



Lamberts Gully Mine

**Extension of Mining Operations
Within Existing Mining Leases**

Environmental Assessment

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Centennial Coal

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1. Introduction

Springvale Coal Pty Ltd owns and operates the Lamberts Gully Open Cut Mine. This is a small operation within the Western Main Colliery Holding located in the Western Coalfields of New South Wales, near the village of Blackmans Flat as shown on **Figure 1**.

Springvale Coal is a joint venture between Centennial Coal (50%), SK and Kores Corporation.

Springvale Coal proposes to extend the area of extraction of the Lamberts Gully Open Cut mine. The extension area does not require any additional mining titles or surface infrastructure and will not require an increase in production rate or method.

The consent authority for this application will be the Department of Planning (DOP).

1.1 Objectives of the Development

Springvale Coal seeks project approval to (“the Development”):

- ❑ the extension of mining operations within the existing mining leases (ML1448 and CCL733) as described in **Chapter 4** for 1.5MT for a period of up to 8 years; and
- ❑ the continuation of coal handling and transport as described in **Section 4.2**.

This Environmental Assessment (“EA”) has been prepared to accompany a project application for the Development. The Project Application Area is part of the Western Main Colliery Holding and is shown on **Figure 3**.

The Project will result in the securing of additional reserves which lie within the existing mining leases. Total reserves to be secured are 1.5 Mt and this will provide ongoing employment opportunities for approximately a further 4 years at the maximum production rate of 400,000 tpa. The consent period sought is 8 years to take into account potential for lower production levels.

1.2 History and Location

The current Lamberts Gully operation mines an area of remnant shallow coal and is situated in a heavily industrialised area. The area in the immediate and surrounding vicinity of the Application Area has a long history of underground and open cut mining and associated infrastructure and power generation and associated facilities. It is adjacent to the Springvale Coal Preparation and Handling site (within the Western Main Colliery Holding), the overland coal conveyor to Mount Piper Power Station, reject disposal facilities and several old

open cut areas as shown on **Figure 2**. The site is also immediately southeast of the Mount Piper Power Station and ash disposal facility and directly south of the proposed Lithgow Council Waste Disposal Facility, both of which require local open cut mining voids as part of their operation.

1.3 Consultation

1.3.1 Community Consultation

Springvale has been proactive in consulting with the nearest residents at Blackmans Flat. Three separate information newsletters have been produced covering a range of issues at the Springvale Services Site (Appendix D). These have included:

- ☐ General operations and background information on the Springvale Mine.
- ☐ Specific information on the Lamberts Gully Open Cut.
- ☐ Blasting details and information.
- ☐ Reject disposal activities which were located close to the residents.
- ☐ Contact details for key mine personnel.

Direct contact has been made with a number of residents over the past 12 months regarding the ongoing operation at the Springvale Services Site including the operation of the existing open cut. This liaison will continue with the proposed ongoing operations of the open cut as well as other general issues which may arise.

There were two primary issues raised by the community, namely; noise and blasting impacts and dust generation. It was recognised by the community that there are other sources of noise and dust, however, Springvale Coal has implemented a number of additional measures to reduce noise and dust generation from its operations.

The overall concern raised was not specific to Lamberts Gully but one referring to the geographic setting more generally. The residents feel that they are now surrounded by industrial, mining and power generation activities. Although not opposed to mining related development, they wanted the government to understand their unique position.

The issues of noise, blasting and dust generation have been addressed in this report.

1.3.2 Authority Consultation

Lithgow City Council was advised of the proposed development at a meeting on 21 April 2005. Council advised that there were resident concerns at the village of Blackmans Flat regarding noise and dust and that these issues needed to be fully addressed. It was understood that the Lamberts Gully Open Cut was one of several existing and proposed mining and industrial activities in the area however, the control of noise and dust impacts would be an ongoing issue.

These issues were also expressed by the Department of Environment and Conservation over the past 12 months. The issue of noise and dust controls have been addressed in this report, however it must be stressed that although compliance with statutory provisions can be demonstrated, there will be an ongoing need to closely manage these issues as well as to continue active communication with the residents of Blackmans Flat in order to resolve future or outstanding problems.

A meeting was held on site with DPI (Mineral Resources) in September 2005 to discuss both the open cut works and the future Reject Emplacement Area (REA). The DPI advised that the open cut design should allow for future safe disposal of washery reject in the previously approved REA. Approval under Section 126 of the Coal Mines Regulation Act is required prior to emplacement of reject within the approved REA.

1.4 Justification

The proposed Development is designed to utilise known coal resources within ML 1448 and CCL 733 in an efficient and environmentally responsible manner. The assessments and predictions made in this EA will be subject to environmental monitoring to ensure they are verified and corrective actions implemented as necessary.

The continuation of the Lamberts Gully Open Cut will not prejudice future use of the land in the area nor affect the landuse of adjacent areas.

The approval of the Development is justified in that:

- ☐ the environmental impacts have been identified;
- ☐ mitigation and safeguards have been proposed;
- ☐ any impacts are temporary;
- ☐ ongoing noise, blasting and air quality monitoring will be undertaken and corrective actions implemented as required to maintain compliance;
- ☐ local and state economic benefits will be gained; and
- ☐ continuity in local employment by the contractor will be maintained.

2. Legislative Framework

2.1 Development Approval Process

The Environmental Planning and Assessment Act (NSW) 1979 (EP&A Act) is the principal piece of legislation that governs the approval process for the Development.

With effect from 1 August 2005, the EP&A Act was amended by the addition of a new Part 3A which deals with the approval of major projects. This project has been assessed by the Department of Planning under the provisions of the State Environmental Planning Policy (Major Projects) 2005, as being a project to which Part 3A of the EP&A Act applies.

The Project Application has been lodged with the Department of Planning and the subsequent requirements for this Environmental Assessment are attached as Appendix A.

2.2 Permissible Development

The land covered by this application is zoned Rural (General) 1(a) under the Lithgow Local Environmental Plan and mining is permissible under this zoning. In accordance with State Environmental Planning Policy (Major Projects) 2005, the Minister for Planning has formed the opinion that this project is one to which Part 3A of the EP&A Act applies.

2.3 State Environmental Planning Policies

No core koala habitat was found within the Application Area. Consequently, SEPP 44 is considered to not apply to the development.

The Development is within the area subject to SEPP 58 - Protecting Sydney's Water Supply. Since the project falls under Part 3A, the concurrence of the Sydney Catchment Authority is not required. However water management and protection of the catchment remains a key management issue for the ongoing operation at Lamberts Gully and the Springvale Services Site.

2.4 Commonwealth Legislation

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is legislated by the Commonwealth Government. Under this Act the approval of the Commonwealth Minister of the Environment is required for any action that may have a significant impact on matters of national environmental significance, which includes threatened species. There were no threatened species found in the Application Area which require separate assessment under the EPBC Act. No referral to the Department of Environment and Heritage has been made and is not considered necessary.

2.5 Key Assessment Requirements

The Director General's Requirements, which are attached as Appendix A, list the key environmental assessment requirements for this project. These are as follows:

- ☐ Noise and Blasting;
- ☐ Air Quality
- ☐ Surface and Groundwater including flooding;
- ☐ Flora and Fauna – both in terms of impacts on threatened species and general vegetation clearing; and
- ☐ Heritage – both Aboriginal and non-Aboriginal;

These key issues are described in detail in the following sections.

3. Existing Mining Operations

This Chapter outlines the existing Lamberts Gully Open Cut, its approval status and its relationship with the Springvale Services Site.

3.1 Existing Mining Operations

Lamberts Gully is a contract mining operation generally using the following methodology:

- ☐ Topsoil stripping/land clearing using dozer
- ☐ Overburden removal using dozer, loader and trucks
- ☐ Removal of Irondale Seam if present
- ☐ Interburden removal using dozer and blasting as necessary
- ☐ Lidsdale seam extraction
- ☐ Removal of interburden using dozer and blasting as necessary
- ☐ Lithgow Seam mining
- ☐ Reshaping backfilled overburden material
- ☐ Topsoil spreading and revegetation.

Approximately 400,000 tonnes have been mined since the Lamberts Gully Mine commenced. Rehabilitation work has commenced with the first sowing scheduled for Autumn 2006. The boundaries of the original mine proposal have now been reached.

3.1.1 Approval for Existing Mining Operations

Development consent was granted to Springvale Coal by Lithgow City Council on 14 September 1998, which approved the extension of previous open cut operations on the Western Main Colliery Holding. The extension area (Lamberts Gully) was approved to mine 439,000 tonnes of steaming coal for sale to Mount Piper Power Station. The approval was granted following the preparation and display of an environmental impact assessment.

3.2 Coal Handling

Coal from the open cut is transported from the extraction area to the existing ROM stockpile area where it is loaded into a crusher by a front end loader. Crushed coal is then conveyed to the existing Springvale stockpile.

3.2.1 Approval for Coal Handling

The handling of open cut coal from the extraction area to the main stockpile was covered by the original Lamberts Gully Mine consent.

3.3 Coal Transport

All coal on the main coal stockpile can either be transported to Mount Piper Power Station or back to the Washery for processing. Washed coal is stockpiled separately where it can be loaded onto the underside of the existing overland conveyor for transport back to the Lidsdale Rail Siding for export.

3.3.1 Approval for Coal Transport

All infrastructure associated with the Washery, coal stockpiles, underground feeders, coal delivery and transfer systems were approved as part of an amendment to the Springvale Mine consent approved by the Minister for Planning on 29 June 1993. The original consent was subject to an Environmental Impact Statement, while the amendment was covered by a separate environmental assessment. This amendment followed the purchase of the Western Main Colliery by Springvale Coal allowing consolidation of mine infrastructure.

The Lamberts Gully Mine consent did not require any additional coal handling infrastructure but allowed coal to continue to be transported off site by the Springvale overland conveyor.

4. Proposed Mining Operations

This Chapter describes the proposed mining operation in sufficient detail to allow for the assessment of environmental impacts.

4.1 The Proposed Mine Plan

The proposed mine plan is shown on **Figure 4**. Extraction will progress in a series of strips (referred to as blocks) with topsoil and overburden being removed separately and in advance of coal extraction. The area of prestrip is kept to a minimum to reduce the dirty water catchment and potential for dust generation at any one time.

The mine will continue to be operated by contractor, responsible for both overburden removal and coaling operations as well as all environmental safeguards and rehabilitation. These activities are described in the following sections.

4.1.1 Program

The program of works will run for a maximum of 8 years (or 4 years at maximum production of 400,000 tpa) with sequential extraction of the pits as shown on **Figure 4**. Extraction will commence on western of the current Lamberts Gully Mine area. Although located as separate pits the intervening area will be prepared for the future reject emplacement site. This work will need to commence in October 2005 in order to be able to extract the coal beneath the reject emplacement as well as to provide continuity of work for the existing contractor.

Extraction to the north of the existing overland conveyor to Mount Piper Power Station will commence once the emplacement site base has been prepared and the existing access road beneath the conveyor has been upgraded. The “E” and “D” series strips will then be mined. Overburden will be emplaced within the old Huon No 6 void.

Access to the proposed Lithgow Council Waste Emplacement will be maintained, however the ultimate timing on this development is unknown. Strip D3 may be varied should the Council proceed with the Waste Emplacement prior to completion. Depending on Council requirements, the existing target waste emplacement void can be enlarged.

4.1.2 Topsoil Stripping

Topsoil removal and handling will be undertaken by dozers cutting available topsoil from all disturbed areas. Prior to mining each area, the topsoil will be removed by pushing it, or trucking it, into a stockpile directly adjacent and upslope from the pit. The stockpile toe will be protected from water erosion by a water diversion, redirecting catchment runoff.

