



BENGALLA MINE

RESPONSE TO SUBMISSIONS

for

Bengalla Mining Company Pty Limited

February 2011

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ENVIRONMENTAL CONSULTANTS

**BENGALLA MINE
DEVELOPMENT CONSENT MODIFICATION EA
RESPONSE TO SUBMISSIONS
for
*Bengalla Mining Company Pty Limited***

1 INTRODUCTION

Bengalla Mining Company (BMC) submitted an Application for Project Approval under Part 3A of the *Environment Planning and Assessment Act 1979* (EP&A Act) for the Bengalla Coal Mine Modification to Development Consent (the Modification) on 6 April 2009. The Modification Environmental Assessment (EA) prepared by Hansen Bailey was submitted to the Department of Planning (DoP) for a test of adequacy under Section 75W of the EP&A Act on 17 August 2010. The EA was determined to be adequate and was placed on public exhibition by DoP from 8 December 2010 to 24 December 2010 before an extension to the exhibition period was granted until the 21 January 2011. During this extended period the general public and the relevant Government departments were invited to provide written submissions.

DoP received 13 submissions to the EA. Submissions were received from five Government agencies, three non-government organisations and five private landholders. All submissions are included in **Appendix A**.

This report has been prepared in response to the submissions received. Input into this report has been provided by the relevant specialists involved in the preparation of the EA and BMC personnel, where appropriate. Excerpts from the submissions are re-stated in italics, with a response to each following as normal text.

2 GOVERNMENT AGENCIES

2.1 DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE & WATER

I refer to your letter dated 7 December 2010 to the Department of Environment, Climate Change and Water (DECCW) requesting a review of the adequacy of the document "Bengalla Mine Company Development Consent Modification Environmental assessment" prepared by Hansen Bailey and dated December 2010 ("the EA") and requesting that DECCW comment on the proposal and include any recommended conditions of approval.

DECCW understands that proposed modifications to the existing approval relates to:

- Increasing the extraction rate of mining operations in the Wantana Extension Area;*
- Increasing the footprint of the existing waste dump; and*
- Using an area to the west of the mine for the temporary storage of overburden.*

DECCW also understands that mining operations will continue to be undertaken at the currently approved production rate, approved mining methods, utilising the existing vehicle fleet and no change to the hours of operation at the mine.

DECCW has completed an assessment of the EA and comments arising from this review are provided below. While DECCW has no objection to the proposal, and no specific recommended conditions of approval in relation to air and noise impacts, DECCW is unable to provide advice regarding impacts to Aboriginal cultural heritage until a revised Aboriginal cultural heritage assessment is completed.

2.1.1 Comment 1

THREATENED SPECIES

*DECCW has reviewed the EA, including the Flora and Fauna Impact Assessment ('the Report') and notes that the EA did not identify any threatened species, populations, communities, or threatened species habitat in either the Southern Overburden Emplacement Area (OEA) or the Western OEA. The Pine Donkey Orchid (*Diuris tricolor*) is a threatened species and plants in the Muswellbrook local government area also comprise an Endangered Population. In the Muswellbrook area this orchid is known to occur in derived grassland with both native and exotic species. DECCW considers that the Western OEA could include suitable habitat for this species. When the Western OEA was surveyed on 19th March 2010 plants of this species would either have still been dormant or had a few non-descript grass-like leaves present – flowers are needed to identify this species. Therefore the Pine Donkey Orchid would have scarcely been detectable, let alone identifiable, during the ecological fieldwork for this proposal and its presence on the site has not been fully identified.*

*DECCW recommends that the proponent conducts targeted surveys for the Pine Donkey orchid (*Diuris tricolor*) sometime between 19 September and 17 October 2011 (the exact timing of flowering is based on the weather conditions of the preceding weeks; and the flowering of known *Diuris tricolor* plants in the Muswellbrook LGA may also be used as a guide) on the Western OEA to determine if this species is present on the site. If present, DECCW recommends that the proponent implements adaptive management to ensure that any *Diuris tricolor* plants are not impacted by the project.*

Response

Diuris tricolor is a cryptic species that is almost impossible to detect when it is not in flower, generally between September and October. As a result, additional flora surveys were conducted within the footprint of the Western Overburden Emplacement Area (OEA) and surrounds on 13 October 2010 as part of a broader survey for this species at Bengalla. Weather conditions had been very favourable for plant growth in the weeks prior to the survey, and a known population was confirmed to be flowering prolifically in the locality (at Mt Arthur). No evidence of this species was recorded in the footprint of the Western OEA or surrounds, despite careful targeted searches using a meandering transect (Cropper 1993). As such no further survey or additional mitigation measures, beyond those described in the Ecological Impact Assessment (Cumberland Ecology 2010), are considered to be required.

2.1.2 Comment 2:

AIR QUALITY IMPACTS

DECCW has identified that emissions from wheel generated dust and wind erosion may have been underestimated in the AQIA. However, DECCW agrees with the conclusion that there would be a reduction in impacts on the surrounding air environment due to the modification as consistent approaches to assessment were used for both assessments.

A summary of the issues identified by DECCW in relation to air quality along with a response is provided below with a full copy of the submission provided in **Appendix A**. A full response prepared by PAEHolmes is provided in **Appendix B** of this report.

Comment:

Emissions of wind erosion sources have been reduced due to estimated annual rainfall.

Response

- The emission factor used in the Air Quality Impact Assessment (PAEHolmes 2010) to calculate emissions generated from wind erosion is shown below:

$$E_{TSP} = 1.9 \times \left(\frac{s}{1.5} \right) \times \left(\frac{365 - p}{235} \right) \times \left(\frac{f}{15} \right) \quad \text{kg/ha/day}$$

Where:

s = silt content (%)

p = number of rain days per year, and

f = percentage of the time that wind speed is above 5.4 m/s

- It is agreed that theoretically the inclusion of the variable for the average number of rain days in a year may lead to an underestimation of the hourly emissions, and as such, potentially under-estimate the worst-case 24-hour impacts. However, a review of the NPI EET Manual for Mining v2.3 (Environment Australia 2001) shows that the default uncontrolled TSP emission factor for wind erosion is 0.4 kg/ha/hour. As shown in **Table 1**, use of the NPI default emission factor would have resulted in estimated emissions 44% lower than modelled.

- As such, it is considered that the Air Quality Impact Assessment (PAEHolmes 2010) prepared for the Modification is in practice conservative and that emissions are not “reduced”.
- DECCW explains that more complex approaches can be applied to consider days on which rain falls, however, it is noted that there are dozens of alternative and equally valid approaches that various experienced consultants can apply, and as such no incorrect methodologies have been applied. It is important to point out that a theoretical reduction/increase in emissions does not directly translate into a reduction / increase in actual impacts and a “valid” assessment is one that reflects likely actual impacts.

Table 1
Comparison of estimated TSP emissions from wind erosion sources – EA emission factor compared with NPI default

Source	TSP Emission per year (kg/year)	NPI Default Emission Factor (kg/year)
WE - OB spoil areas (all approved + SOEA)	1,464,692	792,955
WE - OB spoil areas (WOEA)	159,026	86,093
WE - Open pit	1,104,182	597,782
WE - ROM stockpiles	7,281	7,884
WE - Product stockpiles	57,037	77,197
TOTAL	2,792,219	1,561,912

Comment:

Emission estimates of wheel generated dust emissions are not based on a referenced emission estimation technique.

Response

- The emission estimate of wheel generated dust emissions is based on the historical US EPA default emission factor of 4 kg/ Vehicle Kilometres Travelled (VKT), as presented in the State Pollution Control Commission (SPCC), document (SPCC 1983) and validated at Hunter Valley coal mines in the 1988 National Energy Research, Development and Demonstration Council (NERDDC) study (NERDDC 1988). This emission factor has been applied in numerous Air Quality Impact Assessments for coal mines (and other extractive industries) and is consistent with the emission factor used in the previous Air Quality Impact Assessments completed for Bengalla (Holmes Air Sciences 2006; Holmes Air Sciences 2007).
- The emission factor applied is the only emission factor available that has been validated for Hunter Valley coal mining activities.
- It is noted that an AP-42 (*United States Environmental Protection Agency AP 42 Compilation of Air Pollutant Emission Factors – 1985 5th Edition*) emission factor for wheel generated dust exists and has been updated several times since the original default was developed.

However, no validation of the revised AP-42 emission factor has been completed for conditions in the Hunter Valley, and it was not used in this assessment. More specifically, the assessment does not apply the 2003 NPI emissions equations or any NPI default parameters to these equations. Thus it is an interesting coincidence that these equations and defaults, produce, as calculated by DECCW, approximately the historical AP-42 default used in the assessment.

- The merit of DECCW applying the default NPI 48t vehicle mass and 10% silt assumptions in an equation that was not used in the assessment and using this to state that the assessment may underestimate impacts is not clear, it is useful therefore to examine the comparison DECCW have made in further detail.
- The current AP-42 emission factor for industrial vehicles travelling on unsealed roads is shown below:

$$EF_{TSP} = 0.2819 \times \left(4.9 \times \left(\frac{s}{12} \right)^{0.7} \times \left(\frac{(W \times 1.1023)}{3} \right)^{0.45} \right)$$

Where:

EFTSP = TSP emission factor from wheel generated dust

s = silt content of road surface

W = average weight of vehicles travelling on haul road

- By back calculation using the updated AP-42 emission factor (see Table 3 of **Appendix A**), the silt content of the road surface would have to be 8.4%.
- It is important to note that the updated AP-42 emission factor is particularly sensitive to the surface silt content of the road, as shown below in **Table 2**. The same vehicle weights used by DECCW have been used to allow for direct comparison.

Table 2
Estimated TSP emissions from wheel generated dust using updated emission factors – influence of silt content

Silt Content (%)	Carrying Capacity (tonnes)	Tare weight (tonnes)	Average Gross Weight (tonnes)	Control Efficiency (%)	TSP Emission Factor (kg/km)
2	218 (OB Haul Trucks)	165.7	274.7	75	0.79
3					1.04
4					1.28
5					1.49
10					2.42
2	136 (coal haul trucks)	113.5	181.5	75	0.65
3					0.87
4					1.06
5					1.24
10					2.01

- Whilst no surface silt content data are currently available for the haul roads at Bengalla, recent data collected at the Integra Mine (see PAEHolmes Response to DECCW Letter **Appendix B**), show an average silt content of 2%. As shown in Table 2, in the likely event that similar conditions exist at Bengalla, use of the updated emission factor as suggested by DECCW would result in a controlled emission factor less than the 1 kg/km used in the assessment and would result in total emissions lower than assumed. Applying the likely silt content of 2% indicates that the emissions per the DECCW suggested equation would be between 65% and 79% of those applied in the assessment.
- It is also noted that the range of source conditions used in developing the equation, was for gross vehicle weights in the range of approximately 1.8 tonnes to 263 tonnes. The average gross weight assumed by DECCW for the overburden haul trucks is 274.7 tonnes, which is outside this range, potentially making application of this equation invalid for this situation.
- DECCW also comments that further reductions in estimated emissions may be possible due to speed limits on haul trucks. The updated AP-42 emission factor does not account for vehicle speed and it is understood that the reason for this is that larger haul trucks travel at relatively low speed (for example, compared with light vehicles on dirt roads) and have little turbulent under-body wake to induce significant dust (as might occur for light vehicles on public roads, for which the AP-42 equation does contain a relevant speed parameter).

2.1.3 Comment 3

NOISE IMPACTS

DECCW has reviewed the Acoustic Impact Assessment (AIA) prepared by Bridges Acoustics, dated 27 July 2010 and recommends that the Department of Planning consider the following advice when determining the project application:

The proponent should justify that the predicted noise levels in Table 5 represents the best achievable noise levels after the application of all feasible and reasonable noise mitigation measures:

- *Subject to the proponent satisfactorily demonstrating that all feasible and reasonable noise mitigation measures have been implemented, the predicted noise levels in Table 5 of the AIA do not exceed levels that DECCW would normally consider licensing to, and therefore DECCW raises no objection on consent limits being amended in line with the predicted noise levels in Table 5;*
- *Any approval by Planning, if issued, should include a condition which specifies that the increased noise limits only apply while modified emplacement practices are occurring. The proponent should be required to nominate a date after which the increased noise limits would not apply, and noise limits would revert back to limits currently applied in the existing consent; and*
- *Any approval by Planning, if issued, should include a condition which specifies that receivers likely to qualify for 'Additional noise mitigation measures' be advised of this fact by the proponent, so that noise monitoring can be undertaken to confirm noise impacts, and initiate the offer, where applicable.*

Response

- As noted in Section 6.2.4 of the EA, this Modification will result in the noise levels similar to the currently approved levels with noise mitigation measures to continue to be implemented in accordance with the mitigation and management measures provided for in the relevant Environmental Management Plans (EMPs) including the Coal & Allied (CNA) Environmental Management System (EMS), the relevant Rio Tinto Environmental Performance Standard and CNA Environmental Procedures and as described in the approved *Statement of Environmental Effects Modification to Mining Operations* (Bengalla SEE) (Hansen Consulting 2006) and the *Wantana Extension Statement of Environmental Effects* (Wantana Extension SEE) (Hansen Bailey 2007). These management plans and procedures will ensure that Bengalla Mine will continue to employ best practice noise management and mitigation measures and achieve best practice noise emission levels from its plant and equipment.
- Any technical recommendations included in the Acoustic Impact Assessment (Bridges Acoustics 2010) presented in Appendix E of the EA will be incorporated into the updated EMPs as required in consultation with the relevant regulators to the satisfaction of DoP.

2.1.4 Comment 4

ABORIGINAL CULTURAL HERITAGE

DECCW has reviewed the EA and notes that the proponent has relied upon an Aboriginal cultural heritage impact assessment completed in 1992. Given that significant changes in landform can occur over time DECCW is of the opinion that a revised assessment is necessary, incorporating new / additional survey information and which makes reference to recent changes to the National Parks and Wildlife Act 1974 (the NPW Act). The revised assessment should reflect the best practice standards recommended by DECCW in the "Code of Practice for Archaeological Investigations of Objects in New South Wales"(DECCW, 2010).

Further, while DECCW acknowledges that the current Bengalla Community Consultative Committee specifically formed for the Bengalla project – this committee does not represent all Aboriginal groups in the area. The proponent should undertake additional consultation with the local Aboriginal community in accordance with DECCW's "Aboriginal Cultural Heritage Consultation Requirements for Proponents" (DECCW, 2010).

Until a revised Aboriginal heritage impact assessment is provided, DECCW is unable to provide specific recommended conditions of approval for this project.

The proponent should also be advised that as the Bengalla consent was issued under Part 4 of the Environmental Planning and Assessment Act 1979, separate application for a permit under s90 of the NPW Act will be required if any impacts to Aboriginal heritage are likely to occur as a result of this project proceeding. Similarly, the proponent should liaise with the Hunter–Central Rivers Catchment Management Authority regarding any approvals required under the Native Vegetation Act 2003 for the clearing of native vegetation as a result of this project.

Response

- An extensive Aboriginal Heritage Impact Assessment was completed in 1992 as part of the *Environmental Impact Statement for Bengalla Coal Mine* (Bengalla EIS) (HLA Envirosciences 1993).
- No Aboriginal heritage sites or items identified as part of the Bengalla EIS were found to exist within the relatively small and highly disturbed areas proposed to be affected by this Modification. Aboriginal sites remaining at Bengalla located in the vicinity of the Southern OEA Extension and the Western OEA that were not salvaged as part of the 1998 salvage program are identified on Figure 9 of the EA. No Aboriginal heritage sites exist within Survey Area 1 or Survey Area 2. Due to the ongoing careful management of these areas by Bengalla Mine since the original survey and hence their soils stability there has been no opportunity for any further finds to be exposed.
- Section 6.10.3 of the EA describes how the Western OEA was designed so as to avoid any impacts on Aboriginal heritage items identified as part of the Bengalla EIS and any sensitive ecology.
- According to legal advice, confirmed by Mark Leeming SC, sections 75U applies to the development “to the extent” it is approved under Part 3A (see **Appendix D**). Therefore, the dispensations from the requirement for approvals listed in section 75U of the EP&A Act apply to the Bengalla Project to the extent that it is approved by the Minister under Part 3A. Accordingly, approvals under Section 90 of the National Parks and Wildlife Act 1974 and Section 12 of the *Native Vegetation Act 2003* are not required for those elements of the Bengalla Project, the subject of the modification application.
- It is noted that Hunter-Central Rivers Catchment Management Authority acknowledges that as the modification application is not a Part 3A project, no separate approval is required under the *Native Vegetation Act 2003*.

2.2 INDUSTRY & INVESTMENT NSW

A summary of the issues raised by Industry and Investment NSW (I&I NSW) are provided below with a full copy of the submission included in **Appendix A**.

2.2.1 Comment 1

Mining Title:

The proposed modification is within Mining Lease 1397, 1450 and 1469 as well as Assessment Lease 13. I&I NSW Mineral Resources understands that no additional mining titles will be required by the Proponent for the proposed modification.

Response

As presented in Figure 1 and as noted in Section 4.3.2 of the EA the proposed Modification lies entirely within Bengalla’s existing Mining Lease 1397, 1450 and 1469 as well as Assessment Lease 13. These Mining Leases are valid for the life of the Modification, with the exception of Assessment Lease 13 which will require renewal in 2011. Bengalla will ensure that valid Mining Leases are maintained throughout the life of their mining operations.

Section 75V of the EP&A Act provides that an application for a mining lease cannot be refused if it is necessary for carrying out an approved project (i.e. a project to the extent that it is approved under Part 3A) in any event.

2.2.2 Comment 2

Mining Operations Plan:

I&I NSW Mineral Resources require a revised Mining operations Plan (MOP) be submitted by the proponent and approved by I&I NSW Mineral Resources prior to commencement of any activities proposed by this Modification.

Response

- As noted in Section 4.3.2 and Table 11 Reference 9 of the EA, should this Modification be granted, Bengalla, in consultation with I&I NSW, will submit a revised Mining Operations Plan (MOP) prior to the commencement of any activities proposed by this Modification.
- BMC has commenced consultation with I&I NSW regarding the development of a revised MOP.

2.2.3 Comment 3

Rehabilitation Plan:

I&I NSW require the following issues to be addressed by the proponent in presenting a Rehabilitation Plan to the satisfaction of the Director-General I&I NSW.

- a) Domain Specific Objectives: Identify the functional domains of the project and describe the rehabilitation objectives for each domain.*
- b) Completion Criteria: Propose strategic completion criteria for each domain having regard to the various phases of rehabilitation (i.e. Decommissioning, Landform Establishment, Growth Medium Development, Ecosystem Establishment, Ecosystem Development) and outline the proponent's commitment to progressive rehabilitation.*

I&I NSW recommend that the following conditions be incorporated into the planning approval, if granted:

The Proponent must prepare and implement a Rehabilitation Plan to the satisfaction of the Director-General I&I NSW. The Plan must:

- a) Be prepared in accordance with I&I NSW guidelines and in consultation with relevant agencies and stakeholders;*
- b) Be submitted and approved by the Director-General I&I NSW prior to the commencement of construction;*
- c) Address all aspects of rehabilitation and mine closure, including final land use assessment, rehabilitation objectives, domain objectives, completion criteria and rehabilitation monitoring.*

Response

Table 11 Reference 7 of the EA notes that BMC will revise and consolidate its Rehabilitation and Landscape Management Plan and the Landscape Management Plan to incorporate details of this Modification in consultation with I&I NSW, MSC and to the satisfaction of DoP. Bengalla will include the requirements outlined in the above correspondence including domain specific objectives and completion criteria.

2.2.4 Comment 4

Adequate consultation with I&I NSW (Primary Industries Division) did not occur in relation to the value of the identified agricultural resource lands and proposed impacts. I&I NSW (Primary Industries Division) is additionally concerned that the Modification proposal and exhibited EA:

- *Does not identify adequate agricultural compensatory measures or offsets;*
- *May create precedent for future mining disturbance to important agriculture resource lands and related alluvial water resources in the Hunter (including by other mining companies);*
- *Does not adequately identify rehabilitation objectives as required by DoP;*

Response

- Conversation occurred between representatives from DoP and a representative from I&I NSW indicating that I&I NSW (Primary Industries Division) were comfortable with the proposed Modification and that no site visit was required.
- In addition, I&I NSW (Primary Industries Division) noted that they were supportive of a compensatory objective for any loss of Class II Land Capability that may occur as a result of the Modification as an alternative to attempting to recreate or purchase new areas of Class II land.
- Correspondence was received from I&I NSW, dated 26 May 2010, regarding the 2010 Bengalla AEMR Review and also refers to the upcoming Modification. The correspondence requested 'that Bengalla look at selective topsoil and subsoil management, compensatory options (limited of Class 2, but a number of options available for Agricultural compensatory) and the overall Bengalla Land Management Strategy'. This correspondence is presented in Appendix A of the EA.
- Discussions commenced with I&I NSW in September 2010 in relation to reinstating an area of Class II land. One proposition currently being investigated is the amelioration of soils by the application of bio-solids in advance of stripping to improve their quality and handleability.
- BMC will continue to consult with I&I NSW (Primary Industries Division) and are available at any time to provide a briefing and / or site tour of the area proposed to be impacted as a result of the Modification.

2.2.5 Comment 5

Agriculture Resources and Land Use Options:

The EA provides detailed information on the soils within the proposed extension of the Bengalla overburden emplacement areas and recognises their past land use and value for future topdressing and rehabilitation. Information on agricultural resource values and agricultural impacts is not however, clearly presented.

Response

- Each of the soil types identified in the Soil and Land Capability Impact Assessment, as presented in Appendix F of the EA, the Soil Type Position Descriptions Tables in Section 3.2 identify the historical land use on the associated area along with the current vegetation form and type.
- The area associated with the Southern OEA Extension historically has only been primarily used for grazing and intermittent cropping. As described within Section 8.2 of the EA the establishment of the Muswellbrook to Ulan Rail Line constructed in 1918 forms the southern boundary to the Southern OEA Extension effectively separating it from the existing Hunter River Floodplain and existing agricultural activities. In addition, there are upgrade works being conducted on the adjacent Muswellbrook to Ulan Rail Line further isolating the area from existing agricultural lands hence, limiting the areas potential for effective and productive agricultural use.

2.2.6 Comment 6

Classification Systems:

The objectives of the Soil and Land Capability Assessment include 'describe pre and post mining suitability and capability'. The main EA text, however, only refers to Land Capability and fails to clarify that 'Class II land' (capability) is scarcer and more productive than Class 2 Agricultural Suitability land.

Potential for confusion exists in relation to consideration of alluvial areas vs alluvial soils affected by the proposed modification.

Soil Type 3 (Red Chromosol – Brown Dermosol complex) which covers 12% of the Survey area 1 (South East overburden extension area) is classified as not being an 'alluvial soil' due to it no longer being directly connected to the Hunter alluvial groundwater flows and having developed a soil profile. This distinction and the subsequent notation that only 4.6 ha of the 9.6 ha of Class 1 Agricultural Suitability land comprises "alluvial soils" is a moot point when considering agricultural resource values, potential impacts and the merit of potential offsets.

As noted in section 3.2.4 of Appendix F, soil type 3 comprises a relatively flat alluvial terrace (<1% slope) and was formed by ancient alluvial deposits. Prior to being purchased as part of the Bengalla mining development the site was used for irrigated cropping and its land use options remain identical to those of adjoining "alluvial soil types". Non soil experts and the farming community would typically consider this location to be alluvial lands and its productive value is recognised by its assessment as Class 1 Agriculture Suitability (Class II Land Capability).

Consideration of the potential resource impacts may additionally be skewed by an apparently conservative classification of Agricultural Suitability for the pre mining landscape, whilst that for post mining is optimistic.

The EA identifies Soil Type 5 (Redoxic Hydrosol) as Class 4 Agricultural Suitability which are “Marginal Lands not suitable for periodic cultivation with low to very low levels of production”. There are also usually very significant limits to agriculture use (e.g. shallow soil depth, steep slopes). The soil type comprises an old meander channel of the Hunter River within an alluvial floodplain area and the EA states that it is unlikely to have been cultivated due to the potential water logging.

Restrictions on agricultural use and periodic cultivation would only be significant if the depression was subject to frequent and prolonged flooding or high flow rates and scouring. Alluvial soils are typically free draining and the main obstruction to site drainage appears to be the old conveyor belt road that is post mining feature. The alluvial origin of the soils mean that its nutrient levels are likely to be high and photos of this soil landscape (plate 3.12) show lush pasture growth. I&I NSW (Primary industries Division) consequently suggests that a more appropriate classification of this pre mining soil landscape would be as Class 2 / 3 Agricultural Suitability.

I&I NSW (Primary Industries Division) similarly suggests that rehabilitated (post mining) areas with a relatively shallow topsoil profile on a slope of 10 – 18%, and which are vegetated with a mix of tree species and persistent, but not highly productive pasture species (as is typical of current mining rehabilitation) would be more appropriately classified as Class 4 Agricultural Suitability than Class 3.

Response

- A detailed Soil and Land Capability Impact Assessment (GSS Environmental 2010) has been prepared for the Modification and is presented in Appendix F with a summary provided in Section 6.3 of the EA. Section 4.1 of the Soil and Land Capability Impact Assessment presents a succinct section on the relationship between land capability and agricultural suitability. Sections 4.2 and 4.3 of this report separate the two classification systems and provide a detailed explanation into the recorded results under both the land capability and agricultural suitability classifications systems respectively. As a land capability assessment was the focus of the report all references to the agricultural suitability classification system and how they interact with land capability were addressed within this section of the assessment.
- The author of the Soil and Land Capability Impact Assessment has confirmed that soil type 3 (Red Chromosol – Brown Dermosol complex) has been correctly classified.
- The author of the Soil and Land Capability Impact Assessment disagrees with the comment above that Redoxic Hydrosols (Class 4 Agricultural Suitability) should be more appropriately classified as Class 2 – 3 Agricultural Suitability. The Redoxic Hydrosols are associated with the old meander channel of the Hunter River.

The aerial photograph on Figure 4.3 of the Soil and Land Capability Impact Assessment shows the Class 3 land associated with the Redoxic Hydrosols connecting to existing farmland where the effects of the intermittent water logging is visible on cropping and pasture growth and consequently would restrict tractor access during sowing and harvesting. In addition, drainage from this area has been obstructed by the adjacent rail line.

- The author of the Soil and Land Capability Impact Assessment disagrees with the above statement that the recreation of Class 2 Agricultural Suitability on the Southern OEA Extension is unrealistic and would be more appropriately classified as Class 3. The indicative location of the area proposed to be recreated to Class 2 Agricultural Suitability will be relatively flat and contain sufficient amounts of high quality Black Vertosol topsoil that would be capable of supporting regular dry land cropping or pasture establishment and would provide a relatively high quality seedbed. Section 6.3.4 of the EA notes that suitable topsoil from each of the soil types within the Southern OEA Extension and the Western OEA will be stripped prior to overburden emplacement.
- Table 11 of the EA notes that a procedure detailing specific topsoil stripping methods will be developed in consultation with I&I NSW to ensure topsoil stripped from the Southern OEA Extension is utilised beneficially within the rehabilitation activities of the existing OEA.

