creek realignments that satisfy the environmental requirements of regulators. If Centennial Coal is successful in this application, Delta Electricity would expect Centennial Coal to undertake the creek realignment and any associated work.

However, Delta Electricity is seeking approval for the creek realignment as proposed at this time and would apply for a modification of its approval under Section 75W should Centennial Coal be successful in its application to undertake coal extraction in Areas 3 and 4. Delta Electricity would like Centennial Coal to address any implications of the proposed activities on Delta Electricity's existing assets as part of its assessment of the feasibility of mining these areas. In particular, Centennial Coal should consider requirements to stabilise the existing bund wall structure around the Kerosene Vale ash repository. The revised staging of these areas should enable Centennial Coal up to 2 years to pursue access to potential resources in Areas 3 and 4, which would be subject to separate approval.

In line with the proposed amendment to operational staging, surface water would initially be directed to the existing canal. The proposed amendments are consistent with the Environmental Assessment, but would allow additional time for Centennial Coal to obtain the necessary approval(s) to undertake mining. However, once alternate areas are filled as far as safety concerns dictate, Delta Electricity would need to place ash over Area 2 for operational purposes.

- **Centennial Coal is the owner of the land immediately to the north of the existing and proposed repository areas and is directly impacted by the proposed activities.**

The project has been developed to contain direct impacts to land owned by Delta Electricity. The entire ash repository site and associated developments fall within the boundaries of Delta Electricity land. As such, there would be no direct impacts on Centennial Coal-owned land. Potential indirect impacts on adjacent land are discussed in the relevant sections of the Environmental Assessment.

- **Centennial Coal is the owner and operator of the coal haul road used for fly ash haulage and coal haulage.**

Delta Electricity is the owner of the Coal Haul Road, which is leased and operated by Centennial Coal.

- **Coal sterilisation — there is potential to sterilise 989 kt of coal through the proposed ash placement. The current export value of this coal is $123 million.**

Delta Electricity is unable to comment on the value of the coal beneath the site. The value of the coal would ultimately depend on whether the coal is used for export or domestic purposes, and whether approval to extract the coal would be provided by the Department of Planning. As discussed above, Delta Electricity commits to staging ash placement operations to allow time for Centennial Coal to seek the relevant approvals, subject to its own operational limitations. The issue of the value of the coal would need to be addressed as part of the separate approvals process for the mining activities.

Any coal sterilisation would be the result of economic or technical limitations, rather than ash placement.

- **Ash storage capacity — if the coal is removed prior to ash placement, the capacity of the site for ash storage will be increased and the operational life of the facility prolonged.**

Noted. If Centennial Coal is successful in obtaining approval to remove the coal at the site, there would be benefits to the longevity of the facility. As such, Delta Electricity has committed to operational staging to allow Centennial Coal to seek approval to mine and facilitate these potential longer-term benefits.

- **Environmental impacts on Lidsdale residents — removal of coal prior to ash placement would reduce visual, noise and dust impacts, as the ash would be placed partially below ground level.**

The design height assessed in the Environmental Assessment is consistent with the Stage 1 activities. The Environmental Assessment does not consider the potential impact, or benefits, of coal removal as this does not form part of the proposed Stage 2 activities. This would need to be assessed as part of a separate assessment for Centennial Coal's proposed activities.

- **The proposed relocation of Sawyers Swamp Creek will sterilise 325 kt of shallow coal reserves.**

The creek is an existing feature in the landscape and currently sterilises some coal resources. The relocation of the creek would not significantly increase the quantity of coal sterilised by the creek and is consistent with the overall proposal for the ash repository. Delta Electricity agrees that if Centennial Coal is successful in obtaining approval to mine in this area, there would be significant environmental benefits to relocating the creek only once.

In this respect, Delta Electricity commits to staging operations at the ash repository to allow Centennial Coal to undertake investigations and seek the relevant approvals for alternative creek realignments beyond those identified in the existing Environmental Assessment that may better suit Centennial Coal's proposal. Delta Electricity would delay relocation of the creek as long as operationally feasible and has re-scheduled the proposed creek realignment to late 2010 to facilitate Centennial Coal access to these reserves. However, as stated previously, Delta Electricity is seeking approval for the current proposal given the identified benefits of rehabilitation. Delta Electricity would seek a modification to the approval should Centennial Coal obtain approval within the identified timeframe.

- **Centennial Coal notes the commitment from Delta Electricity to stage activities to optimise the timeframe in which Centennial Coal could access the remaining coal reserves.**

Delta Electricity reconfirms this commitment, and as such, has added it to the revised Statement of Commitments for the project (see Chapter 7).

- **Centennial Coal proposes that one Part 3A application/approval should apply to both the ash placement and coal mining activities in the area, and requests that the Department of Planning considers this request. This submission outlines Centennial Coal's proposed approach to achieve this.**

Discussions have been undertaken with the Department of Planning with regard to this request. The Department of Planning has indicated that it does not agree that one approval should apply to mining and ash placement at the site, due to the differences in the operational activities and their associated impacts and the different proponents for each activity. The Department of Planning has advised that a separate Part 3A approval would be required for any mining activities at the site. Delta Electricity now proposes to stage its operations at the site to allow time for Centennial Coal to seek the relevant approval(s), as far as operational requirements allow, and has modified its proposal to facilitate this (see Chapter 5).

3.2.7 Submission 7 (Lithgow Environment Group)

Issues and responses

- **Unacceptable levels of surface and groundwater pollution are resulting from the facility breaching section 120 of the *Protection of Environment Operations Act 1997* (POEO Act).**

An assessment of current groundwater and surface water quality is presented in Chapters 7 and 8 in Volume 1 and Appendix E and F in Volume 2 of the Environmental Assessment. A comparison of groundwater quality and surface water quality at the potential groundwater discharge locations (Lidsdale Cut and Sawyers Swamp Creek) against guidelines for the two major beneficial use categories in the area (ANZECC Irrigation and Freshwater Ecosystem Protection Guidelines (ANZECC 2000)) was included in the assessment presented. The assessment also noted that, prior to commencement of operations at the Stage 1 area, the catchment was classified as disturbed, with some evidence that existing and historic land use activities had contributed to a deterioration in local water quality (ERM 2002).

Based on water quality data collected by Delta Electricity over the period November 2001 to April 2007, the assessment found that concentrations of trace elements (including zinc, copper, lead, cadmium, barium, fluoride and boron) are present in the groundwater down gradient of the existing and proposed ash repository areas (in Sawyers Swamp Creek and at the Lidsdale Cut). Elevated concentrations of boron, copper, zinc, cadmium and lead were also identified in Sawyers Swamp Creek. While concentrations in the ground and surface water have been found to be higher in some cases that the ANZECC Ecosystem Protection Guidelines, they are generally lower than the ANZECC Irrigation Guidelines. Trace element concentrations are consistent with current regional water quality within the Coxs River catchment at groundwater discharge locations and cannot be attributed to a breach of the *Protection of the Environment Operations Act 1997 (*PoEO Act) by Delta Electricity. Delta Electricity also notes the Department of Environment and Climate Change's submission (Submission 9), which supports the proposal, and its role in exercising statutory functions in relation to the POEO Act.

- **Air quality:**
  - **A serious dust problem in Lidsdale township since 2003 is ignored in the environmental assessment.**
  - **Environmental buffers are non-existent or inadequate to minimise adverse impacts.**
  - **The ash repository should be separately licensed from the main power plant.**
  - **The ash repository should be classified as a hazardous waste facility under the POEO Act, with its own set of air and water quality licence conditions.**

The issue of dust is addressed in Chapter 10 in Volume 1 and Technical Paper 4 in Appendix H in Volume 2 of the Environmental Assessment. The volumes of dust attributable to ash placement activities at the site fall within the relevant criteria set by the Department of Environment and Climate Change and have been undertaken in accordance with the relevant legislative requirements. The assessment, as highlighted in the submission, includes historical data in relation to dust, which includes occasions with elevated readings. The recent incidents highlighted in press materials have been investigated by the Department of Environment and Climate Change, and the overall information within the

Environmental Assessment is consistent with historical data for the site and surrounding area.

The licensing of the ash repository under the main power plant licence is consistent with the licensing of power generating activities throughout NSW. Any change to the existing licensing arrangements would be at the discretion of the licensing authority. As the fly and bottom ash are not classified as hazardous waste (refer Section 2.2 in Volume 1 of the Environmental Assessment), it is not appropriate to classify the ash repository as a hazardous waste facility.

- **Activity is not consistent with land use zoning.**

As stated in the Environmental Assessment, the proposed activity is consistent with existing and historic land uses, as well as current land use zoning in this location.

- **Operating hours:**
  - **The commitment included in the environmental assessment regarding operating hours is too open-ended.**
  - **Operating hours should be restricted to 7 am to 5 pm.**

As discussed in Chapter 11 in Volume 1 and Technical Paper 5 in Appendix I (Volume 2) of the Environmental Assessment, the proposed operating hours were determined based on the results of the noise modelling and assessment, and to achieve the noise criteria relevant to each period of the day. Delta Electricity requires the proposed operating hours to maintain the efficient operation of the Wallerawang Power Station and to continue the efficient contribution to the wider electricity grid.

- **Noise:**
  - **The Environmental Assessment commitment on noise barriers is too open-ended.**
  - **Noise barriers must be installed.**

As discussed in Chapter 11 in Volume 1 and Technical Paper 5 in Appendix I (Volume 2) of the Environmental Assessment, the results of the noise assessment indicate that given the proposed restrictions to operating hours, a noise barrier would not be required and noise levels would comply with the relevant criteria.

- **The need for the project in this location is questioned, and it is too close to homes and underground mine workings.**

The use of the site for ash storage activities was reviewed as part of the Environmental Assessment (refer Section 2.4 of Volume 1) and alternative sites and options were assessed. Based on the existing and historical use of the site for similar activities, it was concluded that this is the most appropriate site for ongoing ash storage.

- **The asbestos disposal area at the eastern end of Maddox Lane was not identified in the environmental assessment. This dump is not licensed and has no development approval, and thus constitutes illegal dumping of hazardous material.**

The area referred to is outside the project footprint and, as such, is not relevant to the current proposal.

- **The Drinking Water Catchments Regional Environmental Plan No 1 states that the project must have a positive or neutral benefit to water quality. The project would not achieve this.**

Submission 4 from the Sydney Catchment Authority, and the water assessments undertaken for the Environmental Assessment, indicate that the project would have a positive or neutral impact on water quality subject to addressing identified issues as discussed in section 3.2.4. Delta Electricity defers to the Sydney Catchment Authority position with regard to this issue and also notes the support of the Department of Environment and Climate Change for the proposal (see Submission 9).

- **Submissions from the NSW Environmental Defender's Office and Aargus P/L (submissions 7a and 7b) should be given full consideration.**

All submissions made on the project have been given due consideration, as required under Part 3A of the *Environmental Planning and Assessment Act 1979*. The issues raised and Delta Electricity's responses are outlined below.

3.2.8 Submission 7a (Aargus P/L)

Issues and responses

- **No seamed capping information is provided in the environmental assessment, allowing trace elements in leachate to enter the groundwater system.**
- **Increasing the thickness of the ash layer would increase the residence time of water, thereby increasing trace element concentrations.**

The above issues are addressed in Chapter 7 (Groundwater) in Volume 1 and Technical Report 1 in Appendix E (Volume 2) of the Environmental Assessment. These assessments indicate that levels within groundwater and surface water would be acceptable relative to existing criteria. Delta Electricity has also committed to continued monitoring of these issues to assess any changes in conditions.

- **Geological permeability was not accounted for.**

The majority of the site is underlain by ash, as stated in the Environmental Assessment. As such, it has similar permeability characteristics to ash permeability studies undertaken at Mt Piper. This issue is further clarified in response to Submission 10.

- **The ash (dirty water) collection pond acts as a mechanism for trace elements to enter the groundwater system. This issue is not addressed in the environmental assessment.**

The proposed surface water catchment system is designed to capture water to avoid release to surface and groundwater and to enable its reuse in the operation of the area. As such, it would be constructed over areas of existing ash and capping material to prevent the ingress of water into groundwater, as discussed in the Environmental Assessment.

- **Minimal mitigation measures are proposed to restrict discharged rainfall.**

Measures to restrict discharge of rainfall are outlined in Chapter 7 (Surface water) in Volume 1 and Technical Report 2 in Volume 2 of the Environmental Assessment. These include the dirty water capture system outlined above.

- **The groundwater monitoring program is sufficient in regard to the frequency of sampling, but requires many more monitoring points.**

Delta Electricity notes the comment that the current monitoring program is sufficient, but does not agree, based on existing monitoring results for Stage 1, that additional boreholes are required. Delta Electricity will defer to the Department of Water and Energy's submission (Submission 9), as the regulator of licensed bores in the area, which supports Delta Electricity's proposed monitoring regime.

3.2.9 Submission 7b (Environmental Defender's Office)

Issues and responses

- **Impacts on surface and groundwater.**

A number of issues raised in this submission are consistent with Submission 7a and have been addressed above in relation to groundwater and surface water. These issues are also described in Chapters 7 and 8 in Volume 1 of the Environmental Assessment.

- **There is no mention in the environmental assessment (Statement of Commitments) of how the 15% moisture content of the ash will be monitored/maintained.**

The 15% moisture content would be monitored by means of a calibrated water meter. Routine maintenance and calibration of this water meter is regularly carried out by Delta Electricity contractors.

- **There is a lack of detail in the Statement of Commitments.**

The Statement of Commitments included in the overall Environmental Assessment was declared adequate by the Department of Planning prior to its exhibition. As part of the Submissions Report process, the Statement of Commitments has been updated (see Chapter 7), with further detail added in response to the submissions received, liaison with the Department of Planning and other parties and ongoing refinement of the project, would form part of the final approval.

3.2.10 Submission 8 (Department of Environment and Climate Change)

Issues and responses

- **The proposal is supported based on the Department's assessment of the proposal and the environmental management and mitigation measures proposed to address potential environmental impacts (as detailed in the Statement of Commitments).**

Noted

- **The commitments in the Statement of Commitments are recommended for inclusion as Conditions of Approval. Construction and operation environmental management plans should better define ongoing monitoring.**

The Statement of Commitments would normally form a part of the approval conditions for the project (should the project be approved). However, this is at the discretion of the Department of Planning; Delta Electricity would concur with such a requirement.

- **Additional conditions are recommended (Attachment A to Submission 8, refer Appendix A), should approval be granted.**

Delta Electricity generally has no objection to the proposed conditions, but appreciates this is at the discretion of the Department of Planning. Delta Electricity would request an amendment to the proposed noise goal, as Delta Electricity's noise assessment identified a criterion of 42 dBA, and the noise criterion applied should be consistent with the Environmental Assessment. This is further discussed within responses to the Department of Planning's Submission 10 in Section 3.2.12.

Additionally, Delta Electricity has no objection to notifying the Department of emergency activities, but would not wish to be required to seek an approval in relation to these activities (due to their nature as emergency activities).

3.2.11 Submission 9 (Department of Water and Energy)

Issues and responses

- **If a new crossing is required over the realigned Sawyers Swamp Creek, a bridge crossing should be built rather than a culvert.**

No new crossing is proposed over the realigned creek.

- **With regard to the rehabilitation of a vegetated riparian corridor along Sawyers Swamp Creek:**
  - **The bridge should be elevated, span the full width of the riparian corridor, maximise light penetration and allow moisture penetration.**
  - **Figure 2 in Appendix B should distinguish the top of the bank with a change of slope and the channel cross-section should reflect that of a natural channel.**
  - **Earthworks should be avoided within 50 metres of the watercourse and downstream of the private coal road, where feasible.**

As discussed above, no crossing of the realigned creek is proposed. The other issues are addressed in the draft Sawyers Swamp Creek Rehabilitation Plan and would be addressed in the final rehabilitation plan (see Appendix B in Volume 2 of the Environmental Assessment).

- **The groundwater monitoring bore network should be licensed by the Department of Water and Energy.**

The process to formalise licensing of the historical bore network is currently underway.

- **Proposed conditions of consent.**

Delta Electricity generally has no objection to the proposed conditions but appreciates this is at the discretion of the Department of Planning. Delta Electricity would like, however, to highlight the following in relation to these conditions:

- The majority of these conditions could be incorporated into the final Sawyers Swamp Creek Rehabilitation Plan, which would be completed prior to creek realignment — now rescheduled to late 2010.
- There are currently no earthworks proposed downstream of the private coal road and any conditions should reflect this.

3.2.12 Submission 10 (Department of Planning)

Issues and responses

Recycling options:

- **With regard to cementitious use, is the issue of market forces or that of the ash quality more relevant to the lack of reuse opportunities?**
- **Referring to a recent article on trials of compressed fly ash in cement manufacture, would ash from Wallerawang be of an appropriate quality for this application and should this avenue be further pursued by Delta Electricity?**
- **Section 2.3.3 of the Environmental Assessment Report suggests that ash from Wallerawang has advantages for horticultural uses. What are the details of current initiatives/investigations being pursued by Delta Electricity to this end?**
- **Section 2.3.8 of the Environmental Assessment indicates that approval for the use of ash in major road projects has not been sought. Why not?**
- **What quantity of bottom ash would be reused in works on-site?**

Delta Electricity is constrained in actively supporting individual companies due to trade practice implications.

Delta Electricity actively supports numerous research facilities, including the Cooperative Research Centre for Coal in Sustainable Development (CCSD), the CSIRO and numerous smaller operations in the search for valid recycling uses for ash. Delta Electricity actively participates in formal organisations such as the Ash Development Association of Australia (ADAA) and the ARIES research group, with a charter to support research and review of ash recycling options. One of the activities of these associations is to develop processes and research to give companies involved in the marketing of fly ash the detail and knowledge they require to do so. For example, the Department of Environment and Climate Change (and its other State equivalents) has banned the use of fly ash in horticultural use in all states; however, the ADAA has researched, sought and gained an exemption for power station fly ash in NSW, and is in the process of negotiating a similar exemption in Queensland.

Whilst Delta Electricity recycles around 16 to 20% of ash from its Mt Piper and Vales Point Power Stations, it also supports research by arranging and delivering 3,000 tonnes of ash samples each year. These samples are used for research and product trials as diverse as:

- agricultural use — rice and cotton growing
- road base trials for road repairs
- mixing of ash with biosolids for fertiliser
- lightweight building blocks and bricks
- race track stabilisation
- potting mix
- domestic cement products
- aggregate supplements
- stormwater drainage
- fertiliser supplements.

Despite all of this research and support, Delta Electricity is unable to actively market products that result from research, as this is the role of the research facility.

With regard to the query on bottom ash, most of the bottom ash produced on-site is used in road bases in the course of normal repository management. Pending approval, the program for Stage 2 would include use of most of the bottom ash produced in the buttressing of the bund wall in the later stages of the project.

Operational activities

- **Has Delta Electricity investigated the feasibility of constructing a new haul road away from residents or a conveyor system, or some combination of these? If not, provide justification as to why these are not feasible options.**

Delta Electricity has considered a number of alternative haul routes; however, land ownership and geotechnical limitations make the current route the most feasible option. As noted in Centennial Coal's submission, Centennial Coal would continue to use the existing haul road and, as such, would continue to have some impact and could potentially extend the area of impact of the overall activities.

- **What does ash conditioning involve?**

Ash conditioning is the mixing of water with the ash to improve the ash properties for placement. Conditioning is undertaken in the silo prior to haulage of the ash to the repository area. Ash properties change depending on water content; too little water and compaction is difficult, too much and the site can become boggy and dangerous. Water content is monitored on a regular basis to ensure the level of moisture is maintained at approximately 15%.

- **Provide details on the scale of extraction planned in the pine plantation (depth and area). Will the removal of this material be undertaken in stages as needed for use on site?**
- **Clarification is sought on the nature of the barrier/capping to be provided in the pine plantation area.**

Excavation of the former pine plantation area is planned to optimise this area. The proposed depth of excavation varies from 4 to 20 metres. It is proposed to initially excavate enough area to allow placement. The fill not required at this stage would be stockpiled in locations on Delta Electricity land where it can be reclaimed as needed. Activities proposed in the former pine plantation area include:

- strip overburden to the underlying sandstone slab 1 metre above the sandstone slab to leave a clay layer to prevent migration of water to groundwater (a depth of between 4 and 20 metres)
- compact and complete this 1 metre capping
- coordinate drainage flow to allow a sump on the north-western corner to gather subsurface water for pumping to the return water canal (and ultimately for use within Delta Electricity's operations)
- direct surface water flows to the collection pond in the eastern corner.

- **What is the latest estimated end date of capacity in the Stage 1 area?**

Based on current estimates, Stage 1 will reach capacity at or about the end of July 2008; however, the use of the site will be optimised, including filling of smaller 'bays and inlets' to allow more time to prepare the former pine plantation for placement. The Centennial Coal issue outlined in Submission 6 can be facilitated by commencing Stage 2 placement activities at the northern end of the Stage 1 area (refer response to Submission 6 for further detail).

Groundwater

- **Are the geological and hydrological conditions at the Mt Piper ash repository sufficiently similar to those at the Kerosene Vale ash repository for the assumption that the trials at Mt Piper to be more appropriate than hydrogeological modelling of the site to be considered valid?**
- **Provide details on the outcomes of discussions with the Department of Water and Energy on the need for hydrogeological modelling.**

The trials at Mt Piper determined the infiltration rates to fly ash pads, and the potential for mobilisation of trace elements in the ash to the groundwater system based on ash generated from the Mt Piper Power Station (Hyder 2002). The ash generated at the Wallerawang Power Station is considered similar to Mt Piper ash, except in regard to its carbon content, due to differences in efficiencies of burner units at the two power stations (Hyder 2002). The similarities in ash properties indicate that infiltration and potential for mobilisation of trace elements in ash to the groundwater system would be similar. The groundwater assessment presented in Chapter 7 and Appendix E of the Environmental Assessment was based on the results from the Mt Piper field trials, as these provided the most relevant baseline data for this assessment.

The Mt Piper field trials were undertaken over 2 years, during which periods of above and below average rainfall conditions were experienced. Mt Piper is located approximately 5 kilometres from Kerosene Vale, and has similar climatic conditions.

As documented in Section 7.1 in Volume 1 of the Environmental Assessment, the decision to not undertake hydrogeological modelling was discussed with Greg Brady and Greg Russell of the Department of Water and Energy on 27 August 2007, as this approach differs from the specifics of the Environmental Assessment requirements for the project. At this meeting, it was agreed that applying the results from the Mt Piper trials was an appropriate approach for this assessment on the basis that this data was the only data available to calibrate a model; thus the model results would be the same as those of the Mt Piper field trials. Delta Electricity also notes the Department of Water and Energy's submission (Submission 9) in relation to groundwater and associated conditions, which supports the proposed monitoring program that was developed as a result of the groundwater assessment outlined in the Environmental Assessment and the approach discussed with the Department.

Groundwater and surface water quality modelling

- **What kind of management responses are available should the monitoring programs indicate exceedance of trigger values?**

This issue was raised in the Sydney Catchment Authority submission (Submission 4) and has been addressed in the response to that submission (refer Section 3.2.4).

Noise

- **Are revisions of the construction noise program likely (as suggested in Section 11.4.1 of the Environmental Assessment Report)? If so, how significant would the changes be?**

The required construction program would be subject to finalisation once construction contractors are engaged.

The noise impact assessment adopted standard construction principles and techniques, which would not be expected to change significantly. Some variation to the required construction plant and duration of works may occur. It is not expected that any changes would adversely affect the predicted noise impacts and subsequent outcomes of the noise assessment.

It should be noted that the construction noise impacts presented are for peak construction operations where all feasible plant required are in cumulative operation. It is likely that these peak noise impacts would occur only during short durations of less than one day.

Notwithstanding the above, construction management practices and control measures to limit the potential for adverse noise impact would be undertaken as set out in the Environmental Assessment. The CEMP prepared by the construction contractor would ensure recommended design goals are achieved for all proposed works.

- **Section 11.4.2 refers to revisions to the project to include night works. This appears contrary to the proposal and would seem to require a modification, not just an assessment of sleep disturbance.**

This relates to the 'abnormal" operations that may occur at night. There is no intent to revise the project to include night-time works, only the capacity for identified emergency, abnormal scenarios to be undertaken to facilitate the operation of the power station.

The reference in section 11.4.2 to a sleep disturbance assessment would be require should Delta Electricity pursue night activities in the future for operational reasons. As indicated in the Department of Planning comments, this would require a modification of approval.

- **Will the current ash management hours be amended under Stage 2? If so, it is not clear if the implications of the change are accounted for in the noise assessment (i.e. with reduced hours would the amount of equipment on-site increase?). Confirm if restricted truck operating hours also apply to ash handling activities at the site.**

Stage 2 ash placement operations would be limited to between 7 am and 10 pm. Any haulage activities outside of these times would occur only as a result of emergency or abnormal operations, such as plant breakdown. The likelihood of such occurrences would be limited by correct maintenance and management of the facility. The noise assessment was undertaken with increased intensity of operations due to the restricted hours and the fact that site equipment would only operate in the nominated hours. There is no requirement within this proposal for additional equipment due to the change in hours, beyond items identified in the Environmental Assessment for construction and incorporated into the existing noise assessment

- **Table 8-2 of Technical Report 5 provides details of the predicted noise impacts for Stage 1. The text states that the predicted noise impacts are based on an assumption that the plant is operational at the most westerly point of the Stage 1 area. Table 9-4 provides details of the predicted noise impacts associated with Stage 2, assuming a worst case scenario of the plant being operational to the nearest receptor. Why are the values in Table 9-4 considerably lower than in Table 8-2 when ash placement will also be undertaken immediately north of the existing placement area, making the distance to Site 2 not significantly greater? In addition, the distance between location 3 and the ash placement area would, at some stages, be equal to or less than under Stage 1. As such, it is assumed that the noise would be either the same or greater, not less.**

The most westerly point of the Stage 2 ash placement is the nearest work location to the receptors. Predicted Stage 2 fly ash placement noise impacts at nearest receptors are lower than the Stage 1 predictions as local topography would impede noise emissions.

The Stage 2 residual ground height would be lower than the existing Stage 1 ash placement area, in relation to the receptor properties. Furthermore, the raised haul road would act as an earth bund noise barrier to ash placement noise emissions for receptors to the north and west of the haul road.

- **Table 8-1 of the technical noise report is titled 'Existing average fly ash truck movements' yet the legend refers to fly ash trucks. Section 8.1.1 states that a truck number equates to two truck passages. A movement is one passage. Hence it is questioned as to what Table 8-1 represents.**

Table 8-1 represents predicted noise impacts for fly ash truck movements, which were determined by adopting the truck movements presented in Section 8.1.1, Figure 8-1.

All results are for movements (i.e. a complete delivery and return empty cycle), not individual truck trips.

- **Table 9-3 of Technical Report 5 shows the change in the worst case scenarios from Stage 1 to Stage 2. Based on the text, the assumptions used for both stages are identical (including the number of truck movements), with the exception of the noise generated by earthmoving equipment. According to the Environmental Assessment Report, this is lower for Stage 2. However, Table 9-3 shows that the predicted noise impact is greater for Stage 2. What are the differences in the modelling inputs? It is considered that there would be a greater number of truck movements for Stage 2 under the worst case scenario as there are more movements per hour?**

The Stage 2 predicted increase in received noise impacts are due to intensification of fly ash truck movements resulting from the removal of night-time (10 pm to 7 am) operations.

The same number of fly ash truck movements as per the Stage 1 operations would occur over a reduced operational timeframe, increasing the frequency of truck pass-by events per worst case 15 minute and day/evening assessment periods.

- **The operational noise goals listed in Tables 8-1, 9-1 and 9-2 of Technical Report 5 are different to those listed in Table 6-3.**

Adopted criteria for the noise impact assessment have been determined for the indicative background location at Woodlands (refer Section 6.3.1of Technical Paper 5). Table 6-3 shows the daytime, evening and night-time noise goals to be adopted.

Table 8-1 is for existing Stage 1 noise impacts and accordingly has criteria for daytime, evening and night-time operations as per Table 6-3.

Tables 9-1 and 9-2 are for daytime and evening Stage 2 predictions and adopt the same criteria from Table 6-3 as in Table 8-1. However the night-time noise goal of 38 dB(A) is no longer required for assessment as truck operations are proposed to stop by 10 pm (i.e. the end of the evening period).

For Table 9-1, Site 2 Skelly Road, the worst case 15 minute level should read 42 dB(A) not 38 dB(A) PB would like to note this correction to information in this table in the Environmental assessment.

- **Was any adjustment made for annoying noise characteristics generated by trucks and equipment (e.g. beepers associated with trucks reversing)?**

Annoying noise from reversing was not assessed as the fly ash trucks would be able to operate a one-way system at the ash placement area, which would remove the requirement for reversing and using audible alarms.

Where reversing is required, any received noise impact would be of short duration (less than one minute), and considering the separation distances and intervening topography between the Stage 2 fly ash placement area and the nearest receptors, received noise impacts would be unlikely to result in disturbance during the daytime and evening periods.

During the operator attended night-time ambient noise monitoring in the local environment, infrequent reversing alarm events were audible with a measured noise influence of 39 dB(A).

Analysis of measured data determined no annoying characteristics were present in the noise profile for these events.

Potential received noise impacts from reversing alarms would be expected to be compliant with the adopted noise design goal criteria of 42 dB(A) LAeq.

Where any annoying characteristics are identified post-commissioning, these would be measured using guidance provided by the NSW *Industrial Noise Policy*. Determination of compliance would be as per the Environmental Protection Licence and/or conditions of approval requirements.