4.1.3 Overburden Removal

Overburden removal will be undertaken by dozer ripping then either dozer pushing into an adjacent pit or removal by front end loader into rear dump trucks. The operating bench height will typically be 5 m. The topsoil, subsoil and partially weathered or unconsolidated material near the surface should be suitable for free digging, however blasting will be required in the more competent overburden material. Where present, the Irondale Seam will be separated from the overburden if possible. A combination of normal and some throw blasting will be used depending upon the final spoil positions. Once blasted, the overburden will be dozed or trucked into its final positions. The last lift directly above the Lidsdale Seam will be taken by a front end loader loading the rear dump trucks, to reduce the traffic on the seam floor. A dozer will be used to assist the excavator by pushing waste towards the excavator for load out.

4.1.4 Lidsdale Seam Mining

The Lidsdale seam will be mined using hydraulic excavators in backhoe configuration or a front end loader, both loading rear dump trucks. The coal will be trucked to the ROM stockpile where a front end loader will be used to load the crushing unit.

Two processes may be used to mine the coal:

- ☐ Rip the coal with a dozer. Then use a front end loader, working on the seam floor to load trucks also travelling on the seam floor.
- ☐ Use the hydraulic excavator, working on top of the coal seam to break out the coal and load into trucks travelling on the seam floor.

The Irondale Seam occurs generally throughout the proposed mining area but may be unsuitable for extraction in some locations. The Irondale Seam will be extracted wherever present and economic to do so.

4.1.5 Interburden Removal

The interburden will be drill and blasted in each mining block down to the Lithgow Seam. After blasting it is envisaged that the interburden will be fragmented to the extent that it will collapse and fill any underground headings that may occur within the Lithgow seam. The drilling of the interburden will, where in proximity to the adjacent underground workings, provide a means to check for possible voids of underground roadways. In the area within 20 m of underground workings being identified the current approved procedures for mining in the vicinity of caution zones will be adopted.

When no underground workings have been identified in the vicinity of the interburden mining, the procedure adopted will be similar to overburden removal. That is, loading of rear dump trucks using front end loaders for dumping of interburden back in the void created from previous mining for immediate sealing of underground entries, or used against highwalls for final batter formation.

4.1.6 Interburden Mining within Caution Zones

Procedures have been developed for the removal of interburden strata immediately over the underground workings. These procedures have been refined over recent years but often vary according to the nature and stability of the underground workings at any particular location. The methods are outlined in the Mining Operations Plan and varied as required by the Mine Manager and Open Cut Examiner (OCE) in consultation with the District Mines Inspector. Interburden strata over underground workings is often blasted with pre-determined drill benches taking into consideration the position of underlying headings and cut-throughs, in order to achieve stable highwalls following blasting.

The location of any underground workings is sometimes marked out on the surface of the bench and/or on the highwall immediately above any identified roadway to assist in the identification of safe work areas. Once blasted the removal of the interburden is undertaken with care such as described below.

- ❑ The excavator/front end loader sits directly above solid coal (pillars) and mine interburden to find the top of coal and the edge of the roadway.
- ❑ The excavator then removes the interburden from above the roadway to the approximate same level as the top of coal. Therefore the interburden that has collapsed into the roadway will remain until immediately prior to coal mining.
- ❑ Once the interburden has been removed and the top of coal cleaned off, the old roadways can then be cleaned out by removing fallen overburden, this can be carried out using a combination of equipment:
 - Dozers - pushing out along roadways to areas where the material can be safely loaded
 - Excavator - loading material into rear dump trucks

4.1.7 Lithgow Seam Mining (When Including Underground Workings)

Where the Lithgow Seam has been subject to "first workings" extraction, the coal mining operation is generally but not necessarily restricted to the smaller excavator and trucks. After the final clean up around the pillars coal mining can commence with coal immediately adjacent to the highwall generally being taken first. This allows the openings into the old workings to be sealed.

The excavator usually sits directly over solid coal and draw the coal that is in the roadway toward itself. The coal is then loaded into the trucks and delivered via a route that does not cross any underground roadways.

4.1.8 Lithgow Seam Mining (No Old Workings)

Where the Lithgow Seam contains no old underground workings the same procedure for mining the Lidsdale coal occurs. That is, the coal seam is mined using dozer ripping and loading by front end loader into rear dump trucks. The coal is then trucked to the ROM stockpile where a front end loader is used to load the crushing unit.

Two processes are currently used to mine the coal:

- ☐ Rip the coal with a dozer. Then use a front end loader, working on the seam floor to load trucks also travelling on the seam floor.
- ☐ Use the hydraulic excavator, working on top of the coal seam to break out the coal and load into trucks travelling on the seam floor.

4.1.9 Waste Handling and Reshaping

Waste material will initially be dumped into the last strip of the current Lamberts Gully working area. Some material will be trucked for placement adjacent to the final void, so it may be dozed to create the final landform. This will be particularly the case for the future Reject Emplacement Area. The vast majority of overburden and interburden material will be dumped in-pit.

A track dozer will be used to spread and contour the dumped material to maintain effective drainage during the dump construction and to meet the requirements of the final design.

4.1.10 Production Schedule

Total coal production is planned remain at currently approved limits of 400,000 tpa ROM. Actual monthly tonnages can vary significantly depending on mining sequence and market demand. It is not uncommon for coal production to cease for short periods while removal of overburden is being undertaken. This may occur later in 2005 when the stripping of the future reject emplacement area occurs.

4.1.11 Mining Equipment

All major work undertaken on site will be with contractor owned and operated equipment. The fleet will be consistent with what is currently used at Lamberts Gully and will typically include:

- ☐ Dozers
- ☐ Trucks
- ☐ Loaders
- ☐ Excavators
- ☐ Hydraulic Rock Drill
- ☐ Water Cart
- ☐ Grader

4.2 Coal Handling and Transport Systems

All required coal handling and transport systems are in place and do not need modification or upgrading. Haul roads within the open cut are constructed as required. These include underpasses beneath the existing overland conveyer.

4.3 Rejects Disposal System

Reject from the existing Washery is currently being disposed in an above ground emplacement site near the front entrance. This site is nearing capacity and is currently used primarily for fine reject. Coarse reject is being trucked to the Huon No 6 mining void to the north of the Lamberts Gully extension area.

The long term reject disposal area lies within the proposed future open cut area. The design of the final landform from the open cut has taken into account the need to develop a future emplacement at this location. Work on preparing the emplacement area will likely proceed under its existing planning consent prior to the open cut extraction commencing in this area.

Overburden produced from Strips E3, D1 to D3 will be partially used for cover material for the existing reject emplacement in the Huon No 6 void, while some overburden from Strips B1 and B2 will be set aside for future cover and rehabilitation of the main future Reject Emplacement.

4.4 Hours of Operation

The Springvale Services site operates 24 hours per day, 7 days per week. The existing and proposed open cut works operates:

- ☐ 7.00am to 5.30pm Monday to Friday
- ☐ 7.00am to 2.30pm Saturday
- ☐ Blasting between 9.00am and 3.00pm, Monday to Friday.

Equipment maintenance will continue to occur after hours as required.

5. Noise and Blasting Assessment

Potential noise and blasting impacts were identified by the Department of Planning as a key issue to be addressed in the Environmental Assessment. This assessment has been undertaken by Atkins Acoustics which is contained in full as Appendix C and summarised in the following sections.

In summary, the assessment found that with little modification, the proposed works will meet the noise assessment goal for the residents at Blackmans Flat at all stages of mining.

5.1 Ambient Noise Measurements

For the purposes of assessing noise from the proposal, the existing ambient background noise levels were measured and recorded Thursday 19 August 2004 to Friday 27 August 2004.

The reference location (shown in Appendix C) selected to acquire ambient background noise levels for Blackmans Flat village was 4 Mudgee Road, Blackmans Flat.

The ambient noise levels were measured and assessed as percentile A-weighted sound levels. The parameter regarded as being the most important amongst these, are the “LA90”, the level exceeded for 90% of the sample period and referenced as the “background or average minimum noise level”.

From the procedures recommended in the INP, the Rating Background Level (RBL) has been established to assess noise emissions from the proposal. The RBL is the median of the tenth percentile background levels for each assessment period over the seven (7) day measurement period. Table 5.1 presents a summary of the existing ambient background noise levels for the daytime, evening and night-time hours, and the calculated RBL levels.

Table 5.1: Measured RBL Noise Levels
dB(A) re: 20 x 10⁻⁶ Pa

Date	Assessment Background Level		
	L _{A90}		
	Day	Evening	Night
Location 1: Blackmans Flat			
Thu 19/8/04	-	31	31
Fri 20/8/04	41	36	32
Sat 21/8/04	38	33	32
Sun 22/8/04	36	33	32
Mon 23/8/04	37	32	33
Tue 24/8/04	37	38	34
Wed 25/8/04	37	35	32
Thu 26/8/04	42	38	30
Fri 27/8/04	45	37	33
RBL	37	33	32

NOTE: Daytime : (7.00am to 6.00pm)

Evening : (6.00pm to 10.00pm)

Night-time : (10.00pm to 7.00am)

Noise levels in *Italics* deleted due to extraneous noise

Meteorological information supplied by Holmes Air Sciences provided daytime data for annual and seasonal data on wind speed and direction for the closest meteorological stations at Mount Piper. A review of the data for the purpose of noise modelling has identified that the percentage occurrence of predominant winds from source to receiver with speeds of less than 3m/s is less than 30%. The supplied data also identified that F Stability Class conditions at wind speeds of less than 3m/s occur for less than 36.4% of the time during night-time hours (6.00pm to 7.00am). It is not proposed to operate the mine during night-time hours.

In accordance with the procedures of the INP, adverse meteorological conditions (wind and temperature inversion) are not required to be considered for the proposal as source to receiver winds of 3m/s or below occur for less than 30% of the time in any assessment period or season and night-time operation is not proposed.

5.2 Noise Assessment Goals

In accordance with the INP the following goals have been considered for assessing noise associated with the proposed works.

- ☐ controlling intrusive noise; and
- ☐ maintaining noise level amenity.

The intrusiveness of a noise source is considered to be acceptable if the LAeq,15min noise level does not exceed the RBL by more than 5dB(A). In order to determine the amenity noise goal, the ambient LAeq noise levels should not

normally exceed the acceptable noise levels (Table 5.2). Where existing LAeq noise levels approach or exceed acceptable noise levels, design goals are set below the existing LAeq in order to limit any further increase or “creep” in the ambient levels. By conservatively assuming the proposed works is a ‘greenfield’ development and the existing ambient LAeq noise is controlled by traffic on Mudgee Road (Castlereagh Highway), the intrusive goals have been adopted for this assessment.

Table 5.2: DEC Noise Policy Amenity Criteria dB(A) re: 20 x 10⁻⁶ Pa

Type of Receiver	Indicative Noise Amenity Area	Time of Day	Recommended LAeq Noise Level dB(A)	
			Acceptable	Recommended Maximum
Residence	Rural	Day	50	55
		Evening	45	50
		Night	40	45

It is noted (DEC, INP Section 1.4.1) that the criteria presented above are best regarded as planning tools. They are not mandatory, and an application for a noise producing development is not determined purely on the basis of compliance or otherwise of noise criteria. Numerous other factors need to be taken into account in the determination. These factors include economic consequences, other environmental effects and the social worth of the development.

Considering the measured ambient noise levels and the INP guidelines, Table 5.3 presents the assessment RBL’s, the LAeq noise levels and the recommended project noise assessment goals.

Table 5.3: Assessment RBL, Planning Level and Noise Goal dB(A) re: 20 x 10⁻⁶ Pa

Period ⁽¹⁾	Existing RBL LA90	Recommended Noise Level LAeq	Project Assessment ⁽²⁾ Criterion LAeq
Location 1: All assessment locations – Blackmans Flat			
Day	37	50	42

(1) Daytime: (7.00am to 6.00pm)

(2) Assessment goals based on the intrusive criteria.