2.2.7 Comment 7

Resource Significance:

While this Class 1 lands on the site are separated from more extensive arable areas by the railway line embankment, I&I NSW (Primary Industries Division) considers that they are of sufficient size and potential to remain a valuable asset, particularly when considered in conjunction with adjoining grazing lands and the Bengalla homestead complex. Land use options include lucerne production, specialist calf rearing, horticulture or equine establishments. Fodder production on arable, alluvial lands is additionally critical for supporting optimal sustainable use of adjoining Class 3 and 4 grazing lands which typically have more seasonal growing periods.

Although overlooked in the EA the immediate proximity of the Bengalla homestead complex and related infrastructure (residence, sheds, access, etc) is highly relevant to the scope for agricultural use of these highly productive premium soils, post mining.

Response

Section 8.2 within the EA addresses the site suitability and potential agricultural resource of the Southern OEA Extension in regard to past and future activities and the areas limited potential for effective and productive agricultural activities. The establishment of the Muswellbrook to Ulan Rail Line constructed in 1918 forms the southern boundary to this area effectively separating it from the existing Hunter River Floodplain. In addition, there are upgrade works being conducted on the adjacent Muswellbrook Rail Line further isolating the area from existing agricultural lands.

2.2.8 Comment 8

Agricultural Impacts:

Appendix F of the EA indicates that 6.7 ha on a bench between the 230 m and 240 m contour levels might be rehabilitated to Class 2 agricultural suitability. I&I NSW (Primary Industries Division) does not support this proposal. This site, would be isolated from water sources and power supplies necessary for irrigation that is essential to support high levels of production and cropping. Being located in an exposed position near the top of the overburden area would also introduce other constraints to productive agricultural use including increased exposure and evaporation, high levels of subsoil drainage and isolation from road access for cultivation, cropping equipment and supervision. Hence even if it were possible to construct slopes of less than 3°, topsoils and to selectively save the alluvial soil types and replace them to a depth of at least 100 mm, it is very unlikely that the site could comprise Class 2 agricultural suitability. Similar level areas of good soils on hilltops are more typically identified as being Class 3 agricultural suitability (i.e. suitable for grazing).

The EA also notes that the majority of Survey Area 1 would be rehabilitated to Class 3 Agricultural Suitability (Class V land capability), I&I NSW (Primary Industries Division) cautions that the proposed 10 – 18% slope combined with a relatively shallow topsoil layer of mixed origins would not be suitable for being cultivated. Nor would it be well suited for improved pastures and it would not sustain high levels of grazing. Consequently post mining at least 45 ha (86%) within Survey Area 1 is more likely to comprise Class 4 Agricultural Suitability (Class VI Land Capability). This result would also be consistent with the EAs (Appendix F) pre mining assessment of Soil Type 1 (Red Sodosol) as Class 4 Agricultural Suitability (and Class VI Land Capability I due to its 'steeper' slopes of 5 – 10%, erosion risk and predominance of native grasses.

Response

The author of the Soil and Land Capability Impact Assessment has reconfirmed that the indicative location of the area between 230 and 240 m can be appropriately classified as Class 2 Agricultural Suitability and Class III Land Capability as:

- Agricultural Suitability Class 1 soils are to be selectively stripped and stored for this purpose;
- It is proposed that a sufficient amount of good quality Black Vertosol topsoil be overlayed onto a suitable subsoil;
- Success using this approach has occurred on other mines in the Hunter Valley e.g. Hunter Valley Operations Mine;
- The final landform of the entire mine landscape will allow for accessibility of agricultural input e.g. biosolids, seed and fertiliser; and
- The local climate is suitable for dry land pasture production and cropping.

The Soil and Land Capability Impact Assessment, as presented in Appendix F of the EA, determined that rehabilitated areas on the existing OEA have successfully been managed to achieve areas of Class 3 Agricultural Suitability.

With appropriate management and mitigation measures as outlined in Section 6.3.4 of the EA the rehabilitation of the balance of the Southern OEA Extension to a post mining condition of Class 3 Agricultural Suitability is considered achievable.

2.2.9 Comment 9

While topsoil stripping recommendations for each soil type are given, no specific advice is provided on selective topsoil management or emplacement of the higher quality agricultural soils. This is contrary to the objectives of the Soil and Land Assessment (see section 16.3.3 of the EA and section 1.2 of Appendix F). It also fails to support the indicative proposal to re-instate highly productive arable lands. The EA also fails to provide specific rehabilitation recommendations in relation to re instating or rehabilitating agricultural lands.

Response

- Table 11 Reference 1 of the EA notes that BMC will develop a procedure detailing specific topsoil stripping methods in consultation with I&I NSW to ensure that topsoil stripped from the Southern OEA Extension is utilised beneficially within the rehabilitation activities of the existing OEA.
- Section 5.2 of the Soil and Land Capability Impact Assessment identifies that where topsoil stripping and transportation is to occur a number of handling techniques are recommended. Section 6.3.4 of the EA notes that suitable topsoil from each of the soil types within the Southern OEA Extension and the Western OEA will be stripped prior to overburden emplacement. To ensure that better quality topsoil is not mixed with the inferior subsoil, selective soil stripping practices will occur.

2.2.10 Comment 10

Agricultural Recommendations:

Mitigatory / compensatory offsets are expected for the proposed complete and permanent loss of a total of 11 ha of high quality agricultural lands (soil types 3, 4, 5) within the undisturbed residual areas affected by the proposed South Eastern overburden extension and the associated permanent downgrading of future land use options.

Bengalla Mining Company's commitment in Table 11 of the EA to compensate for impacts on Class II (Land Capability) lands is supported, however I&I NSW (Primary Industries Division) does not support reliance on indicative plans to rehabilitate a smaller extent of land near the top of the overburden emplacement. Reliance on undisclosed proposed future modifications to the existing land management plan is also unsatisfactory.

Similar to biodiversity offsets compensatory offsets for the loss of agricultural resources might include specific proposals to enhance the agricultural management of equivalent highly productive farmlands within the control of the mining company or to purchase and ensure appropriate long term management of additional farming lands as an offset.

I&I NSW (Primary Industries division) also recommends that topsoil from the highly valuable soil types (3, 4 and 5) is selectively managed and re used to support maximum future agricultural production rather than being included in the generic mix.

Response

- As noted in Table 11, of the EA Bengalla will update the Rehabilitation and Landscape Management Plan, Landscape Management Plan and Land Management Plan in consultation with I&I NSW, MSC and to the satisfaction of DoP. Such revisions will, subject to DoP approval, include any of the technical recommendations included in the Soil and Land Capability Impact Assessment. Bengalla looks forward to working with I&I NSW (Primary Industries Division) to ensure the best land management outcome is achieved with the limited soil resource which will become available.

2.3 NSW OFFICE OF WATER

A meeting was held with Fergus Hancock of NOW on 14 February 2011 with representatives from BMC, Hansen Bailey, AG&E and Golder Associates in attendance to discuss the issues in NOW's submission. This response has been revised to provide further clarification to issues following the meeting. A copy of this response has been provided to NOW.

2.3.1 Comment 1

The NSW Office of Water has reviewed the Environmental Assessment for the above modification of development consent. NOW advises that the modification area comprises part of the Hunter Regulated Alluvial Water Source, governed under the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009 (WSPHUAWS), and as a result, protection to the water source is governed under the water management principles (S.5 Water Management Act 2000) and rules of the WSPHUAWS.

Response

Noted.

2.3.2 Comment 2

The EA fails to adequately describe the geomorphological and depositional history of the floodplain pocket on which out of pit spoil dumping is proposed. However, the groundwater impact assessment in Appendix H to the EA indicates extensive gravel and sand lenses form the majority of the aquifer, which provides confirmation that the alluvial material is derived and connected to the Hunter River. Previous mining interception and removal of alluvial materials has been strictly limited to tributary deposits, with a general prohibition on excavation through or spoil dumping on the alluvial floodplain.

Response

The Groundwater Impact Assessment presented in Appendix H of the EA describes the lithology of the alluvium and alluvial aquifers. The drilling of the two monitoring bore holes and four stratigraphic holes provided sufficient information into the alluvial deposits within the Southern OEA Extension. Further to this the Soil and Land Capability Impact Assessment as presented in Appendix F of the EA provides a description of the current alluvial soils (Black Vertosols and Redoxic Hydrosols) and the old alluvial soils (Red Chromosol – Brown Dermosol Complex) deposited over 5,000 years ago.

2.3.3 Comment 3

The specific impact of greatest concern to NOW relates to aquifer compaction in the Hunter Regulated Alluvial Water Source, and resultant sterilisation of the alluvial water source to productive use.

This is not addressed in the EA. NOW is not in a position to provide advice as to means to avoid alluvial compaction and consequential loss of porosity and groundwater storage in the alluvium.

Response

In order to address NOW's concern regarding the possible impact the proposed Southern OEA Extension might have on the aquifer BMC has subsequently engaged Golder & Associates Pty Limited (a specialist environmental engineering firm based in Brisbane) to conduct a hydrogeological assessment on the effects of overburden placement on the area. A full copy of the report is presented in **Appendix C**.

Calculations were conducted based on the mine plan presented in the EA to determine the impacts on permeability of the alluvial aquifer. This assessment concluded that for the applied overburden load the resultant settlement would be 0.014 m³ per m³ of aquifer and that for an existing void ratio in the range of 0.25 to 0.35, the corresponding reduction in permeability through the aquifer would be in the order of 15 -20 %.

It is noted that the alluvial aquifers are inherently variable in their properties from place to place and the natural variability in the aquifer permeability is likely to far exceed the possible 15-20 % variation in permeability as a result of the Southern OEA Extension. Furthermore a reduced permeability of 0.8×10^{-4} m/s (a 20% reduction of the nominal figure presented in the Groundwater Impact Assessment (Appendix H of the EA) still represents a highly permeable material suitable for use as a water supply aquifer.

With respect to sterilisation of the aquifer, it should be noted that the alluvial gravels in the embayment area that will underlie the spoil will remain in hydraulic continuity with the gravels of the main floodplain area, that is, the area outside of the spoil footprint. As such the alluvial aquifer underlying the spoil is not sterilised and water supply bores drilled at the toe of the spoil or further into the floodplain will be able to access the groundwater resource in the gravels underlying the spoil. Groundwater will flow from the gravels under the spoil to the bore(s) and therefore the section of aquifer under the spoil will not be sterilised as a groundwater resource.

As illustrated by Figure 4 in Appendix C of the Golder's report, the total capacity of the area beneath the proposed emplacement to store additional water at times of high river level is governed by the thickness and porosity of unsaturated gravel above the water table, both of which will be slightly impacted by the settlement under the applied load. This is illustrated in the analysis from June 2010 which showed approximately 3-6 m of available unsaturated gravel to store additional water, 0.5 m less than maximum levels measured since 2005. The height of water level rise for a given inflow from the river may be slightly more than is currently the case due to reduced porosity, however the likely maximum reduction in porosity will be in the order of 8-10%. Thus, the change in water level for a given inflow of water will be up to 8-10% greater.

Golders assessment concluded that the proposed overburden emplacement associated with the Southern OEA Extension will have negligible effects on the permeability and porosity of the gravel aquifer which occurs under the expanded footprint area of the Southern OEA Extension. It can further be concluded that the overall impact on the hydrogeological characteristics of the Hunter Regulated Alluvial Water Source (aquifer compaction, sterilisation, loss of porosity, loss of groundwater storage) would be negligible.

2.3.4 Comment 4

NOW, in conjunction with Industry and Investment NSW (IIN), as a policy principle opposes sterilisation of alluvial groundwaters and floodplains by mining activities. The account framework of the WSPHUAWS, water quality and geomorphological integrity of the riverine system should be protected to the greatest extent possible. This is a general obligation to any approval or activity authorised under the Water Management Act 2000, and must be considered by NOW in terms of any approval(s) which are required to install or operate water supply, drainage or flood works.

As the EA has not clarified whether any of the above approvals will apply to the proposal, NOW cannot complete its assessment of the proposal. Should any of the above approvals be required to construct the out of pit spoil dumps, NOW may be unable to issue any such approval. Therefore, NOW requires clarification as to the approvals required to the application, and protection measures to the alluvial aquifer on the floodplain terrace.

Response

The Southern OEA will impede 9.6 ha of Class II Agricultural Land that has previously been dissected from the more extensive Hunter River Floodplain by the construction of the Muswellbrook to Ulan Railway Line.

As a result of the previous fragmentation of this relatively small pocket of land, the impacts upon agricultural productivity in the region will be negligible. The Surface Water Impact Assessment (WRM 2010) has considered the potential for the Modification to result in additional flooding impacts. This assessment has confirmed that there will be no significant loss in floodplain capacity (this area taking up only 0.3%) in the vicinity of this Modification, and as such there will be no significant backup of floodwaters.

Appendix H of the EA provided an assessment of potential for seepage from the spoil to the alluvial gravels for both an in-situ and a compacted silty clay base of the spoil pile. It must be stressed that the results of the analyses which are repeated in **Table 3** were for non-rehabilitated spoil. BMC will progressively rehabilitate the spoil by contouring, placing stockpiled topsoil and re-vegetating. This will further significantly reduce rainfall infiltration into the spoil and hence infiltration from the base of spoil to the alluvial gravels. An assessment has been made of the rate of infiltration once the spoil is completely rehabilitated and the results are also presented in **Table 3**.

The Geochemical Assessment completed as part of the EA confirmed that for the materials to be placed in the Southern OEA and the management measures to be employed (including adherence to the limit of rejects emplacement), limited salinity generation from runoff is likely. However until rehabilitation is completed, runoff water from this area will be diverted and captured within the mine's closed water management system. Additionally, BMC will rip and seal the natural surface in the vicinity of the Southern OEA to assist in this process prior to the emplacement of overburden.

The data indicates that once the spoil is rehabilitated the rate of infiltration will be very low and is likely to be less than under natural conditions as runoff will be greater from the vegetated spoil than from the Class II Agricultural Land in the vicinity of the Southern OEA. However, as discussed, the Hunter River and not rainfall is the major recharge source of the alluvial gravel.

Table 3
Seepage from Spoil Southern Extension Area Extension

Clay Alluvium Permeability (m/day)	Rainfall Infiltration (m/day)	Flux from Base of Spoil		Total Predicted Seepage		Comment
		(m ³ /day/300m)	(m ³ /day/m ²)	(m ³ /day)	(L/s)	
0.004 (In-situ Silty Clay Base)	1.76 x 10 ⁻⁴ (10%)	0.031	1.03 x 10 ⁻⁴	11	0.13	Non-rehabilitate
	2.64 x 10 ⁻⁴ (15%)	0.046	1.53 x 10 ⁻⁴	17	0.2	Non-rehabilitate
	3.52 x 10 ⁻⁵ (2%)	0.0062	2.1 x 10 ⁻⁵	2	0.02	Rehabilitated Spoil
8.6.0 x 10 ⁻⁵ (Compacted Silty Clay Base)	1.76 x 10 ⁻⁴ (10%)	0.014	4.67 x 10 ⁻⁵	5	0.06	Non-rehabilitated
	2.64 x 10 ⁻⁴ (15%)	0.015	5.0 x 10 ⁻⁵	5.5	0.06	Non-rehabilitated
	3.52 x 10 ⁻⁵ (2%)	0.0028	9.3 x 10 ⁻⁶	1	0.01	Rehabilitated Spoil

Section 4.3.4 of the EA describes the *Water Management Act 2000* and outlines the connection to the Water Sharing Plan for the *Hunter Unregulated and Alluvial Water Sources 2009*.

Section 4 of the EA describes the requirements for subsidiary licences and approvals as a result of this Modification. Further to this, legal advice from Mark Leeming SC (see **Appendix D**) confirms that Section 75U of the EP&A Act operates to remove the need for a number of approvals for an "approved project". These include a "controlled activity" approval (the "carrying out of work ... in or under waterfront land" where waterfront land is (relevantly) defined to include "... the bed of any river, together with any land lying between the bed of the river and a line drawn parallel to and the prescribed distance in land of the highest bank of the river ... where the prescribed distance is 40 metres"). The Bengalla Project will be "an approved project" to the extent of this modification application (which is being assessed under section 75W EP&A Act). Therefore, by virtue of section 75U EP&A Act no controlled activity approval will be required for it.

2.4 NSW HERITAGE COUNCIL

2.4.1 Comment

Reference is made to a letter dated 7 December 2010 inviting comment of the Environmental Assessment for the above project prepared by Hansen Bailey on behalf of the Bengalla Mining Company (Coal & Allied). The modification is proposed to maximise the mine's overburden storage capacity within the existing Development Consent Boundary. The existing Overburden Emplacement Area (OEA) would be extended to the south-east with permanent rehabilitation of the northern face of the existing OEA to occur by 2016, and permanent rehabilitation of the eastern face, which is visible from Muswellbrook, to continue as quickly as possible. An already approved temporary Overburden Emplacement Area would be relocated further west, away from areas to be mined. The proposed modifications would also allow the acceleration of mining operations within the Wantana Extension area to align with the existing mining area, with no overall increase in total annual production from Bengalla.

The EA prepared by Hansen Bailey deals with heritage issues in Section 6.9 and in a separate report Appendix L Non-Indigenous Heritage Impact Assessment prepared by Archaeology Australia in July 2010. The EA notes that two heritage buildings exist in the vicinity of the Bengalla Mine, the Bengalla Homestead and Overdene Homestead. The assessment concluded that no significant impact on Overdene Homestead would occur as a result of this Modification. The Bengalla Homestead has previously been assessed as being of high local and regional significance. It represents early settlement and continued occupation and development of rural industries. Whilst this may be the case, the Heritage Branch notes that 'high local' and 'regional' significance are incorrect terms which do not conform to Heritage Council guidelines or terminology.

The fence line of the Bengalla Homestead is noted to be approximately 50 m from the Southern OEA Extension and has been identified by Archaeology Australia as being potentially impacted upon by this Modification. A physical site inspection of the Southern OEA Extension identified other potential indirect impacts on Bengalla Homestead such as:

- Increased traffic may result in increased dust settlement within the Homestead. Additionally, traffic vibration may impact on the Homestead footings;
- Increased catchment area and steep slopes may increase the risk of flooding in the immediate vicinity of the Homestead; and
- Decreased visual integrity as a result of the proximity of the proposed Southern OEA Extension.

The Assessment determined that there will be no significant direct impacts on any heritage items resulting from the proposed Southern OEA extension. In addition, no significant impacts on any non-indigenous heritage items are predicted as a result of the Western Overburden Emplacement Area. Section 6.9.4 of the EA indicates that Bengalla will continue to comply with the mitigation and management measures for the Bengalla Homestead in accordance with the Bengalla EHMP, Rio Tinto Environmental Performance Standard 9 Land Use Stewardship and CNA Environmental Procedure 2.1 Cultural Heritage Management and as described in the Bengalla SEE as previously approved by the Department of Planning.

The Statement of Commitments in Section 7 of the EA also indicates (Commitment No. 4) that the measures recommended by the specialist heritage report and in Section 6.9.4 would be implemented.

Following review of the proposed modification and the supporting documents it is considered that, based on the results of the Heritage Impact Assessment, no specific mitigation is required for non-Indigenous heritage. The SOC's provided in Section 7 of the Environmental Assessment are considered adequate to manage the project in the event the modification is approved.

Response

Noted.

2.5 MUSWELLBROOK SHIRE COUNCIL

2.5.1 Comment

I refer to the above and to recent telephone conversations and advise that Council is waiting on an amended Statement of Commitments (SoC) from the Proponent. The Proponent has indicated that the SoC is likely to address many of the outstanding concerns raised by Council in preliminary discussions but will not be available until sometime after 7th February 2011.

Council is not in a position to make a detailed submission until it has all information, including any amended SoC before it.

Council simply submits that at this stage, it is not in a position to support the Application but will review its position after all material is provided to it and on that basis would welcome an opportunity to make a further more detailed submission when that further information is to hand.

Response

Noted.

3 NON – GOVERNMENT ORGANISATIONS

3.1 HUNTER-CENTRAL RIVERS CATCHMENT MANAGEMENT AUTHORITY

The Hunter-Central Rivers Catchment Management Authority (CMA) has reviewed the information provided and offers the following comments for your consideration. The comments are provided in the context of the impact of the Project on the Hunter-Central Rivers Catchment Action Plan (CAP) which is available on the CMA's website <http://www.hcr.cma.nsw.gov.au>.

3.1.1 Comment 1

Hunter-Central Rivers CAP

The Hunter-Central Rivers CAP is a whole of government approach to natural resource management which has been endorsed by the NSW Government. As such it should be taken into consideration in all planning decisions that have an impact on natural resources.

Response

- Noted, the Hunter-Central Rivers CAP is a NSW Government endorsed plan, and should be taken into consideration in planning decisions. The Part 3A process does not however require an assessment under the *Native Vegetation Act 2003* (NVA).

3.1.2 Comment 2

Native Vegetation

The CAP guiding principle, "Where practical, future development (e.g. residential, industrial) should be restricted to primarily cleared land. Where the loss of vegetation is unavoidable, native vegetation offsets should be used", is strongly underpinned by the objects of the Native Vegetation Act, 2003, which included prevention of "broad-scale clearing unless it improves or maintains environmental outcomes".

It is acknowledged that this proposal is being assessed under Part 3A of the Environmental Planning and Assessment Act 1979 and that the Native Vegetation Act 2003 does not apply in this circumstance. Nevertheless, the CMA considers that the principles of the CAP and the Act should still apply.

The information provided regarding the native vegetation assessment of the Western Overburden Emplacement Area does not include an assessment of native groundcover. A native groundcover assessment is a vital component in the determination of the condition of the native vegetation. The CMA requests that a ground cover assessment be undertaken and to determine the condition of the native vegetation. If the area has greater than fifty percent native groundcover (NVA Section 20) under the assessment criteria (NVA regulation clause 42) an offset is appropriate for the removal of native vegetation for the Western Overburden Emplacement Area. The Southern Overburden Emplacement Area does not require an offset based on the data presented in the report.

Response

- The Hunter-Central Rivers CAP includes targets for terrestrial biodiversity. The Modification is consistent with the objective of “Where practical, future development (e.g. residential, industrial) should be restricted to primarily cleared land.. ” as both the Southern OEA Extension and the Western OEA are located in low diversity derived native grasslands and exotic pasture.
- Section 3.3 of the EA describes how through extensive mine planning options analysis conducted for the Modification the footprint of the Western OEA has been defined to avoid any potential impact to sensitive ecology.
- As a component of the Ecological Impact Assessment (Cumberland Ecology 2010) a groundcover assessment was conducted for the Western OEA using the BioBanking Assessment methodology (DECC 2009).
- Although biodiversity offsets are not considered to be of relevance to the Modification, the field assessment methodology provides a comprehensive assessment of vegetation condition and habitat value. Results from the assessment indicate the grasslands present within the Western OEA contain less than 50% native groundcover, no habitat features such as logs or hollows and 0% canopy coverage. As such, clause 42 of the NVA is satisfied, although not generally relevant for the Part 3A assessment pathway.

3.1.3 Comment 3

The on ground native vegetation assessment included an investigation for the presence of Prassophyllum sp. Wybong. Please note this plant flowers in spring hence a targeted survey in March is highly unlikely to identify this plant.

You should be aware that there is a possibility of the presence of White Box Yellow Box Blakely's Redgum Woodland under the NSW Threatened Species Act and the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 please utilise the following <http://www.environment.nsw.gov.au/resources/native/box-gumIdGuidelines.pdf> for the identification and categorisation purposes. The presence of a derived native grassland as classified under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 will need to be investigated.

Response

- The Hunter-Central Rivers CMA has identified the potential for *Prasophyllum sp. Wybong* to potentially occur in the habitats of the Western OEA. *Prasophyllum sp. Wybong* is a cryptic species that is almost very difficult to detect when it is not in flower, generally in spring. As, the field survey for the Ecological Impact Assessment was conducted in March 2010, and therefore was not considered appropriate for the detection of this species. As a result an additional flora survey was conducted in the study area and surrounds on 13 October 2010 as part of a broader survey for this species and other cryptic spring flowering species including *Diuris tricolor*. None were identified during the October field surveys.

- Weather conditions had been very favourable for plant growth in the weeks prior to the survey. No evidence of *Prasophyllum* sp. *Wybong* or other cryptic spring flowers were recorded in the study area or surrounds, despite careful targeted searches using a meandering transect (Cropper 1993) with two ecologists walking the length of Dry Creek and surrounding area, including extensively within the footprint of the Western OEA.
- Parts of Bengalla, including areas proximate to the Western OEA have been identified as areas of Native Grassland that has been derived from the past clearing of Box Gum Woodland, referred to as 'Derived Grassland. White Box – Yellow Box Blakeley's Red Gum Grassy Woodland (Box Gum Woodland), is listed as a critically endangered ecological community (CEEC) under the *NSW Threatened Species Conservation Act 1995* (TSC Act) and *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- The Western OEA occurs on heavily modified soil profiles and as such contains low diversity grassland with exotic pasture and only very hardy native grasses and few herbs. There are no Box trees and the grassland present did not meet the EPBC Act criteria due to a lack of native herbs. The Western OEA will not impact on any Box Gum Woodland or Derived Grassland.
- As discussed in Section 6.8.3 of the EA both the footprint of the Southern OEA Extension and the Western OEA will not impact on any species or community listed under the TSC Act or EPBC Act.

3.1.4 Comment 4

Offsets

The CMA's position is that the Environmental Outcomes Assessment Methodology (EOAM) used in assessing native vegetation clearing under the Native Vegetation Act 2003 or BioBanking should be used to determine offsets to achieve "improve or maintain".

If the proposed Western Overburden Emplacement Area is found to be above low condition, the CMA strongly recommends that the offset strategy is consistent with the DECCW's "Principles for the use of biodiversity offsets in NSW including;

- *Offsetting requires additional management or increased security. Factors to consider include removal of threats, time-lag effects, and the uncertainties and risks associated with actions such as revegetation. Offsets should be agreed prior to the impact occurring.*
- *Offsetting should only proceed if an appropriate legal mechanism or instrument is used to permanently secure the area and required actions.*
- *Offsets should be based on a qualitative assessment of the loss of biodiversity from the clearing or other development and the gain in biodiversity from the offset. The methodology must be based on the best available science, be reliable and used for calculating both the loss from the development and the gain from the offset.*

Response

- No further survey, additional mitigation measures or offsets are considered to be required, beyond those described in the Ecological Impact Assessment. As no Endangered Ecological Communities (EECs) or woodland will be removed, offsets are not considered to be required to compensate for the loss of low diversity grassland and exotic pasture.

3.1.5 Comment 5

Riparian Health and Groundwater

The CMA supports comments from the NSW Office of Water regarding potential impact of the extension has on alluvial aquifer on the floodplain terraces.

The proposal is not consistent with the CMA guiding principles for mining and extractive operations to provide adequate buffers between mining activities and surface/alluvial aquifers, rivers and freshwater wetlands under the Hunter-Central Rivers CAP.