Additional issues

- **Provide clarification on the degree of similarity between the ash produced at the Wallerawang and Mt Piper power stations. During a site visit, it was noted that ash placement activities for the two power stations are different: the ash at Mt Piper is placed in a void, while that at Kerosene Vale is placed above ground; and differences in physical properties of the ash. If there is a difference in the physical properties of the ash by-products from the two power stations, then the application of the results of the infiltration trial at Mt Piper to Kerosene Vale is questionable.**

As noted in the Environmental Assessment, there are limited physical differences between the ash by-products from the Mt Piper and Wallerawang Power Stations in that both the chemical makeup and the particle sizes are the same. However, under the wet system, the ash was slurried and so had higher moisture content when placed. When Delta Electricity tried to batter the wet ash, it was found that the ash slumped (i.e. fell over the fence built to retain it). The ash from both the Mt Piper and Wallerawang Power Stations is dry, and as such, packs and batters sufficiently, as is indicated in the placement of the Stage 1 ash.

As there is limited difference in the physical properties of the two ash by-products, it is considered that the results of the infiltration trial at Mt Piper are applicable to the Kerosene Vale site.

4. Additional investigations

Following a review of the submissions received, a number of meetings were held with Centennial Coal to investigate issues raised in relation to potential coal reserves in the area. This work has resulted in revised staging in relation to the placement of ash and a number of small reviews and amendments to the short-term surface water management strategy. These additional investigations have resulted in minor amendments to the project that do not alter the overall assessment of environmental impacts. The changes are described in Chapter 5.

5. Modifications to the Environmental Assessment and proposed activity

On completion of a review of the received submissions, the Environmental Assessment and overall project were reviewed. On the basis of this review, some minor modifications to the project were determined to facilitate issues raised in submissions. The review also confirmed that the proposed changes to the project would not alter the extent or nature of the overall environmental impacts as set out in the Environmental Assessment. The proposed modifications to the project include:

- revised staging to address concerns related to coal sterilisation and to provide time for Centennial Coal to obtain approval to mine in the area (This change to the staging would delay the need to place ash in the area of Centennial Coal's interest for as long as practical without affecting Delta Electricity's operations (see Figure 5-1).)
- revised timing of the creek realignment to provided additional time to obtain approvals for areas identified as Areas 3 and 4 in the Centennial Coal submission (see Figure 5-1)
- modified surface water run-off and capture to accommodate the revised staging (see Figure 5-2)
- reduced depth of extraction from the pine plantation area in order to leave a 1 metre capping over the underlying sandstone and ensure groundwater impacts are consistent with those outlined in the Environmental Assessment.

The above modifications are described in more detail below.

5.1.1 Revised staging

On the basis of the submissions received from Centennial Coal and the Department of Primary Industries in relation to potential coal reserves affected by the proposal, Delta Electricity proposes to modify its staging at the site to extend the time period before areas identified by Centennial Coal are affected. Delta Electricity believes this will provide a finite opportunity for Centennial Coal to obtain approval to extract any economically viable resources should they be successful in their application for approval.

In this respect, the placing of ash was originally proposed to head in an easterly direction from the Stage 1 area into the pine plantation area and then in a northerly direction, which would have affected the potential coal in Area 2 (see Figure 5-1). As an alternative, Delta Electricity now proposes to place ash in a north-easterly direction to the limit of what is safe within the stability constraints of the existing berm — assessed as 100 metres (Douglas Partners, 2001) — and then move to the area over the pine plantation once other areas have reached capacity. This staging would provide between 9 and 12 months for Centennial Coal to obtain the relevant approvals and commence extraction in Area 2, depending on ash production rates and power generation requirements. After this time, operational constraints would mean that ash placement over the pine plantation area would need to occur in line with the original proposal, as described in the Environmental Assessment. Areas 3 and 4 are discussed further below in relation to the revised timing of the creek realignment.

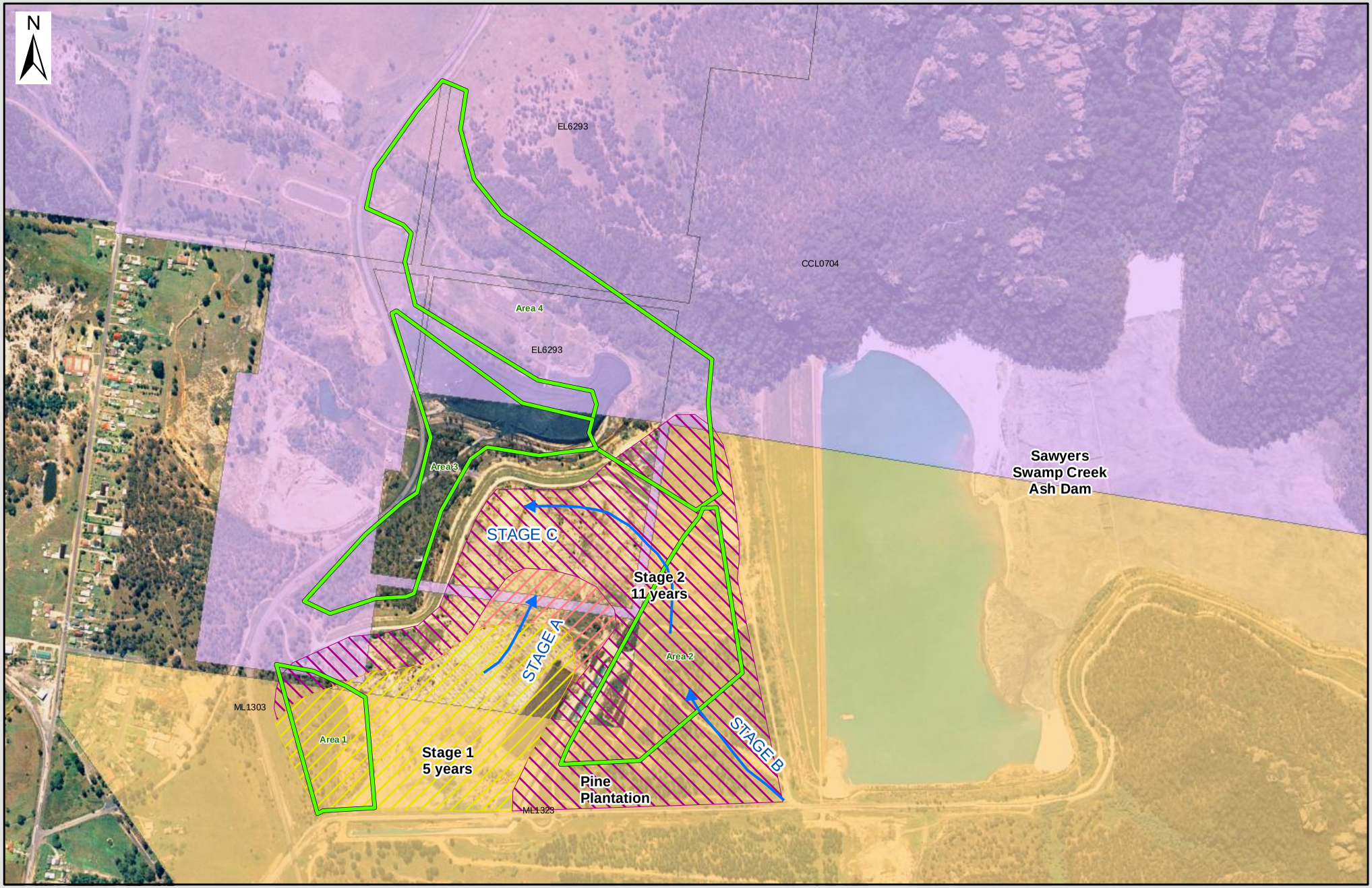


Figure 5-1 Placement strategy

The amended staging proposed in this Submissions Report would result in a small, but significant, increase in costs for Delta Electricity, as it would reduce some efficiencies relating to staging of various activities on the site and the timing of some proposed construction activities. However, Delta Electricity is committed to this revised staging to facilitate resolution of the issues raised in submissions received from the Department of Primary Industries and Centennial Coal.

The proposed modified staging would not change the overall conclusions of the Environmental Assessment, as the proposed activities are consistent with the original proposal, and over the 11 year life the same activities would occur, albeit in a modified order.

However, should an approval be sought by Centennial Coal for mining activities in this area, an environmental assessment to consider impacts associated with these activities would need to address any potential cumulative impacts resulting from the additional activity, including demonstrating that the proposed mining activities would not affect Delta Electricity's existing assets, such as the prescribed dam to the east of the current proposal.

5.1.2 Revised timing of creek realignment

On the basis of the submissions received from Centennial Coal and the Department of Primary Industries, Delta Electricity also proposes to delay the realignment of Sawyers Swamp Creek, in association with the revised staging outlined in Section 5.1.1, until late 2010.

The realignment was originally proposed for early 2009, but as a result of revised staging and in the interests of facilitating an opportunity for Centennial Coal to seek approval to extract coal resources in Areas 3 and 4 (see Figure 5-1), this activity is now proposed to be scheduled for late-2010. This would allow Centennial Coal time to develop and seek approval for an alternative creek alignment to facilitate extraction activities (subject to separate approval) and avoid multiple realignments of an already degraded stream, should the proposed activities obtain approval.

Delta Electricity would seek approval at this time for the proposed alignment to facilitate its long-term operations. Delta Electricity would not complete this alignment until after late 2010, subject to being able to place ash in line with the revised staging outlined in Section 5.1.1 and shown in Figure 5-1. Any alternate creek realignment approved as part of Centennial Coal's proposed extraction activities would be undertaken by Centennial Coal. Delta Electricity may, at that time, require a minor modification to its approval for ash placement activities should an alternate creek alignment be required.

5.1.3 Revised surface water run-off

In conjunction with the revised staging, Delta Electricity would need to modify the initially proposed surface water capture and management plan to ensure that surface water run-off is captured in line with the Statement of Commitments and the Environmental Assessment.

To facilitate the revised staging, it is now proposed that surface water is initially directed in a southerly direction back to the existing surface water canal and the originally proposed pond once placement moves to the pine plantation (refer to Stage B on Figure 5-1). The revised surface water management and drainage is shown in Figure 5-2.

Once ash placement moves back to the pine plantation area, surface water drainage and capture would revert to the originally proposed drainage and capture design as shown in Figure 5-2.

Figure 5.2 Modified surface water to accomodate placement plan

This proposed modification is consistent with the original proposal as set out in the Environmental Assessment, as surface water from exposed areas would be captured and re-used within Delta Electricity's operations. In the long term, once rehabilitation is complete, surface water run-off from this area would be returned to the wider catchment as described in the Environmental Assessment.

5.1.4 Clarification of proposed extraction and placement of capping material in the former pine plantation area

In order to clarify activities and ensure that activities in the pine plantation area do not affect groundwater, Delta Electricity would leave a 1 metre layer of clay material at the base of any excavated area in the former pine plantation to ensure separation of placed ash from groundwater systems. This material would be compacted to provide a barrier to infiltration of any leachate into the surrounding area in a consistent manner to the treatment of existing capping material in areas of ash placement over old ash storage areas. This is consistent with the Environmental Assessment report, and is provided here to clarify issues identified in submissions outlined in Chapter 3.

6. Conclusion and next steps

Delta Electricity proposes to undertake minor modifications to its proposal as outlined in Chapter 5. The proposed changes are consistent with the existing Environmental Assessment and on this basis, Delta Electricity seeks to obtain approval to place ash in the Kerosene Vale Stage 2 ash repository area to maintain the efficient operation of the Wallerawang Power Station.

This Submissions Report has addressed the outcomes of the consultative process conducted during and following the public exhibition of the Environmental Assessment for the proposal.

In addressing both compliance with legislative requirements and the requirements of the consultative process, this Submissions Report demonstrates that:

- Delta Electricity has considered all issues arising from the submissions and provided a written response to the issues (Chapter 3).
- Minor modifications to the project have been proposed, and a justification that each modification is minor or beneficial has been included (Chapter 5).
- A Statement of Commitments, which has been amended as a result of the submissions received and the modifications proposed, demonstrates Delta Electricity's commitment to a comprehensive management approach to minimise environmental impacts (Chapter 7).

In consideration of the above, it is proposed that the Kerosene Vale Stage 2 Ash Repository Area project, as described in the Environmental Assessment and amended by this Submissions Report, should proceed for approval by the Minister for Planning.

7. Revised Statement of Commitments

The Environmental Assessment identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts associated with the proposal.

After considering the issues raised in the public and stakeholder submissions, the draft Statement of Commitments for the project has been revised.

Should the proposal be approved, Delta Electricity would implement the environmental management measures outlined in the revised Statement of Commitments. Any contractor selected to undertake further planning, design, construction or operation of the proposed project, or part of, would be required to undertake all works in accordance with these commitments.

The revised Statement of Commitments is provided in Table 7-1.

Table 7-1 Revised Statement of Commitments

Action
Environmental management
▪ A CEMP and an OEMP will be prepared to address management measures to be implemented for compliance with the Minister for Planning's conditions of approval, including the commitments made in the Environmental Assessment. The OEMP will be prepared prior to the commencement of Stage 2 operations, while the CEMP will be completed prior to the commencement of any construction activities (excavation or creek realignment).
Ash management
▪ Delta Electricity will maximise on-site storage of ash through filling placement areas to capacity by using small lifts and compaction techniques to reduce void creation and associated impacts. ▪ Delta Electricity will continue to discuss ash reuse options and opportunities with regulators to encourage the development and use of ash for agricultural applications and promote cooperation and joint responsibility for management of ash between coal mine and power station operators. ▪ Delta Electricity will continue to monitor the environmental effect of Wallerawang Power Station ash management operations, including continued identification and application of measures to reduce environmental and community impacts where appropriate. ▪ Delta Electricity will continue to contribute to and support research to assess, improve and explore new reuse options for fly and bottom ash. ▪ Bottom ash will be used in the construction of berms and other site stability structures where appropriate to meet engineering requirements. ▪ Delta Electricity commits to staging of the ash placement as set out in the Submissions Report in order to facilitate requests by Centennial Coal and the Department of Primary Industries to provide a finite opportunity for removal of coal resources prior to ash placement.
Groundwater
▪ The potential for changed groundwater levels will be controlled by capping and rehabilitating as soon as ash placement in that area has ceased. ▪ Ash stacking rates will be staged and lift sizes limited to reduce the potential for pore pressure related changes to groundwater levels. Ongoing monitoring will be undertaken to track any change in groundwater level. ▪ The exposed area of ash face will be limited to reduce the potential for infiltration of water to the groundwater system through the ash repository.

Action

- A detailed groundwater monitoring program will be established for the operational phase of the proposal as part of the groundwater management measures set out in the OEMP. The monitoring program will also encompass surface water quality at likely groundwater discharge areas.
- Following completion of the Stage 2 ash repository area, the final landform will be capped and revegetated and surface run-off from the site will enter the catchment as clean water (see Chapter 9 of the Environmental Assessment for the definition of 'clean water').
- The area of ash face exposed at any one time will be limited to reduce the potential leachate from placed ash reaching the groundwater system.

Surface water

- A water-retention system will be established to serve as a water collection basin to ensure that all site run-off is captured for treatment and reuse within the power station operations. This system will be designed to minimise impacts on Sawyers Swamp Creek.
- Mitigation measures will be required to manage impacts that may result during the construction of the proposed Stage 2 ash repository. Erosion and sediment control measures will be detailed, as part of the CEMP and the Sawyers Swamp Creek Rehabilitation Plan, in accordance with *Soils and construction: managing urban stormwater* (Landcom 2004) prior to the commencement of construction. Mitigation measures set out in the plan will include:
  - installing erosion and sediment controls such as sediment basins, staked straw bales, and sediment fences
  - ensuring appropriate planning of creek construction works to reduce the risk of sediment discharge to the existing waterway through limiting the length of time that soil is exposed
  - restricting construction traffic to defined internal roads, and where required, operating wheel-cleaning areas at locations where vehicles leave the construction sites
  - ensuring that chemicals and fuels are appropriately stored and bunded
  - training of construction employees to implement spill response procedures and implement, maintain and be aware of sediment and erosion control measures and requirements.
- The realignment of a section of Sawyers Swamp Creek and construction of a stability berm for the ash area embankments will be designed to reduce the potential for impact on potential flows in Sawyers Swamp Creek.
- Sawyers Swamp Creek will have erosion and sediment controls installed prior to the commencement of any construction of earthworks, which will take high flows into consideration. With the exception of the creek realignment and associated works, earthworks will be avoided within 50 metres of the watercourse, where feasible. Disturbed areas will be rehabilitated or revegetated following the completion of construction and any remaining spoil will be removed or re-used within the proposed development activities.
- The realignment of the creek will include rehabilitation in line with the requirements of the Department of Water and Energy (see Draft Rehabilitation Plan in Appendix B of the Environmental Assessment).
- Following completion of the operational life of the Stage 2 ash repository area, the final landform will be capped and revegetated and all surface water from the area will enter the catchment as clean water.
- The proposed creek realignment design will include the following environmental improvements:
  - improved geomorphic stability
  - improved water quality within the creek through a reduction of sediment loads from erosion
  - riparian corridors extending 20 metres from the top of bank on both sides of the creek.
- The existing water quality management system for the Stage 1 ash repository will be continued throughout the proposed Stage 2 operations. The existing plan will be updated and incorporated into a water management plan work instruction. The plan includes implementing several water quality control measures.

Action
▪ A detailed surface water monitoring program will be established in conjunction with surface water management measures to be set out in the OEMP for the proposed Stage 2 area. The surface water management measures will indicate trigger values (based on the ANZECC water quality guidelines), which, if exceeded, will lead to an appropriate management response. This will include wet weather monitoring.
Aquatic ecology
▪ The draft Sawyers Swamp Rehabilitation Plan will be implemented post creek realignment and will include revegetation of in-stream and riparian zoned areas with appropriate endemic species. Rehabilitation/revegetation will be undertaken in consultation with relevant government agencies, including the Department of Planning, Department of Primary Industries (Fisheries), and the Department of Environment and Climate Change.
▪ Monitoring of aquatic ecology will be undertaken and incorporated into the Sawyers Swamp Creek Rehabilitation Plan (see Appendix B of the Environmental Assessment).
Air quality
▪ Operators will apply standard dust-control measures until the ash material is placed and standard dust suppression (using water) in areas of site activity.
▪ The area of uncovered ash face will be kept to a minimum through the use of a staged stacking approach, with completed areas capped to minimise erosion.
▪ Works undertaken during the proposed Stage 2 activities will be carried out in accordance with a documented management plan. The plan will detail all approaches adopted to minimise dust emissions and specific mitigation measures to be incorporated during emplacement activities. The plan will also include an operating protocol for the irrigation system. As a minimum the wet suppression technique should be activated when 15 minute wind speed thresholds exceed 5 metres per second. Application rates and the coverage area should be such that no visible emissions from the repository area occur.
▪ Ongoing monitoring of dust deposition at local gauges will be undertaken to confirm and manage potential impacts.
Noise
▪ Truck movements will be limited to between 7 am and 10 pm during normal operations to reduce noise impacts. Operations outside these times will be limited to abnormal and emergency conditions.
▪ Proven effective noise limiting operating practices will be implemented including residential class mufflers and, where applicable, engine shrouds (acoustic lining) to engines. Noise emissions will also be an important consideration when selecting equipment for the site. All equipment will be maintained in good order, including mufflers, enclosures and bearings to ensure unnecessary noise emissions are eliminated.
▪ Noise management measures will be developed (as part of the CEMP and OEMP) to identify and address noise impacts on all potentially affected receivers, and detail procedures, noise mitigation measures and noise management practices to be implemented throughout the duration of the works.
▪ Ongoing noise monitoring will be undertaken to validate predicted noise impacts and confirm compliance with NSW *Industrial Noise Policy* noise design goals.
Terrestrial ecology
▪ Once the active ash surface reaches design height, it will be capped and rehabilitated with minimal delay.
Erosion and sediment control
▪ Capping and revegetation of areas will be undertaken with minimal delay. Erosion and sediment controls will be implemented as interim water control measures. Once areas are capped and revegetated, run-off will be diverted to the clean water system. All work on disturbed areas will be ceased during heavy rainfall.

Action
▪ A detailed monitoring program for the realignment of Sawyers Swamp Creek will be established and will include scour and erosion monitoring. As a minimum, reference monitoring as part of aquatic ecology monitoring will be undertaken over the first 5 years in order to adjust rehabilitation as required.
▪ Erosion and sediment control measures will be detailed as part of the CEMP and OEMP and the Sawyers Swamp Creek Rehabilitation Plan, in accordance with *Soils and construction: managing urban stormwater* (Landcom 2004) prior to the commencement of construction. The plan contains several mitigation actions.
Traffic, transportation and access
▪ Traffic management will be undertaken in accordance with existing site management procedures and plans.
▪ Short-term increases in traffic movements on the local road network during construction will be managed through the CEMP.
Land use and property
▪ Site fencing will be erected on the boundary of all construction sites, including storage and other ancillary areas, to avoid unnecessary off-site damage to vegetation, trees and general landscape values.
▪ Where practical, ash will be re-used in local manufacturing and in on-site structures.
▪ Construction personnel, equipment and vehicles will be confined to the works areas as defined by the site fences/hoardings erected at the works boundary.
▪ The repository areas will be rehabilitated following completion of placement activities in line with identified rehabilitation plans.
▪ Placement of ash in mining areas will be delayed (within power station operating constraints) to allow Centennial Coal time to further assess the viability of identified reserves.
▪ As part of the OEMP for the site, a rehabilitation and landscaping plan will be developed to reduce visual and landscape impacts.
▪ Access will be negotiated with Centennial Coal to enable mining should Centennial Coal determine that the identified resources are viable and the necessary approvals are obtained.
Indigenous heritage
▪ Disturbance of the western portion of the study area will be kept to a minimum to reduce the potential for inadvertent disturbance of the Aboriginal heritage values of the area.
▪ If, during the course of development of the area, any objects (as defined under the *National Parks and Wildlife Act 1974*) are discovered, all work will cease and both the Department of Climate Change regional archaeologist and the Bathurst Local Aboriginal Land Council will be notified so that an appropriate course of action can be determined.
Non-Indigenous heritage
▪ If, during the course of development of the area, any objects (as defined under *the Heritage Act 1977*) are discovered, all work will cease and the NSW Heritage Office will be notified so that an appropriate course of action can be determined.
Landscape and visual
▪ As far as practicable and without jeopardising the safety of the operation, lighting associated with the operation of the proposal will continue to be directed away from residential properties in the vicinity and towards Sawyers Swamp Creek Ash Dam.
▪ Industry-recognised visual impact mitigation and landscaping measures will be applied, including tree screening and landscaping, to return the modified areas to a state similar to their pre-use forms. Revegetation will also be implemented following capping.

Action
Waste
▪ Cleared vegetation will be mulched, chipped or re-used on-site for sediment filter fences or other uses, where appropriate. Suitable logs and limbs may be used to provide aquatic habitat and fauna refuge in the realigned Sawyers Swamp Creek. ▪ All other waste streams, including construction waste, will be removed and disposed of in accordance with relevant guidelines.
▪ Maintenance wastes, such as oils and greases, will be disposed of to an appropriate facility. Waste generated by site personnel will be collected on a regular basis. Waste will either be recycled or disposed of to an appropriate facility.
Demand on resources
▪ To ensure that use of recycled water is maximised and waste minimised, the soil and water management plan within the CEMP will include measures requiring the construction contractor to prioritise recycling/reuse of water. The soil and water management plan will be prepared prior to construction and implemented throughout construction. In addition, operational water use will be managed through the OEMP. ▪ Bottom ash will be used in the construction of berms and other site stability structures to minimise the need to use naturally extracted materials, subject to engineering safety constraints. The use of bottom ash in these structures will also extend the operational life of the proposed Stage 2 ash repository.

8. References

ANZECC 2000 *Australian and New Zealand guidelines for water quality monitoring and reporting*. National water quality management strategy, No.7 Prepared for: Australian & New Zealand Governments. ANZECC//ARMCANZ, Australia

Douglas Partners 2001 *Discussion report on geotechnical assessment and feasibility study, ash disposal, Wallerawang Power Station*

ERM 2002 *Stormwater and drainage report: Proposed reinstatement of dry ash placement, Kerosene Vale – Review of environmental factors, Appendix C*

ERM Hyder 2002, Proposed Reinstatement of Dry Ash Placement Kerosene Vale – Review of Environmental Factors

Parsons Brinckerhoff 2008 Stage 2 Kerosene Vale Ash Repository Environmental Assessment. Available online at http://www.planning.nsw.gov.au/

Appendix A

Submissions

Mod DPI Fish

1

NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Contact: Stephen Clipperton
Phone: 02 6881 1279
Mobile: 0427 107883
Fax: 02 6881 1295
E-mail: steve.clipperton@dpi.nsw.gov.au
Your ref: S07/00001
Our ref: DoP08_002

Mary Mikulandra
Department of Planning
Major Infrastructure Assessments
GPO Box 39
SYDNEY NSW 2001

22 April, 2008

Dear Mary

RE: Kerosene Vale – Stage 2 Ash Repository – DPI (Fisheries) response to EA

Thanks for the opportunity to make comment on the Environmental Assessment (EA) for the abovementioned proposal. The comments below reflect the opinion of the fisheries division within the Department of Primary Industries (DPI).

The Department has considered the EA for the proposal and determined that the assessment adequately describes the potential impacts on aquatic habitat and the measures needed to manage and mitigate those impacts.

The Draft Sawyers Swamp Creek Rehabilitation Plan sets in place a mechanism for the restoration of Sawyers Creek and the ongoing improvement of aquatic habitat post realignment and construction. DPI supports its recommendations for the management, monitoring and restoration Sawyers Creek. The following are recommendations for conditions of approval.

- The applicant shall carry out the development in accordance with information set out in the Environmental Assessment (EA) and its Appendices.
- Prior to development commencing, the applicant must prepare a Site Management Plan (SMP). The plan will include the management of land and water affected by the development activity, and will specifically include details on the management of the Sawyers Creek realignment, riparian restoration of Sawyers Creek and surface and groundwater quality and quantity.
- The SMP will include an ongoing monitoring programme that:
  - Quantifies the impacts of the development on aquatic habitats within Sawyers Creek and downstream within the Coxs River.
  - Be ongoing for the life of the development
- The Sawyer Creek realignment is to be built with regard to the need to create appropriate bank characteristics, pool-riffle sequences and native riparian vegetation.
- The SMP shall specifically incorporate details for the planting of species that are appropriate to the area as part of the riparian restoration.

- The applicant shall be required to provide compensation for the loss of aquatic habitat and the impact of the development on local waterways. Such compensation may include the native fish stock enhancement of local waterways or other such measures to the satisfaction of NSW DPI fisheries.

Should you require any further information please contact myself on (02) 6881 1279 or 0427 107883.

Yours sincerely

Stephen Clipperton
Conservation Manager, Central and Far West
Fisheries Ecosystem Branch

FISHERIES ECOSYSTEMS BRANCH
PO Box 865, DUBBO, 2830
37 Carrington Avenue, DUBBO, 2830

ABN 51 734 124 190
www.dpi.nsw.gov.au

Sub2 resident

2.

28th April 2008

Minister for Planning
Department of Planning
GPO Box 39
Sydney NSW 2001

OPPOSITION TO THE EXTENSION OF KEROSENE VALE REPOSITORY AREA (STAGE TWO)
Application Reference Number (07-0005)

Dear Minister

We are writing to **Strongly oppose** the application for the extension of Kerosene Vale (Stage Two).

We have been very active with ongoing complaints to Delta (via- The Environmental Manager), our local MP- Gerald Martin, Lithgow City Council and the EPA.
The **major** complaint for us has been about the **endless noise** from the Ash trucks along the private Haulage Road, and the Earthmoving equipment at the Ash Dam. We have found this noise to be **Loud, Constant, Obtrusive, Unbearable** and **extremely Stressful.**

We purchased our home at Skelly Road, Lidsdale approximately 6 years ago. We had previously lived in a very busy Street in Lithgow and we wanted to move out of town for a more peaceful lifestyle. The home we purchased needed to be updated so we began renovating.

Then what can only be described as our never ending nightmare began. Over 2 years ago the Wallerwang Power Station decided to start transporting dry ash to Kerosene Vale via trucks on the private Haulage Road, which is less than 370 metres from our home. But that wasn't the only problem for us, they decided that they had the right to run these trucks virtually 24/7. They also neglected to inform the community of their decision. (We had **no information** about stage 1). When we first started complaining about the trucks starting at 5.30 in the morning and not finishing until 2 -3.30am (22hr operation), Delta were not very friendly and they informed us that they had exiting user rites.

This was the start of a very stressful time for us, as you can imagine the lack of sleep because of the truck noise (every 20 -30 mins) during the night and the constant noise of the trucks and the earthmoving equipment at the Ash dam during the day has made our life a living hell.

We are amazed in this day and age, with so much enthesis on the Environment, that the Power Station has not found a more appropriate way to dispose of it's waste material. The Ash dam is so close to the Lidsdale Community, therefore you are bound to have huge problems, such as the way that we are affected.

We are also amazed by the lack of communication and miss Management of the Ash dam and the Truck Haulage Contractors. The Power Station has a contract company looking after the Ash dam and the trucks that haul the Ash. And although the trucking Companies have changed 3 times over the period of stage 1 there are little differences in the noise levels. (2 contract companies and 1 sub contractor).
i.e. Late last year we complained about the truck that woke us (yet again) at three o'clock in the morning, only to be told that they were not running at that time BUT on further investigation into the matter we were proven right. Because the people that we complain to are not around during the night time, the truck drivers seem to be a law unto themselves. There also seems to be a huge lack of communication, because one person will tell you one thing and then another will tell you something completely opposite.

Another huge disappointment to us is the lack of response from Delta.
i.e. After speaking to the Department of Planning we rang Delta and requested to get a copy of the review of Environmental factors for stage 1, part 5, (as we were told that this is a Public Document). Delta would not release the document to the Lithgow City Council or to ourselves. We have since learnt that Delta proposed to build a 1500 cubic metre silo to gain the consent of the EP&A act , part 5. Also under the first application for stage 1 they suggested that a conveyor belt would be a solution and we have learnt that they did not even look at the viability of a conveyor belt. To cut costs Delta built a 500 cubic metre silo to hold the dry ash.

i.e. We have also had 2 lots of noise monitoring done in our front yard (by Delta) and we requested that Delta share the results with us - yet again no response was forth coming. The noise monitoring took place during wet windy weather. Which we know is not a proper indication of **all** climatic conditions.