Considering the INP guidelines and procedures, and noise limits as presented in the current licence for the site (DEC Licence 3607), the recommended project specific noise level adopted for the daytime operation of the proposed mine extension is LAeq,15min 42dB(A).

5.3 Site Plant and Equipment

Noise emissions from the proposal have been modelled and assessed in terms of continuous operational noise from mobile plant including trucks.

The operational noise modelling has generally considered the following scenario:

- ❑ Dozer (CAT D10 or D11), Loader (CAT 992) and Truck CAT 773) on existing ground surface.
- ❑ Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) approximately 3m below existing ground surface.
- ❑ Second Unit (dozer, loader, excavator, 3 x trucks) approximately – 5m to 8m below existing ground surface.

The plant schedule and sound power levels summarised in Table 5.4 were adopted for the purpose of predicting noise from the site. The sound power levels were established from site attended audit measurements and manufacturers data.

Table 5.4: Mine Plant Sound Power Levels dB(A) re: 10-12 Watts

Plant Description	Sound Power Level dB(A)								
	dB(A)	63	125	250	500	1k	2k	4k	8k
Unit 1									
Dozer (CAT D10 or D11)	115	106	106	106	111	109	110	102	92
Haul Truck (CAT773) x 3	110	112	114	108	108	105	100	94	85
Front End Loader x2 (CAT922)	112	107	117	104	109	107	106	100	95
Excavator (CAT375)	116	114	114	111	111	113	110	99	93
Hydraulic Rock Drill	110	107	120	104	107	104	103	96	88
Water Cart/Grader	106	116	108	101	101	101	101	94	84
Unit 2									
Dozer (CAT D10 or D11)	115	106	106	106	111	109	110	102	92
Haul Truck (CAT773) x 6	110	112	114	108	108	105	100	94	85
Front End Loader x2 (CAT922)	112	107	117	104	109	107	106	100	95
Excavator (CAT375)	116	114	114	111	111	113	110	99	93

The water cart and the grader would not normally operate simultaneously. The noise modelling has adopted this operational scenario. Additionally due to pit constraints during Stage 13 (Strips F1-F2) and considering the proximity of an isolated residential dwelling, a reduced number of plant would be operated within the Application Area. The following plant and equipment has been considered for Stage 13 (Strips F1-F2) operations: Dozer (CAT D10/11 – Lw115dB(A)), Truck (CAT 773 – Lw 110dB(A)) and Loader (CAT 992 – Lw 112dB(A)) located on the existing ground surface. Accordingly alternative plant configurations with similar sound power levels and a cumulative level of Lw 118dB(A) could be utilised with Stage 13 operations.

5.4 Site Noise Emissions

Noise emissions from the site operations were modelled with the DEC approved Environmental Noise Model (ENM) computer model. The model considers

attenuation factors such as distance, shielding from working faces, ground vegetation, atmospheric absorption, topographical features of the area and on site bunding.

The noise model input data for the proposed works has been based on audit noise measurements, manufacturers specifications and published data, digital ground contours plotted from aerial survey, ground contour intervals generally of two metres with some areas to the north in one metre and to the north-west in ten metres, digital mine plans, shielding provided by the mine faces where applicable.

The INP (Section 5.3.1) guidelines for noise modelling under the effects of varying wind conditions recommend that wind effects should be assessed when wind speeds of 3m/s or below occur for 30 percent of the time or more in any assessment period or season. Considering the meteorological and seasonal wind data from Holmes Air Sciences only calm conditions are required to be incorporated into the noise modelling for the proposal.

The mine development stages considered in the noise modelling included:

- Stage 1:** Strips A1-A3
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 952
 - Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) RL 948
 - Second Unit (dozer, loader, excavator, 3 x trucks) RL 943
- Stage 2:** Strips A4-A6
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 948
 - Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) RL 945
 - Second Unit (dozer, loader, excavator, 3 x trucks) RL 943
- Stage 3:** Strips A7-A9
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 950
 - Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) RL 948
 - Second Unit (dozer, loader, excavator, 3 x trucks) RL 943
- Stage 4:** Strips B1-B3
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 958
 - Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) RL 956
 - Second Unit (dozer, loader, excavator, 3 x trucks) RL 955
- Stage 5:** Strips B4-B6
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 960
 - Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) RL 958
 - Second Unit (dozer, loader, excavator, 3 x trucks) RL 956

-
-
- Stage 6:** Strips C1-C2
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 968
 - Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) RL 966
 - Second Unit (dozer, loader, excavator, 3 x trucks) RL 965
- Stage 7:** Strips D1-D3
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 943
 - Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) RL 940
 - Second Unit (dozer, loader, excavator, 3 x trucks) RL 935
- Stage 8:** Strips D4-D5
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 950
 - Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) RL 947
 - Second Unit (dozer, loader, excavator, 3 x trucks) RL 942
- Stage 9:** Strips E1-E2
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 943
 - Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) RL 940
 - Second Unit (dozer, loader, excavator, 3 x trucks) RL 935
- Stage 10:** Strips E2-E3
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 943
 - Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) RL 939
 - Second Unit (dozer, loader, excavator, 3 x trucks) RL 934
- Stage 11:** Strips E4-E6
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 936
 - Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) RL 933
 - Second Unit (dozer, loader, excavator, 3 x trucks) RL 929
- Stage 12:** Strips E7-E8
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 932
 - Excavator (CAT 375), Hydraulic Rock Drill, Water Cart and Two (2) trucks (CAT 773) RL 929
 - Second Unit (dozer, loader, excavator, 3 x trucks) RL 924
- Stage 13:** Strips F1-F2
- Dozer (CAT D10 or D11), Loader (CAT 992) and Truck (CAT 773) RL 954

Note: Strips E7 to E8 inclusive do not form part of the current project application.

These stages do not represent the order of mining but rather work areas considered for the noise model. The scenarios represent the range of envisaged

situations throughout the life of the mine. They have been considered to model the range of noise levels likely to be emitted from the site. It is noted that for all mining stages (excluding Stage 13) two units of plant and equipment has been considered, however it is likely that in many cases only one unit would generally be utilised due to the small size of each mining strip.

The assessment was based on the assumption that the plant was operating as previously described. Table 5.5 present a summary of the predicted noise levels to the reference assessment locations (Figure 1 of Appendix C) for each stage of operations and various meteorological scenarios.

Table 5.5: Predicted Noise Levels: Mine Operations

$L_{Aeq,15min}$ dB(A) re: 20×10^{-6} Pa

Assessment Location	Predicted Noise Level dB(A)
Stage 1 (A1-A3)	
R1	34.3
R2	37.2
R3	37.2
R4	36.0
R5	36.2
R6	28.5
R7	36.0
Stage 2 (A4-A6)	
R1	31.4
R2	33.1
R3	33.1
R4	31.9
R5	31.9
R6	26.8
R7	34.1
Stage 3 (A7-A9)	
R1	29.5
R2	31.0
R3	31.2
R4	30.0
R5	29.6
R6	25.4
R7	29.3
Stage 4 (B1-B3)	
R1	29.1
R2	30.7
R3	29.9
R4	29.0
R5	29.1
R6	23.5
R7	30.6
Stage 5 (B4-B6)	
R1	31.8
R2	33.2
R3	33.3
R4	32.5
R5	32.3
R6	25.5

Table 5.5: Predicted Noise Levels: Mine Operations $L_{Aeq,15min}$ dB(A) re: 20×10^{-6} Pa

Assessment Location	Predicted Noise Level dB(A)
R7	32.9
Stage 6 (C1-C2)	
R1	36.9
R2	39.1
R3	38.9
R4	36.6
R5	30.3
R6	27.6
R7	38.3
Stage 7 (D1-D3)	
R1	28.5
R2	29.9
R3	29.7
R4	28.4
R5	28.3
R6	26.3
R7	30.4
Stage 8 (D4-D5)	
R1	32.9
R2	33.7
R3	33.6
R4	32.4
R5	34.3
R6	28.0
R7	34.8
Stage 9 (E1-E2)	
R1	37.8
R2	38.5
R3	38.4
R4	37.2
R5	37.2
R6	31.7
R7	35.4
Stage 10 (E2-E3)	
R1	33.2
R2	34.9
R3	33.6
R4	32.3
R5	32.6
R6	29.5
R7	31.8
Stage 11 (E4-E6)	
R1	35.9
R2	36.7
R3	36.4
R4	35.2
R5	35.6
R6	32.1
R7	33.0
Stage 12 (E7-E8)	
R1	34.2

Table 5.5: Predicted Noise Levels: Mine Operations $L_{Aeq,15min}$ dB(A) re: 20×10^{-6} Pa

Assessment Location	Predicted Noise Level dB(A)
R2	36.2
R3	36.0
R4	34.2
R5	35.0
R6	33.5
R7	30.4
Stage 13 (F1-F2)*	
R1	33.2
R2	32.7
R3	30.9
R4	23.7
R5	25.1
R6	22.3
R7	42.2

* reduced number of plant and equipment: Dozer, Truck & Loader on surface

The noise predictions presented in Table 5.5 show that the recommended goals are satisfied at all reference assessment locations for mining operations during conditions. To achieve compliance for Stage 13 (F1-F2), the number of plant and equipment was required to be reduced to enable noise compliance.

5.4.1 Cumulative Noise Assessment

Following advice from the Department of Planning, a cumulative noise assessment has been undertaken to include other nearby projects, namely, the Blackmans Flat Waste Management and the Pine Dale Coal Mine.

For the purpose of the cumulative noise assessment it has been assumed that the three proposals were approved and would operate simultaneously. Additionally, it was assumed that the Lambert Gully proposal could extend for ten a year period. Accordingly the cumulative noise assessment has been limited to a ten year time frame. Referenced to the information provided in the three EIS's, Table 5.6 provides a summary of the predicted noise levels for each proposal and the predicted cumulative levels for the western end of the Blackmans Flat village.

Table 5.6. Predicted Noise Levels at Blackmans Flat

Reference Year/Source Description	Reference Source Location	Predicted Sound Pressure Level dB(A)	Predicted Cumulative Sound Pressure Level dB(A)
5.5 Year 1			
Lamberts Gully	Stage 1 (A1-A3)	37	
BF Waste Management	Stage 1. Initial Work RL913	32	39**
Pine Dale	Area A, B and C	40-58	42-58***
5.6 Year 5			
Lamberts Gully	Stage 9 (E1-E2)	38	
BF Waste Management	Stage 2. 25% Used RL919*	35*	40**
5.7 Pine Dale	Areas A, B and C	40-45	43-46***
Year 10			
Lamberts Gully	Stage 13 (F1-F2)	33	
BF Waste Management	Stage 2. 50% Used RL925	39	41**
Pine Dale	Areas A, B and C	40-45	43-47***

* Estimated by Atkins

** Predicted noise from Lamberts Gully and Blackmans Flat Waste Management proposals

*** Predicted noise from three (3) proposals

The predictions summarised in Table 5.6 show that the cumulative noise from the Lamberts Gully and Blackmans Flat Waste Management proposals satisfy the assessment goal of 42dB(A).

The predicted cumulative noise (Table 5.6) from the three proposals exceeds the recommended 42dB(A) assessment goal by up to 16dB(A). The main source contributing to the noise exceedance is from the Pine Dale proposal. The Lamberts Gully Mine proposal clearly falls well within its assessment criteria as does the Blackmans Flat Waste Management.