Several CAP guiding principles apply to this component including;

- *“all activities within groundwater areas should ensure the long term sustainability of the ecosystems supported by groundwater”*
- *“The end mining landform, particularly its stability and ability to intercept water (runoff and groundwater) should take into account the development, and progressive implementation of coal mining post closure management plans and site rehabilitation programs for saline groundwater and surface water, including derelict mine sites”*
- *Adequate buffers should be maintained between mining activities and adjacent surface water/alluvial aquifers. The CMA recognises the legislative framework under which mining operations function but also promotes the implementation of controls that go beyond those legislative requirements”.*

Response

- The Geochemical Impact Assessment (RGS Environmental 2010) prepared for the Modification determined that the risk of any significant impacts on water quality resulting from the leachate from overburden material to be very low.
- To ensure that the groundwater is appropriately monitored in the vicinity of the Southern OEA Extension, Section 6.5.4 and Table 11 of the EA describes Bengalla’s commitment to the ongoing monitoring of SMB1 and SMB2 with both groundwater bores to be incorporated into the regular environmental monitoring program at Bengalla to ensure the long term preservation of the groundwater network in the area. Monitoring of SMB1 and SMB2 has commenced with the results to be presented going forward in Bengalla’s Annual Environmental Management Report.
- Section 6.11 of the EA notes that Bengalla will continue to comply with its already approved Rehabilitation and Landscape Management Plan in accordance with DA 211/93. The Rehabilitation and Landscape Management Plan includes preliminary details of the Final Void Management Plan and Mine Closure Plan.

- Should this Modification be granted Bengalla in consultation with I&I NSW will submit a revised MOP prior to the commencement of any activities proposed by this Modification.
- Table 11 Reference 7 of the EA notes that BMC will revise and consolidate its Rehabilitation and Landscape Management Plan and the Landscape Management Plan to incorporate details of this Modification in consultation with I&I NSW, MSC and to the satisfaction of DoP.
- The OEAs, in particular the Western OEA, have been set back from Dry Creek and the Hunter River by more than 100m. This 100m set back is considered adequate to satisfy the guidelines for controlled activity works in First Order Streams, as published by the NSW Office of Water and DECCW (DWE (NSW) 2008). Cumberland Ecology believes that a 100m buffer is adequate for the protection of the gentle slopes of the Hunter Valley floor adjacent the proposed OEAs.
- Section 6.8.4 of the EA notes that appropriate erosion and sediment control measures will be implemented between Dry Creek and the Western OEA to limit any impacts to this drainage line.

3.2 CONSTRUCTION FORESTRY MINING AND ENERGY UNION (MINING AND ENERGY DIVISION) NORTHERN DISTRICT BRANCH

3.2.1 Comment

In Summation

The relocation of the approved Western OEA will result in a visually less sensitive landform to that currently approved and will result in a reduced amount of future overburden material re-handling which will ultimately lead to improved air quality impacts from Bengalla.

The creation of the Southern OEA Extension once fully commissioned will screen these existing and future operations both within the Wantana Extension area and the main operation from sensitive receivers located to the east of Bengalla and reduce the visual and acoustic impact of the operation.

Based on comparative analysis of the key elements detailed in the Bengalla Coal Mine Statement of Environmental Effects, it is considered the Modification Activities to build on the attributes of existing project approval.

The Union on balance supports the Bengalla Coal Mine Modification 4, Reference No: DA 211/93 MOD 4.

Response

Noted.

3.3 MUSWELLBROOK SHIRE LOCAL AND FAMILY HISTORY SOCIETY INC

3.3.1 Comment 1

The site inspection was carried out when there was heavy grass cover and nil ground visibility.

Response

- A detailed desktop review including an analysis of historical research was used to indicate the likely location of historical relics. The assessment indicated that there was nothing recorded to suggest the presence of any relic within the footprint of the Southern OEA Extension or the Western OEA.
- The methodology implemented for the field assessment included three transects on foot across the survey area which failed to identify the presence of any historical relics or the requirement to conduct any further assessment of the area.
- No exotic vegetation (apart from grasses and weeds) was located within either of the Survey Areas to indicate the presence of possible historical sites.
- The area also has the potential to be affected by intermittent flooding which has further reduces the likelihood of the presence of any past or present relics.

3.3.2 Comment 2

The document does not give a clear indication of how close the final Southern Overburden Emplacement Area Extension will be to the homestead complex.

Response

- The Non Indigenous Heritage Impact Assessment presented in Appendix L of the EA depicts on Figure 1 the location of the Bengalla Homestead with respect to the proposed Modification.
- In addition the text on page 11 of the Non Indigenous Heritage Impact Assessment (Archaeology Australia 2010) describes the location of the Bengalla Homestead fence to be located between 50 to 80 m east of the proposed Southern OEA Extension.
- Section 6.9.3 of the EA adopts the lesser of the predicted distances between the Southern OEA Extension and the Bengalla Homestead fence of 50 m to conservatively ensure that appropriate management measures are implemented to facilitate the long term preservation of the Bengalla Homestead.

3.3.3 Comment 3

The meaning of relic in the document needs to be updated to reflect the recent changes to the Heritage Act 1977.

Response

Noted.

3.3.4 Comment 4

The effect of dust on the external parts of the buildings and the garden have been overlooked.

Response

Mining has previously occurred in similar proximity to Bengalla homestead. The management plans and monitoring protocols in place have ensured minimal impact on the property. Any foreseeable impacts going forward are considered to be minor and will be managed in accordance with the existing approved Bengalla European Heritage Management Plan (Archaeology Australia 2008).

3.3.5 Comment 5

The measures to be taken if vibration effects the buildings is not stated.

Response

- As described in Section 6.2.3 of the EA, no additional blasting impacts will arise as a result of this Modification. The Modification will have no effect on mining methods, overburden removal, coal extraction or blast locations and parameters.
- Blasting will be conducted no closer to the Bengalla Homestead than previously approved.
- The Non Indigenous Heritage Impact Assessment indicates on page 12 that there is no predicted direct impact on any heritage items that would result from the proposed Southern OEA Extension and Western OEA.
- Indirect impacts on the Bengalla Homestead complex including vibration may impact on the house footings. Any foreseeable impacts are considered to be minor and will be managed in accordance with the existing approved Bengalla European Heritage Management Plan (Archaeology Australia 2008).

3.3.6 Comment 6

The background history of the site is poor and needs to be properly researched.

Response

An extensive background assessment into the historical activities associated with the Bengalla Homestead has been described within the approved Bengalla European Heritage Management Plan (Archaeology Australia 2008). A summary of this historical background has been included on pages 6 and 7 of the Non Indigenous Heritage Impact Assessment.

4 COMMUNITY SUBMISSIONS

4.1 FEENEY

4.1.1 Comment

Please find the following objection in relation to the Bengalla Mine DA 211/93 Mod 4.

The decision pending would certainly impact significantly upon the urban area of Muswellbrook and surrounds. The thought of overburden being dumped on rich alluvial farming land is simply preposterous. This would destroy and decimate farming as we know it. Not to mention the harm to the Hunter River life force to many towns and cities further down the Valley.

I submit my objection to this proposal.

Response

- The environmental impact studies undertaken for this Modification have shown that there will be minor additional impacts to those previously approved for Bengalla.
- The amenity impact assessment criteria have not been predicted to be exceeded at any additional non-mine owned residential receivers.
- The Southern OEA will impact on 9.6 ha of Class II Agricultural Land that has previously been dissected from the more extensive Hunter River Floodplain by the construction of the Muswellbrook to Ulan Railway Line in 1918. As a result of the previous fragmentation of this relatively small pocket of land, the impacts upon agricultural productivity in the region will be negligible. The Surface Water Impact Assessment (WRM 2010) has considered the potential for the Modification to result in additional flooding impacts. This assessment has confirmed that there will be no significant loss in floodplain capacity (this area taking up only 0.3%) in the vicinity of this Modification, and as such there will be no significant backup of floodwaters.

4.2 WEBBER

4.2.1 Comment

Object is lodged to the accelerated mining process by Bengalla as our property is already in Bengalla's ZOA and they already regularly exceed their dust management requirements on our property.

There has been no conclusion with the Webber family from Bengalla with regards to their current exceedances or planned future expansion.

The cumulative effect on our property is already evident being in both ZOA and management zones from two mining companies.

Objection is lodged to the increased timing of the current rehabilitation programme impacting visually on both our homes and our current rural residential subdivision. The same objection is lodged with respect to the extension of the overburden dump in the Wantana area increasing visual impact.

Response

- The author seeks to clarify that the Webber residence is not currently located within the Bengalla Zone of Affection (ZOA).
- Residence ID 12 and Block 90 as depicted on Figure 2 of the EA lies within the ZOA as a result of approved projects associated with other mining companies whereby this property is the subject of acquisition upon request.
- Consultation with private residents in the vicinity of Bengalla occurred with the distribution of the Coal & Allied Community Newsletter Muswellbrook Edition Issue 4 June 2010 and the offer of a Modification briefing. An offer for a Modification briefing was offered to Residence 12 by Bengalla however this offer was politely declined. In addition, notification of the EA being placed on public exhibition was provided to Residence 12 to enable sufficient time for any response to be provided.
- Modelling conducted as a component of the Air Quality Impact Assessment (PAEHolmes 2010) indicates that Residence 12 is predicted to receive maximum (cumulative) PM₁₀ annual average levels of 26 µg/ m³, TSP levels of 63 µg/ m³, depositional dust levels of 1.5 g/m²/month and PM₁₀ 24 hour average levels (Modification alone) of 36 µg/ m³ during 2011 with results decreasing as mining progresses to the west in subsequent years. All predicted results for Residence 12 are below the relevant DECCW impact assessment criteria.
- The Visual Impact Assessment (Integral Landscape Architecture and Visual Planning 2010) presented in Appendix K of the EA determined the assessment of visual impacts of the Modification to be negligible in the vicinity of Racecourse Road (closer to the Modification than Residence ID 12). This is due to the limited scale of changes and similar visual characteristics that will result, in terms of scale and bulk, to the currently approved existing OEA.

4.3 TICKLE

4.3.1 Comment 1

Figure 1 does not give any indication of the location of Bengalla Homestead complex in relationship to the Southern Overburden Emplacement Area Extension.

Response

- See **Section 3.3.2** above.

4.3.2 Comment 2

The third paragraph of the historical summary is totally incorrect. Captain Samuel Wright did not sell Bengalla to Captain DCF Scott in 1832, but took out a mortgage for £500 with Robert and Alexander Walker Scott. In 1838, Wright sold to DCF Scott. Land sold amounted to 8040 acres. In 1839, Scott took out a mortgage with Wright using Bengalla a security. This was for £10,200 at 10% to be repaid by 1st January 1846. Wright then went on an overseas trip. On Wright's return Scott was in serious financial difficulties. He extended his mortgage with Wright in 1844. In 1847 Scott could not pay so Bengalla was transferred back to Wright.

The transfer included additional land that Scott had added to Bengalla. There was only ever one Bengalla. This section of the report needs to be correctly researched.

Response

- An extensive background search into the historical activities associated with the Bengalla Homestead is documented within the approved Bengalla European Heritage Management Plan (Archaeology Australia 2008). A summary of this historical background has been included on pages 6 and 7 of the Non Indigenous Heritage Impact Assessment and is considered an accurate account of historical activities.

4.3.3 Comment 3

Fifth paragraph of the historical summary mentions that bricks for the building of the 1877 portion of Bengalla homestead were made on the estate. Has an attempt been made to locate the site?

Response

- An extensive investigation into the whereabouts of the brick making site and lime kilns was included in the Bengalla European Heritage Management Plan. No sites were located as a result of this investigation and no further information has been forthcoming into the location of either site.

4.3.4 Comment 4

The second paragraph of the Site Description states that the 1895 additions to the Homestead included a serving wing. This wing appears to be much earlier than the 1895 additions and could even pre date the original 1877 brick portion of the homestead. This building needs to be examined by a person experienced in early Australian architecture.

Response

- The comments regarding the additions to the Bengalla Homestead serving wing were again based on the investigation completed for the original Bengalla Homestead Conservation Management Plan completed by Sutters Architects Snell 1996 and were validated by the investigation completed for the revised Bengalla European Heritage Management Plan whereby the serving wing appears to be to post-date the original 1877 brick portion.
- Findings from the Non Indigenous Heritage Impact Assessment concur with the conclusion that the second stage of construction of the Bengalla Homestead included the addition of a serving wing and eastern wing both built in 1895.

4.3.5 Comment 5

Site Inspection: The area that will be directly impacted by the Southern OEA Extension was physically inspected on 12 March 2010. The report states that surface visibility was very low due to heavy grass cover. The report does not give any indication of what survey methodology was used or the percentage of coverage.

Response

- See **Section 3.3.1.**

- The methodology implemented for the field assessment included three transects on foot across the survey area which failed to identify the presence of any historical relics or the requirement to conduct any further assessment of the area.

4.3.6 Comment 6

The second paragraph of Site Inspection gives measurements for the proposed OEA to homestead boundary fence while another measurement is stated for the distance between the homestead and the present OEA. All this is confusing and does not give a clear picture of how close the new OEA will be. It is mentioned that there is a haul road between the present homestead and the OEA, but there is no indication if that haul road will be closer to the homestead.

Response

- Page 11 of the Non Indigenous Heritage Assessment presented in Appendix L describes that the Bengalla Homestead boundary fence is located between 50 to 80 m east of the edge of the proposed Southern OEA Extension.
- The existing OEA (to which the Southern OEA Extension will connect) is located approximately 180 m to the north of the Homestead.
- The Non Indigenous Heritage Impact Assessment clearly depicts on Figure 1 the location of the Bengalla Homestead with respect to the proposed Modification (specifically the Southern OEA Extension) and the existing OEA.
- An existing approved haul road is situated between the existing OEA and the Homestead. It is anticipated that as the existing OEA reaches its maximum approved capacity this haul road will be rehabilitated consistent with the mine plans shown on Figure 3, Figure 4 and Figure 5 of the EA. No additional haul road is required to be constructed closer to the Bengalla Homestead or its constituents.
- Section 6.9.3 of the EA assumes conservatively that the distance between the Southern OEA Extension and the Bengalla Homestead fence will be 50 m to enable appropriate management measures to be implemented to ensure the long term preservation of the Bengalla Homestead.

4.3.7 Comment 7

Heritage Impact Assessment: Paragraph 5 indicates that the visual integrity of the homestead has been compromised by the existing OEA (see Plate 2 in the Report), but gives no indication of the size of the proposed new OEA. At present the visual integrity of the view is compromised by the dam, which in the future could be removed. The removal of a new OEA would be much more difficult.

Response

- Section 6.9.3 of the EA notes that there will be a minor indirect impact on the Bengalla Homestead as a result of the Southern OEA Extension however the overall determination of the Non Indigenous Heritage Impact Assessment indicated that there would be no significant direct impacts on any heritage item as a result of the Modification.

- Page 13 of the Non Indigenous Heritage Impact Assessment noted that while the proposed Southern OEA Extension would, in itself, have a minor indirect impact on the visual integrity of the Homestead, previous works, including the existing OEA, have already diminished its visual worth to such an extent that the new works are unlikely to reduce this any further.
- Views from the Bengalla Homestead and garden are primarily orientated to the south east over the Hunter River floodplain and away from activities associated with the Modification.
- The final landform as presented in Figure 5 within the EA will be achieved in accordance with the Coal & Allied Rehabilitation Procedure and the Rehabilitation and Landscape Management Plan.

4.3.8 Comment 8

Potential Mitigations & Management Strategies. The Heritage Act 1977 has been modified and the report should reflect the current definition of a relic i.e. "relic" means any deposit, artefact, object or material evidence that:

- (a) *relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and*
- (b) *is of State or local heritage significance.*

Response

- Noted.

4.3.9 Comment 9

The following comments apply to the mitigation measures that have been proposed:

- A. *The planting of screen trees between the Homestead and the boundary of the proposed Southern OEA extension would be of little value in the short term.*
- B. *When will the drainage line be constructed? One would assume this will take place after dumping has been completed. Much more detail is needed here i.e. location of drain, time period for construction of drain, archaeological impact of the drain on the curtilage of the homestead site, visual impact of the drain.*
- C. *Vibration monitoring needs to take place before there is an extension of the existing OEA to provide a base measure. Specification needed to be provided as what is in the EHMP. This report needs to detail what the remedial action will be if required.*
- D. *The report states that the interior of the Homestead is to be monitored for dust build up and rectified if necessary. No consideration has been given to the effect of dust on the external fabric of the buildings or the garden vegetation which forms part of the site. The main part of the Application states that the geochemical composition of the Archerfield Sandstone is acidic. Dust from this material could have a serious detrimental effect on the buildings bricks and mortar.*

Response

- A:
 - Noted, however the long term benefit of planning an appropriate tree screen will reduce the overall visual impact associated with the Southern OEA Extension.
- B:
 - In order to prevent the uncontrolled discharge of water from within the DA Boundary off site the construction of appropriate drainage from the Southern OEA Extension will be required to be constructed consistent with the 2017 Mine Plan as presented on Figure 5 of the EA.
 - Section 6.6.3 of the EA states that all areas associated with the Southern OEA Extension will be rehabilitated as soon as practical and left in a free draining state consistent with design of previous final landforms developed as part of the Bengalla SEE and the Wantana Extension SEE.
- C:
 - Section 6.2.3 of the EA states, this Modification will produce no increased impacts to the Bengalla Homestead as a result of blasting as it will have no effect on mining methods, overburden removal, coal extraction or blast locations and parameters.
 - The Non Indigenous Heritage Impact Assessment indicates on page 12 that there is no predicted direct impact on any heritage items that would result from the proposed Southern OEA Extension and Western OEA.
 - Indirect impacts on the Bengalla Homestead complex including vibration may impact on the house footings. Any foreseeable impacts are considered to be minor and will be managed in accordance with the existing approved Bengalla European Heritage Management Plan (Archaeology Australia 2008).
- D:
 - The Statement of Commitments (Table 11) item number 2 within in the EA states that no reject material or Wynn Interburden (Archerfield Sandstone) will be placed within the Southern OEA Extension beyond the limit of Reject Emplacement indicated on Figure 3.
 - Management of the Bengalla Homestead will continue to be managed in accordance with the existing approved Bengalla European Heritage Management Plan (Archaeology Australia 2008).

4.4 HAMILTON

4.4.1 Comment 1

Air Quality

Our air quality has been degraded very noticeably over the last 14 years, we find it very hard to believe that the monitoring, does not show what we see in the air and the deposited mess we have to clean up.

We understand that Bengalla is not the only cause to the problems we face, but we are extremely distressed at the thought of any extension to the mine footprint and associated changes to the landform of the existing OEA to the south-east.

Our concern also extends to the expansion and acceleration of mining within the Wantana Mine pit area, as this extension of the mining pit will disturb a lot more of the ground that is not protected from our vision by natural topography or vegetation as is shown in figure 2-4 on page 7 of the appendix D and will be more open to us and the vagaries of wind, the annual majority of which blow towards us from Bengalla mine (as per figures 5-2 through figure 5-5) in appendix D.

We expect, this concentrated mining effort in the Wantana extension of the actual mining pit and the extended OEA that will be created, will increase the amount of disturbed and unrehabilitated earth, which will in turn increase the level of dust raised, so we will likely feel the outcome more severely as it moves closer to the West and our home.

Another problem that we experience from degraded air quality and high dust deposition, is contamination to our only water supply, which is what we catch from our roofs. If we look at the amount of deposited dust we receive now, that has to be cleaned, from the surface of any item exposed to the open air, e.g. cars, out door furniture and open verandas and equate that to what would cover the area of our roof and know that this is washed into our tanks when we get rain, is a real worry.

Response

- Section 3.4 of the EA states that this Modification is only minor in the context of the existing approved operations and does not seek to change Bengalla's approved duration of mining, annual production limit, maximum height of overburden areas, total overburden material handling. This Modification will result in a 3.6% increase to the currently approved 21 Year Mine Disturbance Limit as presented on Figure 1 of the EA.
- Mining within the Wantana Extension area will not result in the extraction of any additional coal reserves and Bengalla will remain within the approved maximum 10.7 Mtpa ROM coal production limit. No increase to the total amount of overburden material handling is proposed as part of the Modification.
- Extensive air quality monitoring has been conducted to assess the effects of the Modification on the regional air quality. This Modification is not predicted to impact on any additional non-mine owned receivers to that previously predicted to be impacted.

- Modelling conducted as a component of the Air Quality Impact Assessment (PAEHolmes 2010) indicates that the Hamilton residence (Residence ID 38) is predicted to receive maximum (cumulative) PM₁₀ annual average levels of 29 µg/ m³, TSP levels of 65 µg/ m³, depositional dust levels of 1.6 g/m²/month and PM₁₀ 24 hour average levels (Modification alone) of 35 µg/ m³ during 2017. All predicted results for Residence 38 are below the relevant DECCW impact assessment criteria.
- An analysis of wind speed and direction as presented in Section 5 of the Air Quality Impact Assessment indicates that wind direction is primarily prevailing from the south east during summer months and from the north west during the cooler winter months which is a typical wind pattern for the Upper Hunter. With consideration of the location of residence ID 38 (see Figure 2) being located to the west of Bengalla it can be seen that air quality impacts (as presented on Figure 6 and Figure 7) at this location are predicted to remain below the relevant DECCW impact assessment criteria.

4.4.2 Comment 2

Noise

We have been affected by an increase in noise levels since Bengalla Mine first started, we have registered our complaints with the Company only when we feel that they have gone over the limits that were set for their first consent.

Our concern with this new proposal is that we will be more exposed to the actual mine pit area, which is coming into our view from behind the ridge that up until now has shielded us from excessive noise from that area. Also the extension to and the increase in height, of the existing OEA to the south-east, will open us to the extra noise that will be created in constructing this new area, and this new OEA will then act as a rebound wall for noise generated from the pit, that noise will then be directed up an open gully directly at our home.

The proposed acceleration of mining operations within the Wantana Extension area will concentrate the noise in this one area of the mine pit which is more visually and audibly closer and open to us as shown in mine plans in the EA in Figure 3 through 5.

We already hear the noise of the existing haul trucks, the roar of the CHPP and washery, the rumble of the new relocated coal hopper and the vibrations of the trains as they are loaded, all these things are very visible and open to us in a valley that we look down on.

We are distressed that it is claimed in this EA on page 12 of appendix E that we are expected to accept noise level increases above the day and evening intrusive noise criteria as shown in Table 5 in appendix E and not complain. Our original background noise levels as per Table 1 were set at 30 in the year 2000, but the original background noise levels taken before the start of construction at Bengalla were so low, they were not able to be registered by the measuring equipment at that time, so when they set intrusive noise criteria at 5dBA above background noise levels as required by the 1NP the actual noise increase from pre Bengalla and other mines is not taken into account in the tables in this EA, so the real increase to us is more like 10dBA.

Response

- Modelling conducted as a component of the Acoustics Impact Assessment (Bridges Acoustics 2010) indicates that the Hamilton residence (Residence ID 38) is predicted to receive noise levels ($LA_{eq, 15min}$) during prevailing weather conditions of 36 (June 2011 and December 2011 Day / Evening) and 35 (June 2011 and December 2011 Night).
- Residence 38 is predicted to receive a minor noise impact under prevailing weather conditions of 1 or 2 dBA above the day and evening intrusive noise criteria.
- Predicted noise levels remain below current Development Consent criteria of 38 for Day / Evening and 37 for Night periods.
- Section 2.0 of the EA notes that the Southern OEA Extension will not result in an increase to the maximum approved height of the OEA (RL 270 m).

4.4.3 Comment 3

Visual

Originally back in 1994 we were told and the Commissioner of the Inquiry for the original application was also led to believe by Bengalla and their consultants that we would not see much of the industrial area, because of the screening that was proposed, obviously this screening did not do what it was supposed to as we can see a majority of the industrial area, the rail load out, the new coal hopper, the workshop, the washery, the coal stock piles, and the reclaimers and stackers. We are listed as one of the view points in appendix J of this EA. We do not agree with figure 2.2 on page 10 which lists us as having Moderate visual sensitivity.

In the previous Wantana Extension application it was at least acknowledged that we would have high sensitivity as we are one of the houses mentioned at the northern end of Roxburgh Road. We do not accept that the proposed extension to the coal mining pit and OEA into the Wantana Extension, all of which have to be serviced by new roads, will be a minimum impact.

Our major visual concern with this new proposal is that the actual mine pit is moving west, closer to us and at the same time, the actual run of the pit and the increased height of the OEA is being extended to the south. This is already a part of our view from behind the ridge, that up until now has shielded us from this highly sensitive visual impact.

This alone would ordinarily be bad enough but the idea that the OEA from our point of view which will always be an open bare earth mountain, pock marked with tailings that are to be disposed of in this area is to be increased in height making the activity required to build these mountains very visible. This is extremely disturbing to us particularly as this vision will not reduce until it can be rehabilitated at the end of mine life, 6 years from now.

It appears to us that we have had to accept increases to all the adverse effects from our neighbours development, as each extension has been approved over the years without any consideration or compensation.

It has been hard to live with the many adverse conditions we have been subjected to over the last 14 years. Even though the Company has responded to our complaints and has spent a lot of time and money in trying but has been unsuccessful in reducing the problems their development has caused, we still have the stress, inconvenience and distress at having to complain.

We acknowledge that we have been identified as land that has been predicted to be affected within the Mt. Pleasant project Modification EA currently under review by DOP, but feel that as our property has been and is always going to be impacted by Bengalla Mine which is managed by and partially owned by Coal and Allied, as well as the many other mines which in the future will surround us, request that somehow these impacts should not be aloud to be used by Coal and Allied as the owner of Mt. Pleasant Mine to devalue our property during negotiations for acquisition if and or when this might take place.

We should be able to realise the full value of our property under acquisition laws as if that same property was in an area not affected by any mining company.

Response

- Section 2.0 of the EA notes that the Southern OEA Extension will not result in an increase to the maximum approved height of the OEA (RL 270 m).
- The Visual Impact Assessment (Integral Landscape Architecture and Visual Planning 2010) presented in Appendix K of the EA determined the assessment of visual impacts of the Modification to be low due to the limited scale of changes and similar visual characteristics, in terms of scale and bulk, to the currently approved existing OEA.
- Generally, views from the western sector (including Roxburgh Road) of the Western OEA are screened by intervening topography.
- Section 6.5.4 of the EA notes that reject material will not be placed in the Southern OEA Extension outside the footprint of the approved mining operations.
- Residence 38 is already visually impinged by other existing mining operations in the proximity.

4.5 PEEL

4.5.1 Comment 1

To increase the rate of mining from 1.5 to 2.5 million tonnes of coal a year in the Wantana Pit, the increase in overburden by 10 million tonnes, that's a lot of extra dust. The extension of the Wantana Pit contains alluvial soil which Bengalla Mining Company said in their first DA consent they would not mine alluvial soil. The original owners Key's Estate No 2 Dairy farm grew lucerne for dairy cows and made hay off it.

The extra dust off 10 million tonnes of overburden will impact on my property. The mine says my property will not be impacted. I don't believe this as we are already impacted with dust now.

Response

- Section 3.1 of the EA states that although mining within the Wantana Extension will be conducted at a higher rate (from 1.5 Mtpa to 2.5 Mtpa) ROM coal, production from Bengalla as a whole will remain within the maximum approved 10.7 Mtpa.
- Section 3.2.2 of the EA states that the Southern OEA Extension will provide approximately 10 Million loose cubic meters of additional overburden capacity at Bengalla. This Modification is not seeking for the removal of additional overburden material, rather the emplacement of overburden approved in accordance with DA 211/93 as modified.
- Air quality modelling has been conducted to assess the effects of the Modification on the regional air quality. This Modification is not predicted to impact any additional non-mine owned receivers to that previously predicted to be impacted.
- Modelling conducted as a component of the Air Quality Impact Assessment (PAEHolmes 2010) indicates that the Peel residence (Residence ID 41) is predicted to receive maximum (cumulative) PM₁₀ annual average levels of 28 µg/ m³, TSP levels of 64 µg/ m³, depositional dust levels of 1.5 g/m²/month and PM₁₀ 24 hour average levels (Modification alone) of 23 µg/m³ during 2017. All predicted results for Residence 41 are below the relevant DECCW impact assessment criteria.