So these are the facts:

- Because of the position of our house, the private Haulage Road, and the Ash dam we appear to be the most severely affected by the noise. Adjacent to our home there is a hill going down to the Power Station. The grade averages 1 in 17metres, then it levels out to a grade of 1 in 100metres. In this area the trucks change gears going up and use exhaust brakes going down. So we hear the trucks labouring up the hill. We hear the exhaust brakes as they are turning into the Ash dam further along the Road. We hear them going back down the hill. We hear the earthmoving equipment moving the ash around at the Ash dam. We hear the noisy water tanker at the Ash dam. We hear beeping noises. The weather also has a major effect on the volume of noise, some days the noise is so unbearable that you can actually feel your stress levels rising.

- This noise has a major effect on our lives.
  i.e. Because of the lack of sleep it is very hard to function in our daily lives. (Stress, Constant headaches, Anger, Frustration, Lack of concentration etc....). This then is escalated by the constant noise during the day. We received a visit from Delta's Production Manager and an Engineer after John had to have time off work due to fatigue, from the lack of sleep. We got the impression from the Production Manager that he did not believe us about the times that trucks were starting and finishing. He also gave us the impression that they are not responsible for the transportation of Ash from the silo to the Ash dam. Under the OH&S act they are responsible for all contractors on their site. It seems a bit strange to us that up until this time that no one of Authority from Delta has even come near us. That visit occurred in February this year, quiet a long time after this problem started.

- We have asked different Environmental Officers about the effectiveness of noise barriers. They have informed us that noise barriers are cosmetic and that noise rolls over the barriers, and unless you are under the barrier the noise will still travel to residents within the distance that we are from Haulage Road. So it will be no benefit to us.

- There are certain guidelines for noise, but we feel that this is a very individual problem because some people are able to stand a certain amount of noise where another person will not. In their submission the trucks pass the 15 minute lag time of 45db. When there are only 2 or 3 truck movements an hour, the spike of noise can be up to 80db for less than 30 seconds (which wakes us up) and then nothing for the next fourteen and a half minutes. The time between trucks gives us enough time to get back to sleep before the next truck wakes us up again. Then the frustration sets in and the cycle continues throughout the night.

- We have no respect for Delta because of the way that they handled this ongoing problem with us. We feel that they have not been honest with us. One of the things that they keep saying is going to fix some of this night noise problems was the installation of a second silo. We were informed that a second 500 cubic metre silo was to be built. (This was after we went to our local MP), This was to start in December 2006 and was due for completion April 2007. (We have a letter from Mr S. Saladine dated 19th October 2006). Then we received another letter from Mr S. Saladine via Gerald Martin MP that the bin would be completed by June 2007. When this did not eventuate we were given many different dates and promises. They appear to be all talk no action.

- Another major concern for us are the dust particles that are circulating in the atmosphere. We do not know what we are inhaling. This could be a huge environmental and health problem not only now but in years to come. So surely the Government has to take responsibility for this NOW before it is to late.

- We believe that this Ash dam and the noise of the trucks and the earthmoving equipment have devalued our home. As we mentioned earlier we have spent a lot of time and money renovating our house to make it a lovely home. And as this problem was not here when we purchased our home we believe that Delta has forced all this noise and the stress upon us.

We object to any Ash truck movements along the private Haulage Road. And especially any 24 hour operations. We also object to any earthmoving equipment at the Ash dam. They say that they will operate between certain hours, but our experience has proven that they do as they like. We prefer Delta found other means of Ash removal and storage.

Therefore we strongly appeal to you to consider rejecting this proposal because of the physical and emotional effects that it has on us. If you decide to give the green light on this proposal, **the only solution** for us to be able to have the peaceful lifestyle that we came here for, is that Delta purchase our home. We have had more than our share of noise and stress over this problem and we do not want to live with it anymore.

Sub3DPIcoal 3.

NSW DEPARTMENT OF
PRIMARY INDUSTRIES

COAL ADVICE & RESOURCE ASSESSMENT
PO Box 344, Hunter Region Mail Centre NSW 2310
516 High Street, Maitland NSW 2320
Tel: 1300-736 122
Fax: 02 4931 6788
www.dpi.nsw.gov.au
ABN: 51 734 124 190

Mary Mikulandra
Department of Planning
GPO Box 39
Sydney NSW 2001.

26th April, 2008.

Dear Mary,

Re: Kerosene Vale – Stage 2 Ash Repository Area, Environmental Assessment (EA)

Thank you for the opportunity to comment upon the EA for Kerosene Vale Ash Dam. I note that many of the Department's comments have been incorporated into the document.

The EA shows some ambiguity with regard to the calculated Royalties payable to the State, of >$6,000,000. The >$6,000,000 is the calculated Royalty payment to NSW and has no bearing upon extraction costs.

DPI - Minerals note the commitment of Delta Electricity to stage activities to optimise the timeframe in which Centennial Coal could access the remaining reserves.

The Department of Planning must consider that coal sterilisation needs to be considered when determining if the project is supported

Should you have further queries I may be contacted on 4931 6555.

Regards,

Leslie Wiles
Manager Coal Advice

4.

Sub4SCA

SYDNEY CATCHMENT AUTHORITY

PO Box 323 Penrith NSW 2751
Level 2, 311 High Street
Penrith NSW 2750
Tel 1300 722 468 Fax 02 4732 3666
info@sca.nsw.gov.au
www.sca.nsw.gov.au

Received
2 may 2008
mm

Ref: D2008/02672

Mr Neville Osborne
Manager Water and Energy
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Dear Mr Osborne,

Proposed Kerosene Vale Stage 2 Ash Repository Area (MP 07-0005) – Environmental Assessment

Thank you for providing the Sydney Catchment Authority (SCA) the opportunity to review the Environmental Assessment (EA) report for the above application.

The SCA recognises that the proposal has been classified a Major Project to be assessed and determined under Part 3A of the Environmental Planning and Assessment Act and as such is not formally subject to the requirements of the Drinking Water Catchment Regional Environmental Plan No 1 (REP). Notwithstanding this the SCA provides the following comments in relation to the proposal.

The application is within the Upper Coxs' River sub-catchment that is part of Sydney's drinking water catchment. It is therefore desirable that the proposed facility is constructed and operated in a manner that does not adversely impact the quality of surface and groundwaters beyond the boundaries of the site.

The SCA notes that a number of the issues raised by the SCA in a letter (refer D2008/00711 dated 19th February 2008) to the Department of Planning relating to the draft EA have not been adequately addressed in the EA. The SCA has also identified additional issues that should be addressed as part of the proposal.

The SCA considers that the development is likely to achieve a neutral or beneficial effect on water quality providing the following issues are addressed and recommended conditions included with any approval:

1) Impact assessment criteria for surface water quality monitoring

The EA notes that monitoring will accord with the ANZECC water quality guidelines. The SCA recommends that the proponent be required to meet the water quality guidelines identified below which have been derived from the SCA (2006) *Water Quality Monitoring Report 2005-2006* and the *Healthy Rivers Commission Guidelines (1998).*

Parameter	Value
Dissolved Oxygen (% saturation)	90 - 110
pH (pH unit)	6.5 - 8.0
Turbidity (NTU)	25
Total phosphorus (mg/L)	0.05
Total nitrogen (mg/L)	0.5

These are considered by the SCA to be more representative of the desired water quality values in the proposal area than those specified in the Australian Guidelines.

2) Surface water quality monitoring program

Table 9.1 provides a qualitative assessment of water quality for Sawyers Creek and the control locations, but no quantitative results have been included in the EA. The SCA requested in a letter to the Department of Planning (refer D2008/00711 dated19th February 2008) that quantitative data from Delta Electricity's monitoring between January 2006 and January 2008 be included in the EA so that water quality levels and variability can be better understood. This information has not been included in the EA.

The Surface Water Impact Assessment states that "it is also recommended that additional monitoring be undertaken following wet weather events". The SCA agrees that wet weather monitoring is appropriate and considers that the proponent should be required to include wet weather monitoring in the surface water monitoring program.

The EA states that a detailed surface water monitoring program would be established in conjunction with a Surface Water Management Plan for the construction and operation of the Stage 2 ash repository area. The SCA requests that the current monitoring program be extended to include the parameters Dissolved Oxygen (% saturation) and Turbidity (NTU) to obtain baseline data and to monitor the impacts of the proposal with respect to the water quality indicators discussed above.

3) Response to identified exceedances in surface water quality

The EA states that "The Surface Water Management Plan would indicate trigger values (based on ANZECC water quality guidelines) which, if exceeded, would lead to an appropriate management response". The SCA considers this commitment is too ill-defined and lacking in detail. The proponent should be required to develop a protocol for the investigation of identified exceedances in the impact assessment criteria and a response plan to address potential adverse surface water quality exceedances in consultation with and to the satisfaction of the DECC and the SCA.

It is recommended that the following Condition be included in any approval to address issues 1-3 above.

Surface Water Monitoring

The Surface Water Monitoring Program shall:

a) *detail surface water impact assessment criteria as per the SCA (2006) Water Quality Monitoring Report 2005-2006 and the Healthy Rivers Commission Guidelines (1998);*

b) *detail pre-construction baseline data (Delta Electricity Monitoring Program between January 2002 and January 2008) on surface water flows and water quality in Sawyers Swamp Creek ;*

c) *detail a program to monitor surface water flows and water quality in Sawyers Swamp Creek;*

d) *be extended to include Dissolved Oxygen (% saturation) and Turbidity (NTU)*

e) *detail a protocol for the investigation of identified exceedances of the surface water impact assessment criteria; and*

f) *detail a response plan to address potential exceedances and surface water quality impacts to the satisfaction of the DECC and the SCA.*

4) Groundwater

The EA has identified the placement of ash in the Stage 2 repository area could have an impact on groundwater levels and quality. The proposed Stage 2 ash repository area would be located on top of historical capped wet ash repository areas and with capping in place, rates of infiltration to groundwater would be low and the risk of potential impacts would be reduced. Although considered minor the potential impacts of this project include an increase in groundwater levels. Additional impacts could also include leaching of trace elements such as arsenic, boron, fluoride, zinc, selenium, barium and strontium from the ash into the groundwater. Groundwater infiltrating through the ash is likely to discharge at the interface of the base of ash and capping material of the historical ash placement, in the form of surface water discharge. This discharge would be captured as part of surface water management.

Due to the potential impact of trace elements leaching into the groundwater however the groundwater monitoring program is considered an important element of this proposal. The EA states that "the *(groundwater monitoring)* program and associated management measures would include trigger values which, if exceeded, would lead to implementation of appropriate responses". The SCA considers this commitment is too ill-defined and lacking in detail. The proponent should be required to develop a protocol for the investigation of identified exceedances in the impact assessment criteria and a response plan to address potential adverse groundwater quality exceedances in consultation with and to the satisfaction of the DECC and the SCA. It is recommended that the following Condition be included in any approval:

Groundwater Monitoring

The Groundwater Monitoring Program shall detail:

a) *pre-construction baseline data on groundwater quality in the study area ;*

b) *groundwater impact assessment criteria;*

c) *a program to monitor groundwater flows and water quality in the study area;*

d) *a protocol for the investigation of identified exceedances of the groundwater impact assessment criteria; and*

e) *a response plan to address potential exceedances and groundwater quality impacts to the satisfaction of the DECC and the SCA.*

5) Construction of a stabilisation berm

The EA identifies that the existing dam structures and bund walls need to be stabilised to ensure long term stability of the ash repository area. The EA proposes the construction of a stabilization berm along the length of the existing bund which will be constructed of clinker and bottom ash. The EA contains insufficient detail relating to the potential impact bottom ash will have on surface water and groundwater quality.

Given the proximity of the stabilisation berm to Sawyers Swamp Creek and the potential for leaching of trace elements associated with the dry ash into Sawyers Swamp Creek as discussed above, the SCA recommends that caution is exercised and the following Condition is included in any approval unless the Proponent is able to provide additional information relating to the potential impacts of bottom ash on surface water and groundwater.

No ash is to be used in the strengthening of the bund wall due to the proximity of the bunds and the potential for the leaching of trace elements associated with the ash into Sawyers Swamp Creek.

6) Sawyers Swamp Creek Realignment

The draft Sawyers Swamp Creek Rehabilitation Plan states that consideration will be given to incorporating in-stream controls in the reach upstream of the proposed realignment. The SCA considers that the proponent should state in the final Rehabilitation Plan that they will install such measures in that reach to improve the stability of that section of channel. The effectiveness of the proposed realignment and rehabilitation is likely to be compromised if the current erosion upstream is not adequately stabilised. The final plan should also include details of initial and on-going weed control that will be required to protect and enhance riparian habitat and ecological values. It is recommended that the following Condition be included in any approval:

The Proponent is required to incorporate in-stream controls in the reach upstream of the proposed realignment to ensure the effectiveness of the proposed realignment and

rehabilitation. The in-stream controls should be detailed in the Sawyers Swamp Creek rehabilitation plan. The rehabilitation plan should also include details of initial and on-going weed control that will be required to protect and enhance riparian habitat and ecological values

The SCA would appreciate being involved in further environmental assessment and ongoing consultation processes of the application. The SCA requests the following information to be provided to the SCA by the Proponent for review:

- Final Sawyers Swamp Creek Rehabilitation Plan; and
- Construction and Operation Environmental Management Plans when available.

The SCA requests the Department to provide the SCA with copies of submissions made by other government agencies regarding surface water and groundwater quality and the realignment of Sawyers Creek Swamp.

If you wish to discuss any matter raised in this letter please do not hesitate to contact Kristy Mathew on 02 4725 2124 or kristy.mathew@sca.nsw.gov.au.

Yours sincerely

MALCOLM HUGHES

A/Manager, Statutory Planning

2/5/08

5.

5 resident

Major Infrastructure Assessment
Department of planning
GPO Box 39
Sydney N.S.W. 2001

Kerosene Vale Repository Area (Stage two)
Application No 07 0005
Location Lot 16 DP 555844
Lot 17 DP 855844
Lot 5 DP 829137

Dear Sir / Madam,

I am writing this letter to express my concerns on the expansion of the Kerosene Vale repository ash area at Lidsdale.

I am one of many Lidsdale residents who are concerned about the effects of this expansion, what effect does this ash have on our health and how is the level of noise going to be affected? Currently the machinery operating hours are supposed to be from 6am until 8:30-9pm, these hours vary each time an inquiry is made with Delta.

The machinery at the current ash site can be clearly heard in the early hours of the morning, the reversing alarm on the dozer and the banging of the tailgates on the trucks can be heard up until 3am and sometimes starting earlier than 6am on the weekends, surely they could give us a break on Sundays. I do not live as close to the ash site as some residents, so I can only imagine what it is like for those who are positioned right near the road and the ash site. I have made many calls to Delta to complain about the noise and on most of these occasions I have been transferred through to the environmental department only to speak to an answering machine and I have never on any occasion heard back from Delta on any of these calls.

On discussions with local council staff there were guidelines put in place when the original application for the ash disposal was submitted. These guidelines included the washing of trucks on their exit from the ash site, hours of operation of the machinery were limited and the suppression of the dust.

The trucks have a substantial amount of ash dust on them when they leave the ash disposal site which they carry along the haulage road with them, only to have it constantly blown around the neighbourhood. A visit to the intersection of the ash site and the haulage road, and along towards the power station will indicate how successful the dust suppression is at this site.

I find it surprising that the power station has it's loading facility so close to a major highway where so many can see the ash dust being blown about while the trucks are loading and yet there is no action taken. This loading facility does not have sufficient capacity to store the ash long enough for the trucks to stop running into the

night, but I fail to see why the local residents should bear the brunt of this lack of planning.

On inspection of the land on the northern side of the ash storage areas ash can be found in the gutters and in the land formations where water runs off into the local creeks.

Surely there is some use somewhere in Australia for a product of this type, are we too lazy here to investigate this. I believe in other countries around the world the government requires building materials such as house bricks and concrete to contain a small amount of coal ash to control the amount of waste and its storage. Have such avenues been researched here in Australia or is it easier for city executives of these companies to just take the ash over the hill from the source and dump it, out of sight out of mind.

This application for expansion should not be considered, as this company can not manage the ash disposal site correctly at its current capacity and I am concerned about the state of the area in years to come if so many people are airing their concerns now while the ash site is only small in comparison to its planned expansion.

Centennial Coal

Level 18, BT Tower
1 Market Street
Sydney NSW 2000 Australia

T 61 2 9266 2700
F 61 2 9261 5533

E cey1@centennialcoal.com.au
W www.centennialcoal.com.au

5 May, 2008

The Director
Major Infrastructure Assessment
Department of Planning
GPO Box 39
SYDNEY NSW 2001

BY HAND

Dear Sir

Attached herewith is our submission in relation to **Kerosene Vale – Stage 2 Ash Repository Area (MP 07_0005)**.

Yours sincerely

David Moult
Chief Operating Officer

enc

Centennial Coal Company Limited Submission to Department of Planning – Kerosene Vale Stage 2 Ash Repository Area.

Introduction

Centennial Coal Company Limited (Centennial) is a listed public company which has been operating in the Lithgow region since 1994. Centennial is the operator of Clarence, Angus Place, Springvale, Lamberts Gully and Ivanhoe mines as well as the owner of several projects in the region. Centennial also directly employs over 600 persons in the region. Centennial is a significant stakeholder in this region and has demonstrated a long term commitment to supporting the local community.

Centennial has an interest in the Kerosene Vale Stage 2 Ash Repository Area specifically as follows:

Coal Resources

The Kerosene Vale area contains significant open cut coal resources. Centennial Angus Place and Centennial Springvale (Centennial is a 50% owner and the operator of these mines) hold underground mining leases and surface exploration titles over the majority of the area, and unmitigated, the extension of the ash repository poses a significant threat to the extraction of these coal resources.

Land Ownership

Centennial is the owner of the land immediately to the north of the existing and proposed repository areas and is directly impacted by the proposed activities.

Owner and Operator of the Private Haul Road

The Angus Place-Wallerawang PS private haul road traverses the western boundary of the site. This road is used to convey most of Angus Place's coal output to Wallerawang Power Station and is an essential link which keeps heavy coal haulage vehicles off the public road system. Centennial is the owner and operator of this private road. This road is currently used by Delta Electricity to haul flyash to the Stage 1 Repository and is proposed to be used for Stage 2.

Centennial as a Regional Corporate Citizen

Centennial has demonstrated a long term commitment to the region and recognises the importance of the coal mining and electricity generation to the local economy. Centennial also recognises that environmental values and quality of life are factors just as important as the economic health of the community. Centennial wish to see the best long term outcome emerge from this project, both from an economic and an environmental standpoint.

Coal Sterilised by Delta Ash proposal.

Location	Irondale Sea	Lidsdale Seam	Lithgow Seam	TOTAL	Strip Ratio
Opencut					
W1-4 (Area1)		57690	92340	150030	4.3
E1-12 (Area2)	10197	186139	266929	463265	5.7
N17		10690	13338	24028	3.4
N18		15496	13295	28791	4.9
N19		21117	15179	36296	5.4
N20		3052	3628	6680	4.6
N22		6603	8229	14832	4.1
N23		21973	25942	47915	3.0
N24		21673	24625	46298	2.7
N25		3755	4985	8740	2.3
N27		13284	17316	30600	2.3
N28		1004	1462	2466	2.2
TOTAL O/C		362476	487268	**859941**	**4.8**
TOTAL Excluding Area 1		304,786	394,928	**709,911**	**5.0**
Auger Location					
Area 1		60486	60767	121253	
Area 2		79870	120893	200763	
N19		7977	0	7977	
N22		10592	10592	21184	
N23		14520	14520	29040	
N24		5420	11697	17117	
N27		1273	1527	2800	
TOTAL AUGER		180138	219996	**400134**	
TOTAL Excluding Area 1		119,652	159,229	**278,881**	
TOTAL O/C & AUGER		542,614	707,264	1,260,075	
TOTAL Excluding Area 1		**424,438**	**554,157**	**988,792**	

Issues

Coal Sterilisation

The Kerosene Vale area has been the site of several opencut mines which closed in the 1950s as well as the Newcom (Kerosene Vale) underground mine which closed in the late 1970s. The northern extension to the Newcom Colliery is the current Angus Place Colliery. Notwithstanding the previous mining activities, significant remnant coal remains.

Over 20 coal exploration boreholes have been drilled in the past with the most recent series of seven cored holes drilled as recently as 2004. This data along with outcrop observation and old mine record tracings has been used to create a geological model of the coal resource. The proximity of old workings and the spacing of boreholes allows the remaining coal resource to be categorised as a measured resource under the JORC code. Evaluation work by Centennial in 2006 identified approximately 2.5Mt of coal recoverable by open cut. Unfortunately 270kt has already been sterilised by the placement of ash in the area known as the "borrow pit" shown as Area 1 on the attached plan.

As shown in Table 1, an assessment of the Stage 2 Repository Area by Centennial indicates that if no coal is removed prior to ash emplacement a further 989kt will become progressively sterilised. The economic cost of this sterilisation is indicated below.

Current export value of the sterilised coal (20% ash) is 989,000 x A$125 = $123 Mil.
The revenue accruing to the NSW State Govt. from Royalties = $6.9 Mil.
The estimated direct benefit to the local community (wages etc.) = $9 Mil.

From the above it can be clearly seen that the coal contained within the Stage 2 footprint has a very substantial economic value which should be taken into consideration in the context of the proposed extension to the ash repository. If approved the mining and processing of the Stage 2 coal would keep approximately 30 mining contractors employed for two years.

Ash Storage Capacity of the Stage 2 Repository

Mining the coal prior to ash emplacement has inherent advantages compared with simply placing the ash on the existing landform. With judicious placement of the overburden material the capacity of the ash repository can be significantly increased. This allows the design volume of ash to be placed at a lower RL or the capacity of the repository to be increased if the original final RL is retained. A greater proportion of ash would be placed at lower levels resulting in less noise and dust associated with ash emplacement. The volume increase, depending upon the configuration of "out of pit" overburden placement could be as much as 2 million cubic metres which could extend the life of the Stage 2 repository by about five years.

Delta Electricity would naturally benefit from the increased capacity, and indeed Centennial, as the major long term coal supplier to Delta, also has an interest in extending

the life of the Stage 2 repository, particularly as the Wallerawang Power Station has a life expectancy in excess of the current proposal.

Environmental Impact on Lidsdale Residents

If the design height is deemed to be undesirable the pre-mining option would enable the same volume of flyash to be placed partly below ground level. This would result in reduced visual impact as well as noise and dust benefits, whilst still maintaining the life of the repository.

Relocation of Sawyers Swamp Creek Diversion Channel

The proposed re-routing of the diversion channel to a proposed more northerly route unfortunately sterilizes shallow coal reserves. The quantity sterilized is 325kt (this is included in the 989kt total above). This is a significant quantity and includes some of the best quality and lowest strip ratio coal. Removing the coal from the "pine forest" area first would defer the requirement to re-locate the drainage channel to later in the project. This would allow more time to develop alternatives to mitigate this coal loss.

There are other alternatives for the relocation of the existing drainage line that have not been discussed in the proposed extension. An example being just to the north of the proposed deviation, located on Centennial land, is one such alternative where the coal has been removed by an old opencut operation. If the drainage deviation were relocated into this area very little coal would be sterilised.

Suggested Solution

Centennial believe that a two-phase approach developed in close co-operation with Delta can be applied to these issues. As the flyash placement and coal removal activities are operationally tightly integrated it is important that the one part Part 3A approval apply to all activities in each phase.

Phase 1

Without expanding the "footprint" of the current proposal, and still achieving all of the outcomes required by Delta, Centennial believe that recovery of coal within the approval area can take place. This can only be achieved with close co-operation with Delta and the same contractor responsible for the removal of coal and the placement of capping material. Cost savings could accrue to Delta with this approach. Capping material would still be removed and stockpiled with similar types of equipment but coal would be mined and recovered instead of dumped to waste. There would be:

- No changes to operating times;
- No blasting of material; and
- No additional equipment movements for stockpiling of capping material.

It is believed by Centennial that this change would actually result in a higher volume ash repository, within the same footprint and which could be achieved with a cost saving to Delta.

Centennial have committed the resources necessary to develop, in conjunction with Delta, an integrated material movement schedule.

Phase 2

Phase 2 would entail an extension of the Phase 1, i.e, an integrated coal recovery/flyash emplacement program, but covering the remainder of the Kerosene Vale site.

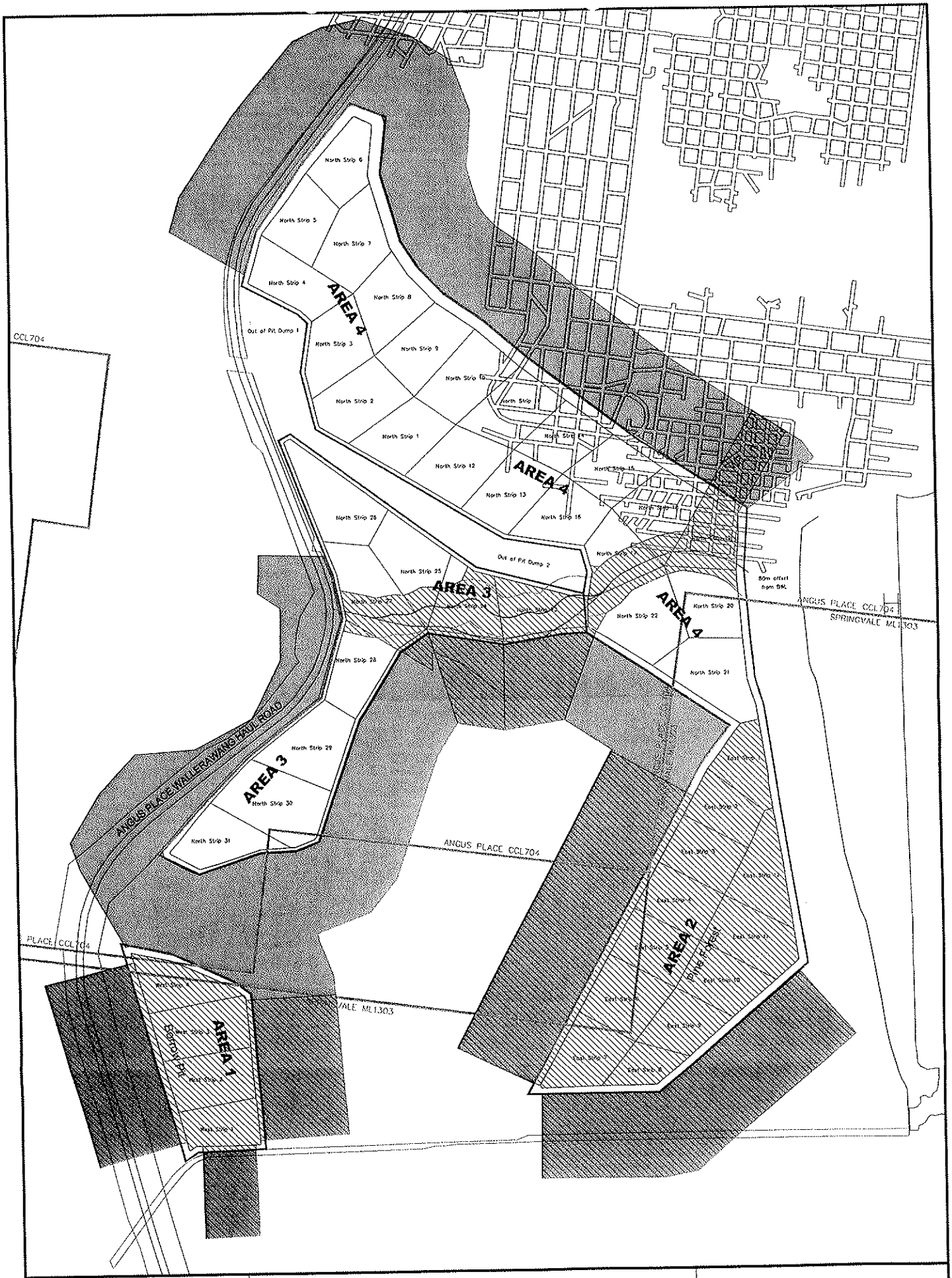
A plan would be developed in conjunction with Delta, which would then need to be assessed under the appropriate approval process. This plan would be expected to:

- recover all remaining economically viable coal;
- provide Delta with a low impact, life of power station ash disposal at reduced disposal costs; and
- provide a detailed program for the final rehabilitation of the area.

Conclusion

The Delta Environmental Assessment does mention that shallow coal seams are present within the footprint of the proposed ash repository, but does not specifically address removal and recovery of this coal prior to ash emplacement. The value of this coal is currently A$123M and therefore should be removed prior to the placement of flyash. In addition there are employment benefits and royalties of $7M to the NSW Government which would otherwise be lost.

An operationally integrated approach has the potential to recover this coal whilst satisfying Delta's requirement for ongoing ash repository. This approach minimises coal sterilisation, avoids a piecemeal result and also offers a better final environmental outcome. A Part 3A planning approval which addresses both flyash emplacement and removal of coal within the project footprint will achieve the best overall outcome for all stakeholders, and Centennial requests that the NSW Department of Planning take this into consideration.