5.7.1 Blasting Assessment

Blasting will be required throughout the life of the open cut at a rate of approximately 1 to 2 blasts per week. Based on current practices, it is anticipated that there would be approximately 80-100 blast holes per blast. Generally the top portion of the overburden will be free-dug. Blasting of the remaining overburden and interburden will be undertaken as required prior to removal.

A review of previous blasting data for Lamberts Gully has shown that generally 80-100 holes would be utilised with a diameter of 200mm. In terms of MIC values, up to 57 kg has been utilised for the coal seam, and up to 226 kg for overburden. Monitoring of blast overpressure and ground vibration has been

conducted in accordance with the mine DEC licence conditions and compliance has demonstrated. For blasting between the hours of 9.00 am and 3.00 pm, the assessment goals at residential receptors are 5 mm/s ground vibration and 115 dB(lin) airblast overpressure.

For the purpose of modelling blast emissions, a provisional blast design has been considered.

Table 5.6: Provisional Blast Design Parameters

Parameter	Provisional Design
Spacing	5-6 metres
Stemming	2-3 metres
Hole Diameter	200
Explosive Type	SoftLOAD
Powder Factor	0.1-0.45kg/m ³
MIC Coal	57 kg
MIC Overburden	226 kg

5.7.2 Blast Modelling

In order to calculate the level of vibration and airblast overpressure at the exposed receiver locations, the measured levels from previous blasts were reviewed and collated. The blast data while comprehensive does not include separation distances for each blast. Hence, the data can only be used to demonstrate that blast emissions can be managed to satisfy the relevant assessment goals.

The results summarised in Appendix C show that the DEC ground vibration goal (5mm/sec) can be satisfied with the employment of controlled MIC's. Blasts should be monitored in accordance with current Environment Protection Licence Conditions to confirm maximum charge weights to ensure compliance with the DEC ground vibration limits and optimise future blasts. The assessment of blast impacts has adhered to ANZECC Guidelines.

5.7.3 Findings and Recommendations

The results of the noise modelling have shown that the recommended noise assessment goal for daytime mining activities is satisfied at all reference receiver locations for all stages of the proposed mine extension during calm conditions. For Stage 13 (Strips F1-F2) the noise modelling has identified that a reduction in the number of plant and equipment utilised within this area is required to establish compliance with the recommended project specific noise level.

The results of the blast assessment, review of blasting records and prediction of blast impacts (airblast overpressure and ground vibration) has shown that with controlled MIC's and appropriate blast design the recommended airblast overpressure and ground vibration limits can be satisfied at the reference receiver locations.

To minimise noise and control blast impacts during the mining operations, the following recommendations have been adopted:

-
- ❑ the operation of all site plant and equipment should be controlled to satisfy the acoustic performance referenced in Table 5.5;
 - ❑ where practical audible alarms shall be replaced with flashing lights or a similar warning system;
 - ❑ restriction to plant and equipment utilised during Stage 13 (Strips F1-F2) to 1 x Dozer (CAT D10/D11), Loader (CAT 992) and Truck (CAT 773) with a combined Lw 118dB(A). Other plant configurations could be utilised provided the total sound power level is <Lw118dB(A);
 - ❑ A Noise Management Plan (NMP) should be prepared and implemented with noise monitoring being conducted during mining to confirm noise levels and where required assess the practicability of additional noise controls. Subsequent annual noise audits should be undertaken if considered necessary to ensure that all noise control measures are installed and maintained, and that the environmental noise levels (criteria) are satisfied.
 - ❑ blasting to be avoided during adverse weather; and
 - ❑ ground vibration and airblast overpressure from all blasts to be monitored at reference monitoring location agreed with the DEC in accordance with current Environment Protection Licence Conditions (EPL 3607).

5.8 Blast Monitoring Data

As a means of verifying the ability of Lamberts Gully Mine to meet future blast criteria, all blasts are monitored at the nearest residential receptor. The results of this monitoring is shown on Table 5.7.

Current limits imposed on the operation include 5mm/m ground vibration and 115 db overpressure. The data shows that all blasts to date have met the criteria.

There have also been 28 “no triggers” recorded. A “no trigger” means that the ground vibration and overpressure caused by the blast were not sufficient to set the equipment off.

Table – 5.7 Overview of Lamberts Gully Shotfiring Practises

<i>Limit 0.4 Air/Ground 5mm/115db</i>										
Date	Shot No	Hole Dia mm	No of Holes	Explosive Used - kgs	OB or IB	HoleDepth Metres	BCM	kg/bcm	Exceedance	
19/11/04	1 MH	187	125	10842	OB 1	8.52	35152	0.308432	No Triggers	All Soft Load
30/11/04	2 MH	187	90	7242	IB 1	9.51	35952	0.201435	No Triggers	All Soft Load
12/01/2004	3 MH	200	139	14476	OB 2	9.25	54029	0.267930	0.15/111.2	All Soft Load
12/09/2004	4 MH	200	165	18560	IB 2	9.59	66427	0.279404	No Triggers	All Soft Load
14/12/05	5 MH	200	84	23054	OB 1	15.04	53046	0.434604	No Triggers	TM840 Added
22/12/04	6 MH	200	71	8176	OB 2	9.78	29152	0.280461	No Triggers	All Soft Load
22/12/04	7 MH	200	74	5084	IB 2	6.92	21512	0.236333	No Triggers	All Soft Load
22/12/04	8 MH	200	122	1588	IB 2	3.10	13615	0.116636	No Triggers	All Soft Load
1/06/2005	9 MH	200	108	8363	IB 2	6.40	24890	0.335998	No Triggers	TM840 Added
1/07/2005	10 MH	200	50	2324	IB 3	5.56	11668	0.199177	0.11/109.4	All Soft Load
1/12/2005	11 MH	200	116	10239	OB 3	7.31	35595	0.287653	No 0.9/108.9	All Soft Load
18/1/05	12 MaH	200	201	16855	IB 3	6.37	46102	0.365602	No 0.6/107.9	TM840 Added
27/1/05	13 MaH	200	204	21470	IB 2	7.53	55300	0.388246	No 0.09/110	TM840 Added
2/01/2005	14 MaH	200	244	17451	IB 3	6.34	55692	0.313348	0.07/108.7	TM840 Added
2/09/2005	15 MH	200	144	7761	IB 3	5.81	30128	0.257601	0.75/114.3	All Soft Load
16/2/05	16 MH	200	170	9513	IB 4	5.94	36346	0.261734	No 3.46/92.4	All Soft Load
23/2/05	17 MH	200	202	9189	IB 6	5.10	33964	0.270551	0.88/109.4	TM840 Added
24/2/05	18 MH	200	69	3641	OB 6	4.32	10732	0.339266	No 0.1/112.5	Aquamax Only
3/02/2005	19 MaH	200	108	5490	OB 4	5.30	17163	0.319874	No Triggers	All Soft Load
3/08/2005	20 MaH	200	75	4973	OB 4	5.1	12519	0.397236	0.07/108.2	All Soft Load
3/09/2005	21 MaH	200	121	6135	IB 6	4.9	19500	0.314615	No 0.09/110	All Soft Load
15/3/05	22 MH	200	108	9471	OB 6	5.5	17838	0.530945	0.07/111.4	TM840 Added
22/3/05	23 MH	200	120	9298	OB 6	5.8	17433	0.533356	No Triggers	Aqua Max added

No											
23/3/05	24 MH	200	87	6139	IB 4	5.0	10833	0.566694	0.09/109.4	All Soft Load	
4/01/2005	25 MH	200	140	7047	IB 4	5.0	17406	0.40486	No Triggers	All Soft Load	
4/06/2005	26 PA	200	74	15952	OB 4	10.4	23043	0.692271	No Triggers	TM840 Added	
4/06/2005	27 PA	200	35	1715	IB 6	4.5	3900	0.439744	No Triggers	All Soft Load	
No											
4/08/2005	28 PA	200	140	9144	IB 6	5.2	18106	0.505026	0.92/105.2	All Soft Load	
14/4/05	29 MH	200	135	12355	IB 6	5.5	18715	0.660166	No Triggers	All Soft Load	
20/4/04	30 PA	200	64	16049	OB 6	12.1	23277	0.689479	No Triggers	TM840 & ANFO Added	
5/05/2005	31 PA	200	109	28655	OB4	12.3	40236	0.712173	No 1.3/115.4	TM840 Added	
17/05/2005	32MH	200	168	6156	IB4	4.6	19268	0.319493	No 0.49/70.7	All Soft Load	
No											
26/05/2005	33MH	200	91	18500	OB5	14.2	38784	0.477001	0.14/110.8	All Soft Load	
No											
27/05/2005	34MH	200	32	6133	OB5	13.6	13038	0.470394	0.14/107.4	All Soft Load	
8/06/2005	35MaH	200	105	4164	OB5	3.6	9508	0.437947	No Triggers	All Soft Load	
22/06/2005	36MH	200	94	16706	OB5	13.2	37215	0.448905	No1.75/103.6	All Soft Load	
No											
23/06/2005	37MH	200	96	6140	IB5	4.5	10740	0.571695	0.16/110.3	All Soft Load	
8/07/2005	38MaH	200	71	4506	IB5	4.5	9549	0.471882	No Triggers	All Soft Load	
12/07/2005	39Mah	200	182	6310	IB4	4.4	23934	0.263642	No Triggers	All Soft Load	
13/07/2005	40MaH	200	54	9200	OB5	13	17503	0.525624	No 0.97/97.3	All Soft Load	
20/07/2005	41PA	200	79	2645	IB5	4.3	10284	0.257196	No Triggers	All Soft Load	
4/08/2005	42MaH	200	89	3454	IB5	4.5	10995	0.314143	No Triggers	All Soft Load	
No											
9/08/2005	43GC	200	80	8813	OB5	10	23784	0.370543	1.35/108.4	Soft Load & Throw max 840	
No											
11/08/2004	44GC	200	82	15940	OB5	10	24444	0.652103	1.31/112.3	Soft Load & Throw Max 840 & Aqua max 870	
23/08/2005	45MaH	200	153	6550	IB4	5	16738	0.391325	No Triggers	All Soft Load	
6/09/2005	46MaH	200	70	11570	OB5	12	25254	0.458145	NoTiggers	All Soft Load	
7/09/2005	47MaH	200	88	17510	OB5	11.9	31518	0.555556	No Triggers	All Soft Load	
No											
20/09/2005	48GC	200	124	6100	IB5	4.6	12695	0.480504	0.71/110.2	All Soft Load	
No											
27/09/2005	49BF	200	166	6130	IB5	4.5	15217	0.402839	0.12/108.9	All Soft Load	
No											
12/10/2005	50MaH	200	104	16200	OB5	11.5	35736	0.453324	1.85/102.3	All Soft Load Semi passed at time of shot	

									No			
18/10/2005	51BF	200	64	10820	OB5	12.2	23481	0.460798	0.73/108.7	All Soft Load		
26/10/2005	52GC	200	261	12520	IB5	4.6	26768	0.467723	No 0.8/110.6	Soft Load & Throw max 840		
2/11/2005	53MH	200	81	15127	OB5	11.9	28905	0.523335	No 1.25/64.8	All Soft Load		
8/11/2005	54MH	200	175	7934	IB5	4.52	17811	0.445455	No Triggers	All Soft Load		
8/11/2005	55MH	200	29	6025	OB5	13.91	12105	0.497728	No Triggers	All Soft Load		
9/11/2005	56MH	200	64	2790	IB5	4.7	6775	0.411808	No Triggers	All Soft Load		
									No			
18/11/2005	57GC	200	230	11566	IB5	4.89	25288	0.457371	0.66/111.1	All Soft Load		
25/11/2005	58PA	200	97	6205	IB5	5.2	10269	0.604246	No Triggers	All Soft Load		
8/12/2005	59PA	200	197	10961	IB5	5.00	20017	0.547585	No Triggers	All Soft Load	28 No trggers to date	

6. Air Quality Assessment

Potential air quality impacts were identified by the Department of Planning as a key issue to be addressed in the Environmental Assessment. This issue is addressed in the following sections.