4.5.2 Comment 2

Increasing the footprint of the existing waste dump, should not be allowed, there is already a waste dump in existence they do not use. To put another waste dump south east of the original dump, will be in direct line with dust onto my property.

Response

- As discussed in Section 3.0 of the EA this Modification is required to alleviate the overburden emplacement capacity issues at Bengalla. It is anticipated that without the Modification Bengalla Mining Company will exhaust its options to emplace overburden within its existing OEA during early 2011.
- A Visual Impact Assessment (Integral Landscape Architecture and Visual Planning 2010) presented in Appendix K of the EA determined the assessment of visual impacts of the Southern OEA Extension to be low due to the limited scale of changes and similar visual characteristics to the currently approved existing OEA.

4.5.3 Comment 3

This is the 4th modification that Bengalla Coal Mine has put in for, when will this stop. On each Modification at Bengalla I have asked Bengalla for a dust monitor, they have always refused the monitor for my property, even though the mine is moving closer to my property each working day.

Response

- Noted. Open cut coal mining is by nature dynamic, thus requiring additional and updated planning approvals from time to time.

- BMC has an approved extensive environmental monitoring network in place to measure and report any potential environmental impact occurring as a result of its mining operations. As a component of the approved Environmental Monitoring Plan, Bengalla operates 42 representative air quality monitors surrounding Bengalla.
- Bengalla operates a depositional dust monitor (D20) in the proximity to this residence. As presented in the 2009 Annual Environmental Management Report results from D20 remained below the DECCW deposition annual average assessment criterion of 4.0 g/m²/month during the reporting period.
- Extensive air quality monitoring has been conducted to assess the effects of the Modification on the regional air quality. This Modification is not predicted to impact any additional non-mine owned receivers to that previously predicted to be impacted.
- Any technical recommendations included in Appendix D of the EA will be incorporated into the updated Environmental Management Plans in consultation with DoP.

5 CONCLUSION

We trust that this response meets your requirements. Please do not hesitate to contact myself on 02 6575 2000 if you have any questions.

Yours faithfully
HANSEN BAILEY



James Bailey
Director

6 REFERENCES

- Archaeology Australia (2008), *'European Heritage Management Plan'*, prepared for Bengalla Mining Company Pty Limited.
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- SPCC (1983) '*Air Pollution from Coal Mining and Related Developments*', Published by NSW State Pollution Control Commission (now EPA).
- WRM Water & Environment 2010, '*Surface Water Impact Assessment*', prepared for Hansen Bailey Pty Ltd on behalf of Bengalla Mining Company Pty Limited.

Appendix A

EA Submissions



**Environment,
Climate Change
& Water**



PCU018557

Your reference: 10/13705; DA 211/93
Our reference: PART 4 DOC1056010;
LIC07/2079-03
Contact: Bill George, 49 086821

NSW Department of Planning
Mining and Industry Projects
GPO Box 39
SYDNEY NSW 2001

Attention: Belinda Parker

12 JAN 2011



Dear Ms Parker

PROPOSED MODIFICATION – BENGALLA COAL MINE (DA 211/93 MOD 4)

I refer to your letter dated 7 December 2010 to the Department of Environment, Climate Change and Water (DECCW) requesting a review of the adequacy of the document "*Bengalla Mine Company Development Consent Modification Environmental assessment*" prepared by Hansen Bailey and dated December 2010 ("the EA") and requesting that DECCW comment on the proposal and include any recommended conditions of approval.

DECCW understands that proposed modifications to the existing approval relates to:

- Increasing the extraction rate of mining operations in the Wantana Extension Area;
- Increasing the footprint of the existing waste dump; and
- Using an area to the west of the mine for the temporary storage of overburden

DECCW also understands that mining operations will continue to be undertaken at the currently approved production rate, approved mining methods, utilising the existing vehicle fleet and no change to the hours of operation at the mine.

DECCW has completed an assessment of the EA and comments arising from this review are provided below. While DECCW has no objection to the proposal, and no specific recommended conditions of approval in relation to air and noise impacts, DECCW is unable to provide advice regarding impacts to Aboriginal cultural heritage until a revised Aboriginal cultural heritage assessment is completed.

THREATENED SPECIES

DECCW has reviewed the EA, including the *Flora and Fauna Impact Assessment* ('the Report') and notes that the EA did not identify any threatened species, populations, communities, or threatened species habitat in either the Southern Overburden Emplacement Area (OEA) or the Western OEA. The Pine Donkey Orchid (*Diuris tricolor*) is a threatened species and plants in the Muswellbrook local government area also comprise an Endangered Population. In the Muswellbrook area this orchid is known to occur in derived grassland with both native and exotic species. DECCW considers that the Western OEA could include suitable habitat for this species. When the Western OEA was surveyed on 19th March 2010 plants of this species would either have still been dormant or had a few

non-descript grass-like leaves present – flowers are needed to identify this species. Therefore the Pine Donkey Orchid would have scarcely been detectable, let alone identifiable, during the ecological fieldwork for this proposal and its presence on the site has not been fully identified.

DECCW recommends that the proponent conducts targeted surveys for the Pine Donkey orchid (*Diuris tricolor*) sometime between 19 September and 17 October 2011 (the exact timing of flowering is based on the weather conditions of the preceding weeks; and the flowering of known *Diuris tricolor* plants in the Muswellbrook LGA may also be used as a guide) on the Western OEA to determine if this species is present on the site. If present, DECCW recommends that the proponent implements adaptive management to ensure that any *Diuris tricolor* plants are not impacted by the project.

AIR QUALITY IMPACTS

The Air Quality Impact Assessment (AQIA) provided with the EA has been reviewed and compared to the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, August 2005* (Approved Methods). The AQIA assessment generally follows the requirements of the Approved Methods. A detailed discussion of issues with the AQIA identified by DECCW is provided at **Attachment B**.

DECCW has identified that emissions from wheel generated dust and wind erosion may have been under-estimated in the AQIA. However, DECCW agrees with the conclusion that there would be a reduction in impacts on the surrounding air environment due to the modification as consistent approaches to assessment were used for both assessments.

NOISE IMPACTS

DECCW has reviewed the Acoustic Impact Assessment (AIA) prepared by Bridges Acoustics, dated 27 July 2010 and recommends that the Department of Planning consider the following advice when determining the project application:

- The proponent should justify that the predicted noise levels in Table 5 represents the best achievable noise levels after the application of all feasible and reasonable noise mitigation measures;
- Subject to the proponent satisfactorily demonstrating that all feasible and reasonable noise mitigation measures have been implemented, the predicted noise levels in Table 5 of the AIA do not exceed levels that DECCW would normally consider licensing to, and therefore DECCW raises no objection on consent limits being amended in line with the predicted noise levels in Table 5;
- Any approval by Planning, if issued, should include a condition which specifies that the increased noise limits only apply while modified emplacement practices are occurring. The proponent should be required to nominate a date after which the increased noise limits would not apply, and noise limits would revert back to limits currently applied in the existing consent; and
- Any approval by Planning, if issued, should include a condition which specifies that receivers likely to qualify for 'Additional noise mitigation measures' be advised of this fact by the proponent, so that noise monitoring can be undertaken to confirm noise impacts, and initiate the offer, where applicable.

ABORIGINAL CULTURAL HERITAGE

DECCW has reviewed the EA and notes that the proponent has relied upon an Aboriginal cultural heritage impact assessment completed in 1992. Given that significant changes in landform can occur over time DECCW is of the opinion that a revised assessment is necessary, incorporating new/additional survey information and which makes reference to recent changes to the *National Parks and Wildlife Act 1974* (the NPW Act). The revised assessment should reflect the best practice standards recommended by DECCW in the *"Code of Practice for Archaeological Investigations of Objects in New South Wales"* (DECCW, 2010).

Further, while DECCW acknowledges that the current Bengalla Community Consultative Committee specifically formed for the Bengalla project – this committee does not represent all Aboriginal groups in the area. The proponent should undertake additional consultation with the local Aboriginal community in accordance with DECCW's "*Aboriginal Cultural Heritage Consultation Requirements for Proponents*" (DECCW, 2010).

Until a revised Aboriginal heritage impact assessment is provided, DECCW is unable to provide specific recommended conditions of approval for this project.

The proponent should also be advised that as the Bengalla consent was issued under Part 4 of the *Environmental Planning and Assessment Act 1979*, separate application for a permit under s90 of the NPW Act will be required if any impacts to Aboriginal heritage are likely to occur as a result of this project proceeding. Similarly, the proponent should liaise with the Hunter-Central Rivers Catchment Management Authority regarding any approvals required under the *Native Vegetation Act 2003* for the clearing of native vegetation as a result of this project.

If you require any further information on this matter please contact Bill George on (02) 4908 6821.

Yours sincerely



KAREN MARLER
Head Regional Operations Unit – Hunter Region
Environment Protection and Regulation

Enclosure: Attachment A – Air quality impact assessment review comments

Attachment A: Air quality impact assessment review comments

The AQIA submitted has been reviewed and compared to the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, August 2005

The AQIA assessment generally follows the requirements of DECCW's *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (Approved Methods)*.

It is also noted that the AQIA assessment shows that there is a reduction in impacts on the surrounding environment due to the modification. This is considered to be a reliable assessment, considering that even though incorrect methodologies were used to assess the impacts, the methodology used to assess the impacts are consistent between assessments.

A summary of issues identified with the AQIA are presented below.

Issues with the AQIA

- **Emission estimates of wind erosion sources have been reduced due to estimated annual rainfall**

Emission estimates of wind erosion from exposed areas such as overburden dumps and coal stockpiles have been corrected to account for the number of rain days in a year. This approach is acceptable for assessing annual average impacts and for environmental reporting on an annual basis. However, this approach is not acceptable when assessing short term impacts such as 24 hour maximum concentrations of PM₁₀.

The air quality model, when run over a typical year, processes emissions data and meteorological data on an hourly basis to predict ground level concentrations that are also on an hourly basis. When determining impacts from coal mines the results are presented as annual averages and 24 hour maximum predicted concentrations. The maximum predicted concentration could occur during a day where there is no rain. By reducing emissions on an annual basis due to the number of rain days reduces the emissions that occurred on the worst case day. Therefore, there is the potential to under predict short term impacts by correcting emissions due to the number of rain days.

Rain days could be incorporated into the assessment to predict maximum short term impacts, if hourly contemporaneous rain data was used in conjunction with meteorological data used for dispersion in the model. However, a justification would need to be made that the meteorological data set used was representative of the worst case year (in terms of predicting air quality impacts). DECCW has performed an analysis of estimated emissions presented in the AQIA to determine the sensitivity of the assessment to this approach. Estimated emissions from wind erosion sources with a rain correction factor are compared to estimated emissions from these sources without a rain correction factor in Table 1. The difference in estimated emission is an additional 30% in emission load.

Table 1: Comparison of estimated emissions from wind erosion sources with and without a rain correction factor

Source	TSP Emissions With Rain Correction Factor (As Modelled) (kg/year)	TSP Emissions Without Rain Correction Factor (kg/year)
WE - OB - spoil areas (all approved + SOEA)	1,464,692	1,916,174
WE - OB spoil areas (WOEA)	159,026	208,044
WE - open pit	1,104,182	1,444,540
WE - ROM stockpiles	7,281	9,526
WE - Product stockpiles	57,034	74,615
TOTAL	2,792,216	3,652,899

However, as the majority of emissions from the proposed project are from other sources (such as haul roads and loading operations), the difference in estimated emissions for the facility is less significant and results in a potential underestimation of impacts of 11% as shown in Table 2.

Table 2: Comparison of estimated project emissions with and without rain correction factors for wind erosion sources

Total Project TSP Emissions With Rain Correction Factor for Wind Erosion (kg/year)	Total Project TSP Emissions Without Rain Correction Factor for Wind Erosion (kg/year)	Difference
7,716,000	8,577,000	11%

Another issue with the treatment of rain correction factors in the AQIA is that they are inconsistently applied to sources. For example emissions from wind erosion are corrected to account for annual rainfall, whereas, emissions from loading and unloading operations are not. Emissions from wheel generated dust are estimated using a "controlled" emission factor of 1 kg/km. It is not clear whether a rain correction factor is incorporated into this emission factor as a reference source is not supplied for this emission factor.

- **Emission estimates of wheel generated dust emissions are not based on a referenced emission estimation technique.**

Wheel generated dust emissions are estimated using a constant emission factor of 1 kg TSP/km. This is reported to be representative of wheel generated dust from haul roads that have controls applied to them that reduce emissions by 75%. Therefore, the uncontrolled emission factor was assumed to be 4 kg TSP/km across the facility. Review of the *NPI EET Manual for Mining v2.3* (Environment Australia, 2003) shows that the default uncontrolled emission factor for TSP for wheel generated dust is approximately 4 kg/km (3.88 kg/km). This corresponds to the emission factor used in the AQIA. However, the default emission factor presented in the *NPI EET Manual for Mining* was derived using a default silt content of 10% and an average vehicle weight of 48 tonnes and a default moisture content of 2% using an outdated USEPA AP-42 equation as follows:

$$EF_{TSP} = \frac{2.82 \times \left(\frac{s}{12}\right)^{0.8} \times \left(\frac{W}{3}\right)^{0.5}}{\left(\frac{M}{0.2}\right)^{0.4}}$$

EF_{TSP}	=	TSP emission factor from wheel generated dust	(kg/km)
s	=	Silt content of road surface	(%)
W	=	Average weight of vehicles travelling on the haul road	(tonnes/vehicle)
M	=	Moisture content of the road surface	(%)

The USEPA AP-42 equation was updated in 2006 and is as follows (in metric units):

$$EF_{TSP} = 0.2819 \times \left(4.9 \times \left(\frac{s}{12}\right)^{0.7} \times \left(\frac{(W \times 1.1023)}{3}\right)^{0.45} \right)$$

EF_{TSP}	=	TSP emission factor from wheel generated dust	(kg/km)
s	=	Silt content of road surface	(%)
W	=	Average weight of vehicles travelling on the haul road	(tonnes/vehicle)

The key issue with the default uncontrolled emission factor is that it is based on an average vehicle weight of 48 tonnes. Information presented in the AQIA show that there are two types of mining trucks used at the mine, one with a carrying capacity of 218 tonnes and another with a carrying capacity of 135 tonnes. ATASU has reviewed mining equipment databases and found mining trucks that closely match these specifications (i.e. CAT 793 and CAT 785). The estimated average weight of trucks and associated controlled emission factors using the most up to date emission estimation technique is presented in Table 3.

Table 3: Revised Emission Factors for Wheel Generated Dust for the Proposed Mine Site

Haul Route	Vehicle Type	Carrying Capacity (tonnes)	Estimated Tare Weight (tonnes)	Estimated Average Weight (tonnes)	Control Efficiency (%)	TSP Emission Factor (kg/km)
OB - Hauling to emplace at Wantana extension	CAT 793	218	165.7	274.7	75	2.15
OB - Hauling to emplace at north emplacement	CAT 793	218	165.7	274.7	75	2.15
OB - Hauling to emplace at south emplacement	CAT 793	218	165.7	274.7	75	2.15
OB - Hauling to emplace at WOEA	CAT 793	218	165.7	274.7	75	2.15
OB - Hauling to emplace at SOEA (Option 1)	CAT 793	218	165.7	274.7	75	2.15
OB - Hauling to emplace at SOEA (Option 2)	CAT 793	218	165.7	274.7	75	2.15
OB - Hauling to emplace at SOEA (Option 3)	CAT 793	218	165.7	274.7	75	2.15
CL - Hauling ROM coal to dump hopper	CAT 785	136	113.5	181.5	75	1.78
CL - transporting rejects	CAT 785	136	113.5	181.5	75	1.78

DECCW has reviewed the emission inventory presented in the AQIA and compared total project emissions as modelled versus estimated emissions with revised emission factors for wheel generated dust. The comparisons between estimated emissions are shown in Table 4.

Table 4: Comparison of estimated project emissions as modelled versus estimated emissions using the revised technique for wheel generated dust

Total Project TSP Emissions (As Modelled) (kg/year)	Total Project TSP Emissions With Revised Wheel Generated Dust Emissions (kg/year)	Difference
7,716,000	9,874,088	28%

The impact of using an out-dated emission estimation technique for wheel generated dust has potentially led to an under estimation of emissions of approximately 28%. Combined with the error in accounting for rain days for wind erosion, there is a potential under estimation of emissions of 39% (on a daily level) in the AQIA.

Considering these factors the impact over 24 hours could be 39% greater (assuming a one to one ratio between emissions and predicted impacts). It is noted that further reductions to estimated emissions that may be possible due to speed limits on haul trucks have not been taken into account in this assessment as this information is not presented in the AQIA.

It is also noted that the AQIA assessment shows that there is a reduction in impacts on the surrounding environment due to the modification. This is considered to be a reliable assessment, considering that even though incorrect methodologies were used to assess the impacts, the methodology used to assess the impacts are consistent between the assessments.



OUT11/883
21 January 2011

Mr Howard Reed
Manager Mining and Industry Projects
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Attention: Belinda Parker

Dear Mr Reed

**Bengalla Coal Mine (DA 211/93 MOD4)
Section 75W Modification**

I refer to your letter dated 7 December 2010 regarding Bengalla Mining Company Pty Ltd application to modify the project approval under the *Environmental Planning and Assessment Act 1979* for the above project.

Industry & Investment NSW (I&I NSW) technical officers have reviewed the Environmental Assessment (EA) for the project and have the following comments.

MINING TITLE

The proposed modification is within Mining Lease 1397, 1450 and 1469 as well as Assessment Lease 13. I&I NSW Mineral Resources understands that no additional mining titles will be required by the Proponent for the proposed modification.

MINING OPERATIONS PLAN

I&I NSW Mineral Resources require a revised Mining Operations Plan (MOP) be submitted by the Proponent and approved by I&I NSW Mineral Resources prior to commencement of any activities proposed by this Modification.

REHABILITATION PLAN

I&I NSW require the following issues to be addressed by the Proponent in presenting a Rehabilitation Plan to the satisfaction of the Director General I&I NSW.

- a) **Domain Specific Objectives:** Identify the functional domains of the project and describe the rehabilitation objectives for each domain.

- b) **Completion Criteria:** Propose strategic completion criteria for each domain having regard to the various phases of rehabilitation (ie. Decommissioning, Landform Establishment, Growth Medium Development, Ecosystem Establishment, Ecosystem Development) and outline the proponent's commitment to progressive rehabilitation.

I&I NSW recommend that the following conditions be incorporated into the planning approval, if granted:

The Proponent must prepare and implement a Rehabilitation Plan to the satisfaction of the Director General I&I NSW. The Plan must:

- a. be prepared in accordance with I&I NSW guidelines and in consultation with relevant agencies and stakeholders;
- b. be submitted and approved by the Director General I&I NSW prior to the commencement of construction;
- c. address all aspects of rehabilitation and mine closure, including final land use assessment, rehabilitation objectives, domain objectives, completion criteria and rehabilitation monitoring.

I&I NSW AGRICULTURE

Approvals for development of Bengalla Mine currently excludes disturbance to Hunter River alluvial (floodplain) areas. This is critical for minimising agricultural impacts. It also enhances future agricultural land use options.

The significance of alluvial lands is reflected in advice from;

- **Department of Planning** (4 May 2010) requiring the EA to justify the development of alluvial lands and provide a detailed description of amended final landform and rehabilitation objectives
- **Muswellbrook Shire Council Environmental Committee** (17 June 2010) briefing which noted concerns about overburden emplacement on the Hunter floodplain and identified compensation for impacts on Class II agricultural lands and rehabilitation as key issue to be addressed
- **Neighbouring landholders** (June 2010 briefings) noting concerns about emplacing overburden on agricultural lands
- **Industry and Investment NSW** (26 May 2010) requesting consideration of selective soil management and compensatory options for agricultural impacts (letter included as part of Appendix A of the EA)
- **NSW Office of Water** (25 June 2010) noting concerns about mining developments on the Hunter River Floodplain

Bengalla Mining Company advised I&I NSW in writing on 1 June 2010 that the proposal would affect Class II "*agricultural lands*" and that in consultation

with I&I NSW, the Bengalla Mining Company would investigate options to “ensure that any impacts associated with the Modification on Class II lands are appropriately compensated.” (EA Appendix A)

Adequate consultation with I&I NSW (Primary Industries Division) did not occur in relation to the value of the identified agricultural resource lands and proposed impacts. I&I NSW (Primary Industries Division) is additionally concerned that the Modification proposal and exhibited EA;

- does not identify adequate agricultural compensatory measures or offsets.
- may create precedent for future mining disturbance to important agricultural resource lands and related alluvial water resources in the Hunter (including by other mining companies).
- does not adequately identify rehabilitation objectives as required by DoP.

The proposed temporary Western overburden emplacement area is subject to future mining operations and eventual rehabilitation. Hence it would not result in significant additional loss of agricultural resources or land use options.

I&I NSW (Primary Industry Division) concerns consequently relate to the undisturbed areas within the South Eastern overburden extension (Survey area 1) and the resultant significant downgrading of agricultural resources from Class 1 – 3 Agricultural suitability (prime crop and pasture lands) to Class 3 - 4 (grazing lands). It would also result in the permanent loss of 9.6 ha of highly productive Class 1 lands. Class 1 Agricultural Suitability lands are extremely limited in extent (less than 2% of agricultural land in NSW) and are well suited for future food production

Agricultural Resources and Land Use Options

The EA provides detailed information on the soils within the proposed extension of the Bengalla overburden emplacement areas and recognises their past land use and value for future topdressing and rehabilitation. Information on agricultural resource values and agricultural impacts is not however, clearly presented.

Classification Systems

The objectives of the Soil and Land Capability Assessment include ‘describe pre and post mining suitability and capability’. The main EA text, however, only refers to Land Capability and fails to clarify that ‘Class II land’ (capability) is scarcer and more productive than Class 2 Agricultural Suitability land.

Potential for confusion exists in relation to consideration of alluvial areas vs alluvial soils affected by the proposed modification.

Soil Type 3 (Red Chromosol – Brown Dermosol complex which covers 12% of the Survey area 1 (South East overburden extension area) is classified as not being an ‘alluvial soil’ due to it no longer being directly connected to the Hunter alluvial groundwater flows and having developed a soil profile. This distinction and the subsequent notation that only 4.6 ha of the 9.6 ha of Class 1 Agricultural Suitability land comprises “alluvial soils” is a moot point when considering agricultural resource values, potential impacts and the merit of potential offsets.

As noted in section 3.2.4 of Appendix F, soil type 3 comprises a relatively flat alluvial terrace (< 1% slope) and was formed by ancient alluvial deposits. Prior to being purchased as part of the Bengalla mining development the site was used for irrigated cropping and its land use options remain identical to those of adjoining “alluvial soil types”. Non soil experts and the farming community would typically consider this location to be alluvial lands and its productive value is recognised by its assessment as Class 1 Agricultural Suitability (Class II Land Capability).

Consideration of the potential resource impacts may additionally be skewed by an apparently conservative classification of Agricultural Suitability for the pre mining landscape, whilst that for post mining is optimistic.

The EA identifies Soil Type 5 (Redoxic Hydrosol) as Class 4 Agricultural Suitability, which are “Marginal Lands not suitable for periodic cultivation with low to very low levels of production”. There are also usually very significant limits to agricultural use (eg shallow soil depth, steep slopes). The soil type comprises an old meander channel of the Hunter River within an alluvial floodplain area and the EA states that it is unlikely to have been cultivated due to the potential water logging.

Restrictions on agricultural use and periodic cultivation would only be significant if the depression was subject to frequent and prolonged flooding or high flow rates and scouring. Alluvial soils are typically free draining and the main obstruction to site drainage appears to be the old conveyor belt road that is a post mining feature. The alluvial origin of the soils mean that its nutrient levels are likely to be high and photos of this soil landscape (plate 3.12) show lush pasture growth. I&I NSW (Primary Industries Division) consequently suggests that a more appropriate classification of this pre mining soil landscape would be as Class 2 / 3 Agricultural Suitability.

I&I NSW (Primary Industries Division) similarly suggests that rehabilitated (post mining) areas with a relatively shallow topsoil profile on a slope of 10 – 18%, and which are vegetated with a mix of tree species and persistent, but not highly productive pasture species (as is typical of current mining rehabilitation) would be more appropriately classified as Class 4 Agricultural Suitability than Class 3.

The proposed temporary Western Overburden extension area is appropriately assessed in the EA as prime pasture lands (Class 3 Agricultural Suitability).

Resource Significance

Section 4.3.2 and table 4.6 of the Appendix F identifies that;

- 10.6 ha of the area within the proposed extension to southern out of pit emplacement area comprises Class 3 / 4 Agricultural suitability.
- 9.6 ha of the Soil Types 3 and 4 (Hunter River Soil Landscape) as Agricultural Suitability Class 1 lands (Class II Land Capability). Such soils have virtually no constraints to sustainable agricultural production and subject to available ground water / irrigation, this area would be well suited a very diverse range of agricultural development options including horticulture, food and fodder crops.

Premium Class 1 agricultural soils are of extremely limited extent in Australia and comprise less than 1% of agricultural land in NSW. The close proximity of this location to population sources and markets increases its value for both local food production and future food security generally.

Whilst the Class 1 lands on the site are separated from more extensive arable areas by the railway line embankment, I&I NSW (Primary Industries Division) considers that they are of sufficient size and potential to remain a valuable asset, particularly when considered in conjunction with adjoining grazing lands and the Bengalla homestead complex. Land use options include lucerne production, specialist calf rearing, horticulture or equine establishments. Fodder production on arable, alluvial lands is additionally critical for supporting optimal sustainable use of adjoining Class 3 and 4 grazing lands which typically have more seasonal growing periods.

Although overlooked in the EA the immediate proximity of the Bengalla homestead complex and related infrastructure (residence, sheds, access, etc) is highly relevant to the scope for agricultural use of these highly productive premium soils, post mining.

Agricultural Impacts

Appendix F of the EA indicates that 6.7 ha on a bench between the 230m and 240 m contour levels might be rehabilitated to Class 2 agricultural suitability. I&I NSW (Primary Industries Division) does not support this proposal. This site, would be isolated from water sources and power supplies necessary for irrigation that is essential to support high levels of production and cropping. Being located in an exposed position near the top of the overburden area would also introduce other constraints to productive agricultural use including increased exposure and evaporation, high levels of subsoil drainage and isolation from road access for cultivation, cropping

equipment and supervision. Hence even if it were possible to construct slopes of less than 3°, topsoils and to selectively save the alluvial soil types and replace them to a depth of at least 100mm, it is very unlikely that the site could comprise Class 2 agricultural suitability. Similar level areas of good soils on hilltops are more typically identified as being Class 3 agricultural suitability (ie suitable for grazing).