LOCATION	ANGUS PLACE
SEAM	LTH, LDS, IRN
DRAWN	A. Brown
CHECKED	-
APPROVED	
SCALE	1:5,000 @ A3

KEROSENE VALE ASH DISPOSAL AREA

LEGEND

- Open Cut Reserves
- Auger Reserves
- Coal Sterilised by Stage 2 Repository

Centennial Coal

DATE 01/05/08

KV-DOP-01

Lithgow Environment Group

PO Box 3081 Bowenfels, NSW 2790

Preserving the Balance of Nature

The Director
Major Infrastructure Assessment
Department of Planning
GPO Box 39
SYDNEY NSW 2001

3rd May 2008

Dear Sir/Madam

RE: KEROSENE VALE - STAGE 2 ASH REPOSITORY AREA (MP 07_0005)

Lithgow Environment Group (LEG) has a current membership of 38 from the local area, and is a sub-committee of Blue Mountains Conservation Society with 968 members from the wider region. Our mission is to protect human health, water quality and natural environments of the Lithgow and Blue Mountains region, and the Greater Blue Mountains World Heritage Area (GBMWHA).

Our membership is totally opposed to any further extension of Kerosene Vale fly-ash repository in its current location. We formally request that the Department of Planning:

1. Acknowledges receipt of our submission opposing this proposal (MP 07_0005);
2. Advise LEG of the results of determination, and Conditions of Consent if approved.

Our reasons for totally opposing Stage 2 of Kerosene Vale Ash Repository (MP 07_0005) are:

1. UNACCEPTABLE LEVELS OF SURFACE WATER POLLUTION

Under section 120 of the *Protection of Environment Operations Act 1997* (POEO Act) it is an offence to pollute waters.

The KVAR has in the past and will in the future continue to have a highly detrimental impact on the physical, chemical and biological condition of not only in Sawyers Swamp Creek, but also on the Cox's River below Lake Wallace, West Wolgan and Narrow Swamps on Newnes Plateau, and the Wolgan River, as these waterways are also being polluted by mine dewatering from Springvale Colliery - which has been heavily contaminated with leachate from KVAR since the late 1950's.

This is demonstrated by water testing undertaken by the LEG Streamwatch Program since 2006[1], testing undertaken by the Sydney Catchment Authority (SCA) in May 2007[2], water quality data cited by Parsons Brinckerhoff and the Ecology Lab in June 2007[3], and POEO Licence Non-compliance records for Springvale Colliery (Lic. No. 3607)[4] available on the EPA website.

[1] *LEG/LRS Streamwatch Monitoring Results 2006/2008: Site 3 – Sawyers Swamp Creek.*
[2] *SCA Upper Cox's River field site monitoring data, 15 & 16 May 2007: Site 3 – Sawyers Swamp Creek.*
[3] *Parsons Brinckerhoff (2008), Stage 2 KVAR: Technical Report 2 – Surface Water Impact Assessment, Appendix 4.*
[4] *EPA POEO Licence Register (www.epa.nsw.gov.au/prpoeo/searchregister.aspx)*

LEG Streamwatch Group has since September 2006[1] consistently recorded salinity levels exceeding Australian Drinking Water Guideline[1] upper limit of 800 µS/cm in Sawyers Swamp Ck.[5] Water testing by SCA field staff in May 2007[2] recorded salinity levels of 1600 µS/cm in Sawyers Swamp Ck, which exceeds the ANZECC (2000)[6] upper limit of 1500 µS/cm above which adverse biological impacts can occur. The SCA also recorded levels ANZECC upper limit exceedances for Nickel, Zinc, Manganese & Iron. Cobalt and Nitrogen levels were also very high.

Parsons Brinckerhoff, in their Surface Water Impact Assessment[3] as part of this application cited water testing by Hyder & ERM (2002)[7] which identified elevated concentrations of Boron, Fluoride, Aluminium, Nickel, Zinc and Cadmium within waters of Swayers Swamp Creek Ash Dam (SSCAD).

Parsons Brinckerhoff also cite water quality data collected by Delta Electricity between 1991 - 2007 at the SSCAD, Dump Creek and Sawyers Swamp Creek. This identified elevated salinity, Lead, Cadmium, Copper, Zinc, Aluminium, Boron, and Nitrogen concentrations exceeding ANZECC ecosystem protection guidelines. They also cite research by *Birch et al, 2001*[8] on Sawyers Swamp Ck, which recorded the highest concentrations for Cobalt in the Cox's River catchment (113 µg/g).

In June 2007 the Ecology Lab[9] recorded Salinity levels above 800 µS/cm at 2 points on Sawyers Swamp Creek, excessively high Turbidity levels above ANZECC Guidelines for an upland river, and high levels of Nickel and Manganese. Macro-invertebrate and faunal assemblages as well as fish communities in Sawyers Swamp Creek were also identified as being severely impaired.

In 2003 Springvale Colliery (POEO Lic. No. 3607) exceeded licence discharge concentration limits for Hexavalent Chromium (Cr VI) and Selenium, and in 2004 again exceeded limits for Selenium, from discharge points LD 4/5 on Newnes Plateau, which flows into the Wolgan River catchment.

Chromium only occurs naturally as Cr (III), not as Cr (VI), which is a man made form. Selenium exceedances have not been recorded at any other coal mine in the Lithgow region, but have been recorded in waterways associated with the KVAR, and in Lake Wallace. Therefore the most likely source of Cr (VI) and Selenium in Springvale Colliery's minewater is leachate from the KVAR, given that these underground mine workings are just a few 100 metres to the north, and all local groundwater studies state that aquifers drain to the north, towards Springvale's zones of extraction.

Much of this contaminated minewater previously dumped into ephemeral creeklines on Newnes Plateau is now being discharged via the Springvale Transfer to Wallerawang Power Station and the "Tortuous watercourse" into the Cox's River below Lake Wallace. Delta Electricity's "Tortuous Watercourse" is the most highly polluted waterway in the upper Cox's River catchment. (*see Site 23 of attached LEG Streamwatch Monitoring Results 2006-2008 [1], and Site 19 of SCA Field Data May 2007 [2])*

The NSW Environmental Defenders Office[10] and Aargus Pty Ltd[11] have also provided LEG with written advice on this submission. We request that the DoP considers their recommendations.

None of the reports forming part of Stage 2 of the KVAR proposal identify any strategies to reduce the high levels of salinity, trace elements and heavy metals being discharged into Sawyers Swamp Creek, aquifers, and associated waterways. Indeed Parsons Brinckerhoff[3] state that discharge volumes, and hence pollution levels, will increase.

These dangerously high water pollution levels breach section 120 of the *Protection of Environment Operations Act 1997*, and are totally unacceptable to LEG. The DoP must reject this proposal.

---

[5] *Australian Drinking Water Guidelines 6, 2004. http://www.nhmrc.gov.au/publications/synopses/_files/adwg_11_06.pdf*
[6] *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC & ARMCANZ 2000).
[7] *Hyder and ERM (2002). Proposed Reinstatement of Dry Ash Placement, Kerosene Vale, Review of Environmental Factors*
[8] Birch, G., Siaka, M., and Owens, C. (2001). The source of anthropogenic heavy metals in fluvial sediments of a rural catchment: Cox's River, Australia. *Water, Air and Soil Pollution* **126**, pp.13-35.
[9] *The Ecology Lab(2007).Ecology Studies for the Kerosene Vale Stage 2 Ash Repository Area.*
[10] *NSW Environmental Defenders Office (EDO) – Advice to LEG for submission on Stage 2 of KVAR (see attached).*
[11] *Nick Kariotoglou, Principal Scientist, Aargus Pty Ltd - Groundwater advice to LEG for submission on Stage 2 KVAR*

2. UNACCEPTABLE LEVELS OF GROUNDWATER POLLUTION

For the same reasons as above, LEG contends that dangerously high levels of salinity, trace elements and heavy metals will continue to leach from the KVAR and the ash (dirty water) collection pond into local groundwater aquifers, old mine workings of Newcom Colliery, and underground mine workings of Springvale Colliery. This represents a breach of section 120 of the *Protection of Environment Operations Act 1997*, and therefore is totally unacceptable to LEG.

LEG is aware that leachate from the KVAR has leaked into underground mine workings of the adjacent Springvale Colliery. This has been confirmed by personal communications between senior staff of Centennial Coal and members of Blue Mountains Conservation Society at Springvale Colliery SMP Committee's, and LEG members at Lambert's Gully Mine CCC meetings.

This is also evidenced by the fact that in 2003 Springvale Colliery (Lic. No. 3607) exceeded licence discharge concentration limits for Hexavalent Chromium (Cr VI) and Selenium, and in 2004 limits for Selenium, from discharge points LD 4/5 on Newnes Plateau within Wolgan River catchment.

Chromium only occurs naturally as Cr (III), not as Cr (VI) which is a man made compound. Selenium exceedances have not been recorded at any other coal mine in the Lithgow region, but have been recorded in waterways associated with the KVAR, and in Lake Wallace. The most likely source of Cr (VI) and Selenium in Springvale Colliery's minewater is leachate from the KVAR, given that these underground mine workings are just a few 100 metres to the north, and all local groundwater aquifers drain to the north, towards Springvale Colliery's zones of extraction.

Much of this contaminated minewater was previously dumped into ephemeral creeklines on Newnes Plateau. It is sent via the Springvale Transfer to Wallerawang Power Station and discharged via the "Tortuous watercourse" into the Cox's River below Lake Wallace. Delta's "Tortuous Watercourse" is the most highly polluted waterway in the upper Cox's River catchment. (*see Site 23: LEG Streamwatch Monitoring Results 2006-2008* [1], *and Site 19: SCA Field Data May 2007* [2])

In addition to the key points raised by LEG's groundwater consultant, Mr Nick Kariotoglou, Managing Director and Principal Scientist of Aargus Pty Ltd[11], we also raise the following issues.

Parsons Brinckerhoff[3] in their Groundwater Assessment for this proposal identify from the DNR Bore Registry that there are 89 bores within a 10 kilometre radius of the proposed KVAR Stage 2. Most of these are registered for private/domestic use (stock or irrigation bores) with only 9 registered for government or other uses.

Groundwater contamination from the KVAR therefore has the potential to contaminate up to 80 licenced bores used for private or domestic use, irrigation or stock watering.

In addition, the increasing reliance by Delta Electricity on mine dewatering programs for cooling water has resulted in ever increasing volumes of highly saline minewater, potentially contaminated with leachate from the KVAR since the late 1950's, being pumped into ephemeral creeks on Newnes Plateau, the Wolgan River, and ithe Cox's River catchment and Sydney's water supply.

LEG regards this practice as highly dangerous and irresponsible for human health and the environment. Delta Electricity is being allowed to contaminate the drinking water supply for 4 million Sydney water consumers and the bore water of 80 private and domestic consumers with high levels of Salinity, Boron, Fluoride, Aluminium, Nickel, Zinc, Lead, Cadmium, Manganese, Iron, Hexavalent Chromium, Selenium, Cobalt and Nitrogen from the Kerosene Vale Ash Repository.

These dangerously high levels of groundwater pollution are in breach of section 120 of the *Protection of Environment Operations Act 1997*, and are totally unacceptable to LEG. The DoP must reject this proposal.

3. IMPACTS ON AIR QUALITY

LEG considers it highly misleading, grossly dishonest, criminally negligent and corrupt that Delta Electricity, Parsons Brinckerhoff, and the Holmes Air Sciences Air Quality Assessment[12] neglected to make any reference to the serious dust problems that have existed at Lidsdale township since the changeover from wet disposal to dry disposal of fly-ash at the KVAR since 2003.

If Delta Electricity has not been unable to manage dust problems at KVAR in the past, it will be physically impossible to manage dust from Stage 2, which will be twice as close to residences.

These serious dust problems (as well as noise from reversing beepers, banging truck tailgates, bulldozers, and artificial lighting at night) have been raised with Delta, Lithgow City Council, the EPA, various Members of Parliament, and in the local media on numerous occasions since 2003.

The most serious and highly publicised dust incident occurred on Friday 14 September 2007, within the reporting period of the Holmes Air Sciences Air Quality Assessment for Stage 2 of the KVAR completed on 16 January 2008. And yet this incident as not mentioned in that report?

Attached are copies of *Lithgow Mercury* articles about fly-ash dust problems in recent years:

- *Lithgow Mercury,* 27 September 2007 - "**EPA targets Wang dust up"**
- *Lithgow Mercury,* 25 September 2007 – "**Mt Piper facing an ash disposal crisis"**
- *Lithgow Mercury,* 6 September 2007 – **"Industry doesn't care; Sartor doesn't have a clue"**
- *Lithgow Mercury,* 20 November 2007 – **"It's an issue that won't go away**"
- *Lithgow Mercury,* 14 February 2008 – **"More angst for residents of Blackmans Flat"**
- *Sydney Morning Herald,* 12 December, 2007 – **"It was green, my valley"**
- Press release by Duncan Gay MLC, 14 November 2007 - "**Glimmer of hope for Blackmans Flat residents"**
- Press Release by Lee Rhiannon, SMH, 2 March 2006 – **"Govt sneaks in major Mount Piper Power Station upgrade"**
- Greens Media Release, 6th March 2006 - **"Mount Piper power station upgrade set to damage Cox's River headwaters"**

Attached also are numerous Questions asked in the Upper and Lower House of Parlaiment by Mr Peter Debnam MP, Mr Duncan Gay MLC, Dr John Kaye MLC, and Ms Lee Rhiannon MLC regarding fly-ash dust and related pollution issues over the last 4 years. The membership of LEG therefore finds it difficult to accept that Delta Electricity and their consultants were totally unaware of the fly-ash dust problems facing local residents in Lidsdale.

The evidence a dust problem exists is detailed in the Holmes Air Sciences Air Quality Assessment. The approved DECC criterion for dust levels at the KVAR are 4 g/m^2/month of insoluble solids. In 2003, DG29 recorded an annual level of 7.4 g/m^2/month, in 2004 it was 5.3 g/m^2/month, and in 2005 it was 4.9 g/m^2/month. DG27 was 5.7 g/m^2/month in 2005. In 2006 DG28 exceeded 4 g/m^2/month.

In other words, while dust levels at eastern-most residences of Lidsdale may currently comply, houses to the west most definitely do not. On page 6 of the Holmes Air Quality Assessment it says*"…it would be conservative to assume that the effect of emissions from the ash repository decreased linearly with distance from the repository".*

Stage 2 of the KVAR will move ash storage twice as close to Lidsdale residences, therefore its 'conservative to assume' that dust levels are likely to be twice as high at Lidsdale residences.

[12] *Holmes Air Sciences Air Quality Assessment, 16 January 2008 - Stage 2 of Kerosene Vale Ash Repository*

4. PLANNING ISSUES

Once again the key planning issues regarding Stage 2 of the HVAR proposal relate to:

- What constitutes appropriate development for land zoned 1(a) Rural (General)
- What constitutes appropriate development for land which is immediately adjacent a Residential Village of 100 houses,
- What constitutes 'hazardous industry',
- What constitutes adequate separation distances between conflicting landuses, and
- What constitutes adequate buffer zones between conflicting landuses.

And once again the main objectives of the *Environmental Planning and Assessment (EP&A) Act 1979* appear to have been ignored. The main objectives of the EP&A Act are to:

- establish processes to regulate competing land uses,
- to give property owners some surety that their property rights will be protected,
- to give property owners some surety that their property values won't be devalued,
- to give property owners some surety that their neighbourhood won't be changed into something radically different, and
- to protect human health and the environment by locating developments to avoid unacceptable risks.

Town Planners are supposed to achieve this by putting in place adequate Strategic Plans, Regional Environmental Plans (REP's), and Local Environmental Plans (LEP's) to separate conflicting land uses, to provide adequate environmental buffers, and to ensure that the right regulatory processes pertaining to traffic safety, noise and dust pollution, surface water pollution, groundwater pollution, OH&S and Workcover are in place to manage potential impacts.

One would assume a development involving superfine fly-ash dust which can be breathes deep[ly uinto the lungs and cause long term chronic health problems would be classified as a 'hazardous industry', and would not be located near homes.

The LEG members who are residents of Lidsdale most definitely judge the risks associated with fly-ash disposal so close to homes as intolerable and unacceptable to their local community. The membership of LEG believe that Stage 2 of the KVAR:

1. Is far too close to homes to safely manage dust, noise, heavy metal and other pollution;
2. Environmental buffers are non-existant or totally inadequate to minimise adverse impacts;
3. Should be a separately licensed activity from the main power generation plant,
4. Should be classified as a Hazardous Waste Facility under the *Protection of Environmental Operations (POEO) Act 1997*, with its own set of air and water quality licence conditions.

5. OPERATING HOURS

Operations are proposed to be undertaken 24 hours a day. However, this would be subject to review in relation to noise impacts as part of a detailed environmental assessment (*Chapter 7*).

LEG believes this is too open-ended. Operating hours must be restricted to 7am to 5pm, because the operations are obscenely far too close to 100 residential properties in Lidsdale.

6. NOISE BARRIERS

The report says that noise barriers may be installed. This is too open ended. Noise problems have occurred in the past, they are likely to recur given this proposal is twice as close to residences, and **noise barriers must be installed if this proposal is to proceed.**

7. NEED FOR THE PROJECT

LEG disputes the need for this project in this location. In 11 years time what will delta (or their successor) do? Bury the residents of Lidsdale in fly-ash? It is well beyond time that some proper long term Planning was done in the Lithgow region.

And it is well beyond time that Delta Electricity developed a single fly-ash repository for both Wallerawang and Mount Piper Power Stations, far enough away from homes not to cause dust and noise problems, and on stable sub-surface geology away from underground mine workings so that toxic leachate does not contaminate groundwater.

8. DELTA ASBESTOS DISPOSAL AREA

All reports for Stage 2 of the KVAR failed to identify the Asbestos dump which has been operated by Delta adjacent the KVAR at the eastern end of Maddox Lane in Lidsdale just 300 metres from residences.

Children had been playing and riding their bikes in this area for years, until a local resident queried what the fibrous material was strewn across the site, with the result that an Asbestos Disposal Area sign was installed in May 2005.

The fence can hardly be described as child-proof or anything else proof for that matter, given the dangerous nature of asbestos fibres for human health.

These asbestos fibres can be stirred up by native animals such as wombats or feral animals to be spread by wind and convection currents towards homes in Lidsdale. They can be carried during rainfall events closer to homes and into the Cox's River less than a kilometre away downstream, where they can be deposited in silt and sediment, dry out, and be resuspended many times over.

LEG can find no evidence that Delta's asbestos dump is a Licenced activity as required under Schedule 1 of the *Protection of the Environment Operations (POEO) Act.*

Nor can we find any evidence that a DA was ever lodged with Lithgow City Council or approval granted for the operation of this asbestos disposal area as a Waste Management Activity.

LEG can see absolutely no reason why delta Electricity needs to operate such a dangerous facility in such close proximity to residential property, nor can we see how this facility can be possibly be regarded as essential for the viable operation of Stage 2 of the KVAR.

This asbestos disposal area cannot be described as being of State Significance for this Proposal, the separation distance from residential property is totally inadequate, buffer zones for windblown asbestos are non-existent, and the fencing is not secure.

The acceptability and tolerability of the risks associated with asbestos fibres to human health can only be fostered by adequate consultation with the local community. That has never happened.

We therefore formally request that the Department of Planning:

1. Investigates whether this Delta Electricity asbestos disposal area constitutes illegal dumping of a hazardous material on land without EPA or Council approval;
2. Demand that relevant authorities take appropriate action to rectify any breaches; and
3. Require delta Electricity to remove all asbestos from this site and rehabilitate the area prior to approving any further activities on the Kerosene Vale Ash Repository.

9. DRINKING WATER CATCHMENTS REGIONAL ENVIRONMENTAL PLAN NO. 1

LEG cannot possibly see how this proposal could be deemed to have a Positive or Neutral Benefit on water quality given the high levels of Salinity, Boron, Fluoride, Aluminium, Nickel, Zinc, Lead, Cadmium, Manganese, Iron, Hexavalent Chromium, Selenium, Cobalt and Nitrogen proven to be released in surface water from, or leaching into groundwater from Kerosene Vale Ash Repository.

LEG considers there is no Positive or Neutral Benefit for either Swayers Swamp Creek or the Cox's River immediately downstream.

Due to leachate from the KVAR contaminating mine water in Springvale Colliery, LEG considers that there is no Positive or Neutral Benefit for West Wolgan Swamp and Narrow Swamp on Newnes Plateau, the Wolgan River, or the Cox's River below Lake Wallace.

10. SUBMISSION FROM NSW ENVIRONMENTAL DEFENDERS OFFICE AND AARGUS P/L

LEG has received written advice on our submission for Stage 2 of the KVAR proposal. We formally request that the Department of Planning give full consideration to the recommendations of the EDO and groundwater consultants Aargus Pty Ltd.

Yours faithfully

Julie Favell
Streamwatch Coordinator on behalf of
Lithgow Environment Group
PO Box 3081
Bowenfels NSW 2790
(02) 6351 4887

Mt Piper facing an ash disposal crisis

LITHGOW MERCURY
25 September 2007
LEN ASHWORTH

Delta Electricity appears to be facing a major new challenge in dealing with the most obvious of the by products from its generation process, the huge volumes of fly ash.

The ash is from the boilers at the power stations and is a residual headache with all coal fired operations.

And in Lithgow Council there has been increasing agitation about the conditions of the ever growing ash dump at the Mt Piper power station.

The dump, now visible for a long distance along the Castlereagh Highway, is increasingly being described as an environmental disaster.

The major concerns expressed in Council relate to the impact of the ash on residential areas around Blackmans Flat **and Lidsdale.**

In this week's monthly ordinary meeting of Council there were again calls for urgent action to address the problem.

Cr Howard Fisher said that in the high wind conditions of last week he had responded to a request by residents between Lidsdale and Blackmans Flat to carry out an on site inspection.

He said that he had received numerous complaints about the conditions aggravated by the high winds.

"Residents had a right to be concerned," he said. "The entire area was coated in a white powder.

Ït's an absolutely deplorable situation when the wind blows."

Cr Fisher said Council must move urgently for a crisis meeting with Delta.

"They have to tell us what they are going to do about the fly ash and what they will do to protect these residents," he said.

Mayor Neville Castle said that moves have already been initiated to seek to address the problem.

He said Delta representatives had indicated they would meet with Council at the next committee meeting on October 2.

Delta had been scheduled for a similar meeting with Council last month but had to cancel at the last meeting due to what was described as an accident involving one of the representatives.

The Mt Piper ash dump has been highlighted at Council as one of a wide range of industrial environmental problems affecting Blackmans Flat.

Council has been told that the ash dump has grown too big to be manageable and that the dust in the air at times is like fog.

There have been no recent complaints about the ash disposal system at Delta's Wallerawang power station.

The problems being experienced at Blackmans Flat are reminiscent of the issues facing Portland years ago when the cement works was in full operation, with a constant 'fallout' of cement dust causing an environmental headache.

EPA targets Wang dust up

Lithgow Mercury

27 September 2007

LEN ASHWORTH

Sources within the industry have rejected claims that dust problems being experienced in the Blackmans Flat/ Lidsdale area are originating from the ash dump at Mt Piper power station.

Instead they point the blame at the Wallerawang power station ash dams and what they described as a now abandoned briquette operation at the old Wallerawang Colliery site.

On Tuesday the Mercury reported that Lithgow Council was calling for an urgent meeting with Delta Electricity to attempt to resolve problems with the Mt Piper ash facility.

Cr Howard Fisher had raised the issue at last week's meeting of Council when he said residents in the affected area were putting up with deplorable conditions during windy weather.

Cr Fisher said he had made a personal inspection during the recent high winds and had been appalled at the level of dust in the air.

He said that everything was covered in 'fine white powder'

"Residents had a right to be concerned," Cr Fisher said.

"Ït's an absolutely deplorable situation when the wind blows."

It was the latest in a sequence of similar complaints from the Blackmans Flat area.

But according to industry sources the criticism is being misdirected.

And that view is supported by the Environment Protection Authority, the EPA.

EPA regional spokesman Richard Whyte said the authority does not have a problem with the control measures at the Mt Piper ash dump.

The Mt Piper dump is continually 'capped' and has hundreds of water spray outlets.

Mr Whyte said that in recent times the EPA had sent inspectors from the Bathurst office to investigate complaints from residents of dust from the Wallerawang ash dam at Kerosene Vale.

He said the inspectors had witnessed the dust clouds and shortfalls in the capping procedures.

The EPA has had discussions with Delta and their Wallerawang contractors regarding the need for adequate measures to prevent the ash from blowing from the site.

"We served a notice to ensure there would not be a repeat of the occurrence," he said.

The targeting of the Wallerawang dump will come as something of a change of direction for Council where the debate on dust problems has always centred on Mt Piper.

Mayor Neville Castle said representatives from Delta are scheduled to address the next meeting of Council on Tuesday night when it is hoped to literally clear the air' on the dust complaints.

* THE latest concerns come at a time when Delta is seeking to significantly increase the size of the Kerosene Vale ash dam.

Residents have received correspondence from a firm of consultants, Parsons Brinckerhoff Australia, who are carrying out an environmental assessment on behalf of delta.

The consultants said the ash storage is essential to the ongoing operation of the power station.

“Delta has, and continues to, investigate opportunities to reuse dry conditioned ash to minimize storage requirements but at the moment most ash must be stored in the repository”, project manager Nigel Buchanan said.

He said that in 2001 delta decided that there was an operational need to changing the management of the ash from a wet process as in the past to a dry ash.

It is this dry ash that is causing most of the problems according to residents.

One Wolgan Road resident Jim Whitty said the dry ash was like talcum powder and it took only minimal air movement to produce floating clouds.

“We wonder how much we can ingest before it becomes a health issue,” he said.

Mr Whitty claimed residents were not opposed to the ash dam but would like to see a return to the wet slurry management to prevent dust.

“As the dump grows and with the wind in the right direction this will become as much problem for Lithgow as for Lidsdale and Blackmans Flat,” he said.

But the expansion plan now being studied is to provide for an additional 5.3 million cubic metres of ‘dry conditioned ash’, taking the total storage 7.8 million cubic metres.

This will allow for a further 11 to 15 years of operation.

Expansion of the dump would require the diversion of Sawyers Swamp Creek and excavation of material from the pine plantation.

Industry doesn't care; Sartor doesn't have a clue

LITHGOW MERCURY
06 September 2007
LEN ASHWORTH

Lithgow Council was told this week that a 'myriad of problems' confronting residents around the village of Blackmans Flat were the result of ‘mining companies that no longer care', a ‘State planning Minister who doesn't have a clue what his department is doing', and bureaucrats who ‘are not interested .

The strong criticism came when Council was considering an application for increased production and an associated increase in road haulage from the Pinedale open cut mine.

Regional Services Manager Andrew Muir told the meeting of Council's Finance and Services Committee that Pinedale currently has approval to mine 200,000 tonnes per annum.

Part of the approval was that after an initial six month period the coal was not to be hauled to Mt Piper and Wallerawang power stations by public roads.

That approval also called for the company to negotiate with the operators of a private haul to utilise that facility for the power station deliveries.

Mr Muir said the company now wants to vary that consent to increase production to 350,000 tonnes a year and to utilise the Castlereagh Highway for a period of five years.

The company argued that the condition imposed by Council restricting the use of a public road was not valid under common law.

This submission was rejected in a legal opinion obtained by Council.

Mr Muir said the 75 per cent increase in tonnages had been sought by the company to meet power station orders.

He said this would obviously mean a significant reduction in the life of the mine from 10 to six years.

While this shorter period would benefit residents in the area the downside was the increase in truck movements and this could not be justified.

Mr Muir said that a private haul road exists adjacent to the mining operation and was ‘incongruous that heavy vehicles would have to travel by public road when such a facility is so close'.

He said that council officers strongly favour retention of the condition relating to road haulage.

Cr Wayne McAndrew said the condition relating to haulage was appropriate if the haul road is available.

But he said there was a problem in the fact that the haul road is owned by a competitor in the mining industry who is reluctant to allow access to Pinedale.

He said Council may be able to bring the parties together to mediate.

Cr Howard Fisher said that only two weeks ago Council had held discussions with State Planning of problems' that already exist for the Blackmans Flat area.

"If we approve this Pinedale application we put further burden on this community," he said.

Cr Fisher also criticised Delta Electricity for its ash dump that he said was ‘spewing ash over everyone'.

"I was out there two days ago and the wind was blowing and it was atrocious," he said.

"Not one of these operators like Delta, Centennial or Pinedale are able to sit down and consider what they are doing to the community."

Cr Fisher said he believed there had never been serious discussions between Pinedale and the owners of the haul road.

He said it was a sad state of affairs that these days these companies put their own interests first and ignore the community.

"Coal companies don't care any more and we have a Planning Minister who doesn't have a clue what his department is doing," Cr Fisher said.

"We have to get the point across to the Minister about what has been happening around Blackmans Flat and what needs to be done."

Cr Fisher said that some time ago Centennial were also unable to reach an agreement on haul road usage and put a conveyor across the countryside from Springvale.

"The coal companies these days are holding the community to ransom and it's wrong," he said.

Mayor Neville Castle said most members of the community would agree with this opinion.

He said that when Council met with Minister Sartor he at first did not seem to know much about what was going on but had later asked his staff to prepare a report.

"Isn't it a crying shame we have to go to this trouble to get the Minister to understand," Cr Fisher said.

He said the Minister was kept uninformed by bureaucrats in his department who 'don't care because it's not in their backyard'.

Council adopted a resolution rejecting the consent modification and will allow just there months for the company to arrange alternative transport measures.

At the same time Council will seek to mediate on the haul road issue between Pinedale and the road

It was green, my valley

Sydney Morning Herald

Wendy Frew - December 12, 2007

Bruce Marshall does not want to leave Wollar.

Over the past 16 years he and his wife have created an arcadian existence for themselves and their two daughters on a property surrounded by parks and bushland. The village, 3½ hours drive from Sydney, has a school, a few shops, a community hall and a cricket ground.

The small, tight-knit community, nestled in sandstone escarpment country north-west of Mudgee offered the Marshall family the community spirit they had dreamed of when they began thinking of leaving city life.

Marshall and two other residents mow all the village lawns, and the former boilermaker has taken on the role of vice-president of the school's parents and citizens association.