6.1 Air Quality

Air quality issues associated with the proposed works will occur for the duration of the project. There will be no initial construction period or infrastructure establishment since the equipment is already on site and operating.

Air quality issues include dust from overburden stripping and dumping activities, exhaust emissions from vehicles and equipment (graders, scrapers, dozers), and dust and other particulate matter generated from the movement of vehicles on site. The location of the open cut operations will change continuously with the pit advancing both horizontally and vertically below natural ground level. Dust particles will be generated by the mobile equipment and will range in size from minute particles to much heavier particles which settle out rapidly not far away from the place of their origin.

Dust will also be generated from cleared areas, overburden and topsoil stockpiles and from vehicles travelling along the access road. The potential impact on air quality would be limited due to the restricted scale of the project, the relative infrequency of high wind conditions prevailing in the area and the predominant direction being away from receptor reactions.

6.1.1 Air Quality Assessment Criteria

Table 6.1 and Table 6.2 summarise the air quality goals that are relevant to this study. The air quality goals relate to the total dust burden in the air and not just the dust from the project. In other words, some consideration of background levels needs to be made when using these goals to assess impacts.

Table 6.1: Air quality standards/goals for particulate matter concentrations

Pollutant	Standard/Goal	Averaging Period	Agency
Total suspended particulate matter (TSP)	90 µg/m ³	Annual mean	NHMRC
Particulate matter < 10 µm (PM ₁₀)	50 µg/m ³	24-hour maximum	NSW EPA
	30 µg/m ³	Annual mean	NSW EPA long-term reporting goal
	50 µg/m ³	(24-hour average, 5 exceedances permitted per year)	NEPM
Particulate matter < 2.5 µm (PM _{2.5})	15 µg/m ³	Annual mean	US EPA*

	65 µg/m ³	24-hour maximum**	US EPA
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Note:

* Australian standard under development

** 99th percentile averaged over three years

Also included in Table 6.1 are the US EPA goals for the fine fraction of PM₁₀ namely PM_{2.5}. Epidemiological studies (Dockery et al, 1993 for example) indicate that it is the finer particles, that is those below 2.5 µm in diameter and referred to as PM_{2.5}, that cause health impacts as they are taken deeper into the lung.

In addition to health impacts, airborne dust also has the potential to cause nuisance impacts by depositing on surfaces. Table 6.2 shows the maximum acceptable increase in dust deposition over the existing dust levels. These criteria for dust fallout levels are set to protect against nuisance impacts (NSW EPA 2001b).

Table 6.2: NSW EPA criteria for dust fallout

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month

6.1.2 Existing Dust Levels and Performance

Springvale Coal measures dust from a number of gauges located around the pit top, Lidsdale Rail Siding and the Springvale Services Site. There are two gauges, referred to as Dust Gauge 4 and 5 which measure dust deposition around the Springvale Service Site. Dust Gauge 4 is located to the south east of the Washery and existing open cut, while Dust Gauge 5 is located adjacent to Blackmans Flat. Dust deposition rates since June 2002 are shown in Table 6.2.

Table 6.3 – Dust Deposition at Springvale Services Site

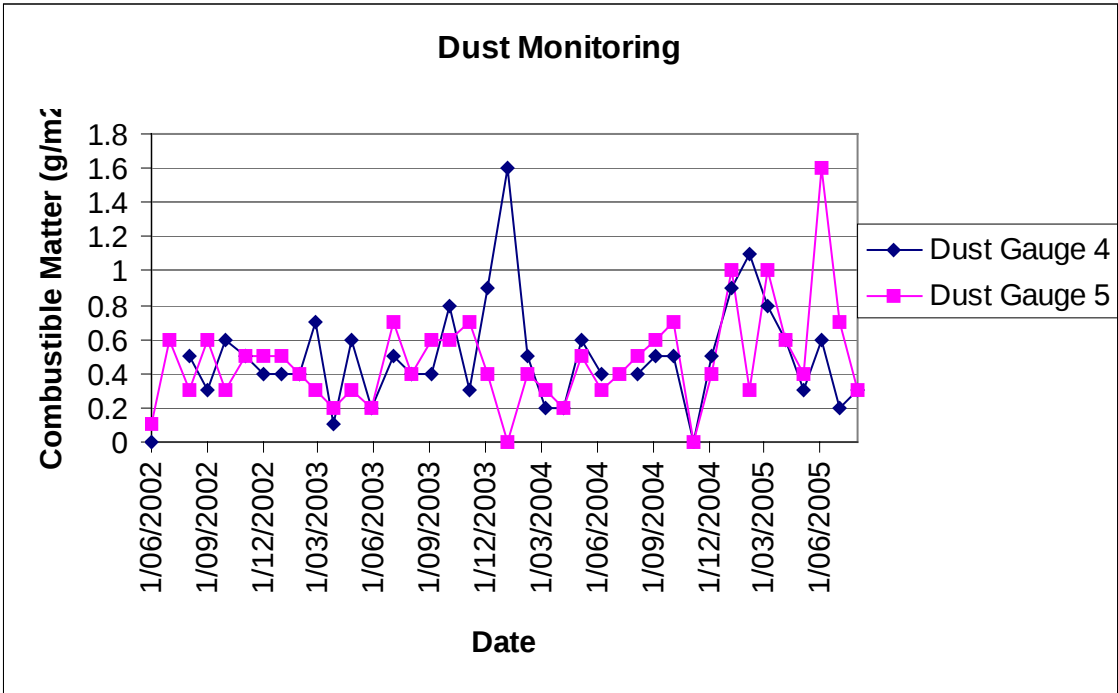
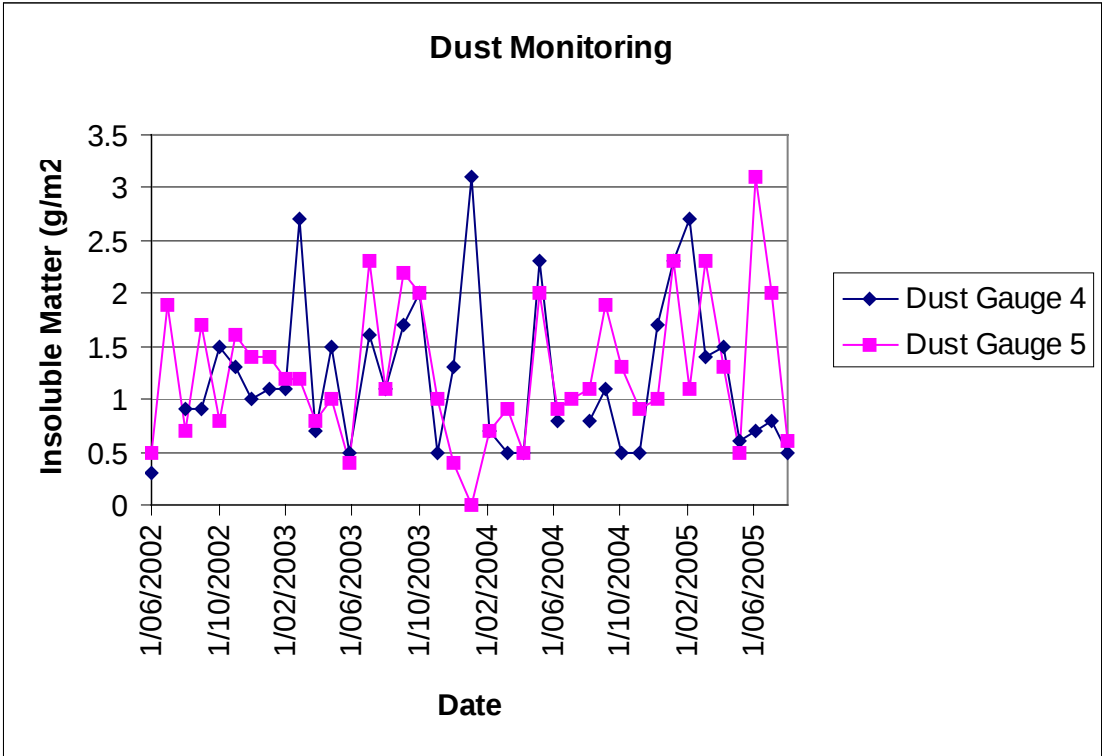
Date Collected	Dust Gauge No	Insoluble Solids	Combustible Matter	Ash
1/6/2002	4	0.3	0	0.3
	5	0.5	0.1	0.4
1/7/2002	4	N/A	N/A	N/A
	5	1.9	0.6	1.3
1/08/2002	4	0.9	0.5	0.4
	5	0.7	0.3	0.4
1/09/2002	4	0.9	0.3	0.6
	5	1.7	0.6	1.1
1/10/2002	4	1.5	0.6	0.9
	5	0.8	0.3	0.5
1/11/2002	4	1.3	0.5	0.8
	5	1.2	0.4	0.8
1/12/2002	4	1	0.4	0.6
	5	1.6	0.5	1.1
1/01/2003	4	1.1	0.4	0.7
	5	1.4	0.5	0.9
30/01/2003	4	1.1	0.4	0.7
	5	1.4	0.5	0.9
26/02/2003	4	2.7	0.7	2
	5	1.2	0.3	0.9
26/03/2003	4	0.7	0.1	0.6
	5	0.8	0.2	0.6
24/04/2003	4	1.5	0.6	0.9
	5	1	0.3	0.7
28/05/2003	4	0.5	0.2	0.3
	5	0.4	0.2	0.2