The EA also notes that the majority of Survey Area 1 would be rehabilitated to Class 3 Agricultural Suitability (Class V land capability), I&I NSW (Primary Industries Division) cautions that the proposed 10 -18% slope combined with a relatively shallow topsoil layer of mixed origins would not be suitable for being cultivated. Nor would it be well suited for improved pastures and it would not sustain high levels of grazing. Consequently post mining at least 45 ha (86%) within Survey Area 1 is more likely to comprise Class 4 Agricultural Suitability (Class VI Land Capability). This result would also be consistent with the EAs (Appendix F) pre mining assessment of Soil type 1 (Red Sodsol) as Class 4 Agricultural Suitability (and Class VI Land Capability) due to its 'steeper' slopes of 5 – 10%, erosion risk and predominance of native grasses.

Whilst topsoil stripping recommendations for each soil type are given, no specific advice is provided on selective topsoil management or emplacement of the higher quality agricultural soils. This is contrary to the objectives of the Soil and Land Assessment (see section 16.3.3 of the EA and section 1.2 of Appendix F). It also fails to support the indicative proposal to re-instate highly productive arable lands. The EA also fails to provide specific rehabilitation recommendations in relation to re instating or rehabilitating agricultural lands.

Agricultural Recommendations

Mitigatory / compensatory offsets are expected for the proposed complete and permanent loss of a total of 11 ha of high quality agricultural lands (soil types 3, 4, 5) within the undisturbed residual areas affected by the proposed South Eastern overburden extension and the associated permanent downgrading of future land use options.

Bengalla Mining Company's commitment in Table 11 of the EA to compensate for impacts on Class II (Land Capability) lands is supported, however I&I NSW (Primary Industries Division) does not support reliance on indicative plans to rehabilitate a smaller extent of land near the top of the overburden emplacement. Reliance on undisclosed proposed future modifications to the existing land management plan is also unsatisfactory.

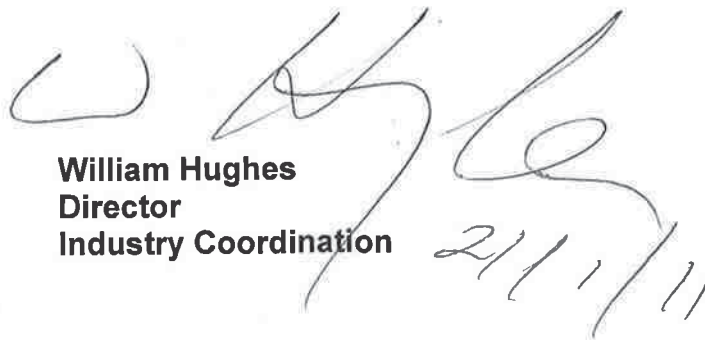
Similar to biodiversity offsets compensatory offsets for the loss of agricultural resources might include specific proposals to enhance the agricultural management of equivalent highly productive farmlands within the control of

the mining company or to purchase and ensure appropriate long term management of additional farming lands as an offset.

I&I NSW (Primary Industries Division) also recommends that topsoil from the highly valuable soil types (3, 4 and 5) is selectively managed and re used to support maximum future agricultural production rather than being included in the generic mix.

Should you have any enquires regarding this matter please contact Julie Moloney, Principal Adviser, Development Coordination on (02) 4931 6549.

Yours sincerely

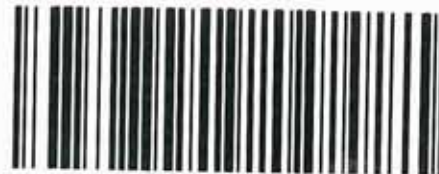


William Hughes
Director
Industry Coordination

21/1/11



Office of Water



PCU018253

**Major Development Assessments
Department of Planning
GPO Box 39
SYDNEY NSW 2001**

c: Fergus Hancock
t: 02 4904 2532
f: 02 4904 2501
e: Fergus.Hancock@water.nsw.gov.au

Our ref : ER 21343

Your ref: 10/13705

Date 4 January 2010

Attention: Naomi Nelson

Department of Planning
Received
10 JAN 2011
Scanning Room

Dear Naomi

Bengalla Coal Mine Modification – DA 211/93

The NSW Office of Water has reviewed the Environmental Assessment for the above modification of development consent. NOW advises that the modification area comprises part of the Hunter Regulated Alluvial Water Source, governed under the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009 (WSPHUAWS), and as a result, protection to the water source is governed under the water management principles (S.5 Water Management Act 2000) and rules of the WSPHUAWS.

The EA fails to adequately describe the geomorphological and depositional history of the floodplain pocket on which out of pit spoil dumping is proposed. However, the groundwater impact assessment in Appendix H to the EA indicates extensive gravel and sand lenses form the majority of the aquifer, which provides confirmation that the alluvial material is derived and connected to the Hunter River. Previous mining interception and removal of alluvial materials has been strictly limited to tributary deposits, with a general prohibition on excavation through or spoil dumping on the alluvial floodplain.

The specific impact of greatest concern to NOW relates to aquifer compaction in the Hunter Regulated Alluvial Water Source, and resultant sterilisation of the alluvial water source to productive use. This is not addressed in the EA. NOW is not in a position to provide advice as to means to avoid alluvial compaction and consequential loss of porosity and groundwater storage in the alluvium.

NOW, in conjunction with Industry and Investment NSW (IIN), as a policy principle opposes sterilisation of alluvial groundwaters and floodplains by mining activities. The account framework of the WSPHUAWS, water quality and geomorphological integrity of the riverine system should be protected to the greatest extent possible. This is a general obligation to any approval or activity authorised under the *Water Management Act 2000*, and must be considered by NOW in terms of any approval(s) which are required to install or operate water supply, drainage or flood works.

As the EA has not clarified whether any of the above approvals will apply to the proposal, NOW cannot complete its assessment of the proposal. Should any of the above approvals be required to construct the out of pit spoil dumps, NOW may be unable to issue any such approval. Therefore, NOW requires clarification as to the approvals required to the application, and protection measures to the alluvial aquifer on the floodplain terrace.

If you require any clarification of the above, please contact Fergus Hancock on (020 4904 2532.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'm. mignanelli', with a stylized flourish at the end.

Mark Mignanelli
Manager Major Projects and Assessment



Contact: Siobhan Lavelle
Phone: (02) 9873 8546
Fax: (02) 9873 8599
Email: siobhan.lavelle@planning.nsw.gov.au
File: 10/25009
Our Ref: B254443
Your Ref: DA 211/93 MOD 4

Ms Belinda Parker
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Dear Ms Parker

**BENGALLA MINE DEVELOPMENT CONSENT MODIFICATION – 75W EPA ACT – DA 211/93 MOD 4
– REVIEW OF ENVIRONMENTAL ASSESSMENT**

Reference is made to a letter dated 7 December 2010 inviting comment of the Environmental Assessment for the above project prepared by Hansen Bailey on behalf of the Bengalla Mining Company (Coal & Allied).

The modification is proposed to maximise the mine's overburden storage capacity within the existing Development Consent Boundary. The existing Overburden Emplacement Area (OEA) would be extended to the south-east with permanent rehabilitation of the northern face of the existing OEA to occur by 2016, and permanent rehabilitation of the eastern face, which is visible from Muswellbrook, to continue as quickly as possible. An already approved temporary Overburden Emplacement Area would be relocated further west, away from areas to be mined. The proposed modifications would also allow the acceleration of mining operations within the Wantana Extension area to align with the existing mining area, with no overall increase in total annual production from Bengalla.

The EA prepared by Hansen Bailey deals with heritage issues in Section 6.9 and in a separate report Appendix L Non-Indigenous Heritage Impact Assessment prepared by Archaeology Australia in July 2010. The EA notes that two heritage buildings exist in the vicinity of the Bengalla Mine, the Bengalla Homestead and Overdene Homestead. The assessment concluded that no significant impact on Overdene Homestead would occur as a result of this Modification. The Bengalla Homestead has previously been assessed as being of high local and regional significance. It represents early settlement and continued occupation and development of rural industries. Whilst this may be the case, the Heritage Branch notes that 'high local' and 'regional' significance are incorrect terms which do not conform to Heritage Council guidelines or terminology.

The fence line of the Bengalla Homestead is noted to be approximately 50 m from the Southern OEA Extension and has been identified by Archaeology Australia as being potentially impacted upon by this Modification. A physical site inspection of the Southern OEA Extension identified other potential indirect impacts on Bengalla Homestead such as:

- Increased traffic may result in increased dust settlement within the Homestead. Additionally, traffic vibration may impact on the Homestead footings;
- Increased catchment area and steep slopes may increase the risk of flooding in the immediate vicinity of the Homestead; and
- Decreased visual integrity as a result of the proximity of the proposed Southern OEA Extension.

The Assessment determined that there will be no significant direct impacts on any heritage items resulting from the proposed Southern OEA extension. In addition, no significant impacts on any non-indigenous heritage items are predicted as a result of the Western Overburden Emplacement Area.



Section 6.9.4 of the EA indicates that Bengalla will continue to comply with the mitigation and management measures for the Bengalla Homestead in accordance with the Bengalla EHMP, Rio Tinto Environmental Performance Standard 9 Land Use Stewardship and CNA Environmental Procedure 2.1 Cultural Heritage Management and as described in the Bengalla SEE as previously approved by the Department of Planning.

The Statement of Commitments in Section 7 of the EA also indicates (Commitment No. 4) that the measures recommended by the specialist heritage report and in Section 6.9.4 would implemented.

Following review of the proposed modification and the supporting documents it is considered that, based on the results of the Heritage Impact Assessment, no specific mitigation is required for non-Indigenous heritage. The SOC's provided in Section 7 of the Environmental Assessment are considered adequate to manage the project in the event the modification is approved.

If you have any questions regarding the above matter please contact Siobhan Lavelle using the details on this letter.

Yours sincerely

22/12/2010

Vincent Sicari
Manager
Conservation Team
Heritage Branch
Department of Planning

cc. Hansen Bailey, PO Box 473 Singleton, NSW 2330

Chris Gidney
02 6549 3770

21 January 2011

**The Director General
Department of Planning
GPO Box 39
SYDNEY NSW 2001**

Dear Sir,

Re: Proposed modification 4 _ Bengalla Coalmine to

- Accelerate mining in the Wantana Extension and
- Implement a new overburden emplacement strategy

I refer to the above and to recent telephone conversations and advise that Council is waiting on an amended Statement of Commitments (SoC) from the Proponent. The Proponent has indicated that the SoC is likely to address many of the outstanding concerns raised by Council in preliminary discussions but will not be available until sometime after 7th February 2011.

Council is not in a position to make a detailed submission until it has all information, including any amended SoC before it.

Council simply submits that at this stage, it is not in a position to support the Application but will review its position after all material is provided to it and on that basis would welcome an opportunity to make a further more detailed submission when that further information is to hand.

Yours faithfully

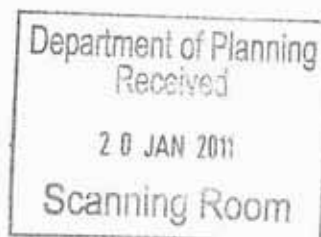
SJ McDonald
General Manager



PCU018721

Naomi Nelson
Mining
Department of Planning
GPO Box 39
SYDNEY NSW 2001

File: DA 211_93Bengalla Mine Development Consent
Modification Letter.doc



Your Ref: 10/13705
Our Ref: A491830

Dear Ms Nelson

Subject: Bengalla Coal Mine Modification (DA No. 211/93)

The Hunter-Central Rivers Catchment Management Authority (CMA) has reviewed the information provided and offers the following comments for your consideration. The comments are provided in the context of the impact of the project on the Hunter-Central Rivers Catchment Action Plan (CAP) which is available on the CMA's website <http://www.hcr.cma.nsw.gov.au>

Hunter-Central Rivers CAP

The Hunter-Central Rivers CAP is a whole-of government approach to natural resource management which has been endorsed by the NSW Government. As such it should be taken into consideration in all planning decisions that have an impact on natural resources.

Native Vegetation

The CAP guiding principle, "Where practical, future development (e.g. residential, industrial) should be restricted to primarily cleared land. Where loss of vegetation is unavoidable, native vegetation offsets should be used", is strongly underpinned by the objects of the Native Vegetation Act, 2003, which includes prevention of "broad-scale clearing unless it improves or maintains environmental outcomes"

It is acknowledged that this proposal is being assessed under Part 3A of the Environmental Planning and Assessment Act, 1979 and that the Native Vegetation Act 2003 does not apply in this circumstance. Nevertheless, the CMA considers that the principles of the CAP and the Act should still apply.

The information provided regarding the native vegetation assessment of the Western Overburden Emplacement Area does not include an assessment of native groundcover. A native groundcover assessment is a vital component in the determination of the condition of the native vegetation. The CMA requests that a ground cover assessment be undertaken and to determine the condition of the native vegetation. If the area has greater than fifty percent native groundcover (NVA Section 20) under the assessment criteria (NVA regulation clause 42) an offset is appropriate for the removal of native vegetation for the Western Overburden Emplacement Area. The Southern Overburden Emplacement Area does not require an offset based on the data presented in the report.

The on ground native vegetation assessment included an investigation for the presence of *Prassophyllum* sp. *Wybong*. Please note this plant flowers in spring hence the targeted survey in March is highly unlikely to identify this plant.

You should be aware that there is a possibility of the presence of white box yellow box Blakely's Redgum Woodland under the NSW Threatened Species Act and the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 please utilise the following <http://www.environment.nsw.gov.au/resources/native/box-gumldGuidelines.pdf> for the identification and categorisation purposes. The presence of a derived native grassland as classified under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 will need to be investigated.

Offsets

The CMA's position is that the Environmental Outcomes Assessment Methodology (EOAM) used in assessing native vegetation clearing under the *Native Vegetation Act, 2003* or BioBanking should be used to determine offsets to achieve "improve or maintain".

If the proposed Western Overburden area is found to be above low condition, the CMA strongly recommends that the offset strategy is consistent with DECCW's "*Principles for the use of biodiversity offsets in NSW*", including;

- *Offsetting requires additional management or increased security. Factors to consider include removal of threats, time-lag effects, and the uncertainties and risks associated with actions such as revegetation. Offsets should be agreed prior to the impact occurring.*
- *Offsetting should only proceed if an appropriate legal mechanism or instrument is used to permanently secure the area and required actions.*
- *Offsets should be based on quantitative assessment of the loss in biodiversity from the clearing or other development and the gain in biodiversity from the offset. The methodology must be based on the best available science, be reliable and used for calculating both the loss from the development and the gain from the offset.*

Riparian Health and Groundwater

The CMA supports comments from the NSW Office of Water regarding potential impact of the extension has on alluvial aquifer on the floodplain terraces.

The proposal is not consistent with CMA guiding principles for mining and extractive operations to provide adequate buffers between mining activities and surface/alluvial aquifers, rivers and freshwater wetlands under the Hunter-Central Rivers CAP.

Several CAP guiding principles apply to this component including;

- "all activities within groundwater areas should ensure the long-term sustainability of the ecosystems supported by groundwater"
- "The end mining landform, particularly its stability and ability to intercept water (runoff and groundwater) should take into account in the development, and progressive implementation of coal mining post closure management plans and site rehabilitation programs for saline groundwater and surface water, including derelict mine sites"
- Adequate buffers should be maintained between mining activities and adjacent surface water/alluvial aquifers. The CMA recognises the legislative framework under which mining operations function but also promotes the implementation of controls that go beyond those legislative requirements".

If you require any further information please do not hesitate to contact Steve Eccles on 6542 4444.

Yours sincerely



Steve Eccles
A/Catchment Coordinator, Upper Hunter
For Glenn Lyons
A/ General Manager

17/01/11



Mining and Energy Division

Review of Environmental Assessment

Bengalla Mine – Modification 4

Reference No: DA 211/93 MOD 4

Submission

Construction Forestry Mining and Energy

Union (Mining and Energy Division)

Northern District Branch

December, 2010

On 18 August 2010, the Bengalla Mining Company (BMC) managed by Coal and Allied applied to the Minister, Department of Planning seeking approval to accelerate mining operations within the Wantana Extension area to align these with the existing operations; and implement an Overburden Emplacement Strategy to resolve an overburden emplacement capacity issue at Bengalla.

This modification to Bengalla Mine is sought under section 75W of Part 3A of the EP&A Act.

The Director General made the Environmental Assessment publicly available on the 8 December 2010, at the DoP Information Centre Sydney, Muswellbrook Shire Council Offices, Nature Conservation Council Newtown, and Coal and Allied Muswellbrook Shopfront, Muswellbrook.

The Union is pleased to take the opportunity to comment on the Bengalla proposal and related activities Environmental Assessment.

The Mining and Energy Division is a Division of the CFMEU under the Federal Workplace Relations Act 1996, with over 120,000 members, one of the largest in Australia. The Division covers several industries including the coal industry, coal ports, metalliferous mining industries, electrical power generation, oil and gas and the Nation's small coking industry.

The Northern District Branch of the CFMEU Mining and Energy Division, being the branch that on behalf of the organisation which is making the submission is the principal Union representing coal miners in the Northern District coalfields of New South Wales. The Bengalla Coal Mine, with its site located 4 kilometres North-West of Muswellbrook, is wholly within the State's Northern District coalfields.

The Union is familiar with the Bengalla site and engaged the services of an Environmental Consultant with extensive experience in local government and environmental assessments on coal mining related projects.

After reviewing all the material and taking advice, the Union supports on balance the Bengalla Coal Mine Modification Application Reference No. DA 211/93 MOD 4.

Project Overview

BMC seeks to modify DA 211/93 to facilitate mine plan alterations which will alleviate overburden emplacement capacity issues at Bengalla. These issues have ultimately resulted from the delay in the relocation of the ROM Hopper and subsequent commencement of mining within the Wantana Extension area.

Bengalla has been unable to achieve its maximum production limit of 10.7 Mtpa ROM coal due to insufficient capacity for loading at the port. Such uncertainties surround rail and port allocations have resulted in the delay of capital expenditure associated with the relocation of the ROM Hopper, as described in the Bengalla EA, which ultimately resulted in the delayed entry into the Wantana Extension area.

In addition to the reduction in rail and port allocations, BMC experienced a delay in the granting of the relevant approval under Part 6 of the National Parks and Wildlife Act 1974. This approval was required for the salvage of Aboriginal material over the relocated ROM Hopper site, prior to the commencement of construction.

Both of these matters have since been resolved however the delay in the relocation of the ROM Hopper and consequent entrance into the Wantana Extension area has resulted in an overburden capacity issue now being experienced.

The changes to the development, the subject of the application for Modification, comprise:

- The acceleration of mining operations within the Wantana Extension area to align it with existing mining operations; and
- Implementation of an overburden emplacement strategy at Bengalla to resolve overburden emplacement capacity issues.

If this Modification is approved, Bengalla as modified will have the following features as compared to the currently approved development:

- 21 Year Mine Disturbance Area of approximately 717 ha being an increase of 26 ha to that previously approved;
- Maximum ROM coal production of 10.7 Mtpa being no change to what is currently approved by the Development Consent as modified;
- Maximum recovered coal reserve of 154.5 Mt of ROM;
- Mining approval to 2017, remaining unchanged from that currently approved;
- The same open-cut strip mining method as currently approved;
- The same maximum height of the OEA (RL 270 m) as currently approved;
- No increase in the 400 full-time permanent employees as currently approved;
- No change to existing infrastructure to that currently approved; and
- Some minor changes in the potential environmental impacts of the operations arising from the alterations to the approved development as proposed by this Modification.

Wantana Extension

Mining operations within the main mining area at Bengalla have progressed further to the west of that originally scheduled, restricting overburden emplacement activities within the southern portion of the existing OEA, thus resulting in a loss of overburden emplacement capacity remaining, leaving existing operations in a critical situation.

This Modification application is seeking the acceleration of mining within the Wantana Extension area at a rate of up to 2.5 Mtpa. This will align with the main mining area and ultimately assist in liberating approved emplacement areas.

Although mining within the Wantana Extension area will be conducted at higher rates, ROM coal production from Bengalla will remain within the maximum approved 10.7 Mtpa.

The proposed acceleration of mining within the Wantana Extension area will commence immediately upon the approval of this Modification.

Overburden Emplacement Strategy

Since the initial identification of the overburden emplacement capacity issues BMC's mine planners have conducted a detailed modelling to accurately quantify the shortage and to develop possible options to resolve the issue.

BMC will exhaust its options to emplace overburden with the existing OEA during early 2011. This is compounded by the fact that BMC relies upon a strip dragline mining operation as its primary method of overburden removal which constrains overburden emplacement within the existing OEA on a strip by strip basis. As such, BMC has no alternative but to seek approval to modify the footprint of the existing OEA.

Following the review conducted by the proponent and consideration of the alternative available to resolve the issue, BMC's mine planners have developed what they consider to be the ideal overburden emplacement strategy that will afford additional capacity required at Bengalla. This is whilst considering the impacts upon the natural environment and community.

The overburden emplacement strategy includes:

- Extending the footprint and associated landform of the existing OEA to the south-east (Southern OEA Extension);
- Relocation of the already approved but not yet constructed temporary OEA to the west of the current operations (Western OEA); and
- Delaying the finalisation of rehabilitation of the northern face of the existing OEA.

Southern OEA Extension

The Southern OEA Extension involves the development of the existing OEA further towards the south-east and will generate approximately 10 Mbcm of additional overburden emplacement capacity at Bengalla. The Southern OEA Extension covers approximately 11 ha outside the currently approved 21 Year Disturbance Limit within the current Mining Lease. The new landform will extend from the old conveyor belt

road at around 10 degrees towards the north-west to the maximum approved OEA height of RL 270m.

The Southern OEA Extension is proposed over a portion of land partly inside the 1955 Hunter River flood level. However, this area has previously been separated from the Hunter River Floodplain by the Muswellbrook to Ulan Rail Line and the Old Conveyor Belt road.

The Southern OEA Extension will allow the final landform to be developed at RL 270m further to the south than currently approved. The Southern OEA Extension has been designed to blend in with the currently approved mine plan, with some minor adjustments to create a free draining final landform.

The commencement of activities associated with the Southern OEA Extension is scheduled in early 2011 to ensure that BMC can proceed with currently approved mining operations. By this time, the eastern face of the existing OEA will be developed in readiness for rehabilitation activities.

Rehabilitation of the eastern and southern faces of the Southern OEA Extension is expected to be undertaken mid 2013. From this point in time, continuing improved environmental outcomes will be experienced by receivers to the east and south of Bengalla.

Western OEA

Mine planning has determined that should overburden material be emplaced within the areas as approved, it would need to be removed shortly after as mining progresses and at the time when emplacement capacity has been exhausted. This would not resolve the capacity issue and would result in an inefficient use of resources.

BMC's mine planners have identified an alternative location for this emplacement area to the west of currently approved mining activities.

The proposed Western OEA will provide BMC with the flexibility of an additional 6.6 Mbcm of overburden emplacement capacity to assist in alleviating the shortage. The Western OEA will be constructed to a maximum height of RL 210 m which will complement the natural topography within this area. The Western OEA will cover an area of approximately 24.6 ha with an additional footprint of approximately 15 ha outside of the approved 21 Year Disturbance Limit.

BMC plans to utilise the Western OEA as a last resort for emplacing overburden material in order to reduce the amount of land disturbance and the impacts associated with the rehandling of this material at a later date. The temporary rehabilitation of the Western OEA will be undertaken as each stage is developed to ensure the area of open spoilt is limited.

Northern OEA

The northern face of the existing OEA has been steepened to accommodate additional overburden capacity and to maximise coal recovery. The Bengalla SEE described the reshaping of this area at 10 degree slope in approximately 2012. Due to the overburden emplacement capacity issues currently experienced at Bengalla, BMC seeks approval to delay the final shaping and rehabilitation of the northern face of the existing OEA until 2016.

Analysis and Outcome

Extending the footprint of the existing OEA to the south-east into a lower lying area was the preferred option. This option was found to most effectively promote the orderly and economic development of Bengalla whilst protecting the environment. This option has been designed to integrate with the currently approved landform, whilst also minimising potential environmental and social impacts.

The Southern OEA Extension is proposed to impact upon some small areas of Class II agricultural land.

The Western OEA, as sought in this Modification, has been designed around one of the alternatives considered. Other alternatives considered were deemed to result in impacts on either Aboriginal heritage items or on sensitive ecological areas.

Extending the Southern OEA as part of the Overburden Emplacement Strategy sought by this Modification provides the proponent with the most practical and approvable options in resolving the overburden emplacement capacity issues at Bengalla, while achieving the objectives of the EP & A Act.

This Modification is required to permit the strategic timing of mining and placement of overburden materials within the approved DA Boundary. This Modification will result in a 3.6% increase to the currently approved 21 Year Mine Disturbance Limit.

Stakeholder Consultation

The issue scoping phase of the proponent's consultation program was to provide stakeholders with information on the Modification and to identify community concerns and issues.

Consultation generally was in the form of the distribution of the CNA Community Newsletter Muswellbrook Edition to near neighbours and relevant regulators.

Briefings have also been made to the Bengalla Mine CCC in relation to this Modification over the course of the preparation of the Environmental Assessment.

The proponent has established a stakeholder consultation program, which will continue to be implemented throughout the operation of Bengalla. Any issues identified during the consultation program will be addressed by providing more information or incorporate further refinements to the Modification. All issues raised were addressed in the proponents EA.

Air Quality

An air quality impact assessment was undertaken by consultants PAE Holmes in order to assess the effects of this Modification on the regional air quality.

The cumulative impact assessment takes into account the predicted impacts from Bengalla (including this Modification), the neighbouring mines in the area and the contribution from other local sources of dust.

Dispersion modelling of Depositional Dust, TSP and PM₁₀ was undertaken for the Modification. These figures show the predicted annual average TSP concentrations, predicted annual average PM₁₀ concentrations, and the predicted annual average (insoluble solids) dust deposition rate in relation to private receivers for Bengalla (including this Modification) considered in isolation and cumulatively where relevant.

The results from the dispersion modelling indicate that air quality emissions from Bengalla alone are not predicted to contribute to exceedances of the relevant depositional dust, TSP or PM₁₀ annual average air quality criteria at any non-mine owned receivers.

The dispersion modelling shows that when other sources are considered, the PM₁₀ annual average air quality criteria is predicted to be exceeded at seven non-mine owned receivers, mainly to the south-west and east of Bengalla. However, these non-mine owned receivers have previously been identified to be affected as a result of the approved operations at Bengalla, a neighbouring mining operations zone of affectation or recently predicted to be impacted within the Mount Pleasant Modification Project Coal EA. The depositional dust air quality criteria is predicted to be exceeded at one non-mine owned receiver located to the east of Bengalla, which has previously been identified to be affected by mining operations.

Results for Bengalla (including the Modification) alone indicate that no non-mine owned residences will exceed the PM₁₀ 24 hour criteria of 50 µg/m³ on more than five occasions per year as a result of Bengalla's operations. The assessment completed for cumulative PM₁₀ 24 hour average air quality concentrations concluded that there is limited potential for the Modification to result in any additional exceedances of the relevant criteria.

The proponent is seeking approval for additional overburden emplacement capacity. It is important to note that this Modification is not seeking the movement and storage of any additional overburden material on an annual basis or an increase in annual ROM coal production rates that are currently approved.

There are some minor changes to the “centre of gravity” of the dust sources at Bengalla during the construction of the Southern OEA Extension, however, these have been considered in the modelling which has confirmed no significant changes to the impacts to sensitive non-mine owned receivers.

As detailed, the Modification is not predicted to impact on any additional non-mine owned receiver to that previously predicted to be impacted.