"When we decided to move from Sydney we consciously chose Wollar because we could see so many similarities with the area in which we grew up. The national park is to the east, a nature reserve to the west, and all age groups were represented in the village," Marshall says.

But two years years ago everything changed. Coalmining came to town and many people left.

These days, Marshall says, his children are often woken by the sound of blasting at the nearby Wilpinjong open-cut mine. Coal dust drifts across town, leaving sooty marks on roofs and clothes hung out to dry. Mine workers and trucks speed along village roads. Unsafe levels of lead and diesel have been detected in water tanks.

Marshall estimates that as many as 150 people have moved away in the past three years because of the mine. The mine's owner, the US coal giant Peabody, is negotiating with another 14 families to buy them out.

"The Government is taking more than coal out of this area," Marshall says. "It is taking the people out, the social wellbeing of the town."

The story of Wollar is the story of many other rural and semi-rural communities in NSW. As mining encroaches into new terrain, more people end up living cheek-by-jowl with the dirty end of a business that has earned countless billions of dollars for international companies and hundreds of millions for state government coffers.

In the year to June 2006 miners dug up 161.3 million tonnes of coal, much of it for export. Development applications are before the State Government for another 24 million tonnes a year, not including the 20 million tonnes a year recently approved for the giant Anvil Hill and Moolarben mines.

Increased mining mechanisation has produced bigger mines but fewer jobs. That has also led to more damage to the environment and the communities that live near mines, says the NSW Greens MP Lee Rhiannon.

Rhiannon, who has spent the past couple of years travelling the state talking to residents living near mines, says the days of coalmining supporting entire communities are long gone.

"Communities are fractured and mine workers don't live in the local communities because they don't like living so close to the mines," says Rhiannon, who believes the historically close relationship between the coal industry and the NSW ALP has blinded the Government to the changing circumstances facing mining towns.

The people of Blackmans Flat and Lidsdale, tiny settlements near Lithgow, agree. Virtually encircled by open-cut mines and giant fly ash dumps from power stations, residents have been worn down by years of complaining to government departments about air, water and noise pollution.

"I don't know what the mining companies are talking about [when they quote consent conditions]," says Michelle Vincent, whose family is one of a dozen who want the State Government to relocate them.

The Department of Planning attaches a swag of conditions for air, water and noise pollution to every mining licence. Mining companies report breaches to the Department of Environment and Climate Change, which posts them on its website.

A recent analysis of that data by the NSW Greens shows a rising number of licence breaches but few prosecutions. However, the Department of Environment says many breaches are minor, and companies are fined, sent warning letters or ordered to upgrade their operations.

The Minister for Planning, Frank Sartor, told the *Herald* that environmental standards had been significantly tightened in recent years.

"For example, noise pollution was tightened in 1999 so that controls around noise had to take into account adverse weather conditions."

Australia's environmental standards in the mining sector are as good as those in any industrial country, Sartor says, but he recognises there is sometimes a clash of interests when mining comes close to settlements.

"There is nothing easy about a coalmine, and the biggest difficulty with an extractive industry is that you can't move the resource."

Critics argue that more could be done, and at least one company is considering compensating residents for noise and health issues, even though it has no legal obligation to do so.

Peabody's managing director in Australia, Ian Craig, says the Wilpinjong mine is complying with its licence conditions, but he has decided to negotiate with 14 families in Cumbo Lane, not far from Wollar village.

"It is not something we have to do," Craig says. "Noise has been the issue … on that basis we held a meeting with the residents and agreed that we would talk with individual families about their requirements. That could range from a purchase of their property … or an option to purchase in the future."

On why noise would still be an issue if licence conditions were being met by the mine, Craig says he is not qualified to comment.

Lance Batey, who lives three kilometres from Wilpinjong, has spent countless hours researching the health effects of noise on people and animals, including infrasound - sound with a frequency too low to be detected by the human ear. One source of infrasound is heavy machinery.

Despite his expertise, Batey feels frustrated and often helpless. "Everyone has difficulty describing the humming in their heads … you can even hear the machines change gear," he says from the Wollar property he once hoped to turn into an organic winery.

"It is really driving us nuts … the Department of Environment says there is no noise, but local residents just laugh when they hear that."

This story was found at: ***http://www.smh.com.au/articles/2007/12/11/1197135463526.html***

It's an issue that won't go away

Lithgow Mercury
Tuesday, 20 November 2007

Nationals MLC for the Bathurst electorate Duncan Gay said there is some hope the Iemma Labor government will finally consider the plight of Blackmans Flat residents near Lithgow, after pushing the issue in Parliament.

Mr Gay said Mineral Resources Minister Ian Macdonald agreed to look into the Blackmans Flat community's requests for a government-funded relocation away from their village, which is surrounded by state-approved mining developments.

“To have the Minister agreeing to investigate the issue on the record is good news for the people of Blackmans Flat,” Mr Gay said.

“We might finally see this government take some action to save the people of Blackmans Flat from their increasingly untenable living situation.”

Mr Gay said Labor Minister Ian Macdonald appeared to know very little about the issue, despite Labor Bathurst MP Gerard Martin’s claims he’d made representations to the relevant Ministers on the Blackmans Flat community’s behalf.

“Ian Macdonald’s response in Question Time didn’t sound like a Minister who’d been in dialogue with the local MP about the issue,” Mr Gay said.

“If he knew anything about the Blackmans Flat debacle, he’d know the community aren’t trying to hinder the mining industry in any way, shape or form.

“They simply want to be relocated to homes away from the ash, dust, truck traffic and mining explosions.

“This is the second time this week we’re hearing the local Member tell the community one thing while his Labor colleagues in Macquarie Street say another.”

Mr Gay said the Blackman’s Flat community have a fair case for relocation, at an estimated cost of $5 million, because eight homes had been already been relocated years before.

“I have met with the people of Blackman’s Flat, I’ve been to their homes, I’ve seen the what the surrounding mining industry is doing to their lifestyle,” Mr Gay said.

“They’re good people with a reasonable request for relocation who deserve a fair response.”

Martin and Rhiannon cross swords over Blackmans Flat

LITHGOW MERCURY

10 November 2007 - 8:38AM

Member for Bathurst Gerard Martin yesterday hit back at claims by Greens Upper House Member Lee Rhiannon, in relation to action to be taken on behalf of residents of Blackmans Flat who are faced with major problems in relation to their proximity to major industrial developments.

Speaking in the Legislative Council this week Ms Rhiannon said that although Blackmans Flat has only 13 families they are ‘doing it tough’ because of industrial activity that has developed in close proximity to the village.

She said Blackmans Flat was ‘wedged’ between Mt Piper power station and coalmines and Lithgow Council was soon to establish a central garbage dump there.

She claimed that in the last three years three new coal mines and four coal mine extensions were granted without proper community consultation.

“For decades the government of the day has established dirty industries in the area and the residents have had to contend with dirty living conditions.”

She said that in the past year house prices in Blackmans Flat had dropped by $40,000.

“Prior to the last election the Local Member Gerard Martin told a public meeting it would be a drop in the ocean to relocate the residents of Blackmans Flat,” she said.

“The residents now ask for relocation.

“Although Blackmans Flat has been their home for a long time they do not believe any remediation or changes can help their situation.

“Following the election Mr Martin said that relocation was asking a lot.”

Yesterday Mr Martin said the plight of Blackmans Flat was far from being ignored and Ms Rhiannon was again making ‘false claims’.

“I have taken up a petition on behalf of the residents and the matter is currently with the Minister for Planning Frank Sartor,” he said.

“The Minister has met a deputation of residents and is taking into account the matters raised by them.

“Despite the false claims by Lee Rhiannon my position is quite clear; the residents have a legitimate claim and they should be adequately compensated to allow them to re-establish in a place of their choosing.”

Mr Martin said it was his view that it is not possible to remove the existing village of Blackmans Flat to another location.

He said he has asked the Minister to organise a meeting of the companies, including Lithgow City Council, involved in operations in and around Blackmans Flat to develop a strategy and apportion responsibility to arrive at a satisfactory arrangement with the residents.

“This has been my position from day one and I will push for a timely and a satisfactory result for the residents,” Mr Martin said.

More angst for Blackmans Flat residents?

LITHGOW MERCURY

Don Kipp
Thursday, 14 February 2008

Residents of Blackmans Flat could again come under siege if a development application currently before Lithgow Council is approved.

Pine Dale Coal Mine, operated by Enhance Place Pty Ltd, is hoping to have its existing coal transport conditions between the mine and Mt Piper and Wallerawang’s varied.

The variation seeks to increase the amount of coal transported to the two power stations from 200,000 tonnes a year to 350,000 tonnes a year over the next six years.

Crushed coal from the mine’s stockpile is trucked by private contractor to Mt Piper, Wallerawang and other customers.

The company has had, in the past, access to the private coal haul road, but this access is not presently available, meaning all the truck movements would be put onto public roads.

The majority of the trucks lumbering along the Castlereagh Highway would be those heading to Mt Piper, with only five per cent heading to Wallerawang.

It is claimed in the formal application by consultancy company R W Corkery and Company that no complaints have been received in relation to trucks travelling on public roads and no Enhance Place Pty Ltd trucks have been involved in any road accidents during the operation of the Pine Dale Coal Mine or previous operations at the Enhance Place Coal Mine.

On current annual production rates of 200,000 tonnes a year the average weekly traffic is seven to nine trucks in one or both directions, or about 240 to 300 truck movements a week.

Under the application, once production levels reach the 350,000 tonnes a year, this would increase to between 420 and 520 movements a week.

In the application, the consultants claim the privately owned haul road … is the only reasonable alternative transport route that exists for the transportation of coal to the Mt. Piper and Wallerawang Power Stations.

“The use of the haul road is currently not justifiable due to the inability to negotiate a suitable agreement with the owner of the private haul road and a refusal of Delta Electricity to meet any additional costs for the use of the private haul road,” the application says.

The company’s access to the 15-year old private coal haul road ceased recently, but negotiations are currently going on, with hopefully some resolution in the next few weeks.

A director for Pine Dale, John Doherty, said yesterday that none of the 12 employees at the mine are in danger of losing their jobs, but “this is subject to whatever conditions that may be imposed” on the development application currently before Lithgow Council.

Pine Dale’s application and plans are on display at Council’s Administration Centre in Mort Street until February 26, while a copy of the proposal can be found on Council’s website at www.council.lithgow.com (see Council’s advertisement in today’s edition on page six).

Get us out of here

Town surrounded by mines wants to be moved

Neighbour from hell . . . a children's playground overlooks an open cut mine in Blackmans Flat, near Lithgow. Pictures: JUSTIN LLOY

By MICHELLE CAZZULINO

BLACKMAN'S Flat is a town surrounded — and after more than two years of opposing plans to expand nearby coal mining and waste disposal operations, residents are waving the white flag.

About 11 families in the 15-house settlement have begun petitioning the State Government to relocate them, claiming that the "industrial carnage" being wreaked on the tiny village, about 15km from Lithgow, is making it uninhabitable.

While some locals, such as Chris Jonkers, bought their houses as recently as four years ago, they say at the time of purchase they were led to believe mining operations in the area were winding down.

Instead, Mr Jonkers said he had spent 18 months fighting six major open-cut mining, power-generation and waste disposal projects.

"Most of the property searches that we all had told us that the mining was coming to an end and therefore we thought they'd be rehabilitating all this," he said.

"Nobody wants to buy here. We can't go and we can't stay, so we're stuck."

Call for action . . . residents say industry has made the town uninhabitable

As well as environmental concerns, Mr Jonkers said residents felt like they were constantly under siege.

"There's screeching noise from trucks reversing six days a week — we're starting to hear it in our dreams," he said. "Everything we touch or grow in the garden is covered in dust, the coal trucks come roaring down the highway and cracks are starting to appear in our walls.

"Every time a blast goes up, we get a huge mushroom cloud of dust and the windows shake. It's like living in Iraq."

Among other residents looking to move are a 90-year-old who has been a lifelong resident of Blackman's Flat and Robert and Beverly Pyne, who have lived there for the past 40 years.

Local Michelle Vincent, who has been in the area for eight years, said the town was simply uninhabitable.

"We don't want to go, but the onl way we can see an end to all thi would be for them to actually relocat us somewhere else," she said.

Earlier this month the resident met Bathurst MP Gerard Martin who said he had passed on the concerns to the NSW Government.

"It's a really complex and uniqu situation. I've written to the Premie the Minister for Planning and th Minister for Natural Resources an said we should have a whole-o Government approach to this proble that they've got at Blackman's Flat Mr Martin said.

Lithgow Council general manage Paul Anderson said he was aware o the request for relocation but rejecte residents' suggestions their concern have been ignored.

"I have a number of staff and councillors who are members of th community consultative committee for the mining operations in an around Blackman's Flat and they ar raising the issues and concerns of th community," he said.

"I suppose I'm at a bit of a loss as t how we'd actually manage that [reloca tion] process, but we'd be happy to b involved and assist where we can."

MERCURY
THURSDAY, MARCH 8, 2007 Phone 6352 2700 lithgow.yourguide.com.au Issue No 331 $1.30

INDUSTRY'S URBAN ANGST:

Boom's human impacts

Story: LEN ASHWORTH

The downside to the resources boom continues to be experienced by residents in mining areas with new concerns being expressed about developments in the Lidsdale and Blackmans Flat areas.

At this week's meeting of Lithgow Council's Finance and Policies Committee Cr Brian Morrissey called for an urgent report into the potential impact on property owners at Lidsdale from a bid to extend the Enhance Place mining leases.

Cr Morrissey said that the mining company had sent correspondence to residents in the area around View Street, Maddox Lane and the Wolgan Road advising that the company was applying for an extension of its leases.

Enhance Place currently owns a small open cut operation at Lidsdale.

Council was told that the application outlined on maps supplied to residents indicated an intrusion onto residential properties.

There were also concerns that the application extends along the Wolgan Road as far as the Blue Lake which is in the headwaters catchments of the Coxs River.

Cr Morrissey said residents were 'very worried' about the implications and were concerned about impacts on their lives and property valuations.

They claimed that when they had contacted the company they had received only 'an arrogant response'.

One resident told the Mercury that letters of objection were being prepared for submission to the Minister.

He said that inquiries to the department had resulted in a 'very offhanded response' from a public servant.

And, he said, when he contacted the Enhance Place head office in Wollongong the reply had been that the leases might not be required for 30 years and that 'no compensation was contemplated'.

State Member Gerard Martin yesterday agreed with the com-

▷ Continued Page 3

Rights of residents versus the needs of industrial expansion

▷ From Page 1

plaints of residents regarding the extent of proposed intrusion into their properties.

He said that, in fact, it was one of the worst intrusion bids he had seen.

Mr Martin has written to Resources Minister Ian Campbell and to the State Planning Minister Frank Sartor outlining his concerns.

■ MEANWHILE, last year's unrest by residents of Blackmans Flat over industrial impacts has also again erupted with a demand that the State Government physically relocate the village.

Residents have written to the Premier Morris Iemma with a request that he visit Blackmans Flat to 'see what State significance has done to our township'.

Spokesman Julie Favell said Blackmans Flat had been 'sacrificed to the costs of providing electricity to New South Wales' and to the coal export market.

"You need to know what you have done to the people in this community," she said.

"We deserve a far better lifestyle than what your Government has imposed on us.

"You have taken away our dignity, our respect, our pride, our native environment, our homes, our community and our home environment."

The Premier has been told that developments approved for the Blackmans Flat area had shown little regard for the rights of residents and had degraded the township 'to the point of no return'.

"Give us back our lives," she said.

The residents want the State Government to meet the full cost of relocating the entire village to a more suitable location.

The submission follows on angry mass representations by residents to meetings of Lithgow Council last year.

Their concerns focus on Delta Electricity expansion, coal mining expansion, plans approved for Lithgow Council for a central garbage dump, and the primitive condition of the Castlereagh Highway.

Lithgow Mercury: MARCH 24, 2007

Blackmans Flat is seeking 'industrial carnage' relief

Story: LEN ASHWORTH

Residents of Blackmans Flat have met with State Member Gerard Martin to seek support in their campaign against what they have described as the 'industrial carnage' being caused to their village.

The meeting with the State Member followed on earlier representations to Lithgow Council and a submission to Premier Iemma asking the government to meet the costs of the complete relocation of Blackmans Flat.

Spokesman for the lobby group, Michelle Vincent, said the residents were grateful that Mr Martin had been able to take time out of his busy schedule a week out from the election to allow them to air their concerns on site.

"Mr Martin gave us an hour and a half of his Sunday morning to see first hand the mining and industrial carnage that is occurring," she said.

"He wrote down our concerns and has promised to get back to us after the issues are further investigated."

Main issues raised at the meeting included the Delta ash repository at Mt Piper and the rapid expansion of coal mining and haulage operations.

The mining operations under fire included the Enhance Place open cut which is also now the subject of new concerns further along the Castlereagh Highway at Lidsdale.

"We're sure everyone can see the huge ash repository as they travel down the highway," Ms Vincent said.

"The real concern is that there is another eight years of ash dumping before they cap it and start a new one in the same area.

"We have to put up with 800,000 tonnes of fly ash on our doorstep.

"Where does Delta plan to dump the excess from the latest extensions at the power station?

"For years the people of Blackmans Flat have had to bear the down side of electricity production that benefits all of NSW."

Ms Vincent told Mr Martin that coal mining approvals had spiralled out of control.

"We have a collective opinion that you don't believe anything the mining operators tell you, particularly when they say they will lessen the life a mine site by almost doubling the annual production rate, with more dust, noise and traffic.

"Then they go ahead and apply to extend their mines."

Ms Vincent said there was too much consideration given to industry and not enough to the rights of residents in the village.

Apart from the mining and power generation issues Lithgow Council was adding insult to injury by planning to establish a central waste disposal facility at Blackmans Flat to replace all of the other garbage tips around the local government area.

"Relocation of the village seems to be the only way this situation can be dealt with," she said.

"There just seems to be no other way to fix the unfixable."

LITHGOW MERCURY
129 Years of Publication
Servicing the Community
THURSDAY, SEPTEMBER 6, 2007 Phone 6352 2700 lithgow.yourguide.com.au Issue No 407 $1.40

Council told - when it comes to public impact --

Industry doesn't care; Sartor hasn't a clue

Story: LEN ASHWORTH

Lithgow Council was told this week that a 'myriad of problems' confronting residents around the village of Blackmans Flat were the result of 'mining companies that no longer care', a 'State planning Minister who doesn't have a clue what his department is doing', and bureaucrats who 'are not interested'.

The strong criticism came when Council was considering an application for increased production and an associated increase in road haulage from the Pinedale open cut mine.

Regional Services Manager Andrew Muir told the meeting of Council's Finance and Services Committee that Pinedale currently has approval to mine 200,000 tonnes per annum.

Part of the approval was that after an initial six month period the coal was not to be hauled to Mt Piper and Wallerawang power stations by public roads.

That approval also called for the company to negotiate with the operators of a private haul to utilise that facility for the power station deliveries.

Mr Muir said the company now wants to vary that consent to increase production to 350,000 tonnes a year and to utilise the Castlereagh Highway for a period of five years.

The company argued that the condition imposed by Council restricting the use of a public road was not valid under common law.

This submission was rejected in a legal opinion obtained by Council.

Mr Muir said the 75 per cent increase in tonnages had been sought by the company to meet power station orders.

He said this would obviously mean a significant reduction in the life of the mine from 10 to six years.

While this shorter period would benefit residents in the area the downside was the increase in truck movements and this could not be justified.

Mr Muir said that a private haul road exists adjacent to the mining operation and was 'incongruous that heavy vehicles would have to travel by public road when such a facility is so close'.

He said that council officers strongly favour retention of the condition relating to road haulage.

▷ Continued Page 2

Critical of industrial sprawl

▷ From Page 1

Cr Wayne McAndrew said the condition relating to haulage was appropri-

"Not one of these operators like Delta, Centennial or Pinedale are able to sit down and consider what they are doing to the community."

holding the community to ransom and it's wrong," he said.

Mayor Neville Castle said most

Greens Media Release

6th March 2006

Mount Piper power station upgrade set to damage Cox's River headwaters

The Government's new project to expand the Mount Piper power station to produce an additional 180MW of electricity will result in serious environmental destruction to endangered heath land at Long Swamp, the headwaters of the Cox's River, warns Greens MP and Mineral Resources spokesperson, Lee Rhiannon.

"The Mount Piper power plant upgrade will result in serious damage to the endangered Temperate Highland Peat Swamps in Long Swamp, the headwaters of the Cox's River," said Ms Rhiannon.

"Coal mining in the Lidsdale and Lithgow coal seams already creates polluted groundwater which runs off towards Long Swamp.

"Contaminated groundwater flows from Delta's Mt Piper fly-ash dams, the Pine Dale mine and Centennial Lambert's Gully mine in a north-easterly direction towards Long Swamp.

"The upgrade to Mount Piper will worsen this problem, with a predicted 28% increase in brine, and we could see the endangered Temperate Highland Peat Swamps disappear as a result.

"A predicted 17% increase in water consumption will also impact on the aquifers underneath Newnes Plateau, which has already been damaged by Centennial Coal's underground mining operations at the Clarence colliery.

"Add this to an increase in the power station's coal consumption by 1.7 million tonnes per year, producing an extra 2.5 million tonnes of greenhouse gas emissions per year, and we are facing a major environmental threat.

"The Mount Piper power station was originally approved in 1982, in an era when the damage caused to the environment was an afterthought.

"It is highly irresponsible of the State Government to upgrade Mt Piper using an approval granted 24 years ago that would not pass the grade on social or environmental grounds by today's standards." Said Ms Rhiannon.

More information: Lee Rhiannon - 9230 3551 ; 0427 861 568

Media Background
For Sydney Morning Herald
2 March 2006

Govt sneaks in major Mount Piper Power Station upgrade

Summary

In the January holiday period the NSW government took the first step in sneaking through a coal fired power project with major greenhouse implications. The emissions from the180 mw Mt Piper Power Station upgrade will be 2.65 times more than the cancelled desalination plant.

Background

Although the NSW government never released their Energy White Paper they are pushing ahead with a 180 mw upgrade of the Mt Piper Power Station near Lithgow.

The so-called modification is to a deveopment appliction originally approved in April 1982, under conditions very different from those applying today.

The upgrade will take the Mt Piper Power Station capacity from 1320mw to 1500mw. This will result in an increase in consumption of 1.7 million tonnes of coal per year.

In the January holiday period Lithgow residents had two weeks to decipher a mass of technical material and make their submission.

Described in the development application as a “modification”, the Mt Piper expansion will increase greenhouse gas emissions by 2.5 MT a year. This will result in a 2.8 per cent increase in emissions from the NSW energy sector.

(Energy supply for the biggest version (500 ML/day) of the now cancelled Kurnell desalination plant would have caused emissions of 0.945 MT/year, compared with the 2.5 MT/year from the Mt Piper expansion.)

The Mt Piper Power Station expansion will result in 2.65 more emissions than the now cancelled desalination plant.

This power plant expansion will exacerbate a range of other environmental problems.

Increase in fly ash

A 30 per cent increase in fly ash is predicted due to use of dirtier coal. This is set to exacerbate problems local residents are already experiencesing from polluted ash blowing on to their properties.

The 1982 DA incorrectly predicted the ash content of coal would be 21%. It is currently at 22.7% and this is anticipated to increase to 28% when the power station is expanded.

Water loss

A 28 per cent increase in brine could impact on Temperate Highland Peat Swamps.

A 17 per cent increase in water consumption will impact on the aquifers under Newne's Plateau.

Lee Rhiannon will supply comment on this if you are interested in this story.

1421—MOUNT PIPER POWER STATION

Mr Peter Debnam to the Minister for Emergency Services, Minister for Water Utilities representing the Minister for Primary Industries, Minister for Energy, Minister for Mineral Resources, and Minister for State Development—

1. On what day was the last time that fly ash from the Mount Pipe Power Station fell on the neighbouring townships of Blackmans Flat and Lidsdale?
2. Do the fly ash plumes present a health risk to local residents?
3. When did Delta Energy first become aware of this problem?
4. How has Delta Energy addressed this problem?
5. Can residents be certain no more fly ash will fall on their townships?

Question asked on 9 November 2007 (session 541) and published in Questions & Answers Paper No. 33.
No answer has been published

0231—DRY DISPOSAL OF FLY ASH

Dr Kaye to the Minister for Lands, Minister for Rural Affairs, Minister for Regional Development representing the Minister for Climate Change Environment and Water—

1. What research was relied upon to support the switch from "wet disposal" of fly-ash to "dry disposal" of fly-ash at Wallerawang Power Station in 2003, given that atmospheric dust pollution from Kerosene Vale fly-ash dam was already unacceptably high for human health and the environment of the residents of Lidsdale at that time?
2. What action will be taken to reduce the dust plumes continually blowing off Kerosene vale fly-ash dam to minimise the adverse human health, environmental and visibility impacts on Lidsdale residents and travellers along the Castlereagh Highway?

Answer—

I am advised by the Department of Environment and Climate Change that the change from wet to dry emplacement of ash was based on the Review of Environmental Factors report: Proposed Reinstatement of Dry Ash Placement Kerosene Vale (July 2002) prepared by Hyder Consulting and Environmental Resources Management.

This environmental assessment considered earlier trials undertaken at the Mount Piper Power Station by Pacific Power and Coffey Partners International.

Delta Electricity conditions the ash with moisture during placement and routinely sprays the ash with water to control dust. The Department of Environment and Climate Change conducts unannounced inspections of the area to ensure Delta Electricity comply with its environemtn protection licence.

0225—WALLERAWANG POWER STATION

Dr Kaye to the Minister for Lands, Minister for Rural Affairs, Minister for Regional Development representing the Minister for Climate Change Environment and Water—

1. Is the Minister aware that residents living near the Delta Electricity Wallerawang Power Station in Lidsdale are concerned about health, amenity and environmental affects of fly-ash dust blowing from Kerosene Vale fly-ash dam?
2. Has the Minister received any complaints from residents living near Wallerawang Power Station's Kerosene Vale fly-ash dam about the levels of air pollution from coal ash particles during high winds?
    a. If so, how many?
3. Is the Minister aware of the Prime Television News item on 2 October 2007 highlighting the dust pollution facing Lidsdale residents from Kerosene Vale fly-ash dam?
4. Is the Minister aware of the Lithgow Mercury headlines on 27 September 2007 "EPA Targets Wang Dust Up", and 25 October 2007 "Mt Piper Faces An Ash Disposal Crisis"?

Answer—

I am advised that since January 2005 the Department of Environment and Climate Change's Environment Line has received ten complaints about ash from the Kerosene Vale fly ash emplacement area. Four of these complaints were reported on 14 September 2007 and the Department directed Delta to take immediate steps to rectify the problem.

An ongoing Departmental investigation into this incident is examining potential breaches by Delta of its environment protection licence.

The Department will continue to investigate all pollution complaints regarding the Delta Electricity Power Station at Lidsdale, and closely monitor its environmental performance.

Question asked on 17 October 2007 (session 541) and published in Questions & Answers Paper No. 20.
Answer received on 27 November 2007and published in Questions & Answers Paper No. 31.

0236—POWER STATION FLY-ASH DAMS

Dr Kaye to the Minister for Lands, Minister for Rural Affairs, Minister for Regional Development representing the Minister for Climate Change Environment and Water—

Why are power station fly-ash dams not a separately licensed activity to the main power generation plant, as toxic industrial waste facilities under the Protection of Environmental Operations (POEO) Act, with their own set of air and water quality licence conditions?

Answer—

Fly ash emplacement areas are not industrial toxic waste facilities, and are therefore not scheduled activities under the Protection of the Environment Operations Act 1997. For this reason they are regulated through an environment protection licence.

Question asked on 17 October 2007 (session 541) and published in Questions & Answers Paper No. 20.
Answer received on 27 November 2007and published in Questions & Answers Paper No. 31.

0234—FLY ASH REPOSITORY IN BLACKMANS FLAT

Dr Kaye to the Minister for Lands, Minister for Rural Affairs, Minister for Regional Development representing the Minister for Climate Change Environment and Water—

1. Is the Minister aware that residents living downwind of Delta Electricity's Mount Piper Power Station fly-ash repository in Blackmans Flat are concerned about the adverse human health, environmental and visibility impacts of the dust pollution constantly blowing from this ash-repository?
2. Is the Minister for Climate Change, the Environment and Water aware that the residents of Blackmans Flat have been raising concerns about the health effects of the dust blowing from Mt Piper Power Station's fly-ash repository with the former Minister for Planning, the current Minister for Planning Mr Sartor, the former Minister for the Environment Mr Debus, the former Minister for Energy and Utilities, and Lithgow City Council, since at least 2005?

Answer—

I am aware of community concerns in relation to dust from Delta Electricity's Mount Piper Power Station. The Department of Environment and Climate Change closely monitors Delta Electricity's compliance with its environment protection licence.

Question asked on 17 October 2007 (session 541) and published in Questions & Answers Paper No. 20.
Answer received on 27 November 2007and published in Questions & Answers Paper No. 31.

0238—MOUNT PIPER FLY-ASH REPOSITORY

Dr Kaye to the Minister for Lands, Minister for Rural Affairs, Minister for Regional Development representing the Minister for Climate Change Environment and Water—

1. Is the Minister aware that since it commenced operation in 1994 the Mount Piper fly-ash repository has been a constant source of erosion and sedimentation into local waterways such as Netback's Creek, the Cox's River, and Sydney's drinking water supply, and has a significant scenic and visual amenity impact on the local area for residents and travellers along the Castlereagh Highway?
2. Why has Delta Electricity not undertaken staged capping of the entire Mount Piper fly-ash repository and revegetation of the raw and eroding embankments of this fly-ash repository?

Answer—

I am advised by the Department of Environment and Climate Change that the Mount Piper fly ash emplacement area is subject to sediment and erosion controls to prevent the area causing erosion and sedimentation into the local waterways of the Upper Cox's River catchment.