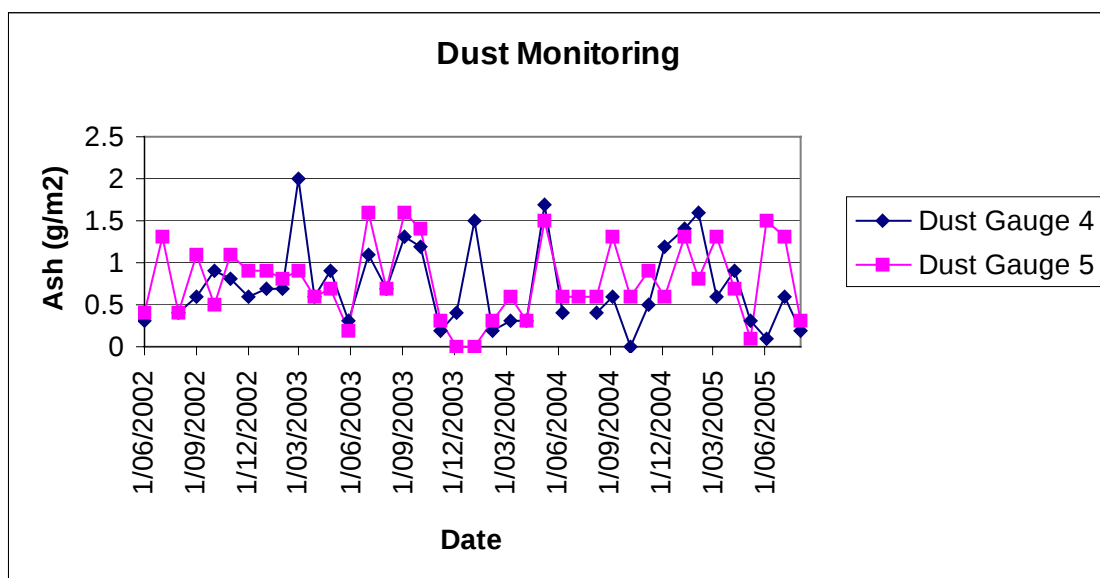
Date Collected	Dust Gauge No	Insoluble Solids	Combustible Matter	Ash
2/07/2003	4	1.6	0.5	1.1
	5	2.3	0.7	1.6
31/07/2003	4	1.1	0.4	0.7
	5	1.1	0.4	0.7
3/09/2003	4	1.7	0.4	1.3
	5	2.2	0.6	1.6
1/10/2003	4	2	0.8	1.2
	5	2	0.6	1.4
5/11/2003	4	0.5	0.3	0.2
	5	1	0.7	0.3
3/12/2003	4	1.3	0.9	0.4
	5	0.4	0.4	0
5/01/2004	4	3.1	1.6	1.5
	5	0	0	0
6/02/2004	4	0.7	0.5	0.2
	5	0.7	0.4	0.3
8/03/2004	4	0.5	0.2	0.3
	5	0.9	0.3	0.6
6/04/2004	4	0.5	0.2	0.3
	5	0.5	0.2	0.3
7/05/2004	4	2.3	0.6	1.7
	5	2	0.5	1.5
7/06/2004	4	0.8	0.4	0.4
	5	0.9	0.3	0.6
6/07/2004	4	N/A	N/A	N/A
	5	1	0.4	0.6
5/08/2004	4	0.8	0.4	0.4
	5	1.1	0.5	0.6
3/09/2004	4	1.1	0.5	0.6
	5	1.9	0.6	1.3
5/10/2004	4	0.5	0.5	0
	5	1.3	0.7	0.6
5/11/2004	4	0.5	0	0.5
	5	0.9	0	0.9
6/12/2004	4	1.7	0.5	1.2
	5	1	0.4	0.6
7/01/2005	4	2.3	0.9	1.4
	5	2.3	1	1.3
4/02/2005	4	2.7	1.1	1.6
	5	1.1	0.3	0.8
7/03/2005	4	1.4	0.8	0.6
	5	2.3	1	1.3
6/04/2005	4	1.5	0.6	0.9
	5	1.3	0.6	0.7
6/05/2005	4	0.6	0.3	0.3
	5	0.5	0.4	0.1
3/06/2005	4	0.7	0.6	0.1
	5	3.1	1.6	1.5
4/07/2005	4	0.8	0.2	0.6
	5	2	0.7	1.3
1/08/2005	4	0.5	0.3	0.2
	5	0.6	0.3	0.3

The results of the dust deposition monitoring are measured in grams per square metre per month. The dust is collected in bottles which is analysed for its various constituents in order to determine the component which may have been derived from the mine or other dust sources. The individual components include soluble solids (cobwebs, pollen, bird droppings), insoluble solids (which can also include some organic material) combustible material (usually all remaining carbon and organic material) and ash content, which is the final material which can be considered mineral based dust that could be sourced from the open cut.

As can be seen from in the following three graphs, there is some variability in dust deposition experienced at the site, particularly with the insoluble solids and combustible matter which generally do not relate to mineral based dust. The last

graph which shows the mineral content has remained relatively unchanged over the past three years. Despite the variability, all results comply with DEC assessment criteria for dust deposition.





The above graph shows that ash residual has remained largely unchanged over the past three years indicating that there are no trends or potential that activities at Lamberts Gully Mine are adversely affecting air quality at the residential area of Blackmans Flat.

6.1.3 Dust Emissions and Impacts

The proposed works will not represent a new source of dust in the local area. Current sources of air pollution affecting the local area include:

- ☐ Existing open cut operations at Lamberts Gully;
- ☐ Existing coal handling equipment and infrastructure
- ☐ Mount Piper Power Station and Ash Disposal operation;
- ☐ Other mining activities located to the east and north of the site;
- ☐ Agricultural activities surrounding the site;
- ☐ Dust and vehicles emissions associated with local sealed and unsealed roads.

The existing air quality with respect to dust deposition is good and considered to be typical of rural areas.

The principal sources of dust and associated mitigation measures proposed for the open cut extension are detailed in **Table 6.4**. These are currently in operation for the existing Lamberts Gully Open Cut and will continue for the proposed extension.

Table 6.4 - Sources of Dust and Mitigation Measures

Source	Mitigation Measures
Stripping activities	Water carts will spray water as required to minimise dust generation
Haul and Access Roads	Road watering when conditions are dry and/or windy
Stockpiles	Stockpiles would be watered under dry and/or windy conditions. Dedicated stockpile areas identified.
Cut and Fill Batter	Revegetation of batters immediately following construction. Outer faces of dams, culverts and processing area batters will be rock armoured.
Exposed areas cleared as part of the operations	Exposed areas would be minimised. Rehabilitation would be undertaken to stabilise disturbed areas as soon as possible.

Of the measures described above, it is anticipated that the overburden stripping and the internal haul roads will continue to be the dominant potential sources of dust. Watering of all exposed surfaces including the internal haul roads is an integral part of the open cut proposal and a dedicated water spray truck will be provided on site for this purpose.

The expected increase in dust deposition levels and concentrations due to emissions from the proposed open cut operation is predicted to be small, given that the main dust generating activities are already being carried out in the existing open cut area. There will be no additional equipment and no increase in production rate. Therefore the volume of overburden moved or coal extracted, transported and crushed will remain the same as at present.

Dust concentrations under windy dry conditions are difficult to assess reliably because of the difficulty of estimating dust emission rates from wind erosion under these conditions.

The likelihood of adverse dust impacts off site will be greatly reduced with the incorporation of the mitigation measures outlined in **Table 6.4**. Dust deposition will continue to be monitored in order to verify the adherence to EPA assessment criteria.

7. Surface and Groundwater Assessment

Potential impacts on surface and groundwater systems were identified by the Department of Planning as key issues to be addressed in the Environmental Assessment. These issues are addressed in the following sections.

7.1 Existing Drainage System

The Application Area generally drains in a north-easterly direction to Neubecks Creek, which flows south-east to the Coxs River. The Coxs River flows to Lake Burragorang (Warragamba Dam) approximately 60 km to the south-east. The Application Area lies mid slope between the rising hills to the south and the broad Neubecks Creek valley to the north. Terrain to the south rises to RL 1050 m while the site elevation is between RL 960 m to RL 920 m with the overall terrain sloping to the north east.

The existing water quality leaving the Lamberts Gully Open Cut and Springvale Services site can be broadly divided into categories:

- ☐ clean runoff from undisturbed areas entering the Lease area or in pit rainwater inflows;
- ☐ open cut dewatering pumps discharging onto the surface (currently not in use);
- ☐ water discharged from the co-disposal system;
- ☐ runoff from disturbed areas which enters the main pollution control ponds.

Water quality leaving the site varies. Clean runoff from undisturbed areas is usually high in sulphate (215 - 230 mg/L), relatively high in filtrable iron (up to 1.2 mg/L) and is considered "hard" (200 - 255 mg/L CaCO₃). Clean water on site can also have a relatively low pH value. Clean water dams up stream of disturbed areas have pH values of between 5.6 to 6.8. Water that has been in contact with overburden material can have a pH of up to 7.9.

The variations in pH relate to the type of materials passed over by surface waters. Soils in the upper catchment of the site tend to be influenced by coal in the Irondale seam. Soil profiles often contain coal chips and weathered coal material. Soil tests have shown pH levels of around 6.

Below the soil profile are a number of overburden and interburden sequences which have pH levels as high as 8.5. Therefore, background water quality depends largely on its origin.

Previous investigations have identified old reject disposal areas, haul roads, tailings dams and old workings such as found in the "knoll" as being prime acid generation areas. Groundwater pump outs have also proved acidic in the past. Contaminated water generally has a pH of between 3.1 to 3.5, however levels as low as 2.4 have occurred in areas where water has ponded for some time in reject areas.

The removal of the “knoll” and reconstruction of the old coal chitter roads has vastly improved the water quality entering the pollution control structure resulting in less need for the current limestone weirs to control pH leaving the site.

7.1.1 Water Management System

The Springvale Services site has an established water management system incorporating clean and dirty water systems. The current water management system for the site does not need modification or augmentation to cater for this application.

Dirty water from the existing mining area is generally contained in pit in sumps. This water is used preferentially for dust suppression. Excess water can be pumped into the main dirty water containment structures on site. These include a series of dams and weirs leading to the main pollution control structures near the front entrance to the site. Settled water is then allowed to discharge into the main channel leading from the site. This point is licensed and monitored monthly in accordance with the existing Pollution Control Licence.

Considerable work has been undertaken over recent years in the control and treatment of water discharges from the site. This work has largely centred on the control of acid mine drainage. A plan of the water management system covering the Springvale Services site, including the proposed open cut extension is shown on **Figure 5**.

It has been found that high sulphur concentrations (in the form of pyrite) occur with coal reject material which forms sulphuric acid when in contact with water. Therefore, waters leaving the coarse and fine reject disposal areas as well as runoff from haul roads and other exposed areas are acidic. The formation of low pH has been a specific issue relating to coal generated from the site rather than coal mined from Springvale and transported to the site by the overland conveyor.

A number of initiatives have been put in place to ameliorate acid discharge, as well as to reduce the overall volume of water leaving the site. Activities undertaken to date include:

- ☐ Upgrading of the reject disposal system. The current system enables complete containment of both coarse and fine reject coupled with a water recycling system.
- ☐ Clean up of the old Western Main surface facilities area including the bathhouse, workshop, office, equipment storage areas and old stockpiles. This has significantly reduced the area of disturbance and in particular, the area of reject exposure since these areas were constructed with coarse reject.
- ☐ Construction of an additional dam downstream of the export product area.

-
- ❑ Re-instatement of the old tailings dams as pollution control ponds. These ponds are located adjacent to the Washery and contain all runoff from exposed hardstand and roads.

The limestone weirs which were previously constructed along the main discharge channel have been reconstructed and upgraded. This work has included both additional channel length and additional weirs. The main drain has also been diverted into the return pond of the reject disposal facility. This has enabled a much greater settling capability for dirty runoff from upstream areas.

The purpose of the weirs is to enable the limestone to react with the sulphuric acid to form gypsum (CaSO_4) and in the process, raising the pH. The weirs also control the flow of coal fines leaving the site. However, the gypsum formed within the weirs is often flushed out during high rainfall events. The gypsum forms a non-filtrable residue (NFR) within the discharge but poses no off-site environmental problems.

The system, coupled with the removal of reject from the roads and general clean up works have succeeded in raising the pH of the discharge to acceptable levels.

There is one licensed discharge point for the site which is located adjacent to the main access road near the entrance.

7.1.2 Impacts on Water Quality

The water management system for the proposed works will represent a simple extension to the existing system. The proposed works will not increase the loading on the existing system, as this loading is systematically limited due to ongoing rehabilitation effort. The volume of dirty water runoff is in fact set to reduce as further revegetation works establish.

All water pumped from the Application Area will enter the existing retention dam (located below the reject disposal facility), where pH is controlled prior to water re-use in the Washery or excess water is released off site at the licensed discharge point.

It is therefore considered that the proposed works will not result in a deterioration in water quality leaving the site nor increase the volume of water requiring treatment.

7.1.3 Management of Water Quality

The following monitoring of the licensed discharge point occurs:

- ❑ daily monitoring of pH at the property boundary at the pit top main entrance;
- ❑ daily pH monitoring of sites upstream and downstream of the discharge point in accordance with EPA licence conditions;
- ❑ daily monitoring of flow volume;
- ❑ monthly monitoring of NFR;
- ❑ weekly inspection of channels for evidence of oil and grease contamination;

-
- ❑ weekly inspection of sedimentation levels within all channels and upstream of rock weirs. Material is removed once capacity was reduced by 50%.

Procedures are continually being reviewed, as is the required treatment system to ensure that the system is effectively managed. No additional discharge points and no changes to the current licence are sought with this application.