Greenhouse Gas Emissions

The only change to existing mining operations proposed in this Modification that is likely to affect greenhouse gas emissions is a minor change due to the altered routes of haul trucks.

Total distances travelled by haul trucks under currently approved mining operations at Bengalla were compared with those required for this Modification in years 2011 and 2017.

The emissions for 2011 are not considered a significant increase in the total emissions produced compared to existing approved operations at Bengalla.

The mitigation and management measures included within the approved EMP are considered appropriate and relevant to the Modification.

Noise

An acoustics impact assessment for this Modification was undertaken by consultants Bridges Acoustics.

The acoustics impact assessment included a review of existing noise conditions, establishing Modification specific noise assessment criteria, modelling the mining noise levels resulting from this Modification, and an assessment of the predicted mining noise levels against the assessment criteria.

Regular attended and unattended noise monitoring was conducted at five residential locations surround Bengalla.

These locations were representative of most receivers that may be affected by noise from Bengalla.

The predicted noise levels were based on operational activities that include proposed mitigation measures. The predicted noise levels represent a worst case scenario with all equipment operation and modelled under prevailing weather conditions in accordance with the INP.

Noise levels are predicted to be generally lower than the predicted noise levels on most occasions when not all equipment is operating or noise enhancing weather conditions do not occur.

All other non-mine owned receivers have been predicted to receive less than the intrusive or consent criteria.

Results indicate that noise levels during day and evening periods remain within intrusive criteria at all non-mine owned receivers with the exception of three properties and four receivers with predicted noise levels 1 or 2 dBA above the day and evening intrusive criteria.

Three properties and three receivers have predicted noise levels 3 or 4 dBA above the night intrusive noise criteria.

Seven residences are predicted to receive minor noise impacts of 1 or 2 dBA above the night time intrusive noise criteria.

Modelling indicates that mining noise impacts from Bengalla would be less than those predicted in previous assessment at a majority of properties. This is attributed to the western advancement of operations within the main mining area, away from the sensitive areas to the east, and additional acoustic shielding created by the Southern OEA Extension to the mining operations within the main mining area.

As the Modification does not affect but enhances existing noise management strategies currently being implemented at Bengalla, this Modification is therefore unlikely to affect existing maximum noise levels from Bengalla, and a detailed sleep disturbance assessment therefore is not required.

The Modification will produce no increase in impacts as a result of blasting as it will have no effect on mining methods, overburden removal, coal extraction areas or blast locations or parameters. Similarly, this Modification will not increase traffic noise levels as it will have no effect on production rates or staff levels.

Soil

Suitable topsoil from each of the soil types within the Southern OEA Extension and the Western OEA will be stripped prior to overburden emplacement. This will be completed to ensure the better quality topsoil is not mixed with the inferior subsoil.

The proponent will continue to comply with the land mitigation and management measures provided for in accordance with their EMPs approved by DoP.

Groundwater

A groundwater impact assessment was conducted by consultants Australasian Groundwater and Environmental Consultants Pty Ltd.

The Hunter River Alluvial Aquifer is considered to be an important groundwater resource being widely used by the agricultural industry for stock watering and irrigation in the area.

The Southern OEA Extension will have increased infiltration through exposed overburden, due to water pooling against the alluvial bed without the influence of

evaporation. Increased recharge to the Hunter River Alluvial Aquifer has the potential to alter the piezometric gradient of this aquifer in close proximity to the Southern OEA Extension. However, this is expected to be a minor effect.

Electrical conductivity (EC) in the area of the Southern OEA Extension bores SMB1 and SMB2 indicate levels between 1950 – 2190 $\mu\text{S}/\text{cm}$. Based on this existing alluvial water quality data, the leachate testing and the groundwater seepage model, it is predicted that the Southern OEA Extension will locally improve the EC in the Hunter River Alluvial Aquifer in the vicinity of the recharge point.

The proponent will continue to comply with the mitigation and management strategies provided for in accordance with the approved EMPs.

Surface Water and Flooding

A surface water impact assessment was undertaken by consultants WRM Water and Environment Pty Ltd.

The Modification lies entirely within the original study area of the Bengalla EIS and the DA Boundary. No coal extraction on the Hunter River alluvial floodplain is proposed as part of this Modification.

The Modification requires the development of a new sedimentation dam and extensions to an existing dam to capture the surface runoff from the Southern OEA Extension.

Evaporation from these dams is expected to slightly increase water loss across Bengalla. However changes to Bengalla's water demands resulting from this Modification are negligible.

The Southern OEA Extension will extend onto the fringe of the 1955 flood extent. The assessment confirmed that there will be no significant effect on the flow of floodwaters along the Hunter River Floodplain as floodwater can only enter the area

proposed to be occupied by the Southern OEA Extension via culverts under the rail and road embankments.

The loss of floodplain storage resulting from the Southern OEA Extension, Modification represents a loss of only 0.3% across the adjacent 1.2 km reach of the Hunter River. This is a very small loss of storage and will have no measurable effect on Hunter River flood levels or flood behaviour.

Visual and Lighting

A visual impact assessment was undertaken by consultants Integral Landscape Architecture and Visual Planning.

The assessment of visual impacts of the Southern OEA Extension found that impacts will be low due to the limited scale of changes and similar visual characteristics to the currently approved existing OEA.

Assessment of the visual impacts of the Western OEA found that impacts will also be low due to the lack of external visibility, existing topography in the area and the similar visual character to the backdrop of the current existing OEA.

The lighting associated with this Modification was assessed to be at a similar level to that currently approved and experienced at Bengalla. Some direct lighting impact will occur when operational areas located on the Southern OEA Extension are not screened by overburden or topography.

The expeditious completion and rehabilitation of the Southern OEA Extension with priority given to the outer faces will occur. This will reduce the visual impact of this Modification to potentially sensitive receivers to the east of Bengalla.

Ecology

An ecological impact assessment was undertaken by consultants Cumberland Ecology.

Flora

The proposed Modification involves the disturbance of approximately 9 ha of grassland containing predominantly exotic pasture and no native plant communities for the Southern OEA Extension.

The Western OEA will disturb approximately 22 ha of heavily modified native grassland that has derived from the historic clearing of woodland.

In both cases, degraded low diversity derived native grassland and exotic pasture is of a modified form and not conforming to a community listing in the TSC Act or EPBC Act.

Fauna

The habitats provided within the Survey Areas are of low conservation significance for local fauna due to the absence of food resources and poor structural diversity for shelter.

A State and Federal database search indicated that a number of fauna species listed under the TSC Act and EPBC Act have the potential to occur within the Survey Area. However, these species were not identified during the fauna surveys and it is not likely that the Survey Area offers habitat for these species.

Non Indigenous Heritage

A non-indigenous heritage impact assessment was undertaken by consultants Archaeology Australia.

A review of Bengalla's EIS identified two heritage buildings in the vicinity of Bengalla, including the Bengalla Homestead and Overdene Homestead.

The assessment concluded that no significant impact on Overdene Homestead would occur as a result of this Modification.

The fence line of the Bengalla Homestead is approximately 50 m from the Southern OEA Extension and has been identified as being potentially impacted upon by the Modification.

The Assessment determined that there will be no significant impacts on any heritage items resulting from the proposed Southern EOA Extension.

In addition, no significant impacts on any non-indigenous heritage items are predicted as a result of the Western OEA.

Indigenous Heritage

An Aboriginal heritage impact assessment was conducted by consultants at Bengalla in 1992. This assessment identified Aboriginal sites and artefact scatters across the site.

The Western OEA as sought in this Modification has been designed to avoid any impacts on Aboriginal heritage items and sensitive ecology.

No Aboriginal heritage sites as part of the Bengalla EIS were found to exist within the areas proposed to be disturbed by this Modification. Aboriginal sites remaining at Bengalla located in the vicinity of the Southern OEA Extension and the Western OEA that were not salvaged as part of the 1998 salvage have been provided. No Aboriginal heritage sites exist within the Survey Area 1 or Survey Area 2.

Rehabilitation and Final Landform

BMC currently conduct rehabilitation in accordance with the Rehabilitation and Landscape Management Plan 2007.

Two options are currently available at Bengalla in regard to existing mine planning and ultimately, mine closure. The first option is as currently approved including this Modification, resulting in mine closure in 2017 with a conceptual final void located to the west.

The second option relates to large areas of identified coal reserves to the west of currently approved mining operations at Bengalla.

It is anticipated that BMC will seek the relevant approval necessary prior to 2017, to allow continuation of mining operations at Bengalla into the future. The mine closure would be rescheduled and the location of the final void and associated landform would be altered.

The rehabilitation of land disturbance associated with this Modification will continue to occur progressively as an integral component of the mining operations at Bengalla.

It is expected that in order to minimise air quality impacts associated with the proposed Western OEA, surface disturbance will be limited to a maximum of 50% of the total footprint with progressive temporary rehabilitation being conducted on any additional disturbance.

Should approval of this Modification be granted a revised Mining Operation Plan will be required to be submitted to Industry and Investment NSW.

Justification

The proponent indicates the Modification will ensure the maximisation of resource recovery and orderly continuation of open cut coal mining with the creation of additional overburden storage capacity within Bengalla's current mining tenements. It will also ensure the progressive rehabilitation of the operation to a predetermined conceptual 2017 landform consistent with DA 211/93 and the Bengalla SEE.

The EA presented by BMC has not identified significant impacts associated with the acceleration of mining within the Wantana Extension area or the implementation of the overburden emplacement strategy in the manner proposed by the Modification. Therefore the Modification has been designed to result in an improved environmental outcome for ongoing operations at Bengalla.

In Summation

The relocation of the approved Western OEA will result in a visually less sensitive landform to that currently approved and will result in a reduced amount of future overburden material re-handling which will ultimately lead to improved air quality impacts from Bengalla.

The creation of the Southern OEA Extension once fully commissioned, will screen these existing and future operations both within the Wantana Extension area and the main operation from sensitive receivers located to the east of Bengalla and reduce the visual and acoustic impact of the operation.

Based on comparative analysis of the key elements detailed in the Bengalla Coal Mine Statement of Environmental Effects, it is considered the Modification Activities to build on the attributes of existing project approval.

The Union on balance supports the Bengalla Coal Mine Modification 4, Reference No: DA 211/93 MOD 4.

A handwritten signature in black ink, appearing to read 'Grahame Kelly', with a stylized, cursive script.

Grahame Kelly

DISTRICT SECRETARY

**Belinda Parker - Online Submission from Heather Meissner
(Secretary) of Muswellbrook Shire Local & Family History Society Inc.
(object)**

From: Heather Meissner (Secretary) <mei2@bigpond.com>
To: Belinda Parker <belinda.parker@planning.nsw.gov.au>
Date: 20/12/2010 23:29
Subject: Online Submission from Heather Meissner (Secretary) of Muswellbrook Shire Local & Family History Society Inc. (object)
CC: <assessments@planning.nsw.gov.au>

- (1) The site inspection was carried out when there was heavy grass cover and nil ground visibility.
- (2) The document does not give a clear indication of how close the final Southern Overburden Emplacement Area Extension will be to the homestead complex.
- (3) The meaning of relic in the document needs to be updated to reflect the recent changes to the Heritage Act 1977.
- (4) The effect of dust on the external parts of the buildings and the garden have been overlooked.
- (5) The measures to be taken if vibration effects the buildings is not stated.
- (6) The background history of the site is poor and needs to be properly researched.

Name: Heather Meissner (Secretary)

Organisation: Muswellbrook Shire Local & Family History Society Inc.

Address:

PO Box 450

Muswellbrook

NSW 2333

IP Address: cwpp-p-144-134-227-59.prem.tnns.net.au ~ 144.134.227.59

Submission for Job: #4150 Modification 4

https://majorprojects.onhiive.com/index.pl?action=view_job&id=4150

Site: #499 Bengalla Mine

https://majorprojects.onhiive.com/index.pl?action=view_site&id=499

Belinda Parker

E: belinda.parker@planning.nsw.gov.au

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Belinda Parker - DA 211/93 Mod 4

From: "Mandy Feeney" <feeney@hotmail.net.au>
To: <information@planning.nsw.gov.au>
Date: 13/12/2010 19:30
Subject: DA 211/93 Mod 4

RECEIVED

13 DEC 2010

Dear Sir/ Madam

As my submission on your website is not sending because of your security numbers. It keeps requesting resend obviously flawed.

Please find the following objection in relation to the Bengalla Mine DA 211/93 Mod 4

The decision pending would certainly impact significantly upon the urban area of Muswellbrook and surrounds. The thought of overburden being dumped on rich alluvial farming land is simply preposterous. This would destroy and dessimate farming as we know it. Not to mention the harm to the Hunter River life force to many towns and cities further down the Valley.

I submit my objection to this proposal.

Regards

AM Feeney
Shire Resident
20 Mangoola Road
DENMAN NSW 2328

Belinda Parker - Online Submission from Ian and Faye WEBBER (object)

From: Ian and Faye WEBBER <i.fwebber@pacific.net.au>
To: Belinda Parker <belinda.parker@planning.nsw.gov.au>
Date: 15/12/2010 17:27
Subject: Online Submission from Ian and Faye WEBBER (object)
CC: <assessments@planning.nsw.gov.au>

Received
15/12/10.

Object is lodged to the accelerated mining process by Bengalla as our property is already in Bengallas ZOA and they already regularly exceed their dust management requirements on our property. There has been no consultation with the Webber family from Bengalla with regards their current exceedences or planned future expansion. The cumulative effect on our property is already evident being in both ZOA and management zones from two mining companies. Objection is lodged to the increased timing of the current rehabilitation programme impacting visually on both our homes and our current rural residential subdivision. The same objection is lodged with respect the extension of the overburden dump in the Wantana area increasing visual impact.

Name: Ian and Faye WEBBER

Address:
307 Denman Road
Muswellbrook 2333 NSW

IP Address: ppp5122.dsl.pacific.net.au - 125.255.17.34

Submission for Job: #4150 Modification 4
https://majorprojects.onhiive.com/index.pl?action=view__job&id=4150

Site: #499 Bengalla Mine
https://majorprojects.onhiive.com/index.pl?action=view__site&id=499

Belinda Parker

E: belinda.parker@planning.nsw.gov.au

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Appendix L: Non Indigenous Heritage Impact Assessment
Comments

1. Figure I does not give any indication of the location of Bengalla Homestead complex in relationship to the Southern Overburden Emplacement Area Extension.
2. The third paragraph of the historical summary is totally incorrect. Captain Samuel Wright did not sell Bengalla to Captain DCF Scott in 1832, but took out a mortgage for £500 with Robert and Alexander Walker Scott. In 1838, Wright sold to DCF Scott. Land sold amounted to 8040 acres. In 1839, Scott took out a mortgage with Wright using Bengalla a security. This was for £10,200 at 10% to be repaid by 1st January 1846. Wright then went on an overseas trip. On Wright's return Scott was in serious financial difficulties. He extended his mortgage with Wright in 1844. In 1847 Scott could not pay so Bengalla was transferred back to Wright. The transfer included additional land that Scott had added to Bengalla. There was only ever one Bengalla. This section of the report needs to be correctly researched.
3. Fifth paragraph of the historical summary mentions that bricks for the building of the 1877 portion of Bengalla homestead were made on the estate. Has an attempt been made to locate the site?
4. The second paragraph of the Site Description states that the 1895 additions to the Homestead included a serving wing. This wing appears to be much earlier than the 1895 additions and could even pre date the original 1877 brick portion of the homestead. This building needs to be examined by a person experienced in early Australian architecture.
5. Site Inspection: The area that will be directly impacted by the Southern OEA Extension was physically inspected on 12 March 2010. The report states that surface visibility was very low due to heavy grass cover. The report does not give any indication of what survey methodology was used or the percentage of coverage.
6. The second paragraph of Site Inspection gives measurements for the proposed OEA to homestead boundary fence while another measurement is stated for the distance between the homestead and the present OEA. All this is confusing and does not give a clear picture of how close the new OEA will be. It is mentioned that there is a haul road between the present homestead and the OEA, but there is no indication if that haul road will be closer to the homestead.
7. Heritage Impact Assessment: Paragraph 5 indicates that the visual integrity of the homestead has been compromised by the existing OEA (see Plate 2 in the Report), but gives no indication of the size of the proposed new OEA. At present the visual integrity of the view is compromised by the dam, which in the future could be removed. The removal of a new OEA would be much more difficult.
8. Potential Mitigations & Management Strategies. The Heritage Act 1977 has been modified and the report should reflect the current definition of a relic i.e. "**relic**" means any deposit, artefact, object or material evidence that:
 - (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and
 - (b) is of State or local heritage significance.
9. The following comments apply to the mitigation measures that have been proposed:-
 - a. The planting of screen trees between the Homestead and the boundary of the proposed Southern OEA extension would be of little value in the short term.
 - b. When will the drainage line be constructed? One would assume this will take place after dumping has been completed. Much more detail is needed here i.e. location of

drain, time period for construction of drain, archaeological impact of the drain on the curtilage of the homestead site, visual impact of the drain.

- c. Vibration monitoring needs to take place before there is an extension of the existing OEA to provide a base measure. Specification needed to be provided as what is in the EHMP. This report needs to detail what the remedial action will be if required.
- d. The report states that the interior of the Homestead is to be monitored for dust build up and rectified if necessary. No consideration has been given to the effect of dust on the external fabric of the buildings or the garden vegetation which forms part of the site. The main part of the Application states that the geochemical composition of the Archerfield Sandstone is acidic. Dust from this material could have a serious detrimental effect on the buildings bricks and mortar.

Mr. R.R. and Mrs J.M. Hamilton
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Mob: 0408 235 612
SEE Property Id. No. 38

Mining and Industry Project
Department of Planning
GPO Box 39
SYDNEY NSW 2001



12th January, 2011

Re. Bengalla Coal Mine (DA 211-93 MOD 4)

We wish to lodge a submission listing our objection to the proposed modification that Bengalla Coal Mine has applied for as per DA 211-93 MOD 4. The reasons for our objections are listed below.

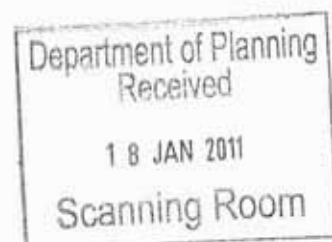
Air Quality:

Our air quality has been degraded very noticeably over the last 14 years, we find it very hard to believe that the monitoring, does **not** show what we see in the air and the deposited mess we have to clean up. We understand that Bengalla is not the only cause to the problems we face, but we are extremely distressed at the thought of **any extension to the mine footprint** and associated changes to the landform of the existing OEA to the south-east.

Our concern also extends to the expansion and acceleration of mining within the Wantana Mine pit area, as this extension of the mining pit will disturb a lot more of the ground that is not protected from our vision by natural topography or vegetation as is shown in figure 2-4 on page 7 of the appendix D and will be more open to us and the vagaries of wind, the annual majority of which blow towards us from Bengalla mine (as per figures 5-2 through figure 5-5) in appendix D.

We expect, this concentrated mining effort in the Wantana extension of the actual mining pit and the extended OEA that will be created, will increase the amount of disturbed and unrehabilitated earth, which will in turn increase the level of dust raised, so we will likely feel the outcome more severely as it moves closer to the West and our home.

Another problem that we experience from degraded air quality and high dust deposition, is contamination to our only water supply, which is what we catch from our roofs. If we look at the amount of deposited dust we receive now, that has to be cleaned, from the surface of any item exposed to the open air, e.g. cars, out door furniture and open verandahs and equate that to what would cover the area of our roof and know that this is washed into our tanks when we get rain, is a real worry.



Noise:

We have been affected by an increase in noise levels since Bengalla Mine first started, we have registered our complaints with the Company only when we feel that they have gone over the limits that were set for their first consent.

Our concern with this new proposal is that we will be more exposed to the actual mine pit area, which is coming into our view from behind the ridge that up until now has shielded us from excessive noise from that area. Also the extension to and the increase in height, of the existing OEA to the south-east, will open us to the extra noise that will be created in constructing this new area, and this new OEA will then act as a rebound wall for noise generated from the pit, that noise will then be directed up an open gully directly at our home.

The proposed acceleration of mining operations within the Wantana Extension area will concentrate the noise in this one area of the mine pit which is more visually and audibly closer and open to us as shown in mine plans in the EA in Figure 3 through 5.

We already hear the noise of the existing haul trucks, the roar of the CHPP and washery, the rumble of the new relocated coal hopper and the vibrations of the trains as they are loaded, all these things are very visible and open to us in a valley that we look down on.

We are distressed that it is claimed in this EA on page 12 of appendix E that we are expected to accept noise level increases above the day and evening intrusive noise criteria as shown in **Table 5 in appendix E** and not complain. Our original background noise levels as per Table 1 were set at 30 in the year 2000, but the original background noise levels taken before the start of construction at Bengalla were so low, they were not able to be registered by the measuring equipment at that time, so when they set intrusive noise criteria at 5dBA above background noise levels as required by the INP the actual noise increase from pre Bengalla and other mines is not taken into account in the tables in this EA, so the real increase to us is more like 10dBA.

Visual Assessment:

Originally back in 1994 we were told and the **Commissioner of the Inquiry for the original application** was also led to believe by Bengalla and their consultants that we would not see much of the industrial area, because of the screening that was proposed, obviously this screening did not do what it was supposed to as we can see a majority of the industrial area, the rail load out, the new coal hopper, the workshop, the washery, the coal stock piles, and the reclaimers and stackers. We are listed as one of the view points in appendix J of this EA. We do not agree with figure 2.2 on page 10 which lists us as having **Moderate visual sensitivity**.

In the previous Wantana Extension application it was at least acknowledged that we would have **high sensitivity** as we are one of the houses mentioned at the northern end of Roxburgh Road. We do not accept that the proposed extension to the coal mining pit and OEA into the Wantana Extension, all of which have to be serviced by new roads, will be a minimum impact.

Our major visual concern with this new proposal is that the actual mine pit is moving west, closer to us and at the same time, the actual run of the pit and the increased height of the OEA is being extended to the south. This is already a part of our view from behind the ridge, that up until now has shielded us from this highly sensitive visual impact.

This alone would ordinarily be bad enough but the idea that the OEA from our point of view which will always be an open bare earth mountain, pock marked with tailings that are to be disposed of in this area is to be increased in height making the activity required to build these mountains very visible. This is extremely disturbing to us particularly as this vision will not reduce until it can be rehabilitated at the end of mine life, 6 years from now.

It appears to us that we have had to accept increases to all the adverse effects from our neighbours development, as each extension has been approved over the years without any consideration or compensation.

It has been hard to live with the many adverse conditions we have been subjected to over the last 14 years. Even though the Company has responded to our complaints and has spent a lot of time and money in **trying but has been unsuccessful in reducing** the problems their development has caused, we still have the stress, inconvenience and distress at having to complain.

We acknowledge that we have been identified as land that has been predicted to be affected within the Mt. Pleasant project Modification EA currently under review by DOP, but feel that as our property has been and is always going to be impacted by Bengalla Mine which is managed by and partially owned by Coal and Allied, as well as the many other mines which in the future will surround us, request that somehow these impacts should not be aloud to be used by Coal and Allied as the owner of Mt. Pleasant Mine to devalue our property during negotiations for acquisition if and or when this might take place.

We should be able to realise the full value of our property under acquisition laws as if that same property was in an area not affected by any mining company.

Yours faithfully,

Ray & Jan Hamilton.

The image shows two handwritten signatures in blue ink. The top signature is 'R. Hamilton' and the bottom signature is 'J. Hamilton'. Both are written in a cursive, flowing style.



PCU018388

Department of Planning
Received

11 JAN 2011

Scanning Room

MARK PEEL

234 ROXBURGH ROAD,

MUSWELLBROOK

NSW 2333.

MODIFICATION N° (DA 211/93 MOD4)

I MARK PEEL OBJECT TO PROPOSED MODIFICATION

- 1) TO INCREASE THE RATE OF MINING FROM 1.5 TO 2.5 MILLION TONNES OF COAL A YEAR IN THE WANTANA PIT, THE INCREASE IN OVERBURDEN BY 10 MILLION TONS, THATS A LOT OF EXTRA DUST. THE EXTENSION OF WANTANA PIT CONTAINS ALLUVIAL SOIL, WHICH BENGALLA MINING COMPANY SAID IN THEIR FIRST DA CONSENT THEY WOULD NOT MINE ALLUVIAL SOIL, THE ORIGINAL OWNERS KEY'S ESTATE N°2 DAIRY FARM, BREW LUCERNE FOR DAIRY COWS & MADE HAY OFF IT, THE EXTRA DUST OFF 10 MILLION TONS OF OVERBURDEN WILL IMPACT ON MY PROPERTY. THE MINE SAYS MY PROPERTY WILL NOT BE IMPACTED, I DON'T BELIEVE THIS AS WE'RE ALREADY IMPACTED WITH DUST NOW.
- 2) INCREASING THE FOOTPRINT OF THE EXISTING WASTE DUMP, SHOULD NOT BE ALLOWED, THERE IS ALREADY A WASTE DUMP IN EXISTENCE THEY DO NOT USE. TO PUT ANOTHER WASTE DUMP SOUTH EAST OF THE ORIGINAL DUMP, WILL BE IN A DIRECT LINE WITH DUST ONTO MY PROPERTY.
- 3) THIS IS THE 4TH MODIFICATION THAT BENGALLA COAL MINE HAS PUT IN FOR, WHEN WILL IT STOP. ON EACH MODIFICATION AT BENGALLA I HAVE ASKED BENGALLA FOR A DUST MONITOR, THEY HAVE ALWAYS REFUSED THE MONITOR FOR MY PROPERTY, EVEN THOUGH THE MINE IS MOVING CLOSER TO MY PROPERTY EACH WORKING DAY.

Mark Peel.

Appendix B

PAEHolmes Response to DECCW Air Quality Issues

28 January 2011

Nathan Cooper
Hansen Bailey
Via email: ncooper@hansenbailey.com.au

Re: 3820 – Bengalla Modification – Response to NSW Department of Environment Climate Change and Water (DECCW) submission

Dear Nathan

Further to the provision of the Air Quality Impact Assessment (AQIA) for the proposed modification to operations at Bengalla (**PAEHolmes, 2010**), it is understood that DECCW has reviewed the AQIA and states it has no objection to the proposal and no specific recommended conditions of approval in relation to air impacts. A copy of the full submission received from DECCW is provided in **Appendix A**.

In the submission, DECCW states that emissions from wheel generated dust and wind erosion may have been under-estimated due to updates to the emissions factors for these activities since the original AQIA was completed and raises a number of issues in relation to the emission factor selection. Further discussion on the issues raised is provided below.

It is noted that DECCW agrees with the report conclusion that there would be a reduction in impacts on the surrounding air environment due to the modification as consistent approaches were used for both the original and revised AQIA's.