Delta Electricity has a revegetation program for the capped ash emplacement area as part of the Environmental Management Plan for the Mount Piper Power Station. Revegetation is occurring on the walls of the ash emplacement area, and the final rehabilitation of the top will occur when the design capacity has been reached, and the surface stabilised.

0239—MOUNT PIPER POWER STATION'S FLY ASH REPOSITORY

Dr Kaye to the Minister for Lands, Minister for Rural Affairs, Minister for Regional Development representing the Minister for Climate Change Environment and Water—

1. What action will be taken to reduce the dust plumes continually blowing from Mount Piper Power Station's fly-ash repository to minimise the adverse human health, amenity, environmental and visibility impacts on the residents of Blackmans Flat and for travellers along the Castlereagh Highway?

Answer—

Delta Electricity conditions the ash with moisture during placement and sprays the ash with water to control dust. The Department of Environment and Climate Change inspects the area and can confirm that dust is not continually emitted from the ash emplacement area near Mount Piper Power Station.

Question asked on 17 October 2007 (session 541) and published in Questions & Answers Paper No. 20.
Answer received on 27 November 2007and published in Questions & Answers Paper No. 31.

0226—EXCESSIVE SALINITY LEVELS

Dr Kaye to the Minister for Lands, Minister for Rural Affairs, Minister for Regional Development representing the Minister for Climate Change Environment and Water—

1. Is the Minister aware that salinity levels readings in the waterways downstream from the discharge point of Delta Electricity's Wallerawang Power Station and Mount Piper power station taken by the Blue Mountains Conservation Society show many instances of excessive salinity levels, including:
    a. discharge into the Cox's River below Lake Wallace since 31 May 2007 ranging from 1620 micro Siemens per centimetre to levels greater than 1999 micro Siemens per centimetre on 14 occasions?
    b. readings in Huon Creek between 19/10/06 and 27/9/07 exceeding 1999 micro Siemens per centimetre on nine occasions, and 1500 micro Siemens per centimetre on two occasions.
    c. readings in the un-named creek adjacent to Huon Creek between 19/10/06 and 27/9/07 exceeding 1500 micro Siemens per centimetre on one occasion?

d. and readings in Nuebecks Creek downstream of these sites between 19/10/06 and 27/9/07 exceeded 1500 micro Siemens per centimetre on nine occasions?

2.

a. Is the Minister aware that Delta Electricity's licence, granted to it under the Protection of Environment Operations (POEO) Act, allows up to 1500 micro Siemens per centimetre for salinity levels in respect of its discharge into the upper Cox's River?

b. Has Delta Electricity been complying with its POEO Licence salinity discharge limit into the upper Cox's River catchment of 1500 micro Siemens per centimetre?

c. If not, what action is the Environment Protection Authority taking to ensure compliance with POEO licence requirements?

Answer—

The Department of Environment and Climate Change is aware of the elevated salinity in the Cox's River and its tributaries. The Department is currently working with the Sydney Catchment Authority to review the environmental impacts of elevated salinity levels, any emerging trends and likely point source discharges, which may require a review of licence conditions.

All Environment Protection Licences may be viewed on the Public Register on the Department of Environment and Climate Change website.

Each year licence holders report on their level of compliance with licence conditions. Details of any non-compliance reported by a licence holder are also available on the Department's Public Register.

Question asked on 17 October 2007 (session 541) and published in Questions & Answers Paper No. 20.
Answer received on 27 November 2007and published in Questions & Answers Paper No. 31.

0227—TURBIDITY READINGS

Dr Kaye to the Minister for Lands, Minister for Rural Affairs, Minister for Regional Development representing the Minister for Climate Change Environment and Water—

1. Is the Minister aware that::

a. the ANZECC (2000) water quality guideline trigger value for Turbidity in an upland river such as the Upper Cox's River is 25 NTU?

b. Turbidity readings taken by Blue Mountains Conservation Society of Wallerawang Power Station's discharge into the Cox's River below Lake Wallace since 31 May 2007 exceeded the 25 NTU trigger value for Turbidity on all 14 occasions tested, ranging from a low of 30 NTU to a high of 50 NTU?

c. Turbidity readings in Huon Creek below Mt Piper Power Station also exceeded 25 NTU on 8 occasions, with a high of 60 NTU on 3 occasions?

2.

a. Has Delta Electricity been complying with its POEO Licence discharge limit for Turbidity into the upper Cox's River catchment?

b. If not, what action is the EPA taking to ensure compliance with POEO licence requirements?

Answer—

The Department of Environment and Climate Change is aware of the water guideline trigger value for turbidity levels in rivers and of the work of the Blue Mountains Conservation Society.

While turbidity levels are not a condition of the environment protection licence, Delta Electricity has been issued with an enforceable notice by the Department to design a program for the treatment of incoming water from Springvale Mine by 1 April 2008 to meet acceptable turbidity levels in the cooling tower water discharge.

All Environment Protection Licences may be viewed on the Public Register on the Department's website.

Each year licence holders report on their level of compliance with licence conditions. Details of any non-compliance reported by a licence holder are also available on the Department's Public Register.

Question asked on 17 October 2007 (session 541) and published in Questions & Answers Paper No. 20.
Answer received on 27 November 2007and published in Questions & Answers Paper No. 31.

0228—COX'S RIVER

Dr Kaye to the Minister for Lands, Minister for Rural Affairs, Minister for Regional Development representing the Minister for Climate Change Environment and Water—

1. Is the Minister aware that:
    a. the ANZECC (2000) guideline trigger value for Available Phosphate in an upland river such as the upper Cox's River is 0.14 mg⁄L.
    b. available Phosphate readings taken by Blue Mountains Conservation Society of Wallerawang Power Station's discharge into the Cox's River below Lake Wallace since 31 May 2007 exceeded the 0.14 mg⁄L trigger value on all occasions tested, ranging from a low of 0.16 mg⁄L to a high of 0.65 mg⁄L.
    c. available Phosphate levels in Lake Wallace also exceeded the 0.14 mg⁄L trigger value on all occasions tested, ranging from 0.29 to 0.55 mg⁄L?
2.
    a. Has Delta Electricity been complying with its POEO Licence discharge limit for Available Phosphate into the upper Cox's River catchment?

b. If not, what action is the EPA taking to ensure compliance with POEO licence requirements?

3.

a. Are the high Available Phosphate levels recorded by Blue Mountains Conservation Society in Lake Wallace and in Wallerawang Power Station's discharge into the Cox's River below Lake Wallace likely to be contributing to the massive algal growth recorded downstream in Lake Lyell on all ten monitoring occasions since 24 October 2006?

b. Are these high Available Phosphate levels likely to have been contributing to the massive algal growth dominating a large proportion of Warragamba Dam at the present time?

c. What action is the EPA taking to reduce Delta Electricity's contribution to these algae levels?

Answer—

The Department of Environment and Climate Change is aware of the guideline trigger value for Available Phosphate in rivers, and of the work of the Blue Mountains Conservation Society.

The Department advises the algal growth experienced in Lake Lyell each summer is related primarily to phosphorus from the Lithgow Sewage Treatment Plant (a point source) and diffuse sources such as runoff from the town of Lithgow and agricultural land within the Upper Cox's River catchment, rather than the processes conducted by Delta Electricity.

The Department advises that Delta Electricity has complied with its POEO licence discharge limit for Available Phosphate in the Upper Cox's River.

All Environment Protection Licences may be viewed on the Public Register on the Department's website.
Each year licence holders report on their level of compliance with license conditions. Details of any non-compliance reported by a licence holder are also available on the Department's Public Register.

Question asked 17 October 2007 (session 541) and published in Questions & Answers Paper No. 20.
Answer received on 27 November 2007and published in Questions & Answers Paper No. 31.

0229—UPPER COX'S RIVER

Dr Kaye to the Minister for Lands, Minister for Rural Affairs, Minister for Regional Development representing the Minister for Climate Change Environment and Water—

1. Is the Minister aware that:

a. the ANZECC (2000) water quality guideline trigger value for pH for an Upland River in an ecosystem type such as the Upper Cox's River is within the range of 6.5 - 8.0 pH units?

b. readings undertaken by Blue Mountains Conservation Society of Wallerawang Power Station's discharge into the Cox's River below Lake

Wallace since 31 May 2007 exceeded pH 8.0 on all occasions tested; readings in Lake Wallace were pH 9.0 on all occasions tested; and readings in Lake Lyell exceeded pH 9.0 on 5 occasions tested?

c. has Delta Electricity been complying with its POEO Licence discharge limit for pH into the upper Cox's River catchment?

d. if not, what action is the EPA taking to ensure Delta complies with its licence requirements?

Answer—

The Department of Environment and Climate Change is aware of the guideline trigger value for available pH for an upland river in an ecosystem type such as the Upper Cox's River, and of the work undertaken by the Blue Mountains Conservation Society.

Delta Electricity has certified in its Annual Return for 2006 that it has complied with its POEO licence discharge limit for pH in the Upper Cox's River catchment.

All Environment Protection Licences may be viewed on the Public Register on the Department's website.

Each year licence holders report on their level of compliance with licence conditions. Details of any non-compliance reported by a licence holder are also available on the Department's Public Register.

Question asked on 17 October 2007 (session 541) and published in Questions & Answers Paper No. 20.
Answer received on 27 November 2007and published in Questions & Answers Paper No. 31

0230—DISCHARGE CONCENTRATION LIMITS

Dr Kaye to the Minister for Lands, Minister for Rural Affairs, Minister for Regional Development representing the Minister for Climate Change Environment and Water—

Given the apparent water quality breaches over an extended period, why are there no "Non Compliances" listed on the EPA Protection of Environment Operations Licence Register for Delta Electricity (POEO Licence No. 766) for exceeding discharge concentration limits for Electrical Conductivity, Turbidity, Available Phosphate, and pH from Wallerawang and Mount Piper Power Station into the upper Cox's River Catchment?

Answer—

The Department of Environment and Climate Change is not aware of any water quality breaches of Delta Electricity's environment protection licence. Delta has certified in its Annual Return for 2006 that it complied with all of its licence conditions for the year.

Question asked on 17 October 2007 (session 541) and published in Questions & Answers Paper No. 20.
Answer received on 27 November 2007and published in Questions & Answers Paper No. 31.

0070—UPPER COX'S RIVER CATCHMENT

Dr Kaye to the Minister for Lands, Minister for Rural Affairs, Minister for Regional Development representing the Minister for Climate Change Environment and Water—

1.

   a. Has Delta Electricity been complying with the licence granted to it under the Protection of the Environment Operations Act (POEO) in respect of discharge limits for salinity into Huon Creek and other creeks in the upper Cox's river catchment?

   b. If not, why not?

   c. What steps has the Department taken to monitor compliance and what were the results of those steps?

   d. Have salinity readings taken from Huon Creek by The Blue Mountains Conservation Society shown great variation in levels from day to day, with some readings showing very low levels and other readings grossly exceeding the Australian Drinking Water Guidelines of 800 micro Siemens per centimetre and ranging from 570 micro Siemens per centimetre to greater than 1999 micro Siemens per centimetre?

2.

   a. Have there been recent allegations that significant damage has occurred to the Huon Creek, including concrete cancer being found in the Castlereagh Highway bridge at Blackmans Flat?

   b. If so, what steps will be take to investigate these allegations and report back to Parliament?

3. Is the current POEO Licence discharge limit of 1500 micro Siemens per centimetre for industry in the upper Cox's River environmentally sustainable, including for Platypus and its macro-invertebrate food source?

4.

   a. Is there photographic evidence of damage to heathlands, wetlands, and aquatic ecosystems in the upper Cox's River?

   b. If so, what steps has the Minister taken to investigate the causes of this damage and, in particular, to ensure that it is not highly saline minewater discharges into natural areas and waterways?

5.

   a. Has the Department investigated a scheme similar to the Hunter Salinity Trading Scheme for industry in the upper Cox's River catchment?

   b. If not, why not?

6.

   a. Were high salinity levels in the upper Cox's River catchment in the Lithgow region identified as an issue of concern in the Audit of the Sydney Drinking Water Catchment 2005, the Metropolitan Water Plan 2006, or the Sydney Catchment Authority Environment Plan 2006-2010?

b. If not, why not?

7.

a. What is the source of the dirty grey coloured water, which has been flowing into the Cox's River immediately below Lake Wallace near Wallerawang for months?

b. Does the water massively exceed the 1500 micro Siemens per centimetre discharge limit for industry, so that the Cox's River is currently 1960 micro Siemens per centimetre where it flows under the Great Western Highway at Wallerawang, and is still 1880 micro Siemens per centimetre a further 5km downstream where it crosses Mount Walker Fire Trail in Lidsdale State Forest?

Answer—

The Department of Environment and Climate Change reviews the monitoring data provided in the annual returns submitted by Delta Electricity. I am advised that over the last seven years, the average conductivity of the discharge has typically been three to five times less than the license limit of 1,500 micro-Siemens per centimetre.

I understand that summary data collected by the Blue Mountains Conservation Society on salinity in the upper Cox's River Catchment has been provided to the Department. Any implications arising from the analysis of the data for premises licensed to discharge into local waterways will be discussed with the Sydney Catchment Authority.

The discharge limit for industry in the upper Cox's River is considered environmentally sustainable. I am further advised it is generally accepted that freshwater ecosystems undergo little ecological stress when subjected to salinity levels of 1,500 micro-Siemens per centimetre.

There are no plans for the Department to adopt a scheme similar to the Hunter Salinity Trading Scheme for the upper Cox's River catchment. I am advised that the best approach for handling excess mine water in the catchment is to seek beneficial uses for the water in preference to direct discharge to local waterways.

This approach has been the focus of the Department's actions and is already happening with 10 to 15 megalitres a day of mine water from the Springvale and Angus Place Collieries being re-used by Delta Electricity for industrial purposes, instead of being discharged into the environment.

The Department advises that the source of discoloration in water flowing into the Cox's River is believed to be mine water from either Springvale Colliery or Angus Place Colliery which, after use, has been discharged by Delta Electricity.

Photographs of heathlands, wetlands, and aquatic ecosystems in the upper Cox's River have been provided to the Department, which is taking appropriate action to determine any relationship between mining activities and potential environmental impacts.

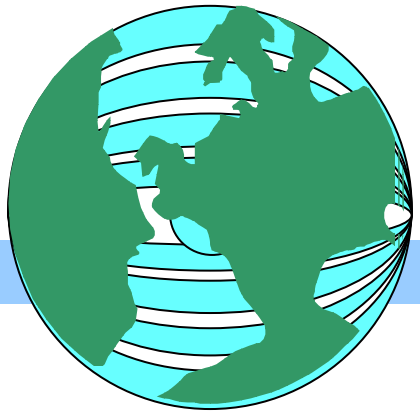
I understand that on 8 March 2007 officers from the Department of Environment and Climate Change inspected the Castlereagh Highway Bridge at Blackmans Flat. The Department has reported that there is no evidence to relate the damage to the bridge to any discharge licensed by the Department.

Each of the three reports 'Audit of the Sydney Drinking Water Catchment 2005', the '2006 Metropolitan Water Plan' and the 'Sydney Catchment Authority Environmental Plan 2006-2010' are public documents, available through the relevant NSW Government agency or over the internet.

Question asked on 31 May 2007 (session 541) and published in Questions & Answers Paper No. 6. Answer received on 25 September 2007 and published in Questions & Answers Paper No. 16.

Aargus

email transmission



To:	Kristy Graham	**Email:**	kristy.graham@edo.org.au
Of:	EDO	**Date**:	1st May 2008
From:	Nick Kariotoglou	**Pages:**	3
Re:	Kerosene Vale Fly Ash extention	**CC:**	

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

Re: Review of Kerosene Vale Fly Ash extention

This summary of information has been provided as a request for expert opinion against a proposed extension of the Kerosene Fly Ash Plant in Wallerawang in NSW. Our advice pertains to a review of the Parsons Brinkerhoff report conducted in 2008 titled Kerosene Vale Stage 2 Ash Repository Area Environmental Assessment. The findings of our review are outlined below.

Ash is classified as inert or solid waste dependant upon its leachability. In this case, no classification has been provided but the report provides a preliminary classification of Inert Industrial Waste. Existing site conditions relevant to our comments include:

- 6 groundwater wells being tested, 5 on site and 1 off site covering an area of approximately 350,000m^2
- previous wet ash disposal caused elevated levels of contaminants within groundwater downgradient to ash deposits
- Discharge areas for groundwater have been identified as occurring near Swayers Swamp Creek and Lidsdale Cut areas

Capping failures are prevalent in all landfill type of sites and the proposed placement of dry ash on capped wet ash areas should not rely on the integrity of this capping. Most landfills place appropriate liners to restrict vertical migration. No seamed capping geofabric material is recommended and no information regarding how the capping will be maintained is provided. The general failure of capping through cracks, works, etc does allow the infiltration of percolated rainwater to enter into subsurface layers and ultimately

PO Box 398 Drummoyne NSW 2047 Phone: 1300 137 038 Fax: 1300 136 038
Website: www.aargus.net Email: nick@aargus.net

into the groundwater system. This therefore allows trace elements within leachate to enter into the groundwater system. This issue has not been adequately addressed.

Field trials at Mount Piper Power Station were used as a model for affects of water infiltration to the ash repository. Whilst the ash medium for this modelling is considered similar to the medium of the proposed development, the natural geology of the two sites differ and as such the Mount Piper trials may not appropriately replicate actual conditions on the site. Differing geology contains differing permeability rates which allow leachate to migrate vertically into the groundwater system at differing rates. No geology permeability data has been accounted for in relation to the proposed development and their use of data from the model.

The statement that 'impacts to groundwater associated with mobilised trace elements would not be significant' contradicts findings showing that downgradient groundwater wells have a higher level of trace elements within their makeup. Historical sampling does show that impacts do occur downgradient of ash deposits.

Increasing the thickness of the ash layer would increase the residence times of water which has the potential to increase the levels of trace element concentrations within groundwater. This has not been discussed in terms of cumulative affects with respect to integrity of capping, ponded water increasing percolation rates and characterisation of the trace metal plume across the entire site.

PB confirm that trace elements in groundwater will saturate to levels where no further increase in concentration occurs. This is tru but this leaves behind undissolved trace elements that provides a mechanism where clean groundwater will flow through once saturated groundwater has left thus increasing in concentration until they too are saturated. It provides a mechanism whereby a constant level of saturated concentration of high trace elements is found in groundwater and doesn't allow for cleaner groundwater to pass through the medium allowing for natural attenuation to occur.

The Ash (dirty water) collection pond increases the vertical migration of trace metals into groundwater due to the ponding nature of water and the weight of ponded water increases the pore pressure within ash material. The pond water acts as a mechanism for trace elements to enter into the groundwater system. No discussion on this has been provided and what are the management procedures to be put in place to restrict vertical migration of this water into the water table.

The statement that 'only 5% of annual rainfall is discharged from the ash surface' does not account for the fact that this is still a significant amount of water being discharged directly from the surface of the ash therefore increasing the mobility of particles through surface waters. Meteorological data should be attained showing the quantity of water expected to flow from the ash surface thus quantifying the claim. A management procedure should then be put in place to control this waster. There are minimal mitigation measures in place to restrict this process as rainfall dissolves and saturates trace elements. These trace elements are then contained within surface waters which are

allowed to pass through sedimentation fences which only stop particulate matter from lateral migration.

Changes to groundwater in the proposed Stage 2 ash repository will increase trace element loads in groundwater that impact Sawyers Swamp Creek. The extra loads on the historical wet ash placement facility will decrease porosity increasing groundwater trace element levels plus there is no certainty wrt capping integrity from new ash layers. This issue requires clarification as heavy rainfall on exposed areas will also impact the affect of surface and groundwater impact.

In general, the surface and groundwater monitoring programme is sufficient in the frequency of sampling proposed but it requires many more monitoring points to be installed. The management of impacts does not account for appropriate monitoring for areas such as the collection pond and its affects in capturing dirty water. No up or downgradient wells are proposed for this area whereby it could be a major source of increased levels of trace elements. We expect that for the large area of approximately 350,000m^2, at least a further set of 10 monitoring wells on top of the existing 6 groundwater wells should be placed in upgradient areas (background), upgradient areas to the collection pond, downgradient to the collection pond (to monitor the effect of pond to levels of trace elements) and general mid site and downgradient wells (for characterisation of plumes and fate transport). In relation to this, no contingencies have been put in place for the event that groundwater levels become unacceptable and what constitutes the trigger levels of acceptable or unacceptable levels. The contingencies should also relate to the effect on Swayers Swamp Creek and Lidsdale Cut areas.

We are available to discuss any of the above.

For and on behalf of
Aargus Pty Ltd

Nick Kariotoglou
Managing Director
Principal Environmental Scientist

ABN: 72 002 880 864

Environmental Defender's Office Ltd

1/89 York Street
Sydney NSW 2000
Tel: (61 2) 9262 6989
Fax: (61 2) 9262 6998

Office 1 Level 1
71 Molesworth Street
PO Box 212
Lismore NSW 2480
Tel: 1300 369 791
Fax: (61 2) 6621 3355

email: edonsw@edo.org.au
web: www.nsw.edo.org.au

Our Ref:
Your Ref:

02 May 2008

Julie Favell
Lithgow Environment Group – Streamwatch Program

By email: chrisandjulie@activ8.net.au

Dear Julie,

Re: Kerosene Vale Fly Ash Dam extension

We refer to our discussions about the proposed Kerosene Vale Stage 2 ash repository area.

We have briefly reviewed the Environmental Assessment (EA) (Parsons Brinckerhoff, 2008) for the proposed extension, with a particular focus on groundwater, surface water and air quality impacts.

We also engaged an expert from our Expert Register – Nick Kariotoglou, Managing Director and Principal Environmental Scientist, Aargus Pty Ltd – to review the groundwater assessment. Mr Kariotoglou provided comments on potential impacts to ground water and surface water systems, which are attached to this letter.

1. Impacts on groundwater and surface water quality

A number of concerns were raised in relation to the impacts on groundwater and water quality.

These include:

a) Failures in the capping are likely, and impacts of this are not adequately addressed;

b) No investigation was done of permeability rates to determine rate of leachate migration;

c) Current data indicates that there are impacts on groundwater as a result of leachate from ash deposits, thereby suggesting ongoing future impacts which are not acknowledged;

d) Increasing the thickness of ash deposit will increase the residence time of water, resulting in a likely increase in the levels of trace elements in any water percolating through the ash;

e) The dirty water collection pond has the potential to further contaminate groundwater with ash leachate. This is not discussed in the Environmental Assessment;

f) A number of extra monitoring bores are recommended and contingencies put in place in the case of an unacceptable impact on groundwater detected by the monitoring network.

2. Impacts on air quality

There are a number of assumptions made in the air quality assessment and the calculation of potential dust impacts from the proposal. These assumptions include;

a) Moisture content of the ash

b) Silt content of the ash

c) That all dust suppression techniques will be used and will be effective

The assumption that the ash is maintained at a moisture content of 15% while being transported and moved around the site is a particularly important one, as identified in the air quality assessment (Pg 11, Appendix H).

> *'it will of course be important to ensure that the ash moisture level is maintained at 15% during this process because the ash contains a high proportion of fine particles, which will become air borne if allowed to dry and if disturbed either by wind or mechanically by a dozer, or both'*

In the draft statement of commitments (Ch 15 of EA) there is no menton of how the 15% moisture content will be monitored or maintained.

One of the commitments is that the wet suppression technique will be activated when windspeeds reach 5m/s for a 15min average, however there is currently no meteorological data available for the fly ash dam, therefore details on how this will work in practice are lacking.

Given the current lack of detail in the statement of commitments, which may be included in the operational management plan (a document that will not be available for public comment), we are of the view that there is significant uncertainty about the impacts of the proposal. If the conditions of consent or the proposed dust suppression measures are not met, then the impacts may be greater than predicted.

Yours sincerely

Environmental Defender's Office (NSW) Ltd

Kristy Graham

Scientific Officer

LEG/LRS STREAMWATCH MONITORING RESULTS 2006/2008

Exceeds SCA Trigger Value of 300 EC for compliance with Water Quality Monitoring Program.

Exceeds *Australian Drinking Water Guidelines* upper limit of 800 EC for salinity in drinking water.

Exceeds *ADWG/WHO* upper limit of 1500EC for salinity above which adverse biological impacts may occur.

Exceeds limit of testing equipment for salinity (>1999 µS/cm for ECScanLow meter).

Exceeds ANZECC (2000) Water Quality Guideline upper limit for pH (8), Turbidity (20NTU), and/or Available Phosphate (0.14mg/L).

Site	Location	Date	Dissolved Oxygen mg/l	Dissolved Oxygen %	Temp ^{0}C	pH	Electrical Conductivity µS/cm	Turbidity NTU	Available Phosphate ppm	Comments
1	**Cox's River, Ben Bullen** State Forest	19/10/06	2.7	38	13	5	30	<10	-	
		3/11/06	3.4	32	13	6	30	10	-	
		23/11/06	3.1	30	16	6	30	10	0.07	
		28/12/06	2.7	31	23	6	40	15	0.05	
		24/1/07	0.08	10	20	6	40	30	0.04	38mm rain
		12/4/07	2.4	23	16	6	50	20	0.02	
		17/5/07	2.3	20	11	6	30	<10	0.02	3mm rain
		18/6/06	3.8	33	9	6	120	<10	0.04	115mm rain
		28/7/07	6.1	50	7.5	6	50	<10	0.02	Flowing, clear, frog calls
		27/8/07	6.0	52	8.5	6	40	<10	0.02	25mm rain, flowing, frog calls
		24/9/07	4.1	36	8	6	50	<10	0.01	Flowing, clear, 700EC downstream
		11/10/07	-	-	12	6	40	<10	-	Flowing, saw a big black snake
		29/10/07	4.7	50	14.5	6	40	<10	0.01	Flowing, lots frog calls
		4/11/07	-	-	-	-	30	10	-	Turbidity after 50mm storm overnite
		30/11/07	3.8	39	16	6	40	<10	0.00	150mm Nov, tea-tree colour, flowing
		31/12/07	3.2	40	21.5	5.5	40	<10	0.03	Flowing, EC 560 2km downstream
		28/1/08	3.4	36	18	5.5	40	<10	0.02	Flowing, EC 480 2km downstream
		2/3/08	4.3	41	13	5.5	40	<10	0.04	71 mm rain, 730 2km downstream
		1/4/08	4.2	42	14	6	40	<10	0.03	Flowing, 1050 EC 1km downstream
2	**Kangaroo Creek**, Angus Place (downstream from Centennial Angus	19/10/06	6.9	69	19	8	880	<10	-	
		5/11/06	9.6	96	15	9	1100	10	0.02	30mm rain
		23/11/06	5.3	61	25	8	980	<10	-	
		28/12/06	5.9	67	21	8	1030	<10	0.03	

	Place Colliery)	26/1/07	3.7	41	21	8	1060	<10	-	38 mm rain
		12/4/07	5.7	60	18	9	980	<10	0.04	
		15/5/07	***6.85***	***83.6***	***16.58***	***8.67***	***986***	***20.0***	***<0.005***	***SCA Field Data***
		17/5/07	6.1	60	15	8.5	900	80	0.05	Water is grey/black
		1/6/07	-	-	-	-	970	-	-	48mm rain, grey
		14/6/07	-	-	-	-	250	-	-	88mm rain
		30/6/07	5.3	46	8	7.5	390	10	0.01	39mm, no frogs
		28/7/07	5.6	49	9	8	620	20	0.06	Black muck on creek bed
		17/8/07	-	-	9	-	570	<10	-	8mm rain, flowing, black creek bed
		27/8/07	6.3	57	11	8	510	15	0.04	25mm rain, flowing, black creek bed
		7/9/07	-	-	10	8	570	10	-	Flowing, black creek bed, no frogs
		24/9/07	6.1	55	10	8	670	**200**	0.08	V. dirty black, no frog calls
		11/10/07	-	-	14	8	710	<10	-	Black silt on creekbed
		29/10/07	5.8	60	17	8	670	10	0.05	29mm rain. No frog calls
		4/11/07	-	-	-	-	440	60	-	Turbidity after 50mm storm overnite
		30/11/07	5.4	55	16.5	7.5	300	15	0.01	150mm rain Nov, rusty colour
		31/12/07	4.8	54	20	7.5	560	20	0.03	Black silt on creekbed
		28/1/08	5.0	53	17.5	8	650	<10	0.03	v. slow flow, no frogs, clear
		2/3/08	6.3	59	12	8	690	<10	0.01	71 mm rain during week
		2/4/08	6.3	60	13.5	8	830	<10	0.08	Flowing, black coal fines on creekbed
3	**Sawyer's Swamp Creek** Lidsdale (downstream from Wallerawang Power Station's Kerosene Vale Fly-ash and Brine disposal areas)	19/10/06	5.7	57	16	7	1120	15	-	
		5/11/06	7.4	70	13	7	1370	<10	0.05	30mm rain
		23/11/06	4.6	50	19	7	1270	30	-	
		28/12/06	4.1	42	17	7.5	1380	<10	0.03	
		26/1/07	4.4	50	21	7	1400	<10	-	38 mm rain
		12/4/07	5.0	47	13	7	1370	<10	0.04	
		26/4/07	-	-	-	-	1510	-	-	1mm rain
		29/4/07	-	-	-	-	1460	-	-	18mm rain
		3/5/07	-	-	-	-	1510	-	-	
		15/5/07	***7.57***	***81.3***	***10.65***	***5.35***	***1600***	***2.1***	***<0.005***	***SCA Field Data***
		26/5/07	-	-	-	-	1280	-	-	48mm rain
		14/6/07	-	-	-	-	1020	-	-	88mm rain
		30/6/07	5.9	50	7	7	690	10	0.02	4mm, no frogs
		28/7/07	6.6	53	6	7	770	<10	0.03	Bleached rusty look to creek bed
		27/8/07	6.4	57	9.5	7	740	<10	0.06	25mm rain, no frogs, rusty creekbed
		7/9/07	-	-	8	-	830	<10	-	Flowing, no frog calls