At the request of the Department of Planning, the results of water quality monitoring is attached as Appendix E. These results show that the operation has effectively controlled the acid mine drainage problem that Springvale inherited when it purchased the Western Main leases.

7.2 Groundwater

Local groundwater systems have been monitored by Mount Piper Power Station via a series of 29 piezometers around the ash disposal area and within the floodplain of Neubecks Creek. These show that the groundwater varies in depth from 5 m to 35 m below existing ground surface. The shallow aquifers represent the coal seams while deeper groundwater reserves occur below the seams. Some water bearing zones also occur in fractures within interburden sequences.

The Western Main Underground mine required dewatering to enable extraction of the Lithgow Seam. When the previous open cut extracted the seam adjacent to the Castlereagh Highway, the underground workings became free draining. Based on the north easterly dip of the coal seams, all seepage through the seams reports to the existing dams at the base of the site, just to the north of the entrance to the Springvale Services Site, as shown on **Figure 5**. These discharge through the licensed discharge point into Neubecks Creek, essentially returning groundwater seepage to the natural environment. These discharges are treated for pH to meet the conditions on the Environment Protection Licence but otherwise represent good quality water.

7.2.1 Impact on Groundwater Systems

Although some local recharge has occurred since underground extraction ceased, the old workings which have been intersected by the existing open cut have been largely dry. The workings between the current operation and the old open cuts to the north of the site are expected to also be dry.

Once the seam has been removed, any groundwater seepage will still report to the old open cut voids and dam systems and will ultimately be discharged back into Neubecks Creek. There will be no measurable impact on groundwater as a result of the project nor loss of water feeding Neubecks Creek.

7.2.2 Management of Groundwater

As no ground water is anticipated to be intersected by the open cut, no specific groundwater management procedures are required. In the event that pockets of water are found within the old workings, the water will be pumped out into the

input sumps for testing prior to pumping into the dirty water system for further settlement prior to discharge through the licensed discharge point.

7.3 Flooding

The Lamberts Gully site is well above the flood plain of Neubecks Creek. The site has never experienced flood flows from Neubecks. It is understood that the Pine Dale Coal Mine proposal, which is partially located within the Neubecks Creek Floodplain will reduce the flood plain area by approximately 4 ha. This reduction in floodplain area will not affect the Lamberts Gully Mine nor any other portion of the Western Main Colliery Holdings.

8. Flora and Fauna Assessment

Potential impacts on flora and fauna within the proposed mining area were identified by the Department of Planning as key issues to be addressed in the Environmental Assessment. These issues have been the subject of a separate assessment by OzArk Environmental Heritage Management but also include rehabilitation work and additional initiatives required to offset the temporary impacts on vegetation systems. These issues are addressed in the following sections.

8.1 Flora and Fauna

A flora and fauna survey of the Application Area was carried out by OzArk EHM, and is contained in Appendix B and summarised below.

Within the current Application Area the Southern Tableland Dry Sclerophyll Forest was the only broad vegetative type. The details of its habitat value and structure have been assessed. This vegetation type is characteristic of portions of the South Eastern Highlands Bioregion.

8.1.1 Southern Tableland Dry Sclerophyll Forest within Lamberts Gully

The Lamberts Gully Application Area consists of a tall open forest dominated by brittle gum (*E. mannifera*), broad-leaved peppermint (*E. dives*) and red stringybark (*E. macrorhynca*) on the hills and slopes on the southern side of the Application Area, Tablelands – Peppermint Woodland and snow gum (*E. pauciflora*) and candlebark (*E. rubida*) on the broader flats to the north (Coxs Valley Woodland). It possesses trees above 12 m in height with a canopy / foliage that is touching to slightly separated. The understory is comprised of plants that are generally less than 1 m at maturity and isolated. There is a sparse to open grassland grass layer that is less than 0.5 m height at maturity that ranges in foliage cover from 10 – 30%.

The useful available key habitats associated with this site are:

- ☐ Ephemeral waterway / drainage line crossings (niche habitat for plants requiring higher moisture);
- ☐ Tree hollows for small – medium sized birds and mammals (c. 18% per ha);
- ☐ An isolated rocky outcrop / shelf (reptile habitat);
- ☐ Isolated piles of rubbish (reptile habitat);
- ☐ Tree canopy cover with mistletoe and winter flowering species (avian and small mammal feeding sites);
- ☐ Dead and down timber and logs (terrestrial species habitat c. 3% per ha);
- ☐ Small isolated population of native blackthorn (*Bursaria spinosa*) near drainage lines for butterfly habitat;
- ☐ Leaf litter (c. 90 – 100% per ha); and
- ☐ Decorating bark (reptile, insect and bat habitat).

8.1.2 Threatened Species and Communities

A search of the Bionet data base (NSW State Forest, NSW National Parks and NSW Royal Botanic Garden records) was conducted in June 2005. The search revealed 27 threatened flora species representing 11 families within the LGA. One of these species Cannons / Capertee stringybark (*E. cannonii*) had been previously recorded by Lembit (1999) with five individual trees occurring within the Application Area. No other threatened species were observed during the floristic survey of the Application Area. Recordings of the other threatened species in the LGA have been remote from the Blackmans Flat area.

The Commonwealth lists 28 threatened species of flora as occurring within the Lithgow LGA (*Environment Protection Biodiversity Conservation Act 1999* Protected Matters Website search 14.6.05). Of these, 15 species overlap with the State records and legislative classification. The remaining 13 species were not observed during the floristic survey and of these, 12 have not been previously recorded within the LGA. The closest recording of the remaining species, *Prostanthera cryptandroides*, is located at Glen Davis 100 km north.

Mr Roger Lembit of Gingra Ecological Surveys has undertaken several ecological assessments within the Application Area and immediate surrounds over several decades. Whilst undertaking the field work for the Lamberts Gully Open Cut Mine Operations Plan in 1999, he located at least five Cannons / Capertee Stringybark trees (*E. cannonii*) within the Tablelands Gum-Peppermint Woodland just below the Lamberts Gully dam.

Cannons / Capertee stringybark is listed as vulnerable in Schedule 2 of the *Threatened Species Conservation Act 1995* and vulnerable within the *Environment Protection and Biodiversity Conservation Act 1999*. A map reference to this recording was not available from the search records. This sighting represents the only plant species observed in the Application Area that is listed as rare or threatened on a State and Commonwealth basis, additionally on the database this recording appears to represent the southern most recorded distribution of the species (Bionet database 2005), however this is not actually the case. Lembit (2002: 4) states that previous surveys by the author in the Mount Piper area have revealed additional populations of Cannons / Capertee stringybark on hills, slopes and valleys south-west and south of the Mt Piper Power Station. It is likely that these recording have not been entered into the relevant databases as yet and consequently the Lamberts Gully population of Cannons / Capertee stringybark does not represent the southern most recorded distribution of the species.

There are two State (Schedule 1 of the *Threatened Species Conservation Act 1995*) and two Commonwealth (nationally endangered and protected under the *Environmental Protection & Biodiversity Conservation Act 1999*) endangered or threatened ecological communities occurring within the South Eastern Highlands Bioregion. These ecological communities were not recorded within the Application Area. A search of the DEC website (14.7.05) revealed that there are not any habitats listed as critical within the Lithgow LGA.

A similar search for fauna was made using the Bionet data base (NSW State Forest, NSW National Parks, NSW Fisheries and Australian Museum records. Search date (14.6.05) revealed 39 threatened fauna species (3 frogs, 14 birds, 1 fish, 2 insects, 7 bats, 7 other mammals and 3 reptiles) representing 12 orders and 27 families within the LGA. Of the species noted within the State agency records 15 have been previously recorded within 30 km of the current Application Area. One of these species, the brown treecreeper (*Climacteris picumnus*) was re-recorded during the current survey and an additional species, the painted honeyeater (*Grantiella picta*) was recorded for the first time within 30 km of ML 1448. The regent honeyeater (*Xanthomyza phrygia*) a NSW State threatened species and a Commonwealth listed terrestrial migratory species has also been recorded as occurring within 30 km of the Application Area.

The Commonwealth lists 20 threatened species of fauna (n = 4 frogs, 4 birds, 3 fish, 1 insect, 3 bats, 3 other mammals and 2 reptile species) as occurring within the Lithgow LGA (*Environment Protection Biodiversity Conservation Act 1999* Protected Matters Website search 14.6.05). Of these 10 species overlap with the State records and legislative classification however an additional 10 threatened species of fauna are recognized. These species were not observed during the faunal survey and have not been previously recorded within the LGA. Six species of migratory terrestrial species of bird and two species of migratory wetland species occurring within the LGA have protection under the *Environment Protection Biodiversity Conservation Act 1999*. Four of the five migratory species listed have been previously recorded and neither of the two migratory wetland species has been previously recorded within the LGA. Only one of these species, the regent honeyeater (*Xanthomyza phrygia*) overlaps with having NSW State legislative protection.

Poor climatic conditions resulted in a low probability of species being active during the survey period and subsequently few sightings of faunal species were recorded. Both threatened species of birds were noted feeding within the same location (within the same group of trees) during a ½ hour break in the snow / rain when the sun came out. Both species have the potential to occur on primarily mature trees with mistletoe and decorating bark in the Application Area. The greatest abundance of potentially suitable habitat for these species was noted within drainage lines throughout the Application Area.

Habitat suitable for threatened species of frogs and reptiles was not available or suitable and the size of the remnant and proximity to urbanised areas may affect the potential for species such as quoll, squirrel and yellow-bellied glider and koala. On a broad brushstroke the habitat associated with decorating bark and medium to small hollows provided a high probability for the presence of selected species of the LGA's threatened microbats.

8.1.3 SEPP 44 – Koala Habitat Protection

The Application Area supports two of the feed trees species (both species occur infrequently and as isolated individuals) listed under Schedule 2 of *State Environmental Planning Policy No 44 (SEPP 44) – Koala Habitat Protection* and State Government records show that the species has occurred either historically or

within more recent time periods within 30 km to the Application Area. Although highly unlikely to occur within the vicinity of the Application Area, it is only expected that occasional, transient and dispersing individuals would be present. As such, the proposed works would not be considered to significantly affect any koala populations or their habitats, and therefore a Plan of Management for the conservation and management of areas of koala habitat is not required to be prepared as part of the current proposal.

8.1.4 Derwentia blakelyi

There are three known populations of *D. Blakelyi* all of which inhabit very steep sandy, sheltered slopes of tributaries (or drainage lines) within woodland that faces or receives light from the morning sun (or is sheltered from the afternoon western sun). Where present it is more likely to be at greater abundance where the forest canopy affords dappled light and protection but does not overshadow the species. Abundance of the species decreases further upslope. The species also tends to grow in the immediate vicinity of large outcropping boulders, the sort associated with escarpments.

Key habitat elements for *D. Blakelyi* are not available within the Lamberts Gully study area. There were no such steep, sandy sheltered slopes next to tributaries in Lamberts Gully and the soil type was more compact than that to which is was suited.

8.1.5 Impact Assessment

The proposed works are sited within a highly disturbed area which has been subject to previous mine related activities and other disturbance. The proposed works will however, result in the removal of some habitat for fauna within the development area. Although impacts on key habitat elements will occur on a local scale, on a regional scale they would not be critical for the life cycle needs of the species observed or expected.

Other non specific consequences of the impacts may include:

- ☐ indirect affects such as sedimentation or erosion;
- ☐ temporary loss of vegetation through direct removal and subsequent loss of genetic diversity; and
- ☐ invasion by exotic weeds.

The subject site contains habitats that a number of threatened species could utilise. It is not considered that the nature of the proposed works within the landscape will affect the potential for threatened flora and fauna species to occur.