DECCW Issues with AQIA

Emission estimates of wind erosion sources have been reduced due to estimated annual rainfall

The emission factor used in the AQIA to calculate emissions from wind erosion is shown below:

$$E_{TSP} = 1.9 \times \left(\frac{s}{1.5} \right) \times \left(\frac{365 - p}{235} \right) \times \left(\frac{f}{15} \right) \quad \text{kg/ha/day}$$

Where:

s = silt content (%)

p = number of raindays per year, and

f = percentage of the time that wind speed is above 5.4 m/s

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BRISBANE

GOLD COAST

TOOWOOMBA

It is agreed that theoretically the inclusion of the variable for the average number of raindays in a year may lead to an underestimation of the hourly emissions, and as such, potentially underestimate the worst-case 24-hour impacts. However, a review of the *NPI EET Manual for Mining v2.3* (Environment Australia, 2001) shows that the default uncontrolled TSP emission factor for wind erosion is 0.4 kg/ha/hour. As shown in **Table 1**, use of the NPI default emission factor would have resulted in estimated emissions 44% lower than modelled. As such, it is considered that the AQIA for the proposed modification is in practice conservative and that emissions are not “reduced”.

DECCW points out that more complex approaches can be applied to consider days on which rain falls, however, it is noted that there are dozens of alternative and equally valid approaches that various experienced consultants can apply, and as such no *incorrect methodologies* have been applied. It is important to point out that a theoretical reduction/increase in *emissions* does not directly translate into a reduction/increase in actual *impacts* and a “valid” assessment is one that reflects likely actual impacts.

Table 1: Comparison of estimated TSP emissions from wind erosion sources – EA emission factor compared with NPI default

Source	TSP Emissions per EA (kg/year)	TSP Emissions NPI default emission factor (kg/year)
WE - OB spoil areas (all approved + SOEA)	1,464,692	792,955
WE - OB spoil areas (WOEA)	159,026	86,093
WE - Open pit	1,104,182	597,782
WE - ROM stockpiles	7,281	7,884
WE - Product stockpiles	57,037	77,197
TOTAL	2,792,219	1,561,912

Emission estimates of wheel generated dust emissions are not based on a referenced emission estimation technique

The emission estimate of wheel generated dust emissions is based on the historical US EPA default emission factor of 4 kg/VKT, as presented in the State Pollution Control Commission (SPCC), document (SPCC, 1983) and validated at Hunter Valley coal mines in the 1998 NERDDC study (NERDDC, 1988). This emission factor has been applied in numerous AQIA’s for coal mines (and other extractive industries) and is consistent with the emission factor used in the previous AQIA’s completed for Bengalla (Holmes Air Sciences, 2006; Holmes Air Sciences, 2007).

The emission factor applied is the only emission factor available that has been validated for the Hunter Valley coal mining activity.

It is noted that an AP-42 emission factor for wheel generated dust exists and has been updated several times since the original default was developed. However, no validation of the revised AP-42 emission factor has been completed for conditions in the Hunter Valley, and it was not used in this AQIA. More specifically, the AQIA does not apply the 2003 NPI emissions equations or any NPI default parameters to these equations. Thus it is an interesting coincidence that these equations and defaults, produce, as calculated by DECCW, approximately the historical AP-42 default used in the assessment.

However, the merit of DECCW applying the default NPI 48t vehicle mass and 10% silt assumptions in an equation that was not used in the AQIA and using this to state that the AQIA may underestimate impacts is not clear, it is useful therefore to examine the comparison DECCW have made in further detail.

The current AP-42 emission factor for industrial vehicles travelling on unsealed roads is shown below:

$$EF_{TSP} = 0.2819 \times \left(4.9 \times \left(\frac{s}{12} \right)^{0.7} \times \left(\frac{(W \times 1.1023)}{3} \right)^{0.45} \right)$$

Where:

EF_{TSP} = TSP emission factor from wheel generated dust
 s = silt content of road surface
 W = average weight of vehicles travelling on haul road

In order to replicate the calculations presented by DECCW in their submission using the updated AP-42 emission factor (see Table 3 of **Appendix A**), the silt content of the road surface would have to be 8.4%. It is unclear why this value has been used.

It is important to note that the updated AP-42 emission factor is particularly sensitive to the surface silt content of the road, as shown in **Table 2**. The same vehicle weights used by DECCW have been used to allow for direct comparison.

Table 2: Estimated TSP emissions from wheel generated dust using updated emission factors – influence of silt content

Silt content (%)	Carrying capacity (tonnes)	Tare weight (tonnes)	Average gross weight (tonnes)	Control efficiency (%)	TSP emission factor (kg/km)
2	218 (OB haul trucks)	165.7	274.7	75	0.79
3					1.04
4					1.28
5					1.49
10					2.42
2	136 (coal haul trucks)	113.5	181.5	75	0.65
3					0.87
4					1.06
5					1.24
10					2.01

Whilst no surface silt content data are currently available for the haul roads at Bengalla, recent data collected at the Integra mine (see **Appendix B**), show an average silt content of 2%. As shown in **Table 2**, in the likely event that similar conditions exist at Bengalla, use of the updated emission factor as suggested by DECCW would result in a controlled emission factor less than the 1 kg/km used in the AQIA and would result in total emissions lower than assumed. Applying the likely silt content of 2% indicates that the emissions per the DECCW suggested equation would be between 65% and 79% of those applied in the assessment.

It is also noted that the range of source conditions used in developing the equation, was for vehicle weights in the range of approximately 1.8 tonnes to 263 tonnes. The average gross weight assumed by DECCW for the overburden haul trucks is 274.7 tonnes, which is outside this range, potentially making application of this equation invalid for this situation.

DECCW also comments that further reductions in estimated emission may be possible due to speed limits on haul trucks. The updated AP-42 emission factor does not account for vehicle speed and it is understood that the reason for this is that larger haul trucks travel at relatively low speed (for example, compared with light vehicles on dirt roads) and have little turbulent under-body wake to

induce significant dust (as might occur for light vehicles on public roads, for which the AP-42 equation does contain a relevant speed parameter).

Do not hesitate to contact me should you have any further queries.

Kind regards

Judith Cox
Senior Air Quality Engineer
PAEHolmes

Phone: 02 9874 8644
Fax: 02 9874 8904
Email: judith.cox@paeholmes.com

References:

- Environment Australia (2001)
"Emission Estimation Technique Manual for Mining" Version 2.3. 5 December 2001.
- Holmes Air Sciences (2006)
"Air Quality Impact Assessment: Bengalla Mine: Mine Plan Modifications" prepared by Holmes Air Sciences for Hansen Consulting Pty Limited, February 2006.
- Holmes Air Sciences (2007)
"Bengalla Mine: Wantana Extension Statement of Environmental Effects. Air Quality Impact Assessment" prepared by Holmes Air Sciences for Hansen Bailey Pty Limited, May 2007.
- NERDDC (1988)
"Air Pollution from Surface Coal Mining: Volume II Emission Factors and Model Refinement, Final Report" prepared by Dames and Moore for National Energy Research Development and Demonstration Council, October 1988.
- PAEHolmes (2010)
"Air Quality Impact Assessment. Bengalla Mining Company. Development Consent Modification" prepared by PAEHolmes for Hansen Bailey Pty Limited, November 2010.
- SPCC (1983)
"Air Pollution from Coal Mining and Related Developments", Published by NSW State Pollution Control Commission (now EPA).

Appendix A: Copy of DECCW submission



**Environment,
Climate Change
& Water**



PCU018557

Your reference: 10/13705; DA 211/93
Our reference: PART 4 DOC1056010;
LIC07/2079-03
Contact: Bill George, 49 086821

NSW Department of Planning
Mining and Industry Projects
GPO Box 39
SYDNEY NSW 2001

Attention: Belinda Parker

12 JAN 2011

Department of Planning
Received
14 JAN 2011
Scanning Room

Dear Ms Parker

PROPOSED MODIFICATION – BENGALLA COAL MINE (DA 211/93 MOD 4)

I refer to your letter dated 7 December 2010 to the Department of Environment, Climate Change and Water (DECCW) requesting a review of the adequacy of the document "*Bengalla Mine Company Development Consent Modification Environmental assessment*" prepared by Hansen Bailey and dated December 2010 ("the EA") and requesting that DECCW comment on the proposal and include any recommended conditions of approval.

DECCW understands that proposed modifications to the existing approval relates to:

- Increasing the extraction rate of mining operations in the Wantana Extension Area;
- Increasing the footprint of the existing waste dump; and
- Using an area to the west of the mine for the temporary storage of overburden

DECCW also understands that mining operations will continue to be undertaken at the currently approved production rate, approved mining methods, utilising the existing vehicle fleet and no change to the hours of operation at the mine.

DECCW has completed an assessment of the EA and comments arising from this review are provided below. While DECCW has no objection to the proposal, and no specific recommended conditions of approval in relation to air and noise impacts, DECCW is unable to provide advice regarding impacts to Aboriginal cultural heritage until a revised Aboriginal cultural heritage assessment is completed.

THREATENED SPECIES

DECCW has reviewed the EA, including the *Flora and Fauna Impact Assessment* ("the Report") and notes that the EA did not identify any threatened species, populations, communities, or threatened species habitat in either the Southern Overburden Emplacement Area (OEA) or the Western OEA. The Pine Donkey Orchid (*Diuris tricolor*) is a threatened species and plants in the Muswellbrook local government area also comprise an Endangered Population. In the Muswellbrook area this orchid is known to occur in derived grassland with both native and exotic species. DECCW considers that the Western OEA could include suitable habitat for this species. When the Western OEA was surveyed on 19th March 2010 plants of this species would either have still been dormant or had a few

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non-descript grass-like leaves present – flowers are needed to identify this species. Therefore the Pine Donkey Orchid would have scarcely been detectable, let alone identifiable, during the ecological fieldwork for this proposal and its presence on the site has not been fully identified.

DECCW recommends that the proponent conducts targeted surveys for the Pine Donkey orchid (*Diuris tricolor*) sometime between 19 September and 17 October 2011 (the exact timing of flowering is based on the weather conditions of the preceding weeks; and the flowering of known *Diuris tricolor* plants in the Muswellbrook LGA may also be used as a guide) on the Western OEA to determine if this species is present on the site. If present, DECCW recommends that the proponent implements adaptive management to ensure that any *Diuris tricolor* plants are not impacted by the project.

AIR QUALITY IMPACTS

The Air Quality Impact Assessment (AQIA) provided with the EA has been reviewed and compared to the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, August 2005* (Approved Methods). The AQIA assessment generally follows the requirements of the Approved Methods. A detailed discussion of issues with the AQIA identified by DECCW is provided at **Attachment B**.

DECCW has identified that emissions from wheel generated dust and wind erosion may have been under-estimated in the AQIA. However, DECCW agrees with the conclusion that there would be a reduction in impacts on the surrounding air environment due to the modification as consistent approaches to assessment were used for both assessments.

NOISE IMPACTS

DECCW has reviewed the Acoustic Impact Assessment (AIA) prepared by Bridges Acoustics, dated 27 July 2010 and recommends that the Department of Planning consider the following advice when determining the project application:

- The proponent should justify that the predicted noise levels in Table 5 represents the best achievable noise levels after the application of all feasible and reasonable noise mitigation measures;
- Subject to the proponent satisfactorily demonstrating that all feasible and reasonable noise mitigation measures have been implemented, the predicted noise levels in Table 5 of the AIA do not exceed levels that DECCW would normally consider licensing to, and therefore DECCW raises no objection on consent limits being amended in line with the predicted noise levels in Table 5;
- Any approval by Planning, if issued, should include a condition which specifies that the increased noise limits only apply while modified emplacement practices are occurring. The proponent should be required to nominate a date after which the increased noise limits would not apply, and noise limits would revert back to limits currently applied in the existing consent; and
- Any approval by Planning, if issued, should include a condition which specifies that receivers likely to qualify for 'Additional noise mitigation measures' be advised of this fact by the proponent, so that noise monitoring can be undertaken to confirm noise impacts, and initiate the offer, where applicable.

ABORIGINAL CULTURAL HERITAGE

DECCW has reviewed the EA and notes that the proponent has relied upon an Aboriginal cultural heritage impact assessment completed in 1992. Given that significant changes in landform can occur over time DECCW is of the opinion that a revised assessment is necessary, incorporating new/additional survey information and which makes reference to recent changes to the *National Parks and Wildlife Act 1974* (the NPW Act). The revised assessment should reflect the best practice standards recommended by DECCW in the *"Code of Practice for Archaeological Investigations of Objects in New South Wales"* (DECCW, 2010).

Further, while DECCW acknowledges that the current Bengalla Community Consultative Committee specifically formed for the Bengalla project – this committee does not represent all Aboriginal groups in the area. The proponent should undertake additional consultation with the local Aboriginal community in accordance with DECCW's "*Aboriginal Cultural Heritage Consultation Requirements for Proponents*" (DECCW, 2010).

Until a revised Aboriginal heritage impact assessment is provided, DECCW is unable to provide specific recommended conditions of approval for this project.

The proponent should also be advised that as the Bengalla consent was issued under Part 4 of the *Environmental Planning and Assessment Act 1979*, separate application for a permit under s90 of the NPW Act will be required if any impacts to Aboriginal heritage are likely to occur as a result of this project proceeding. Similarly, the proponent should liaise with the Hunter-Central Rivers Catchment Management Authority regarding any approvals required under the *Native Vegetation Act 2003* for the clearing of native vegetation as a result of this project.

If you require any further information on this matter please contact Bill George on (02) 4908 6821.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'K. Marler'.

KAREN MARLER
Head Regional Operations Unit – Hunter Region
Environment Protection and Regulation

Enclosure: Attachment A – Air quality impact assessment review comments

Attachment A: Air quality impact assessment review comments

The AQIA submitted has been reviewed and compared to the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, August 2005

The AQIA assessment generally follows the requirements of DECCW's *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (Approved Methods)*.

It is also noted that the AQIA assessment shows that there is a reduction in impacts on the surrounding environment due to the modification. This is considered to be a reliable assessment, considering that even though incorrect methodologies were used to assess the impacts, the methodology used to assess the impacts are consistent between assessments.

A summary of issues identified with the AQIA are presented below.

Issues with the AQIA

- **Emission estimates of wind erosion sources have been reduced due to estimated annual rainfall**

Emission estimates of wind erosion from exposed areas such as overburden dumps and coal stockpiles have been corrected to account for the number of rain days in a year. This approach is acceptable for assessing annual average impacts and for environmental reporting on an annual basis. However, this approach is not acceptable when assessing short term impacts such as 24 hour maximum concentrations of PM_{10} .

The air quality model, when run over a typical year, processes emissions data and meteorological data on an hourly basis to predict ground level concentrations that are also on an hourly basis. When determining impacts from coal mines the results are presented as annual averages and 24 hour maximum predicted concentrations. The maximum predicted concentration could occur during a day where there is no rain. By reducing emissions on an annual basis due to the number of rain days reduces the emissions that occurred on the worst case day. Therefore, there is the potential to under predict short term impacts by correcting emissions due to the number of rain days.

Rain days could be incorporated into the assessment to predict maximum short term impacts, if hourly contemporaneous rain data was used in conjunction with meteorological data used for dispersion in the model. However, a justification would need to be made that the meteorological data set used was representative of the worst case year (in terms of predicting air quality impacts). DECCW has performed an analysis of estimated emissions presented in the AQIA to determine the sensitivity of the assessment to this approach. Estimated emissions from wind erosion sources with a rain correction factor are compared to estimated emissions from these sources without a rain correction factor in Table 1. The difference in estimated emission is an additional 30% in emission load.

Table 1: Comparison of estimated emissions from wind erosion sources with and without a rain correction factor

Source	TSP Emissions With Rain Correction Factor (As Modelled) (kg/year)	TSP Emissions Without Rain Correction Factor (kg/year)
WE - OB - spoil areas (all approved + SOEA)	1,464,692	1,916,174
WE - OB spoil areas (WOEA)	159,026	208,044
WE - open pit	1,104,182	1,444,540
WE - ROM stockpiles	7,281	9,526
WE - Product stockpiles	57,034	74,615
TOTAL	2,792,216	3,652,899

However, as the majority of emissions from the proposed project are from other sources (such as haul roads and loading operations), the difference in estimated emissions for the facility is less significant and results in a potential underestimation of impacts of 11% as shown in Table 2.

Table 2: Comparison of estimated project emissions with and without rain correction factors for wind erosion sources

Total Project TSP Emissions With Rain Correction Factor for Wind Erosion (kg/year)	Total Project TSP Emissions Without Rain Correction Factor for Wind Erosion (kg/year)	Difference
7,716,000	8,577,000	11%

Another issue with the treatment of rain correction factors in the AQIA is that they are inconsistently applied to sources. For example emissions from wind erosion are corrected to account for annual rainfall, whereas, emissions from loading and unloading operations are not. Emissions from wheel generated dust are estimated using a "controlled" emission factor of 1 kg/km. It is not clear whether a rain correction factor is incorporated into this emission factor as a reference source is not supplied for this emission factor.

- **Emission estimates of wheel generated dust emissions are not based on a referenced emission estimation technique.**

Wheel generated dust emissions are estimated using a constant emission factor of 1 kg TSP/km. This is reported to be representative of wheel generated dust from haul roads that have controls applied to them that reduce emissions by 75%. Therefore, the uncontrolled emission factor was assumed to be 4 kg TSP/km across the facility. Review of the *NPI EET Manual for Mining v2.3* (Environment Australia, 2003) shows that the default uncontrolled emission factor for TSP for wheel generated dust is approximately 4 kg/km (3.88 kg/km). This corresponds to the emission factor used in the AQIA. However, the default emission factor presented in the *NPI EET Manual for Mining* was derived using a default silt content of 10% and an average vehicle weight of 48 tonnes and a default moisture content of 2% using an outdated USEPA AP-42 equation as follows:

$$EF_{TSP} = \frac{2.82 \times \left(\frac{s}{12}\right)^{0.8} \times \left(\frac{W}{3}\right)^{0.5}}{\left(\frac{M}{0.2}\right)^{0.4}}$$

EF _{TSP}	=	TSP emission factor from wheel generated dust	(kg/km)
s	=	Silt content of road surface	(%)
W	=	Average weight of vehicles travelling on the haul road	(tonnes/vehicle)
M	=	Moisture content of the road surface	(%)

The USEPA AP-42 equation was updated in 2006 and is as follows (in metric units):

$$EF_{TSP} = 0.2819 \times \left(4.9 \times \left(\frac{s}{12}\right)^{0.7} \times \left(\frac{W \times 1.1023}{3}\right)^{0.45} \right)$$

EF _{TSP}	=	TSP emission factor from wheel generated dust	(kg/km)
s	=	Silt content of road surface	(%)
W	=	Average weight of vehicles travelling on the haul road	(tonnes/vehicle)

The key issue with the default uncontrolled emission factor is that it is based on an average vehicle weight of 48 tonnes. Information presented in the AQIA show that there are two types of mining trucks used at the mine, one with a carrying capacity of 218 tonnes and another with a carrying capacity of 135 tonnes. ATASU has reviewed mining equipment databases and found mining trucks that closely match these specifications (i.e. CAT 793 and CAT 785). The estimated average weight of trucks and associated controlled emission factors using the most up to date emission estimation technique is presented in Table 3.

Table 3: Revised Emission Factors for Wheel Generated Dust for the Proposed Mine Site

Haul Route	Vehicle Type	Carrying Capacity (tonnes)	Estimated Tare Weight (tonnes)	Estimated Average Weight (tonnes)	Control Efficiency (%)	TSP Emission Factor (kg/km)
OB - Hauling to emplace at Wantana extension	CAT 793	218	165.7	274.7	75	2.15
OB - Hauling to emplace at north emplacement	CAT 793	218	165.7	274.7	75	2.15
OB - Hauling to emplace at south emplacement	CAT 793	218	165.7	274.7	75	2.15
OB - Hauling to emplace at WOEa	CAT 793	218	165.7	274.7	75	2.15
OB - Hauling to emplace at SOEA (Option 1)	CAT 793	218	165.7	274.7	75	2.15
OB - Hauling to emplace at SOEA (Option 2)	CAT 793	218	165.7	274.7	75	2.15
OB - Hauling to emplace at SOEA (Option 3)	CAT 793	218	165.7	274.7	75	2.15
CL - Hauling ROM coal to dump hopper	CAT 785	136	113.5	181.5	75	1.78
CL - transporting rejects	CAT 785	136	113.5	181.5	75	1.78

DECCW has reviewed the emission inventory presented in the AQIA and compared total project emissions as modelled versus estimated emissions with revised emission factors for wheel generated dust. The comparisons between estimated emissions are shown in Table 4.

Table 4: Comparison of estimated project emissions as modelled versus estimated emissions using the revised technique for wheel generated dust

Total Project TSP Emissions (As Modelled) (kg/year)	Total Project TSP Emissions With Revised Wheel Generated Dust Emissions (kg/year)	Difference
7,716,000	9,874,088	28%

The impact of using an out-dated emission estimation technique for wheel generated dust has potentially led to an under estimation of emissions of approximately 28%. Combined with the error in accounting for rain days for wind erosion, there is a potential under estimation of emissions of 39% (on a daily level) in the AQIA.

Considering these factors the impact over 24 hours could be 39% greater (assuming a one to one ratio between emissions and predicted impacts). It is noted that further reductions to estimated emissions that may be possible due to speed limits on haul trucks have not been taken into account in this assessment as this information is not presented in the AQIA.

It is also noted that the AQIA assessment shows that there is a reduction in impacts on the surrounding environment due to the modification. This is considered to be a reliable assessment, considering that even though incorrect methodologies were used to assess the impacts, the methodology used to assess the impacts are consistent between the assessments.

DECCW January 2011

Appendix B: Copy of surface silt samples collected at Integra



SGS Muswellbrook
3 Blakefield Rd
PO Box 748
Muswellbrook, NSW, 2333
Ph: (02) 6542 0000
Fax: (02) 6541 4966

ANALYTICAL REPORT

TO: CARBON BASED ENVIRONMENTAL

ATT: Mr Colin Davies

MONTH: Nov-10

OUR REF: HM00096

DATE 27-Jan-11

Sample Description: **RL100 North End**
Mass Sample (a.r.): 3392.4 g
Total Moisture (a.r.): 1.5 %

SIZE ANALYSIS

Aperture (mm)		Fractional		Cumulative
(-)	(+)	Mass (g)	Mass (%)	Mass (%)
	8.0	138.37	35.4	35.4
8.0	4.0	67.27	17.2	52.6
4.0	1.00	94.91	24.3	76.9
1.00	0.600	22.12	5.7	82.5
0.600	0.106	52.95	13.5	96.1
0.106	0.075	6.65	1.7	97.8
0.075		8.79	2.2	100.0
Total Mass (g)		391.06		

Sample Description: **RL100 Centre**
Mass Sample (a.r.): 5401.9 g
Total Moisture (a.r.): 1.4 %

SIZE ANALYSIS

Aperture (mm)		Fractional		Cumulative
(-)	(+)	Mass (g)	Mass (%)	Mass (%)
	8.0	212.52	52.9	52.9
8.0	4.0	41.09	10.2	63.1
4.0	1.00	62.83	15.6	78.8
1.00	0.600	19.60	4.9	83.7
0.600	0.106	49.52	12.3	96.0
0.106	0.075	5.63	1.4	97.4
0.075		10.47	2.6	100.0
Total Mass (g)		401.66		



SGS Muswellbrook
3 Blakefield Rd
PO Box 748
Muswellbrook, NSW, 2333
Ph: (02) 6542 0000
Fax: (02) 6541 4966

ANALYTICAL REPORT

TO: CARBON BASED ENVIRONMENTAL

ATT: Mr Colin Davies

MONTH: Nov-10

OUR REF: HM00096

DATE 27-Jan-11

Sample Description: **RL100 South End**

Mass Sample (a.r.): 418.6 g

Total Moisture (a.r.): 1.3 %

SIZE ANALYSIS

Aperture (mm)		Fractional		Cumulative
(-)	(+)	Mass (g)	Mass (%)	Mass (%)
	8.0	122.31	30.4	30.4
8.0	4.0	84.32	21.0	51.3
4.0	1.00	111.48	27.7	79.1
1.00	0.600	24.40	6.1	85.1
0.600	0.106	48.29	12.0	97.1
0.106	0.075	5.09	1.3	98.4
0.075		6.52	1.6	100.0
Total Mass (g)		402.41		

Appendix C

Golders Response

16 February 2011

Document No. 117632011-001-L-Rev1

Mr Peter Hansen
Hansen Bailey
Environmental Consultants
Level 15, 215 Adelaide Street
Brisbane QLD 4000

**BENGALLA COAL MINE
ASSESSMENT OF POSSIBLE HYDROGEOLOGICAL
EFFECTS OF PROPOSED OVERBURDEN
PLACEMENT ON HUNTER REGULATED ALLUVIAL WATER SOURCE**

Dear Sir,

1.0 INTRODUCTION

The Bengalla Mine propose to extend the footprint of the existing overburden emplacement area to the south east (Southern OEA extension).

Concern has been expressed by the NSW Office of Water (NOW) about the possible impact the proposed extended emplacement area might have on the aquifer which forms the Hunter Regulated Alluvial Water Source. We understand that this aquifer underlies the proposed Southern OEA extension.

This letter sets out details of the proposed Southern OEA extension and the underlying aquifer, and provides advice on the likely effect of the overburden placement on the aquifer.

2.0 THE PROPOSED WORKS

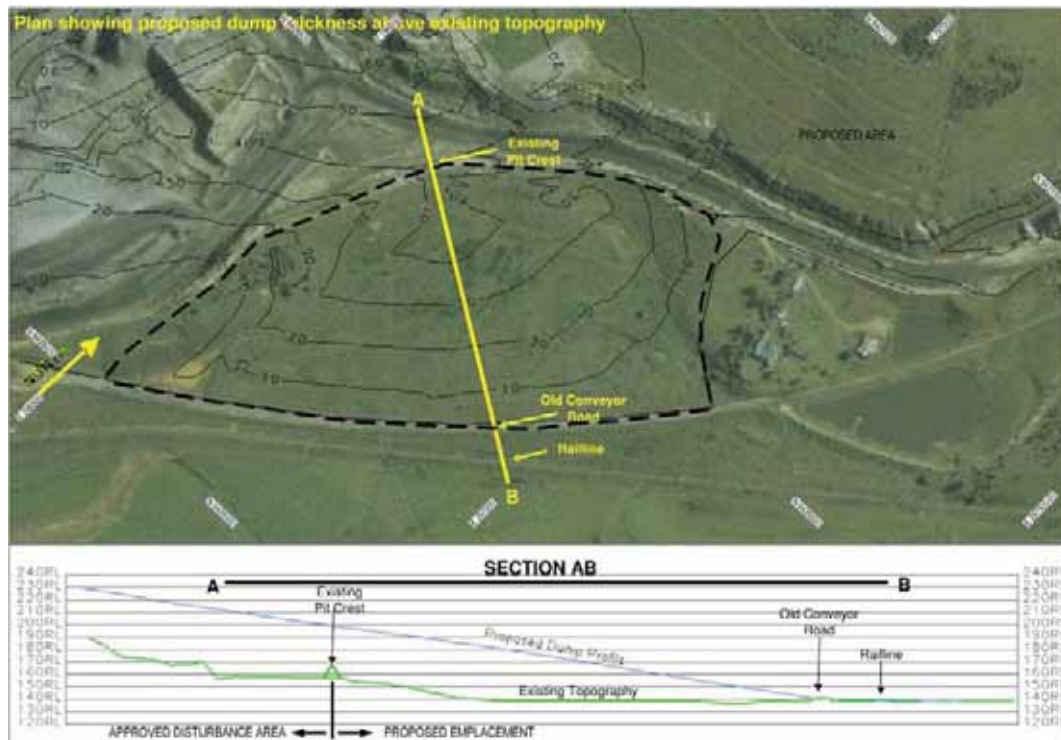
It is proposed that overburden will be placed in the area shown in Figure 1 below.