		24/9/07	6.3	54	8.5	7	910	<10	0.06	Possibly Gambusia, no frog calls
		11/10/07	-	-	13	7	1090	<10	-	Possibly Gambusia, no frog calls
		30/10/07	5.0	50	14.5	7	1070	<10	0.02	Possibly Gambusia, no frog calls
		4/11/07	-	-	-	-	-	200	-	Turbidity after 50mm storm overnite
		30/11/07	5.2	51	15.5	7	650	30	0.01	150mm rain Nov, milky/grey
		31/12/07	5.3	60	19.5	7	770	<10	0.05	Slow flow, no frogs
		28/1/08	5.3	56	17.5	7	580	<10	0.04	Flowing, clear, Gambusia, a yabbie
		2/3/08	5.6	54	13	6.5	730	<10	0.09	71 mm rain during week
		2/4/08	6.6	62	12	7	770	<10	0.02	Possibly Gambusia
4	**Springvale Creek**, Wallerawang (downstream from Centennial Springvale Colliery)	19/10/06	6.8	64	18	9	1010	20	-	Flowing well
		5/11/06	8.6	86	14	8	1080	15	-	Flowing well
		23/11/06	2.5	30	31	9	1230	80	-	Very muddy
		28/12/06	7.2	81	21	9	1180	30	0.04	Not flowing
		24/1/07	5.6	64	21.5	8	780	60	0.16	38mm rain
		12/4/07	9.4	96	15.5	9	1010	20	0.02	Water dirty
		15/5/07	***8.15***	***93.7***	***12.79***	***8.10***	***982***	***12.7***	***0.02***	***SCA Field Data***
		17/5/07	6.6	63	13	8.5	860	15	0.07	18mm rain, water grey, no frogs
		30/6/07	7.0	57	7.5	7	360	20	0.06	200mm+ June
		28/7/07	9.1	80	8.5	7.5	350	20	0.04	Green algae on creekbed
		28/8/07	10.9	99	10	9.5	310	20	0.01	25mm rain. Green algae. No frogs
		24/9/07	9.7	93	13	8	290	15	0.06	Green/milky colour, odour, algae
		30/10/07	6.5	68	16.5	7	320	20	0.08	29mm rain, less algae than usual
		4/11/07	-	-	-	-	340	100	-	Turbidity after 50mm storm overnite
		30/11/07	4.7	49	17	6.5	290	30	0.07	150mm rain Nov,muddy,water weed
		31/12/07	5.8	66	20.5	7.5	320	<10	0.06	Lots water weed, looks stagnant
		28/1/08	4.7	52	19	7	380	15	0.07	No flow, muddy, weedy, no frogs
		2/3/08	6.4	62	13	7	390	10	0.06	71 mm rain during week, weedy
		1/4/08	5.0	49	13	7	250	15	0.09	Muddy, weedy, barely flowing
5	**Top end Nuebeck's Ck** (previously called Huon Creek in error, also referred to as Wangcol Creek), Blackman's Flat (downstream from	19/10/06	4.3	43	20	7	1460	40	-	
		4/11/06	4.6	46	16.5	8	1430	50	-	30mm rain
		18/11/06	6.7	70	18	7	230	20	-	Delta freshwater discharge
		25/1/07	4.9	63	28	7	280	60	0.06	38mm rain
		4/2/07	-	-	-	-	390	-	-	
		12/4/07	5.7	58	18	8	570	15	0.00	
		21/4/07	-	-	-	-	580	-	-	

	Mount Piper Power Station licenced discharge point, and fly-ash and Brine disposal areas)	22/4/07	5.5	60	19	8	>1999	20	0.16	
		23/4/07	-	-	-	-	>1999	-	-	2.5mm rain
		24/4/07	-	-	-	-	>1999	-	-	
		25/4/07	-	-	-	-	>1999	-	-	
		26/4/07	-	-	-	-	>1999	-	-	1mm rain
		27/4/07	-	-	-	-	>1999	-	-	
		29/4/07	-	-	-	-	>1999	-	-	18mm rain
		30/4/07	-	-	-	-	>1999	-	-	
		1/5/07	-	-	-	-	>1999	-	-	
		3/5/07	-	-	-	-	1760	-	-	
		6/5/07	-	-	-	-	1600	-	-	
		15/5/07	***7.67***	***85.8***	***12.49***	***7.48***	***600***	***23.5***	***<0.005***	***SCA Field Data***
		17/5/07	-	-	-	-	610	-	-	3mm rain, v.muddy
		26/5/07	-	-	-	-	310	-	-	48mm rain, v. muddy
		30/6/07	7.6	63	7	7.5	250	15	0.06	34mm, muddy, 200mm+June
		19/7/07	-	-	-	-	460	40	-	v. muddy grey, no frog calls
		29/7/07	6.6	53	6	7	530	10	0.04	Slightly muddy grey, no frog calls
		28/8/07	6.7	61	12	7	420	60	0.02	25mm rain, v. muddy, no frog calls
		27/9/07	4.8	48	13	7	520	60	0.04	v. dirty brown, no frog calls
		11/10/07	-	-	15	6	610	100	-	v. dirty grey/brown
		30/10/07	6.3	67	17.5	7	440	30	0.06	29mm rain. dirty brown. No frog calls
		4/11/07	-	-	-	-	-	400	-	Turbidity after 50mm storm overnite
		30/11/07	8.1	86	17.5	7	170	200	0.01	150mm rain Nov, v.dirty brown/grey
		31/12/07	3.2	35	19	6.5	230	60	0.07	Muddy brown, no frogs
		20/1/08	-	-	17	7	190	400	-	v. muddy after 70mm rain o'nite
		28/1/08	6.9	73	17.5	7	250	300	0.12	v. muddy, light flow, no frogs
		2/3/08	7.7	82	18	7	220	300	0.02	v. muddy, 71 mm rain during week
		2/4/08	6.8	67	14	7	300	80	0.01	v. muddy
6	**Nuebeck's Creek**, Blackman's Flat (downstream from Delta Mt Piper Power station)	19/10/06	4.5	45	17	7	1320	<10	-	
		4/11/06	4.5	45	15	7	1450	<10	-	30mm rain
		18/11/06	4.8	47	15	7	990	<10	0.02	
		31/12/06	5.1	55	19	8	1390	<10	0.02	12mm rain
		25/1/07	4.4	50	23	8	1520	<10	0.05	38mm rain
		12/4/07	3.9	36	15	7	930	<10	0.01	
		23/4/07	5.8	56	14	6	520	15	0.05	2.5mm rain
		24/4/07	-	-	-	-	1230	-	-	

		25/4/07	-	-	-	-	1590	-	-	1mm rain
		26/4/07	2.8	28	13.5	7	1620	<10	0.04	
		27/4/07	-	-	-	-	1610	-	-	
		28/4/07	-	-	-	-	1590	-	-	
		29/4/07	-	-	-	-	1570	-	-	18mm rain
		30/4/07	-	-	-	-	1550	-	-	
		1/5/07	-	-	-	-	1530	-	-	
		3/5/07	-	-	-	-	1540	-	-	
		10/5/07	-	-	-	-	1450	-	-	2mm rain
		15/5/07	***5.68***	***60.2***	***9.97***	***7.07***	***1560***	***1.6***	***<0.01***	***SCA Field Data***
		17/5/07	-	-	-	-	1430	-	-	3mm rain
		1/6/07	-	-	-	-	750	-	-	48mm rain, 200m+ June
		14/6/07	-	-	-	-	270	-	-	88mm, v. muddy
		30/6/07	6.4	52	7	7	240	30	0.06	30mm, v. muddy
		19/7/07	-	-	-	-	360	-	-	Slightly milky, iced over
		29/7/07	4.5	36	6.5	6	580	10	0.03	Slight grey/green
		17/8/07	-	-	-	-	550	<10	-	8mm rain yesterday
		28/8/07	5.5	48	9	6	490	<10	0.02	
		27/9/07	4.4	42	11	6	1050	<10	0.03	Clear, possibly Gambusia
		30/10/07	4.3	44	16	7	1180	<10	0.03	29mm rain. Slight oil slick, no frogs
		4/11/07	-	-	-	-	-	300	-	Turbidity after 50mm storm overnite
		30/11/07	4.3	44	16	6.5	270	20	0.03	150mm rain Nov, muddy
		31/12/07	2.9	31	19	6	280	<10	0.03	Poss. Gambusia, 2 wood ducks
		28/1/08	3.6	38	18	6	260	15	0.06	Gambusia, muddy, no frogs
		2/3/08	4.7	46	14	6	260	20	0.05	71 mm rain during week
		2/4/08	3.8	36	13	6	350	10	0.05	Muddy, poss. Gambusia
7	**Cox's River Castlereagh Hwy, Lidsdale** (downstream from Mount Piper Power station; Angus Place Colliery; Ivanhoe Colliery; Lambert's Gully open-cut mine; Pine Dale open-cut	5/11/06	6.6	64	15	8	1080	<10	0.03	30mm rain
		18/11/06	6.8	70	16.5	8	1010	40	0.04	Very muddy
		19/10/06	6.6	66	22	8	1010	10	-	
		28/12/06	5.6	66	24	8	1050	<10	0.05	
		26/1/07	6.0	60	28	8	1050	<10	-	38mm, dead shrimps/striders/water snails
		12/4/07	7.0	74	17.5	8	910	<10	0.03	
		10/5/07	-	-	-	-	1090	-	-	2mm rain
		15/5/07	***8.85***	***101.5***	***14.46***	***8.33***	***972***	***0.5***	***<0.01***	***SCA Field Data***
		26/5/07	-	-	-	-	930	-	-	48mm rain
		1/6/07	-	-	-	-	890	-	-	8mm rain

	mine, Invincible Colliery Drainage Borehole)	14/6/07	-	-	-	-	730	-	-	88mm rain, muddy
		30/6/07	6.0	50	7.5	7	580	30	0.07	no frogs, 200mm+ rain June
		28/7/07	6.4	54	8	7	640	<10	0.06	Brown muck on creek bed
		27/8/07	6.3	59	12.5	7.5	630	<10	0.03	25mm rain, mud on creekbed, some frogs
		7/9/07	-	-	10.5	7.5	640	<10	-	Flow less than usual, some frog calls
		24/9/07	7.1	68	12.5	7	720	<10	0.11	Flow low, fine brown silt on creekbed
		11/10/07	-	-	15	7	860	<10	-	Possibly Gambusia, silt on creekbed
		30/10/07	7.4	86	21.5	7.5	910	<10	0.07	29mm rain. Possibly gambusia.
		4/11/07	-	-	-	-	610	100	-	Turbidity after 50mm storm overnite
		30/11/07	6.1	64	18	7	540	30	0.01	150mm rain Nov, yellow/milky
		31/12/07	6.9	82	25.5	7	610	<10	0.06	Poss. Brown Trout, poss. Gambusia
		28/1/08	5.6	64	22	7.5	550	<10	0.07	Clear, flowing well, brown trout
		2/3/08	5.8	58	15	7	510	<10	0.07	71mm rain during week, good flow
		2/4/08	6.8	70	17	7	620	<10	0.06	Poss. Gambusia, 1 brown trout
8	**Marrangaroo Creek**, Archvale Trout Farm, Marrangaroo	24/9/06	7.6	75	14	7	40	<10	0.03	
		30/9/06	8.8	82	10	6.5	50	<10	0.03	
		27/12/06	6.6	76	21	8	60	15	0.11	Turbidity rising
		24/1/07	6.3	72	22	6	70	15	0.06	40mm rain
		12/4/07	6.0	68	14	7	60	<10	0.07	
		3/5/07	5.0	50	15	7	50	<10	0.04	
		15/5/07	***7.56***	***81.8***	***11.15***	***7.03***	***44***	***1.8***	***<0.01***	***SCA Field Data***
		22/6/07	6.7	55	7	7	70	<10	0.06	150mm rain
		26/7/07	6.6	55	7	7	90	<10	0.04	1 platypus, brown trout
		31/8/07	8.1	70	9.5	7	60	<10	0.02	25mm rain, slightly green, good flow
		24/9/07	5.1	47	11	7	50	<10	0.02	Water rat ate a baby platypus
		2/11/07	6.3	60	13	7	60	<10	0.06	Milky green
		4/11/07	-	-	-	-	-	40	-	Turbidity after 50mm storm overnite
		30/11/07	5.7	57	14.5	7	40	<10	0.04	150mm rain Nov, slight green tinge
		1/1/08	6.1	60	15	7	50	<10	0.06	Flowing very well, clear
		29/1/08	3.8	42	19	7	40	<10	0.04	Good flow, murky, 5 Platypus
		2/3/08	7.2	69	13	7	40	<10	0.04	71 mm rain during week
		16/3/08	-	-	-	-	-	-	-	2 Platypus. tortoise
		1/4/08	6.9	63	11.5	7	60	<10	0.05	Clear, flowing well
9	**Farmer's Creek Cooerwull Rd**	24/10/06	2.0	32	17	8	580	15	-	
		5/11/06	2.4	22	16	8	460	20	13.4	30mm rain

	Bowenfels (downstream Lithgow City Council STP outfall)	30/11/06	2.1	22	25	7	650	15	17.1	
		24/12/06	2.1	21	20	8	520	20	12.2	20mm rain
		25/1/07	4.8	60	26.5	8	450	15	1.66	40mm rain
		16/4/07	4.8	50	17	7.5	430	10	0.49	
		15/5/07	***5.63***	***66.8***	***15.21***	***7.34***	***434***	***3.4***	***0.2***	***SCA Field Data***
		17/5/07	5.5	55	14.5	7	430	<10	0.76	3mm rain
		30/6/07	7.0	59	8	6.5	170	<10	0.06	200mm+ rain June
		26/7/07	7.7	67	9	7	270	10	0.06	Slightly milky, green
		31/8/07	6.8	63	12.5	7	270	20	0.19	25mm, green algae on creekbed
		24/9/07	7.7	80	16	7.5	350	50	0.04	v. green, no frog calls
		2/11/07	4.9	44	17	7	460	60	1.03	45mm rain, muddy
		4/11/07	-	-	-	-	-	40	-	Turbidity after 50mm storm overnite
		30/11/07	5.7	64	20.5	7.5	270	<10	0.55	Sewage spills last week, 150mm rain
		1/1/08	5.7	65	23	7.5	300	<10	0.36	Looks clear, flowing well
		29/1/08	5.5	70	25.5	7	300	<10	0.32	Slight 'fishy' odour
		9/3/08	6.3	71	20.5	7	310	<10	0.22	7mm rain, froth & bubbles
		1/4/08	6.6	72	17.5	7.5	330	10	0.64	Milky/grey/green, froth, flocs of algae
10	**State Mine Creek**, State Mine Gully, Lithgow	24/10/06	7.4	83	13	7	30	<10	-	
		4/11/06	7.4	74	11	7	30	<10	-	
		9/1/07	5.0	52	17	7	30	<10	0.04	
		23/1/07	5.9	61	18	7	30	<10	0.06	40mm rain
		16/4/07	6.8	66	13	7	30	<10	0.02	
		7/5/07	5.9	55	12	7	30	<10	0.00	
		15/5/07	***8.18***	***87.1***	***11.51***	***6.65***	***47***	***4.7***	***<0.01***	***SCA Field Data***
		22/6/07	6.7	54	7	7	40	<10	0.02	150mm rain to date June
		26/7/07	7.6	61	7	7	30	<10	0.02	200mm+ rain in June
		31/8/07	6.9	60	9.5	7	30	<10	0.08	25mm rain, clear, good flow
		24/9/07	6.9	60	9.5	7	30	<10	0.02	Rust stains on rocks in creekbed
		2/11/07	-	-	13.5	7	30	400	0.03	45mm rain, v. muddy yellow
		4/11/07	-	-	-	-	30	50	-	Turbidity after 50mm storm overnite
		6/12/07	5.8	57	14	7	30	<10	0.07	150mm rain Nov, 23mm 2 days ago
		1/1/08	5.3	56	17.5	7	30	<10	0.02	Clear, lots birds, cicadas
		29/1/08	5.6	56	15.5	6.5	30	<10	0.01	Flowing well, clear
		9/3/08	6.1	60	14.5	6	30	<10	0.01	7mm rain, sediment up after storms
		1/4/08	6.0	56	12	7	30	<10	0.01	Clear, flowing well

11	**Farmer's Creek, Oakey Park**, Lithgow	24/10/06	5.6	78	15	7	40	<10	-	
		4/11/06	7.4	83	13	7	40	<10	-	
		24/12/06	3.5	38	19	6	40	<10	0.01	20mm rain
		16/4/07	6.4	60	12	7	40	<10	0.00	
		7/5/07	6.7	66	11	7	30	<10	0.05	
		15/5/07	***8.49***	***92.8***	***11.6***	***7.30***	***65***	***1.7***	***<0.01***	***SCA Field Data***
		22/6/07	6.8	56	7	7	70	<10	0.02	150mm rain to date June
		26/7/07	7.1	58	6.5	7	30	<10	0.02	200mm+rain in June
		31/8/07	6.3	57	10.5	7	30	<10	0.01	25mm rain, clear, good flow
		27/9/07	6.0	58	13.5	7	30	<10	0.01	Clear, flowing, saw a Lyrebird
		2/11/07	6.5	65	15	7	30	15	0.02	45mm rain, slightly turbid
		4/11/07	-	-	-	-	20	10	-	Turbidity after 50mm storm overnite
		6/12/07	5.2	52	15	7	40	<10	0.04	150mmNov, 23mm 2 days ago, clear
		1/1/08	4.5	48	18	7	20	<10	0.03	Black cockatoos & lots other birds
		29/1/08	4.9	54	19	7	30	<10	0.02	Flowing well, crystal clear
		9/3/08	5.7	58	17	7	20	<10	0.02	7mm storm 2 days ago
		1/4/08	6.5	60	12	7	30	<10	0.01	Clear, flowing well
12	**River Lett**, Hartley	30/12/06	1.9	19	18	7	210	30	0.00	12mm rain
		21/1/07	2.4	24	20	6	410	10	0.02	69mm Hartley
		16/4/07	4.8	48	15	7	160	<10	0.02	
		6/5/07	5.2	48	11	7	130	<10	0.04	
		15/5/07	***8.62***	***92.9***	***11.17***	***7.22***	***137***	***4.3***	***<0.01***	***SCA Field Data***
		28/6/07	7.3	60	7	7	130	10	0.05	200mm+ rain June
		26/7/07	6.9	57	7	7.5	190	<10	0.08	
		26/8/07	6.8	60	10	7	160	<10	0.02	Flowing well, clear, no frogs
		27/9/07	6.8	64	12	7	180	<10	0.04	Lots frogs, butterflys, birds
		2/11/07	5.5	55	15	7	150	<10	0.03	45mm rain, tea-tree colour
		6/12/07	5.7	60	18.5	7	140	<10	0.04	150mmNov, 23mm 2 days ago
		1/1/08	5.3	59	20	7	130	<10	0.01	Tea-tree stained, flowing well
		29/1/08	5.8	66	21	7	110	<10	0.01	Flowing well, clear
		9/3/08	6.0	64	18	7.5	140	<10	0.03	7mm rain. EC 80 at Londonderry
		12/3/08	-	-	-	-	-	-	-	1x White-tailed Water Rat
		1/4/08	4.3	40	11.5	7	140	<10	0.01	Eastern water dragon, dragon flies
13	Cox's River **Magpie Hollow Road**	24/10/06	8.1	76	14	9	750	60	-	Water is green
		5/11/06	8.6	88	17	9	730	15	0.44	30mm rain Water is green

	Lake Lyell	30/11/06	9.1	110	24	9	880	20	0.20	Water is green
		30/12/06	9.7	119	24	9	870	20	0.14	12mm rain Water is green
		25/1/07	8.4	110	29	9	840	50	0.27	40mm rain, Water green
		16/4/07	5.4	58	19.5	8	910	20	0.05	Water is green
		15/5/07	***8.5***	***104.6***	***16.81***	***7.9***	***945***	***12.5***	***0.01***	***SCA Field Data***
		28/6/07	6.8	58	8	7	530	20	0.08	200mm+ rain June
		26/7/07	6.8	58	9	7	530	10	0.05	Slightly green
		26/8/07	8.6	80	12	8	520	60	0.08	Dense green algae, water green
		27/9/07	6.4	62	14	8.5	550	30	0.04	Water green, dense algae on edges
		2/11/07	5.1	56	17.5	7	570	10	0.24	45mm rain, not green for once
		6/12/07	4.5	50	20	7	550	<10	0.10	150mmNov, 23mm 2 days ago
		1/1/08	4.8	65	26	9	570	20	0.12	Algae on edge, motorboats/mud
		29/1/08	7.9	98	25.5	9	610	20	0.08	Algae edge, musty rotting weed smell
		9/3/08	7.5	89	23	8.5	590	20	0.06	AP = 0.74 upstream, 0.20 downstream?
		1/4/08	4.8	51	18	7	580	<10	0.09	Flocs of algae on edge,Farmers Ck green
14	**Lake Wallace** Wallerawang	24/10/06	6.1	60	19	9	1100	<10	-	
		18/11/06	8.0	89	19.5	9	1130	<10	0.29	
		27/12/06	6.3	72	22	9	1140	<10	-	
		9/1/07	-	-	-	-	1200	-	-	
		24/1/07	6.4	74	25	9	1100	<10	0.45	40mm rain
		12/4/07	6.5	68	17.5	9	1130	<10	0.55	
		29/4/07	-	-	-	-	1150	-	-	18mm rain
		15/5/07	***7.8***	***93.9***	***16.00***	***8.82***	***1146***	***0.2***	***0.17***	***SCA Field Data***
		24/5/07	-	-	-	-	1010	-	-	48mm, overflowing dam wall
		12/7/07	-	-	-	-	730	-	-	Overflowing dam wall
		19/7/07	-	-	-	-	710	-	-	**Not** overflowing dam wall
		17/8/07	-	-	9	-	690	<10	-	8mm rain, spillway not overflowing
		24/9/07	-	-	13	8.5	750	<10	-	Dam wall not overflowing
		11/10/07	-	-	18	8.5	720	<10	-	
		4/11/07	-	-	-	-	850	15	-	Top end of lake, 50mm storm o'nite
		9/4/08	6.6	69	16.5	8.5	700	<10	0.26	Day after acid spill at Wang power statio
15	**Piper's Flat Creek** Bray's Lane (1st causeway), Wallerawang - original	24/9/06	-	-	-	-	>1999	-	-	
		24/10/06	4.8	58	15	7	1980	15	-	
		9/1/07	-	-	-	-	1550	-	-	
		28/1/07	-	-	-	-	890			40mm rain

	watercourse of Piper's Flat Creek	26/4/07	-	-	-	-	1910	-	-	Rusty orange
		1/5/07	-	-	-	-	1660	-	-	Rusty orange
		6/5/07	-	-	-	-	1710	-	-	Rusty orange
		13/5/07	-	-	-	-	1650	-	-	Rusty orange
		24/5/07	-	-	-	-	1390	-	-	48mm rain
		1/6/07	-	-	-	-	1380	-	-	8mm rain
		22/6/07	-	-	-	-	320	-	-	35mm, muddy
		15/7/07	-	-	-	-	540	20	-	Rusty coloured
		4/8/07	0.4	5	10	6	1480	30	1.04	V. rusty coloured, flowing
		17/8/07	-	-	10	-	1370	30	-	8mm rain yesterday, rusty coloured
		31/8/07	-	-	11	5.5	1440	30	-	25mm rain, rusty yellow, flowing
		1/9/07	1.2	10	10.5	6	1480	20	-	Rusty orange, some frog calls
		11/10/07	-	-	15	-	1420	40	-	Rusty orange,
		4/11/07	-	-	-	-	230	100	-	Turbidity after 50mm storm overnite
		1/1/08	-	-	-	-	1220	40	-	v.rusty brown, filmy debris on surface
16	**Creek in** Bray's Lane (2nd causeway), Wallerawang - below Wallerawang STP outfall	26/10/06	3.9	20	16	7	650	10	-	
		28/1/07	-	-	-	-	570	-	-	40mm rain
		29/4/07	-	-	-	-	530	-	-	18mm rain
		24/5/07	-	-	-	-	430	-	-	48mm rain
		22/6/07	-	-	-	-	270	-	-	35mm rain
		15/7/07	-	-	-	-	370	<10	-	Flowing well
		17/8/07	-	-	9	-	500	<10	-	8mm rain yesterday
		7/9/07	5.2	46	10	7	530	<10	9.6	Lots bubbles surface, 79H P test
		11/10/07	-	-	16	-	620	10	-	
		1/1/08	-	-	-	-	510	<10	-	Slight oil-slick on surface
17	**Piper's Flat Dam**, Wallerawang	26/10/06	8.0	78	17	8	290	<10	-	
		4/2/07	-	-	-	-	320	-	-	
		1/5/07	-	-	-	-	320	-	-	
		22/7/07	7.5	61	7	7	230	<10	0.04	Tea coloured but clear
18	**Lambert's Gully Ck**, Blackman's Flat - POEO Lic. No. 3607 (also called Huon Creek) - downstream	24/10/06	3.9	40	17	6	1240	15	-	
		18/11/06	5.5	54	15	6	1240	10	-	
		31/12/06	4.1	42	17	7	1290	10	-	12mm rain
		25/1/07	3.6	42	24	6	1280	15	0.09	40mm rain
		1/4/07	-	-	-	-	1460	-	-	

	from Centennial Lambert's Gully open-cut mine, coal washery, coal fines recovery project, coal conveyor, and proposed Lithgow City Council Regional Solid Waste Landfill.	12/4/07	5.1	54	18	9	1450	10	0.06	
		22/4/07	-	-	-	-	1520	-	-	
		23/4/07	-	-	-	-	1510	-	-	
		29/4/07	-	-	-	-	1410	-	-	18mm rain
		6/5/07	-	-	-	-	1420	-	-	
		15/5/07	***5.98***	***68.5***	***13.55***	***6.73***	***1410***	***8.2***	***<0.01***	***SCA Field Data***
		26/5/07	-	-	-	-	970	-	-	48mm rain
		1/6/07	-	-	-	-	1040	-	-	8mm rain
		14/6/07	-	-	-	-	870	-	-	88mm rain
		22/6/07	-	-	-	-	1170	-	-	35mm, no frogs
		30/6/07	6.1	53	8.5	7	1230	15	0.04	34mm, muddy
		23/7/07	6.4	55	8	7	1210	10	0.03	Rusty creekbed
		29/7/07	-	-	-	-	1180	<10	-	Rusty creekbed, no frogs
		28/8/07	-	-	12.5	6.5	1120	10	-	25mm rain, rusty coloured water
		7/9/07	-	-	10.5	7	1050	<10	-	Rusty creekbed, no frogs
		27/9/07	-	-	13.5	6	1010	10	-	Oil slick on surface, milky, no frogs
		11/10/07	-	-	16	6	1010	10	-	Oil slick on surface, slightly turbid
		30/10/07	-	-	-	-	1140	10	-	Oil slick with round silver blobs
		4/11/07	-	-	-	-	-	200	-	Turbidity after 50mm storm overnite
		30/11/07	-	-	19.5	-	1140	10	-	150mm rain Nov, muddy/milky
		31/12/07	-	-	22	-	1220	15	-	Rust colour water, rust on creekbed
		20/1/08	-	-	18	6.5	890	30	-	Muddy after 70mm rain o'nite
		2/3/08	-	-	15	-	1200	10	-	71 mm rain. Slightly muddy
		2/4/08	-	-	15.5	6.5	1040	10	-	Oil slick, flowing, rusty creekbed
19	**Un-named Creek Blackman's Flat** (downstream Mt Piper power station, 80m south of Site 5)	30/1/07	-	-	-	-	1680	-	-	
		13/2/07	-	-	-	-	1460	-	-	39mm rain
		19/2/07	-	-	-	-	1480	-	-	10mm rain
		1/4/07	-	-	-	-	1280	-	-	
		21/5/07	-	-	-	-	1210	-	-	48mm rain
		26/5/07	-	-	-	-	1320	-	-	
		1/6/07	-	-	-	-	1320	-	-	8mm rain
		14/6/07	-	-	-	-	1010	-	-	88mm rain, muddy
		30/6/07	-	-	-	-	910	-	-	200mm+ rain June, grey
		15/7/07	-	-	-	-	990	<10	-	Iced-over surface
		19/7/07	-	-	-	-	1030	<10	-	Ice d-over surface
		29/7/07	-	-	-	-	1080	<10	-	Ice d-over surface

		28/8/07	-	-	-	-	1070	<10	-	25mm rain. Flowing slightly.
		9/9/07	-	-	9.5	7.5	1100	<10	-	Clear, some frog calls
		11/10/07	-	-	-	-	-	-	-	Bone dry for first time ever
		30/10/07	-	-	-	-	1140	<10	-	
		4/11/07	-	-	-	-	-	100	-	Turbidity after 50mm storm overnite
		30/11/07	-	-	16	-	1020	<10	-	150mm rain Nov,
		31/12/07	-	-	22	-	960	20	-	Not flowing, muddy
		2/3/08	-	-	15	-	860	<10	-	71 mm rain during week
		2/4/08	-	-	15	-	910	<10	-	Not flowing
20	**Cox's River, Duddawarra Bridge**, Kanimbla Valley	21/12/06	6.2	68	20	8	760	<10	0.09	12mm rain
		21/1/07	1.8	20	23.5	7	580	10	0.39	69mm rain
		16/4/07	8.5	90	18	8	590	<10	0.04	
		15/5/07	***7.76***	***89***	***13.55***	***7.8***	***597***	***46.1***	***0.01***	***SCA Field Data***
		28/6/07	7.4	61	7.5	7	170	60	0.07	200mm+ rain June
		26/7/07	5.5	46	8	7	250	<10	0.08	Tea coloured
		26/8/07	4.9	43	9	7	240	10	0.07	25mm rain, tea colour, lots frogs
		27/9/07	6.7	66	14.5	7.5	330	<10	0.05	Tea color, lots frogs, birds, ducks
		9/3/08	5.6	66	21	7	270	<10	0.11	7mm rain, Tea color, moorhens
21	**Thompson's Creek Dam**, Wallerawang	3/1/07	-	-	-	-	550	-	-	
22	**Cox's R.** between Lake Wallace & Lake Lyell (**Mt Walker Fire Trail)** Lidsdale State Forest Approx. 5km downstream from Wallerawang Power Stations discharge from the "Tortuous Watercourse"	1/5/07	6.7	66	14	8	1770	15	0.01	Water grey
		3/5/07	5.6	57	14	8	1770	15	0.43	Water grey
		7/5/07	-	-	-	-	1880	-	-	Water grey
		10/5/07	-	-	-	-	1810	-	-	Water grey
		15/5/07	***10.93***	***122.9***	***12.56***	***8.62***	***1970***	***19.7***	***0.15***	***SCA Field Data***
		17/5/07	-	-	-	-	1650	-	-	3mm rain, grey
		24/5/07	-	-	-	-	1520	-	-	48mm rain,grey
		1/6/07	-	-	-	-	1610	-	-	200mm+ rain June, grey
		19/7/07	7.3	58	6	8	480	20	0.09	Flowing, water grey
		22/7/07	-	-	-	-	1010	15	-	Water grey, odour
		26/7/07	-	-	-	-	970	20	-	Water grey
		17/8/07	-	-	9.5	-	1270	15	-	8mm rain yesterday, water grey
		31/8/07	8.1	73	11.5	8.5	960	15	0.09	25mm rain, grey/green
		11/10/07	-	-	17.5	8.5	1370	<10	-	Much clearer than usual

23	**Wallerawang Power Station "Tortuous Watercourse"** - cooling tower blowdown, brine concentrates from demineralisation plant/ reverse osmosis plant, and other water discharges into the Cox's River below Lake Wallace (includes Springvale Transfer)	1/5/07	6.9	74	17.5	8	>1999	20	0.65	Water grey
		3/5/07	-	-	-	-	>1999	-	-	Water grey
		6/5/07	-	-	-	-	>1999	-	-	Water grey
		7/5/07	-	-	-	-	>1999	-	-	Water grey
		10/5/07	-	-	-	-	>1999	-	-	Water grey
		13/5/07	-	-	-	-	>1999	-	-	Water grey
		14/5/07	-	-	-	-	>1999	-	-	Water grey
		15/5/07	***7.28***	***91.9***	***17.82***	***8.42***	***2140***	***46.1***	***0.22***	***SCA Field Data***
		17/5/07	-	-	-	-	>1999	-	-	Water grey
		24/5/07	-	-	-	-	>1999	-	-	48mm rain, water grey
		1/6/07	-	-	-	-	>1999	-	-	200mm+ rain June, water grey
		14/6/07	-	-	-	-	1800	40	-	88mm rain, water grey
		22/6/07	-	-	-	-	950	40	-	Water grey, rain upstream
		12/7/07	-	-	-	-	1620	40	-	Water grey, froth
		17/7/07	-	-	-	-	1710	40	-	Water grey, froth
		19/7/07	5.6	48	9	8.5	1880	50	0.28	Water grey, has a sewage odour
		22/7/07	-	-	-	-	1820	40	-	Water grey, has a sewage odour
		26/7/07	-	-	-	-	1790	40	-	Photo taken of dirty froth
		4/8/07	-	-	-	8.5	1710	40	-	4mm rain o'nite, dirty grey
		17/8/07	7.3	71	14	8.0	>1999	20	0.16	8mm rain, grey, flow more than usual
		31/8/07	-	-	18	8.5	1840	30	-	25mm rain, grey, froth, 12.5^{0}C in river
		7/9/07	-	-	17	8.5	>1999	30	-	Water grey, warmer than Cox's R
		14/9/07	-	-	16	8.5	1840	30	-	Water grey
		24/9/07	-	-	16	8.5	1950	30	-	Water grey, 3^{o}C warmer than Cox's
		11/10/07	5.6	64	21.5	8.5	>1999	30	0.08	Water grey, 4.5^{o}Cwarmer than Cox's
		4/11/07	-	-	-	-	1870	30	-	Turbidity after 50mm storm overnite
		6/12/07	4.1	47	22.5	8.5	1960	20	0.44	150mm rain 23mm 2 days ago
		31/12/07	5.0	60	24.5	8.5	1580	30	0.27	Slight detergent/chemical odour
		20/1/08	6.0	66	20	8.5	>1999	15	0.58	70mm rain o'nite. Sewage odour.
		2/3/08	6.0	62	17	8.5	1940	20	0.78	71 mm rain, red stain on bank
		9/4/08	7.2	77	18	8.0	1980	40	0.45	Day after acid spill at Wang Power Stati
24	**Cox's River, Great Western Highway**, Wallerawang	13/5/07	-	-	-	-	1960	-	-	Water is grey
		17/5/07	-	-	-	-	1900	-	-	3mm rain, grey
		24/5/07	-	-	-	-	1860	-	-	48mm rain, grey
		1/6/07	-	-	-	-	1880	-	-	8mm rain, grey

		14/6/07	-	-	-	-	1270	-	-	88mm rain, grey
		12/7/07	-	-	-	8.5	1620	40	-	Usual froth, grey
		19/7/07	5.7	48	8	8.5	1640	40	0.23	Grey, odour
		26/7/07	-	-	-	-	1580	30	-	Grey
		4/8/07	-	-	-	8.5	1450	40	-	4mm rain o'nite, grey
		17/8/07	-	-	10	8.5	1780	20	-	8mm rain yesterday, grey
		31/8/07	5.7	61	18	8.5	1640	30	0.09	25mm rain, Temp 12.5^0 upstream
		7/9/07	-	-	16	8.5	1760	30	-	Temp 12.5^{o}C upstream of discharge
		24/9/07	-	-	15	8	1470	15	-	Temp 13^{o}C upstream,
		11/10/07	-	-	20.5	8.5	1610	15	-	Temp 17^{o}C upstream
		6/12/07	5.0	58	22.5	8.5	1590	15	0.58	150mm rain Nov 23mm 2 days ago
		31/12/07	6.9	84	24	8.0	1420	20	1.71	Grey/blue, rotten weed/sewage smell
		20/1/08	6.2	66	20	7.5	1600	15	0.44	70mm rain o'nite. Odour. Milky
		2/3/08	5.8	60	17	8.0	1500	15	0.74	71 mm rain, red stain on bank
25	**Cox's River, McKanes** Bridge,	7/5/07	-	-	-	-	740	-	-	
		25/5/07	-	-	-	-	640	-	-	48mm rain
		26/7/07	-	-	-	-	250	<10	-	200mm+ rain in June
		27/9/07	-	-	14	7.5	390	<10	-	A bit turbid, lots frogs, birds
		1/1/08	-	-	-	-	350	<10	-	Froth&bubbles. Floating water weed
		9/3/08	5.7	64	20.5	7.5	340	<10	0.20	7mm storm 2 days ago, tea-tree stain
26	**Cox's River, Glenroy** Bridge	7/5/07	-	-	-	-	650	-	-	
		26/7/07	-	-	-	-	250	<10	-	200mm+ rain in June
		27/9/07	-	-	14	7.5	390	<10	-	Milky/green, lots birds
27	**Invincible Colliery Drainage Borehole** (Long Swamp, Ben Bullen State Forest)	10/6/07	-	-	-	-	1400	-	-	83mm rain, Fe/Mn slime
		14/6/07	-	-	-	-	1400	-	-	5mm more rain, Fe/Mn slime
		18/6/07	-	-	-	-	1400	-	-	25mm, No Frogs, Fe/Mn slime
		22/6/07	-	-	-	-	1360	-	-	35mm, No Frogs, Fe/Mn slime
		20/7/07	3.8	40	18	6.5	1370	<10	0.02	Temp 10^o higher than creek, Fe/Mn
		28/7/07	-	-	-	-	-	-	-	Not flowing today, Fe/Mn slime
		27/8/07	-	-	-	-	-	-	-	Not flowing today, Fe/Mn slime
		7/9/07	-	-	-	-	-	-	-	Not flowing, 2 dead Euc & Lepto
		11/10/07	-	-	-	-	-	-	-	Not flowing, Lepto' sooty-mould
		2/3/08	-	-	-	-	1350	-	-	Low flow, Rotten egg gas odour
		1/4/08	-	-	-	-	1380	-	-	Huge flow, Rotten egg gas odour

		7/4/08	-	-	-	-	1370	-	-	Huge flow, Rotten egg gas odour
28	**Cox's River, Ben Bullen State Forest** (approx 1km downstream from above mine drainage borehole)	19/10/06	2.6	37	12	5.5	40	<10	-	
		24/1/07	-	-	20	6	40	10	-	38mm rain
		12/4/07	-	-	15	6	50	<10	-	
		10/6/07	-	-	-	-	830	-	-	83mm rain
		14/6/07	-	-	-	-	950	-	-	5mm more rain
		18/6/07	-	-	-	-	920	-	-	25mm rain
		22/6/07	-	-	-	-	690	-	-	35mm rain
		20/7/07	-	-	-	-	1150	<10	-	
		28/7/07	-	-	-	-	1170	<10	-	
		4/8/07	-	-	-	-	980	<10		Green stringy algae building up
		17/8/07	-	-	8	-	850	<10	-	8mm rain yesterday, stringy algae
		27/8/07	-	-	9	-	710	<10	-	25mm rain, stringy green algae
		7/9/07	-	-	9	6	710	<10	-	Stringy green algae, some frogs
		23/9/07	-	-	9	6	700	<10	-	Lots algae, rotten-egg-gas odour
		11/10/07	0.3	<10%	12	5.5	670	<10	-	Dead frog, DO v. low, odour
		30/11/07	-	-	-	-	560	<10	-	Oil slick, 150mm rain Nov
		31/12/07	-	-	22	-	560	<10	-	Yellow flower water lily, Lizard
		28/1/08	-	-	17	-	480	<10	-	Oil slick, Nymphoides montana
		2/3/08	-	-	-	-	730	<10	-	Oil slick
		2/4/08	-	-	-	-	1050	-	-	Oil slick. 820EC 1km downstream
		7/4/08	-	-	-	-	1080	-	-	Oil slick. 920EC 1km downstream

Other Locations in Region	**Date**	**DO mg/l**	**DO %**	**Temp ^{0}C**	**pH**	**EC µS/cm**	**Turb NTU**	**AvP ppm**	**Comments**
Macquarie River , GWH, Bathurst	28/12/06	-	-	-	-	430	-	-	
	29/1/07	-	-	-	-	380	-	-	
Nepean River, Penrith	22/1/07	-	-	-	-	260	-	-	
	8/5/07	-	-	-	-	310	-	-	
Fish River, Tarana	3/1/07	5.7	60	18	7	170	10	0.10	
Oberon Dam, Oberon	29/1/07	-	-	-	-	80	-	-	
Ben Chifley Dam, Bathurst	29/1/07	-	-	-	-	360	-	-	
Windermere Dam, Mudgee	28/1/07	-	-	-	-	640	-	-	
	14/7/07	-	-	-	-	590	-	-	

Cudgegong River, Rylstone	28/1/07	-	-	-	-	420	-	-	
Capertee River, Glen Davis	28/1/08	-	-	-	-	730	-	-	
Turon River, Sofala	28/12/06	-	-	-	-	680	-	-	
	1/4/07	-	-	-	-	630	-	-	
Wolgan River, Newnes	16/11/06	8.0	91	17.5	7.5	80	<10	0.00	
Wollangambe R, Newne's Plateau (below Clarence Colliery)	23/1/07	3.5	42	26	8	250	<10	0.08	40mm rain
	20/9/07	5.4	55	16	7	260	<10	0.00	DO??, 1 hr before testing
Bungleboori Dam, Newne's Plateau	23/1/07	5.1	61	25	6	30	<10	0.05	40mm rain
Carne Creek, Newne's Plateau	9/12/07	-	-	-	-	30	-	-	
Clarence Dams, Clarence	23/1/07	-	-	-	-	30	-	-	40mm rain
Wentworth Falls Lake	22/1/07	-	-	-	-	50	-	-	
Glenbrook Lagoon	22/1/07	-	-	-	-	160	-	-	
Pope's Glen Creek, Blackheath	3/9/06	2.1	18	10	6	140	<10	0.00	
Katoomba Falls Creek	14/9/06	10	-	8	6.5	60	<10	-	
Jew's Creek (below Baal Bone Colliery)	18/11/06	-	-	-	-	1130	-	-	
	28/1/07	-	-	-	-	970	-	-	40mm rain
	1/4/07	-	-	-	-	780	-	-	
	14/5/07	-	-	-	-	1070	-	-	
	22/7/07	-	-	-	-	930	<10	-	200mm+ rain in June
	28/1/08	-	-	-	17.5	810	<10	-	70mm rain January

Your reference : S07/00001
Our reference : FIL07/1276-02 & DOC08/14497
Contact :

Mr Neville Osboume
Major Infrastructure Assessments
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Attention: Mary Mikulandra

6 May 2008

Dear Mr Holmes

I refer to the Environmental Assessment and accompanying information provided for the proposed Kerosene Vale – Stage 2 Ash Repository Area (MP07_0005) received by the Department of Environment and Climate Change (DECC) on 1 April 2008.

Please note that DECC exercises certain statutory functions and powers in the name of the Environment Protection Authority (EPA).

DECC has reviewed the information provided and has determined that it is able to support the proposal based on it assessment of the proposal and the environmental management and mitigation measures proposed by the proponent to address potential impacts, as detailed in the Statement of Commitments. DECC recommends that the commitments provided be included as Conditions of Approval and that construction and operation environmental management plans better define ongoing monitoring. DECC also recommends that the conditions provided under attachment A be included as Conditions of Approval, should approval be recommended by the DoP.

As indicated by the application, the activity of ash emplacement (Stage 1) at Kerosene Vale is already covered by environment protection licence 766 for the Power Stations. Licence 766 however does not presently regulate noise associated with ash emplacement activities and as such should the proposed Stage 2 be approved, DECC intends to modify licence 766 in line with the recommended conditions of approval.

Should you have any queries regarding DECC's submission, please contact me at the Bathurst office of the DECC on (02) 6332 7602.

Yours sincerely

DARRYL CLIFT
Head Regional Operations
Environment Protection and Regulation

The Department of Environment and Conservation NSW is now known as the Department of Environment and Climate Change NSW.

PO Box 1388, Bathurst NSW 2795
203-209 Russell Street, Bathurst NSW
Tel: (02) 6332 7600 Fax: (02) 6332 7630
ABN 30 841 387 271
www.environment.nsw.gov.au

ATTACHMENT A - RECOMMENDED CONDITIONS OF APPROVAL

Water

The proponent must comply with section 120 of the Protection of the Environment Operations Act 1997, unless otherwise stipulated by environment protection licence 766.

Air

The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

Noise

1. Construction noise from the ash placement area shall be undertaken between the hours of 7:00am to 6:00pm Monday to Friday, 8:00am to 1:00pm Saturdays with no audible construction activities permitted on Sundays or Public Holidays. Audible means to be heard by the human ear.

2. Operational noise from the ash haulage activity and the ash repository area must not exceed;

An $L_{Aeq,15\ minute}$ noise emission limit of 40 dB(A) (7am to 10pm), at the nearest most affected receiver.

To determine compliance, noise must be measured at, or computed for, any affected noise sensitive locations (such as the nearest most affected receiver). A modifying factor correction must be applied for tonal, impulsive or intermittent noise in accordance with the "Environmental Noise Management - NSW Industrial Noise Policy (January 2000)".

The noise emission limits identified in this licence apply under all meteorological conditions except:

(a) during rain and wind speeds (at 10m height) greater than 3m/s; and
(b) under "non-significant weather conditions".

Note: Field meteorological indicators for non-significant weather conditions are described in the NSW Industrial Noise Policy, Chapter 5 and Appendix E in relation to wind and temperature inversions.

Hours of Operation

3. Operational activities at the ash repository area must only be conducted between the hours of;

7am to 6pm (daytime) and
6pm to 10pm (evening).

No night time ash haulage or ash placement operation shall be undertaken by the proponent, except under specified emergency conditions. The proponent shall specify to DECC and DoP what emergency conditions would require night time haulage and ash placement activity. The proponent must notify DECC prior to undertaking any "emergency" night time ash haulage or ash placement operation, and must maintain a log of "emergency" night time ash haulage or ash placement operations.

Noise Monitoring

The proponent shall undertake noise monitoring of the ash haulage and ash placement activity commencing at the time of the issuing of the Project Approval for this Project and assess the noise impacts against the construction noise limits specified in the EA and the operational noise criteria provided in Section 2 above.

The proponent shall implement all feasible and reasonable mitigation measures (including noise barrier treatment) to ensure that noise impacts from the ash placement and ash haulage activity comply with the noise limits provided for in this Approval.

NSW Government
Department of Water & Energy

Neville Osborne
NSW Department of Planning
GPO Box 39
Sydney
NSW 2001

Contact: Janne Grose
Phone: 9895 7651
Fax: 9895 7501
Email: janne.grose@dnr.nsw.gov.au

File: [PAR9013564]
Our Ref: ERM06/6905 and ER7578

12 May 2008

Attention: Mary Mikulandra

Dear Mr Osborne

Subject: Major Project (MP07-0005) – Kerosene Vale – Stage 2 Ash Repository Area – Environmental Assessment

Thank you for your letter of 28 March 2008 seeking comment from the Department of Water and Energy (DWE) on the Environmental Assessment (EA) and recommended Conditions of Approval for the proposed project.

Specific comment on the EA and supporting documentation is outlined in Attachment A and the Department's recommended Conditions of Approval are provided at Attachment B.

The Department's key issues are in relation to:

- the realignment and rehabilitation of Sawyers Swamp Creek as a natural system
- the rehabilitation of a vegetated riparian corridor along Sawyers Swamp Creek
- groundwater.

Contact Details:

Should you have any queries in respect to this matter, please contact Jeff Hunt on (02) 4904 2634 at the Newcastle office or Janne Grose on (02) 9895 7651 at the Parramatta office.

Yours sincerely

Janne Grose

for Jeff Hunt
Senior Project Planner
Major Projects and Planning

NSW Government
Department of Water & Energy

ATTACHMENT A

Major Project – Kerosene Vale – Stage 2 Ash Repository Area

Environmental Assessment

Department of Water and Energy – Key Issues

Sawyers Swamp Creek

Crossings:

Section 9.3.3 of the Environmental Assessment (EA) makes reference to the installation of in-stream structures and the realigned channel passing under an access road, but notes that the realigned section of the creek would not include these types of structures (page 89). If a new crossing is required over the realigned section, a bridge crossing should be used rather than a culvert.

The bridge should preferably be elevated and span the full width of the identified riparian corridor and maximise light penetration and allow moisture to penetrate under the structure to allow local native vegetation to grow in a continuous fashion beneath the structure and encourage fish passage.

Figure 2 – Typical Cross Section of Realigned Channel

Section 3.5.2 and Figure 2 of Appendix B in the EA notes the banks would be designed to have slopes varying from 1 vertical in 5 horizontal to 1 vertical in 10 horizontal (page 10). It is recommended Figure 2 distinguishes top of bank with a change of slope. The channel cross section should be reflective of the natural channel for Sawyers Swamp Creek.

Earthworks:

The Department supports the recommendation in Section 9.4.1 of the EA that with the exception of the creek realignment activities, earthworks should be avoided within 50 m of the watercourse where feasible. Earthworks should also be avoided downstream of the private coal road which is shown in Figure 2.1 in the EA and within 50 m of the watercourse.

Groundwater

The Department supports the groundwater monitoring program as outlined in Section 7.5.2 of the EA (page 57-58). If the monitoring bore network is not already licensed by DWE, the proponent needs to be advised to contact the Department to arrange appropriate authorisation.

ATTACHMENT B

Major Project – Kerosene Vale – Stage 2 Ash Repository Area

Department of Water and Energy – Conditions of Approval

1. All engineering, other structural works or natural landscaping proposed must be designed, constructed and operated by suitably qualified professionals, recognised in that specialised field. For any Vegetation Management Plan (VMP), this relates particularly to bushland rehabilitation practices, and for any Works Plan (WP), this relates particularly in natural stream processes, design and rehabilitation practices. The designs and construction methods and activities are to result in NIL or minimal harm to aquatic and riparian environments and do not cause erosion, sedimentation, or increase flood levels of waterfront land.

2. Outside the scope of works required for this site, operations shall not damage or interfere in any way with:
   - Native vegetation and habitat within the riparian corridors.
   - The stability of adjacent or nearby bed or banks of Waterfront Land.
   - The stability of Waterfront Land and their associated environments
   - The flow of watercourses within Waterfront Land.
   - The quality of water within Waterfront Land
   - Any pumps or structures in the vicinity (that are licensed under the Water Act 1912 or the Water Management Act 2000).

3. The realigned section of Sawyers Swamp Creek must be consistent with a WP for all works and the finalised Stage 2 Kerosene Vale Ash Repository Sawyers Swamp Creek Rehabilitation Plan.

4. Any works that involve any change (including realignment, stabilisation, naturalised enhancement etc) of any watercourse, must emulate a stable natural watercourse system that behaves as, and has the appearance of a stable natural stream system of the area (including floodplains, terraces and other typical natural features). Part of the form of the watercourse is to create meanders, suitable pool and riffle sequences, with suitable aquatic and terrestrial habitat.

5. The extent of the rehabilitation / restoration of Waterfront Land are to be as indicated by a WP for all works that involve any change (including realignment, stabilisation, naturalised enhancement etc) of any watercourse. Rehabilitation / restoration, and watercourse form must be consistent with the Works and Watercourse Design Guideline (DWE, APRIL 2007)

6. A riparian zone consisting of local native plant species shall be established and maintained in and adjacent to Sawyers Swamp Creek, for the entirety within the Site. The extent of the riparian zones is to be measured horizontally landward from the top of the bank of the watercourse/s, and on both sides of the watercourse, and is to be of a **minimum width of 20 m on both sides** of the creek.

7. A **VMP** for site rehabilitation - that demonstrates protection of any remnant local native riparian vegetation at the Site and restores any riparian zones disturbed or otherwise affected by the development to a state that is reasonably representative of the natural ecotone of the protected waters system - to achieve sound naturalised watercourse and long term riparian area stabilisation and management by the enhancement/emulation of

the native vegetation communities of the subject area - is to be prepared, and be consistent with the *DWE Guidelines for controlled activities (February 2008): Vegetation Management Plans.*

8. Seed and propagule sources are to be from local botanical provenance (regarded as from as close as possible and from the same general habitat (same soil type, distance from watercourse, exposure etc)

9. The riparian zone (and all areas and activities described in the VMP must be maintained for a period of at least five (5) years after final planting or where other revegetation methods are used, five years after plants are at least of tubestock size and are at the densities required by these conditions and with species richness as described in the VMP, and five (5) years minimum for those areas required for access and maintenance relating to any WP.

10. The riparian zone must be monitored over a period of 5 years commencing after final planting.

11. The realigned creek must be monitored over a period of 5 years and will include scour and erosion monitoring. The monitoring program must include sampling before and after realignment of Sawyers Swamp Creek and include a sampling site downstream of the realigned section of creek. In the first year monitoring will be undertaken quarterly or after any wet weather/bankful flow event.

12. The proponent must ensure that all works and activities within the site do not compromise the implementation of the VMP in any way

13. Earthworks (with the exception of the creek realignment) must be avoided within 50 metres of Sawyers Swamp Creek including earthworks downstream of the private coal road.

14. The groundwater monitoring program must be implemented and must be consistent with Section 7.5.2 of the Environmental Assessment (April 2008).

END OF CONDITIONS OF APPROVAL

Department of Planning
Stage 2 Kerosene Vale Ash Repository Area
Environmental Assessment
Comments and Issues

Recycling Options

- Cementitious use (section 2.3.2) – this section suggests that Wallerawang ash is of the wrong quality to be used in cement manufacturing, but then says the lack of reuse is driven by market forces. Which is more relevant?

- A recent article in the media referred to a commercial trial of compressed fly ash in China for cement manufacture. It is questioned as to whether the ash from Wallerawang would be of an appropriate quality for this application and if this is an avenue that should be further pursued by Delta.

- Horticultural uses (section 2.3.3) – the EA suggests Wallerawang has a competitive advantage in this area, and Delta is 'keenly' pursuing this. However, no details are provided on the current initiatives/investigations.

- Aggregates and polymers (section 2.3.5) – indicates that approval for the use of ash in major road projects has not been sought. It is questioned as to why this has not occurred?

- Bottom ash (section 2.3.8) – it is questioned as to whether Delta has any indication of the quantities of ash that might be reused in works on site?

Operational Activities

- Ash delivery (section 3.3.1) – it is questioned as to whether Delta has investigated the feasibility of constructing either a new haulage route away from impacted residents, implementing a conveyor system to transport the ash, or a combination of conveyor system and road haulage as feasible alternatives to using the existing haul road. If so, what was the outcome of these investigations? If not, justification should be provided as to why these are not suitable options.

- Conditioning - what does ash conditioning involve?

- Excavation of the pine plantation (section 3.2.2) – details on the scale of extraction (depth and area) need to be provided. Further, it is questioned as to whether extraction of capping material will be undertaken all at once, or in stages consistent with the need for capping material elsewhere on site?

- Capping of pine plantation area (section 3.2.2) – it is understood that with the exception of the pine plantation area, the remainder of the repository has been capped hence reducing the potential for infiltration. Clarification is sought on the nature of the barrier/capping to be provided in the pine plantation area.

- Ash storage – Section 2.1 indicates that Stage 1 capacity would be reached by July 2008. It is understood that this estimate has been revised. Clarification is sought on the revised design life.

Groundwater

- Assessment approach (section 7.1) – this section indicates that trials at Mt Piper replicated actual conditions, and desktop hydrogeological modelling would not provide any further information. It is questioned as to whether geological and hydrological conditions between Mt Piper and this proposal are sufficiently similar to assume the same outcome? The section also refers to discussions with DWE on the decision not to undertake further modelling. However, no details are provided on the outcomes of the discussions.

Groundwater and surface water quality monitoring

- Reference is made to appropriate management responses if monitoring programmes show exceedances of trigger values (sections 7.5.2 & 8.4.3). It is questioned as to what types of responses are available?

Noise

- Reference is made to possible revisions of the construction noise programme (section 11.4.1) – is this likely, and how significantly?

- Reference is made to possible revisions to the project to include works at night (section 11.4.2) – this would appear to be contrary to the project proposal, and would seem to need a modification, not just an assessment of sleep disturbance.

- Clarification is sought on the current hours of ash management at the repository site and whether there will be a change in the hours under Stage 2. If there is any change, it is not clear whether the implications of this have been taken into account in the noise assessment (e.g. it assumed that a reduction in hours would be accompanied by an increase in the number of pieces of earthmoving equipment and/or more movements to manage the increase in ash delivery). The noise monitoring infers that ash handling would also be restricted to 7 am - 10 pm at the repository site. This should be confirmed.

- Fly ash placement – Table 8-2 of the technical noise report provides details of the predicted noise impacts for Stage 1 ash placement. The text states that the predicted noise impacts are based on an assumption that the plant is operational at the most westerly point of the Stage 1 placement area. Table 9-4 of the technical report provides details of the predicted noise impacts for Stage 2 ash placement assuming a worst case scenario of the plant being operational to the nearest receptor. It is questioned as to "why" the values in Table 9-4 are considerably lower than in Table 8-2 when ash placement will also be undertaken immediately north of the existing placement area and hence the distance to site 2 is not significantly greater. In addition, the distance between location 3 and the ash deposition area would at some stages be equal to or less than under Stage 1 and so it would be assumed that the noise would be either the same or greater, not less.

- Fly ash truck movements – Table 8-1 of the technical noise report is titled "Existing average fly ash truck movements" yet the legend refers to fly ash trucks. Section 8.1.1 states that a truck number equates to two truck passages. A movement is one passage. Hence it is questioned as to what Table 8-1 represents.

  Table 9-3 of the technical report shows the change in the worst case scenarios from Stage 1 to Stage 2. Based on the text, the assumptions used for both stages are identical (including the number of truck movements), with the exception of the noise generated by earthmoving equipment – according to the EA, this is lower for Stage 2. However, Table 9-3 shows that the predicted noise impact is greater for Stage 2. It is questioned as to what the differences are in the modelling inputs. One might argue that there would be a greater number of truck movements for Stage 2 under the worst case scenario as there are more movements per hour?

  The operational noise goals listed in Tables 8-1, 9-1 and 9-2 of the Technical Report are different to those listed in Table 6-3.

- Annoying noise – Clarification is sought on whether any adjustment was made for annoying noise characteristics generated by trucks and equipment (e.g. beepers associated with trucks reversing).

From: Mary Mikulandra [Mary.Mikulandra@planning.nsw.gov.au]
Sent: Monday, 26 May 2008 9:28 AM
To: Buchanan, Nigel
Cc: Dixon, Emma; Peter Reed
Subject: Kerosene Vale Stage 2 repository
Dear Nigel

Further to the comments already submitted, it would be appreciated if further clarification would be provided on the degree of similarity between the ashes from Wallerawang and Mount Piper Power Station. When visiting the site last Tuesday, it was noted that ash placement activities for the two power stations was different for two reasons:

- Mount Piper ash is placed in a void where as at Kerosene Vale it is an above ground deposit; and
- The differences in the physical properties of the ashes.

If there is a difference in the physical properties, then application of the results of the infiltration trials at Mount Piper to Kerosene Vale is questionable.

Cheers
Mary