Figure 1: Location of Extended Southern Overburden Emplacement Area



Overburden thickness contours and a section through the proposed extended emplacement area are shown on Figure 2.

Figure 2: Section Through Proposed Southern OEA extension



Note: Contours show proposed overburden thickness

It is noted that the maximum height above existing ground level is a small zone of 40 m height above the (previous) pit crest line, sloping down at 10° to cover an approximate area of 10.9 ha. Ground pressures applied in this footprint area will range from a maximum of about 720 kPa (under the 40 m height zone) to 0 kPa at the outside edges of the extended emplacement area.

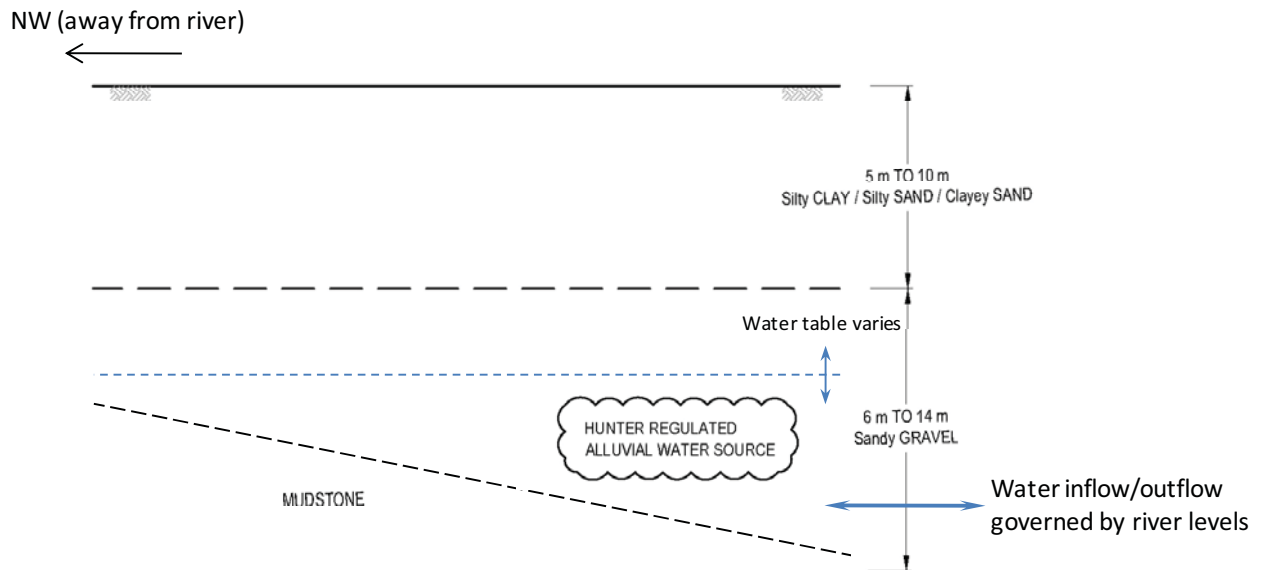
3.0 AQUIFER DETAILS

Four boreholes were drilled in June 2010 by Australian Groundwater and Environmental Consultants (AGE)⁽¹⁾ within the footprint of the proposed extended overburden emplacement area. The borehole logs are included as an attachment to this letter. The ground conditions are summarised in Figure 3 below. The aquifer of relevance is described in the borehole logs as a gravel, with some sand. AGE⁽¹⁾ assigned a value of Hydraulic Conductivity of 1×10^{-4} m/sec to these gravels in their modelling of the overburden emplacement area.

The results of this investigation indicate that the groundwater level was approximately 13 m below the surface at the time of investigation (i.e. June 2010). Close to the railway line (i.e. in wells SMB1 and SMB2), there was 9-11 m of saturated gravel at the time of investigation, and 3-6 m of unsaturated gravel above the water table. Further to the north-west, there is less saturated gravel as a result of the increasing level of the underlying mudstone, but approximately the same thickness of unsaturated gravel (refer to Figure 3).

AGE⁽¹⁾ report that there is little, if any, correlation between groundwater levels measured in the area since 2005 and the Cumulative Rainfall Deficit, but that there is a broad correlation between groundwater levels and the level in the Hunter River. This suggests that the primary source of recharge to groundwater in the emplacement area results from lateral flow from the river. Monitoring since 2005 indicates groundwater level fluctuations of up to 2 m, and the groundwater levels measured in June 2010 are towards the upper end of the range of measured values.

Figure 3: Ground Profile Below Proposed Emplacement Area



4.0 THE ISSUE OF CONCERN

The following is an extract from a letter by NOW, dated 4 January 2010.

"The specific impact of greatest concern to NOW relates to aquifer compaction in the Hunter Regulated Alluvial Water Source, and resultant sterilisation of the alluvial water source to productive use. This is not addressed in the EA. NOW is not in a position to provide advice as to means to avoid alluvial compaction and consequential loss of porosity and groundwater storage in the alluvium."

Another way of expressing the concern is that the weight of the overburden placed on top of the aquifer may reduce the permeability of the gravel stratum by reduction of the voids ratio.

5.0 DISCUSSION

5.1 Potential Impact on Permeability

It is not possible to obtain an undisturbed sample of the gravels which is suitable to measure (in a laboratory) the effects of a variable increase in overburden pressure on the permeability or the porosity of the gravels. Hence this assessment will need to be based on proven empirical relationships and experience-based judgement. A commonly used and well established formula to measure permeability (or hydraulic conductivity) of saturated granular materials is the Hazen formula:

$$k = C_H D_{10}^2$$

where k = permeability (cm/s)

C_H = Hazen empirical coefficient

D_{10} = particle size for which 10% of the material is finer (cm)

Using this approach, a change in permeability would only occur if there was significant change in the D_{10} value due to the overburden loading. The maximum applied load (over an area of <1ha) is 720 kPa. The compressive strength of the gravel and sand grains would be orders of magnitude higher than the applied stress. Hence there would be no change in the D_{10} value, and (according to this approach), no change in permeability of the gravel in response to the overburden emplacement.

The limitation of the Hazen formula is that the permeability estimate is based only on the D_{10} particle size, which as discussed above is unlikely to change as a result of the stresses imposed by the overburden loading. An alternative approach which relates permeability to the void ratio (which will change in response to loading), is based on the Kozeny – Carman formula ⁽²⁾.

The relevant formula is:

$$k = (\gamma/\mu) (1/C_{k,c}) (1/S_0^2) [e^3/(1+e)]$$

where

k = permeability

γ = unit weight

μ = viscosity

$C_{k,c}$ = Kozeny – Carman empirical coefficient

S_0 = Specific surface area per unit volume of particulates

e = Void ratio

Under the proposed overburden loading, the only parameter in the above formula which would change is the void ratio. If the void ratio were to change, this would be due to some rearrangement of the grains associated with the additional pressure due to the overburden loads.

The existing information¹ indicates a modulus of elasticity (E) for the medium dense gravel aquifer of about 50MPa. For the maximum applied overburden load, the resultant settlement would be 0.014 m per metre thickness of aquifer (i.e. a void reduction of 0.014 m³ per m³ of aquifer). For an existing void ratio in the range of 0.25 to 0.35, the corresponding reduction in permeability would be of the order of 15 – 20%. It should be noted that the maximum load will be applied at the extreme periphery of the aquifer (the area of maximum load may in fact be located beyond the extent of the aquifer), and that the load and potential reduction in permeability will be less than indicated above in the area further to the south-east where the gravel is thicker.

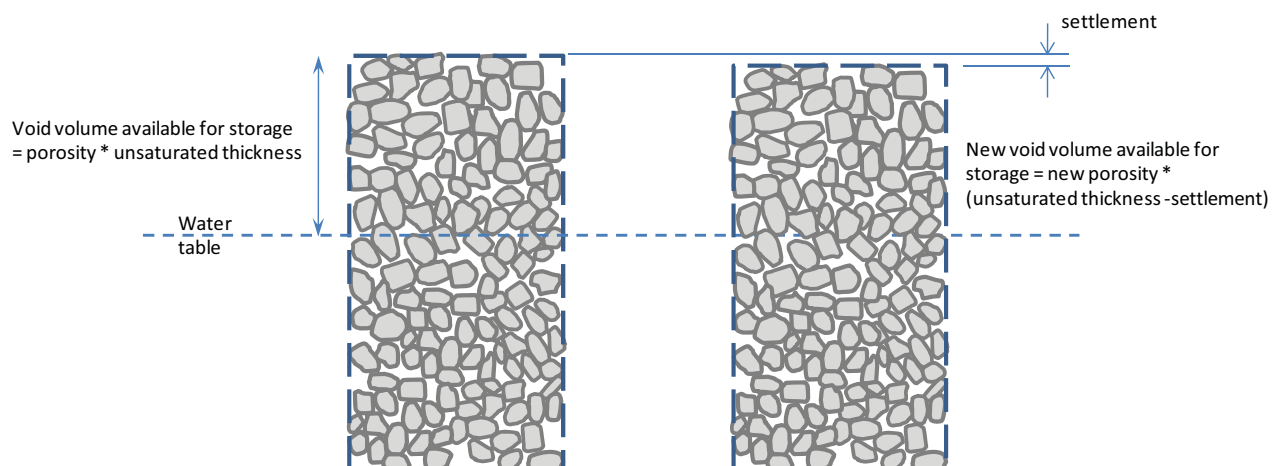
This potential reduction in permeability as a result of the proposed overburden load has the potential to affect flow through the aquifer, however groundwater would still flow into and out of the area in response to changes in river level, albeit at a slightly reduced rate. It is noted, however that alluvial aquifers are inherently variable in their properties from place to place, and the natural variability in the aquifer permeability is likely to far exceed the possible 15% to 20% variation in permeability as a result of the overburden loading. Furthermore, a reduced permeability of 0.8×10^{-4} m/s (a 20% reduction on the nominal figure assigned by AGE) still represents a high permeability material that would be suitable for use as a water supply aquifer.

5.2 Potential Impact on Storage

Under the current conditions, groundwater level in the proposed emplacement area fluctuates in response to river level fluctuations. Water is stored beneath the emplacement area at times of high river level by an increase in groundwater level, and this water is then released to flow back to the river at times of low river level. The total capacity of the area beneath the proposed emplacement to store additional water at times of high river level is governed by the thickness and porosity of unsaturated gravel above the water table, both of which will be slightly impacted by the settlement under the applied load (refer to Figure 4).

¹ Standard Penetration Test results from the geotechnical investigation carried out for a passing loop on the adjacent railway line – Douglas Partners Report on the Geotechnical Investigation for the Bengalla Passing Loop, Muswellbrook to Ulan Railway Line

Figure 4: Potential Reduction in Storage Capacity



As indicated above, in June 2010 there was approximately 3-6 m of available unsaturated gravel to store additional water. Water levels at that time were less than 0.5 m below the maximum levels measured since 2005, which indicates that the total capacity of the system to store water is unlikely to be completely used under normal conditions of river level fluctuation. The height of water level rise for a given inflow from the river will be slightly more than is currently the case because of the reduced porosity, however the likely maximum reduction in porosity will be of the order of 8-10% and thus the change in water level for a given inflow of water will be up to 8-10% greater. For example, if the water table fluctuates by ± 1 m under current conditions, it is likely to fluctuate by ± 1.1 m after the reduction in porosity.

6.0 CONCLUSION

The proposed overburden emplacement will have negligible effects on the permeability and porosity of the gravel aquifer which occurs under the expanded footprint area of the proposed Southern OEA extension.

We consider that the compaction of the aquifer beneath footprint of the extension will have a negligible impact on the capacity of the aquifer in this area to store and transmit groundwater.

7.0 LIMITATIONS

Your attention is drawn to the document - "Limitations", which is included as Attachment B of this document. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be, and to present you with recommendations on how to minimise the risks associated with the services provided for this project. The document is not intended to reduce the level of responsibility accepted by Golder Associates, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

GOLDER ASSOCIATES PTY LTD

Scott Fidler
Principal

SF/DKN/sm

David Nolan
Principal

References: ⁽¹⁾ Report on Bengalla Development Consent Application Groundwater Impact Assessment, Australasian Groundwater and Environmental Consultants, July 2010.
⁽²⁾ *Goodbye Hazen; Hello Kozeny – Carman*, Journal of Geotechnical and Geoenvironmental Engineering; ASCE / November 2003

Attachments: Attachment A - Borehole Logs from AGE Report
Attachment B - Limitations

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Attachment A - Borehole Logs from AGE Report



**Australasian Groundwater & Environmental
Consultants Pty Ltd**

36 Jeays St, Bowen Hills, Queensland 4006

BOREHOLE LOG

BOREHOLE ID: **ST 1**

Page 1 of 1

PROJECT NO. **G1503** DRILLER: **Ellis Hamilton** DATUM: **MGA GDA94**
PROJECT NAME: **Bengalla Spoil Dump** DRILLING METHOD: **RAB** GROUND LEVEL: **138.46 mRL**
DATE: **10/06/2010** DRILL RIG: TOP OF CASING LEVEL: **—**
CONTRACTOR: **ACE Drilling** COORDINATES: **296837.6 mE; 6426539.4 mN** LOGGED BY: **Thomas Muehe**

Elevation Depth	Graphic	Lithologic Description	SWL	Bore Construction	Bore Description
0		SILTY CLAY: minor gravel, dark brown, moist			
		SILTY CLAY: minor gravel, orangish brown, dry			
5		SAND: yellowish brown, dry			
		SILTY SANDY CLAY: some gravel, brown, moist			
		SILTY SAND: brown			
		SILTY CLAY: some sand and gravel, orangish brown, moist			
		SILTY CLAY: some gravel and sand, brown			
10		GRAVEL: some sand, orangish brown			
		SILTY CLAY: some gravel and sand, orangish brown			
		GRAVEL: some sand, orangish brown			
15		MUDSTONE: weathered mudstone, grey			
20					
25					



**Australasian Groundwater & Environmental
Consultants Pty Ltd**

36 Jeays St, Bowen Hills, Queensland 4006

BOREHOLE LOG

BOREHOLE ID: **ST 2**

Page 1 of 1

PROJECT NO. **G1503** DRILLER: **Ellis Hamilton** DATUM: **MGA GDA94**
PROJECT NAME: **Bengalla Spoil Dump** DRILLING METHOD: **RAB** GROUND LEVEL: **137.67 mRL**
DATE: **09/06/2010** DRILL RIG: TOP OF CASING LEVEL:
CONTRACTOR: **ACE Drilling** COORDINATES: **296747.7 mE; 6426378.6 mN** LOGGED BY: **Thomas Muehe**

Elevation Depth	Graphic	Lithologic Description	SWL	Bore Construction	Bore Description
0-0		SILTY CLAY: minor gravel, dark brown-black, moist			
		SILTY CLAY: some gravel, ochre-brown, dry			
		SILTY CLAY: minor gravel, ochre-brown, dry			
5-5		GRAVEL: sandy silty gravel, minor clay, brown-grey, dry			
		GRAVELLY SAND: brown, dry			
		GRAVEL: sandy silty gravel, brown, dry			
10-10		GRAVEL: sandy silty gravel, grey, dry			
		GRAVEL: brown			
15-15					
20-20		MUDSTONE: weathered mudstone, grey			
25-25					



**Australasian Groundwater & Environmental
Consultants Pty Ltd**

36 Jeays St, Bowen Hills, Queensland 4006

BOREHOLE LOG

BOREHOLE ID: **ST 3**

Page 1 of 1

PROJECT NO. **G1503** DRILLER: **Ellis Hamilton** DATUM: **MGA GDA94**
PROJECT NAME: **Bengalla Spoil Dump** DRILLING METHOD: **RAB** GROUND LEVEL: **137.19 mRL**
DATE: **10/06/2010** DRILL RIG: TOP OF CASING LEVEL:
CONTRACTOR: **ACE Drilling** COORDINATES: **296906.4 mE; 6426422.9 mN** LOGGED BY: **Thomas Muehe**

Elevation Depth	Graphic	Lithologic Description	SWL	Bore Construction	Bore Description
0		CLAYEY SAND: some silt, minor gravel, dark brown (orangish), moist			
		SILTY SAND: brown, dry			
5		CLAYEY SAND: some gravel, brown, dry			
		CLAYEY SAND: some gravel, grey, dry			
10		GRAVEL: sandy gravel, grey, dry			
15		MUDSTONE: weathered mudstone, grey			
20					
25					

PROJECT NO.	G1503	DRILLER:	Ellis Hamilton	DATUM:	MGA GDA94
PROJECT NAME:	Bengalla Spoil Dump	DRILLING METHOD:	RAB	GROUND LEVEL:	138.61 mRL
DATE:	11/06/2010	DRILL RIG:		TOP OF CASING LEVEL:	
CONTRACTOR:	ACE Drilling	COORDINATES:	296994.5 mE; 6426555.3 mN	LOGGED BY:	Thomas Muehe

[illegible]

Attachment B - Limitations



LIMITATIONS

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In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Golder's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Golder to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

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Appendix D

Leeming Advice

Our ref: ASW:BEN718/192
Your ref:

9 October 2010

Mr Andrew Kelly
Bengalla Mining Company Pty Limited
Locked Bag No. 5
MUSWELLBROOK NSW 2333

www.sparke.com.au

Dear Andrew

Section 75U and the Modification Works

1 BACKGROUND

1.1 Development Consent DA No. 211/93 for the "*Construction and operation of the Bengalla open cut coal mine, coal handling and preparation plant, rail loop, loading facilities and associated facilities*" (**Bengalla Coal Mine**) was granted on 7 August 1995 by the Minister for Urban Affairs and Planning pursuant to section 101 of the *Environmental Planning and Assessment Act 1979 NSW (EPA Act)* (the **Development Consent**).

1.2 The Development Consent has been modified on three occasions previously (twice under section 96(2) EPA Act and once under section 75W EPA Act).

1.3 On 18 August 2010 Bengalla Mining Company Pty Limited lodged an application for further modification of the Development Consent (the **Modification Application**) as follows:

- *Accelerate mining operations within the area of the mine known as the "Wantana Extension Area" to align these with the existing operations; and*
- *Make certain changes to the manner in which overburden emplacement is handled to resolve an overburden emplacement capacity issue at Bengalla Mine.*

(the **Modification Works**).

1.4 All other aspects of the development are proposed to remain the same as currently approved including:

- total overall coal production at Bengalla Mine (both raw and clean, both as to total allowed maximum rate of extraction and total extracted);
- method of operation;

- manning levels;
- equipment fleet;
- days and hours of operation;
- transport of men and materials to the mine and product from the mine; and
- duration of consent

2 ADVICE REQUIRED

The question on which advice is sought is whether the provisions of section 75U EPA Act apply in respect of the Modification Works.

3 SECTION 75W EPA ACT

3.1 The following are the relevant legislative provisions:

(a) Section 75W EPA Act provides as follows:

“(1) In this section:

Minister’s approval means an approval to carry out a project under this Part, and includes an approval of a concept plan.

modification of approval means changing the terms of a Minister’s approval, including:

- (a) revoking or varying a condition of the approval or imposing an additional condition of the approval, and*
- (b) changing the terms of any determination made by the Minister under Division 3 in connection with the approval.*
- (2) The proponent may request the Minister to modify the Minister’s approval for a project. The Minister’s approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part.*
- (3) The request for the Minister’s approval is to be lodged with the Director-General. The Director-General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.*
- (4) The Minister may modify the approval (with or without conditions) or disapprove of the modification.”*

3.2 Section 157 EPA Act provides that *“The Governor may make regulations, not inconsistent with this Act, for or with respect to any matter that by this Act is required or permitted to be prescribed or that is necessary or convenient to be prescribed for carrying out or giving effect to this Act”*.

3.3 Clause 8J(8) of the *Environmental Planning and Assessment Regulation Act 2000 (EPA Reg)* (as amended most recently by the *Environmental Planning and Assessment Regulation 2010* (3 September 2010) made by the NSW Governor provides (relevantly) that:

“(8) For the purposes only of modification, the following development consents are taken to be approvals under Part 3A of the Act and section 75W of the Act applies to any modification of such a consent:

- (a) a development consent granted by the Minister under section 100A or 101 of the Act,*

The development consent, if so modified, does not become an approval under Part 3A of the Act.”

3.4 For the purposes of completeness (although it is beyond the scope of this advice) we note that the result of the application to the Bengalla situation under consideration of the provisions of clause 8J(8) as they existed prior to the 3 September 2010 amendment would be the same as the application of the amended clause 8J(8). Accordingly, nothing turns on whether the pre September 8J(8) or the post September 8J(8) applies to this application.

3.5 The Development Consent was originally granted under section 101 EPA Act. Despite the modifications (under both section 96(2) EPA Act and section 75W EPA Act) the development consent remains a development consent issued under section 101 EPA Act (ie it does not become a Part 3A project approval).

3.6 By virtue of clause 8J(8), the Minister has the power to modify the Development Consent under section 75W EPA Act.

4 SECTION 75U EPA ACT

4.1 The following are the relevant legislative provisions:

- (a) Section 75U provides that listed authorisations “*are not required for an approved project (and accordingly the provisions of any Act that prohibit an activity without such an authority do not apply)*” (our emphasis). The affected authorisations are then listed.
- (b) An “*approved project*” is defined in section 75A EPA Act as “*a project to the extent that it is approved by the Minister under this Part, but does not include a project for which only approval for a concept plan has been given*”.
- (c) “*Project*” is defined as “*development that is declared under section 75B to be a project to which this Part applies*”.
- (d) “*Development*” is defined¹ as “*(a) the use of land, and (b) the subdivision of land, and (c) the erection of a building, and (d) the carrying out of a work, and (e) the demolition of a building or work, and (f) any other act, matter or thing referred to in section 26 that is controlled by an environmental planning instrument*”.
- (e) Section 75B enables the declaration of “*kinds of development*” to which Part 3A will apply in respect of “*development that, in the opinion of the Minister, is of State or regional environmental planning significance*”.

¹ Section 4 EPA Act

- (f) Section 75B deals with “*kinds of development*”. It is a provision which enables the Minister to categorise types of development.
- (g) SEPP (Major Development) sets out “*kinds*” of development which are declared to be development to which Part 3A applies and these include (in Schedule 1) “*Development for the purpose of mining that .. is coal ... mining*”.

4.2 Therefore:

- (a) Development for the purposes of coal mining is a “*kind of development*” to which Part 3A EPA Act applies.
- (b) Bengalla is therefore a development to which, *prima facie*, Part 3A EPA Act applies.
- (c) However, Bengalla was approved by Development Consent under Part 4 EPA Act.
- (d) The Bengalla development consent can be modified under section 75W by virtue of clause 8J(8) of the EPA Reg.
- (e) The section 75U dispensations are engaged by being “*an approved project*” - namely a project (“*development for the purposes of coal mining*”) to the extent that it is approved by the Minister under Part 3A.
- (f) If the modification is approved under section 75W then the development described in the Modification is an “*approved project*” for the purposes of section 75U because it is “*a project to the extent that it is approved by the Minister under*” Part 3A.
- (g) The approval of the modification under section 75W does not make development consent a Part 3A approval (see last sentence of former Reg 8J(8)). Therefore, the dispensations provided by section 75U will only apply to the development described in the modification (not to the development to the extent that it was approved under Part 4 – namely that approved in the original development consent and under each Part 4 modification subsequent thereto).

5 CONCLUSION

- 5.1 Section 75W EPA Act enables the Minister to approve a modification of the Development Consent under Part 3A because clause 8J(8) of the EPA Reg directs that certain Development Consents (issued under Part 4) are “*taken to be*” project approvals for the purposes of modification.
- 5.2 Section 75U EPA Act applies to an “*approved project*”.
- 5.3 The definition of “*approved project*” contemplates that a project may have been approved partly under Part 4 EPA Act and partly under Part 3A EPA Act.

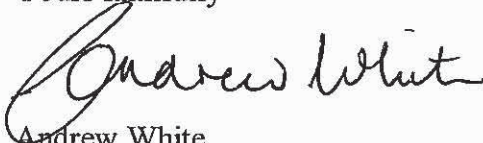
- 5.4 The Development Consent will not become a project which has been approved under Part 3A because it is modified under section 75W.
- 5.5 Section 75U will not apply to those elements of the development the subject of the Development Consent (or any modification thereof) which has been approved under Part 4 EPA Act. Therefore elements of the Bengalla Mine which were approved under the original 1995 development application or modifications effected since then under Part 4 EPA Act will not attract the dispensations afforded under section 75U EPA Act.
- 5.6 However, Section 75U will apply to those elements of the development which are approved under Part 3A (i.e. approved as a modification under section 75W EPA Act).
- 5.7 This outcome is consistent with the scheme and legislative policy which underlies Part 3A of the EPA Act, apparent from the following extracts from the second reading speech which accompanied the introduction of Part 3A EPA Act to NSW parliament in June 2005.

"The bill will introduce ... a single assessment and approval system for major development ... [to] ... replace approval processes currently scattered throughout several pieces of legislation ... the new environmental assessment procedures will reduce time, cost and complexity in the assessment of major projects.

The new part 3A provides for integrated approvals that will consolidate 15 approvals under 9 Acts into a single assessment process and approval given under the Environmental Planning and Assessment Act. Environmental protection provisions under eight different Acts will be integrated into one approval. These provisions relate to impacts on waterways, riparian zones and coastal processes including the use of water, water management works and dredging and aquifer interference."

Please contact the writer if you have any queries regarding this advice.

Yours faithfully



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Memorandum

From: Mark Leeming
To: Andrew White
Subject: Bengalla modification application
Date: 11 October 2010

1. I confirm my earlier advice that I agree with the reasoning and conclusions in your letter of advice dated 9 October 2010 to Mr Andrew Kelly of Bengalla Mining Company Pty Ltd.
2. To the textual reasoning in your letter of advice I would add this.
3. It is plain that Part 3A departs from the regime established by Part 4 in a number of respects (some are noted by Basten JA in *Barrick Australia Ltd v Williams* (2009) 74 NSWLR 733 at [17]-[18]). It is plain that Part 3A has the effect, in relation to the limited class of projects to which it applies, of removing the need for a proponent to obtain certain approvals which otherwise would be necessary (although there continue to be limitations upon the operation of ss75U and 75V: see *Ulan Coal Mines v Minister for Mineral Resources* [2008] NSWCA 174 at [84]). It is plain that the Act, by s75ZA, empowers regulations which permit development under Part 4 to be treated as a project to which Part 3A applies, and that cl 8J(8) is made in the exercise of that power.
4. In those circumstances, any construction other than that expressed in the letter of advice would be difficult to reconcile with the legislative context. For any other construction would create something which was neither subject to Part 4 nor to Part 3A. It would make applicable some of the

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provisions of Part 3A (s75W rather than s96) but deny the applicability of others, notably, ss75U and 75V. It might be asked why would a hybrid outcome be the proper construction of the Act? And, if that were the proper construction, then it would be essential for the decision-maker to be conscious of that fact, namely, that the particular exercise of the s75W power did not carry with it consequences under ss75U and 75V, which would (one might expect) significantly alter the assessment of the application.

5. In my view the statutory language supports the construction outlined in the letter of advice, and any other construction would be foreign to the legislative purpose, contrary to s33 of the Interpretation Act 1987.

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke at the end.