One species of threatened flora, five individual trees of Cannons / Capertee stringybark (*Eucalyptus cannonii*) was previously recorded within the Application Area (Lembit 1999) and were sighted during the current investigation. Two threatened terrestrial fauna species, the brown tree creeper (*Climacteris picumnus*) and the painted Honeyeater (*Grantiella picta*) were observed and five other threatened species were noted as having the potential to occur.

Several threatened species have the potential to occur on site including:

- ☐ Cannons / Capertee stringybark (*Eucalyptus cannonii*)
- ☐ *Persoonia marginata*

The following fauna species were recorded (☒) or could potentially inhabit or utilize habitat existing in the Application Area:

- ☐ Brown treecreeper (*Climacteris picumnus*) ☒
- ☐ Painted Honeyeater (*Grantiella picta*) ☒
- ☐ Large pied bat (*Chalinolobus dwyeri*)
- ☐ Large bent wing bat (*Miniopterus schreibersii oceanensis*)
- ☐ Great pipistrelle (*Falsistrellus tasmaniensis*)
- ☐ Greater broad-nosed bat (*Scoteanax rueppellii*)
- ☐ Bathurst copper butterfly (*Paralucia spinifera*)

Eight-part tests were carried out for each of these species and contained in the specialist report included as Appendix B. The conclusions of the 8-part assessments are provided below.

Capertee Stringybark

The extent of modification to its habitat in relation to the total extent of the habitat of Cannons / Capertee stringybark in the South Eastern Highlands Bioregion is minor. There is a very low likelihood that a viable local population will be placed at risk of extinction as a result of the proposed development. Accordingly it is considered that there will not be a significant effect on Cannons / Capertee Stringybark resulting from the proposed development and a Species Impact Statement is not required.

Persoonia marginata

The extent of modification to its habitat in relation to the total extent of the habitat of *Persoonia marginata* in the South Eastern Highlands Bioregion is minor. Furthermore there is a very low probability that a viable local population exists immediately adjacent or within the Application Area and there is a very low likelihood that a viable local population will be placed at risk of extinction as a result of the proposed development. Accordingly it is considered that there will not be a significant effect on *Persoonia marginata* resulting from the proposed development and a Species Impact Statement is not required.

Brown Treecreeper / Painted Honeyeater

The extent of modification to its habitat in relation to the total extent of the habitat of the painted honeyeater (*Grantiella picta*) and the brown treecreeper (*Climacteris picumnus*) in the South Eastern Highlands Bioregion is minor. There is a very low likelihood that a viable local population will be placed at risk of extinction as a result of the proposed development. Accordingly it is considered that there will not be a significant effect on either species from the proposed development and a Species Impact Statement is not required.

Bathurst Copper Butterfly

The extent of modification to its habitat in relation to the total extent of the habitat of the Bathurst Copper Butterfly in suitable areas within the South Eastern Highlands Bioregion is minor. No local population will be placed at risk of extinction as a result of the proposed development. It is considered that there will not be a significant effect on the Bathurst copper butterfly resulting from the proposed development and a Species Impact Statement is not required.

It is highly probable that the combined affects of the proposed work will not disturb, remove, modify or fragment any habitat critical to the life cycle of any known or potentially occurring threatened fauna or flora species.

Habitats important to the life cycle requirements of those threatened species previously recorded in the region, or likely to occur, based on their documented distribution patterns and habitat needs, will be removed within the c. 200 ha impact footprint, however within a local scale this habitat type is well represented in adjoining reserves. Within a local and regional context no fauna corridors would be disturbed and no significant areas of habitat would be removed or isolated.

It is likely the impacts associated with the works on species of conservation concern are minimal, and therefore, the preparation of a fauna or flora Species Impact Statement may not be considered necessary.

8.1.6 Mitigation Measures

The following mitigation measures will be implemented on site:

- ☐ The location of the 5 Cannons / Capertee stringybark trees reported in Lembit (1999) within Tablelands Gum - Peppermint Woodland in the valley below the dam will be marked in the field so that collection of seed from these trees occurs prior to removal where possible.
- ☐ Clearing of vegetation will be minimised as much as practicable, and only cleared in advance of mining or development of the approved reject emplacement area to retain habitat areas for as long as possible.
- ☐ A weed management plan will be prepared to limit the spread of weeds prior to, during, and after construction work.
- ☐ Tree clearing will be in accordance with the procedures described below.
- ☐ No vegetation is to be burnt on site but larger trees will be retained for use in the revegetation work. The majority of timber will be buried as part of the mining process.
- ☐ All disturbed areas of the work site (including stockpiles, vehicle and machinery turning / parking areas and compound sites) will undergo

rehabilitation upon the completion of construction to restore the land to a condition at least similar to the condition existing before disturbance.

- ❑ Revegetate each component of the work as soon as possible with locally occurring species or sterile crops to assist in soil and erosion control. Road batters and other areas not suitable for tree establishment will be sown to pasture as outlined in Section 5.6.2.

Tree Clearing

When clearing mature trees:

- ❑ Identify them as habitat (all mature trees, hollow bearing limbs or possessing thick shaggy decorating bark) or non habitat trees (less than 40 cm in diameter, no hollow limbs or thick shaggy bark on the trunk that little animals can hide under) and clearly mark them.
- ❑ Check all trees for the presence of bird or nestlings and arboreal mammals before felling or pushing. Start tree removal immediately after visual inspection and avoid removing trees during spring (nesting season) and in mid to late winter when the bats may be in torpor.
- ❑ Remove non habitat trees first to ensure that the associated disturbance will flush out any animals from within the habitat trees.
- ❑ Fell habitat trees after all non habitat trees have been removed. It is advisable to wait for at least 24 hrs (or overnight) so that any animal occupying a habitat tree can have the chance of vacating the area after the initial disturbance period.
- ❑ Check the hollows for injured animals and seek advice from Western Plains Zoo on 6881 1400 if injured wildlife is discovered.

8.2 Rehabilitation

A rehabilitation plan has been prepared which takes into account the future reject emplacement which is covered by an existing consent, the proposed Lithgow Council Waste Emplacement which is subject to a future consent, provision of overburden for covering the existing coarse reject emplacement within the Huon No 6 mining void and the future rehabilitation required for the main reject emplacement. The plan is shown on **Figure 6**.

8.2.1 Rehabilitation Objectives

The following objectives have been adopted for the rehabilitation strategy:

- ❑ To produce a final “walk away” landform which will be stable, aesthetically consistent with the surrounding landforms and which does not preclude possible alternative final land uses.

- ❑ To minimise the environmental impact of the open cut operation and other associated earthworks. This will be achieved by contouring and planting of final surfaces as soon as possible, consistent with constraints imposed by the operation of the mine and associated infrastructure.
- ❑ To ensure that the drainage system at the site will remain stable and functional under extreme rainfall events.
- ❑ To develop a rehabilitation sequence which minimises the lag period between when an area is first disturbed by the advancing open cut operation and when it is finally rehabilitated.
- ❑ To develop a final land use concept which meets the objectives of regulatory authorities and the community but which also provides flexibility to respond to changes in community attitudes and research which may promote different final land use options. At this stage the final land use will be a natural forest community compatible with surrounding vegetation systems.

8.2.2 Temporary Rehabilitation Works

Temporary rehabilitation works will be conducted on nominated exposed batters including access roads, the outer face of dams, construction areas and material stockpiles. Revegetation works will be undertaken quickly to provide the necessary vegetation for surface stabilisation. This will be achieved by sowing immediately following formation.

Recommendations for an appropriate grass seed mix will be obtained from the Department of Primary Industries (DPI) and will be likely to consist of a mixture of fast growing, short lived species and slower growing but more hardy grasses. Nitrogen fixing legumes would also be included. An example of the type of grass seed mix for different growing season is provided in **Table 8.1**.

Season	Species	Rate kg/ha	Fertiliser	Rate kg/ha	Sowing
Autumn sowing/low bulk pasture	Kangaroo Valley Rye	10	11-34-11 or 15-30-0	400	Early March to Early May May
	Highlands Bent	5			
	Rose Clover	5			
	Red Clover	5			
Autumn sowing/high bulk pasture	Cereal Rye	10	11-34-11 or 15-30-0	400	Early March to Early May May
	Kangaroo Valley Rye	5			
	Phalaris (Siroso)	5			
	Highlands Bent	5			
	Seaton Park Sub Clover	5			
	Red Clover	5			
	Lucerne	5			
Summer sowing/low bulk	Cereal Rye	10	11-34-11	400	Late December to late February
	Haifa White Clover	5			
	Red Clover	5			

Table 8.1 – Typical Species used for Temporary Rehabilitation Works					
Season	Species	Rate kg/ha	Fertiliser	Rate kg/ha	Sowing
Summer sowing/high bulk pasture	Japanese Millet	1	11-34-11	400	Late
	Namoi Pod Vetch	3	15-30-0		December to
	Rhodes Grass	5			late February
	Tall Fescue	5			
	Carrie Cocksfoot	15			
	Cereal Rye	10			

Native tree seed is to be used within the mining area and nominated reforestation sites at a rate of approximately 7 kg/ha. Species to be used include *Eucalyptus mannifera*, *E. dives*, *E. macrorhynca*, *E. pauciflora*, *E. rubida*, *Acacia buxifolia*, *A. dealbata*, *A. decurrens*, *A. rubida*. Tree seed collected from Capertee Stringybark will also be used. In these areas a sterile cover crop of oats (Autumn to Winter) or ryegrass (Spring) may be used prior to direct sowing with native species.

Although it is considered that a dense permanent vegetation cover is the best means of effectively providing long-term erosion control, there is a period between final shaping and establishment of exposed batters during which the surface is highly susceptible to erosion.

A normal fertiliser application will likely be required, and will be either “Starter 15” or “Grower 11” at a rate of 400 kg/ha. An application of gypsum, to improve soil structure and water infiltration may also be necessary. This will be determined in consultation with the DPI prior to revegetation works.

Maintenance requirements will be reduced once final revegetation works are completed and self-regenerating native vegetation communities are established.

8.2.3 Topsoil Management

Since topsoil can be essentially destroyed in the stripping process, careful management is required. Particular care will be given to the following matters:

- ☐ Vegetation clearing will avoid contamination of the topsoil with large quantities of green material as this promotes biological degradation (composting) of runners, roots and seeds which would otherwise be a source of regrowth when topsoil is respread.
- ☐ Timber, logs, rubbish and other vegetative matter which will interfere with respreading applications or surface stability will be removed.
- ☐ Topsoil where indicated as available will be stripped in accordance with the plan. The stripping depths are generally restricted to the top 20 cm, however some deeper or shallower soils occur depending on local topographic conditions.

-
- ❑ Equipment operators involved in topsoil stripping will be instructed on topsoil identification to maximise recovery and to avoid contamination of the target material with subsurface clays.
 - ❑ Topsoil is to be loaded into trucks and either transported directly to areas being rehabilitated or to the stockpile area.

The topsoil stockpile will be no higher than 2 m with a side slope of 3:1 (H:V). The length will vary according to volume. These dimensions will reduce the incidence of anaerobic decomposition of organic matter and subsequent loss of viable seeds.

8.2.4 Permanent Rehabilitation Works

In some areas, permanent rehabilitation works will simply flow on from the temporary works described in Section 8.6.2. The final "walk away" landform will require additional earthworks prior to revegetation.

The area disturbed by the open cut operation will be progressively rehabilitated. The overburden dumping schedule allows for a substantial amount of pre-shaping as part of the mining operation. Once overburden has been dumped, the area will be progressively shaped according to the final contour levels shown in **Figure 6**. Once the final landform contours have been completed the surface will be prepared for sowing. Surface preparation will be finalised following appropriate soil chemical testing but will generally include the following:

- ❑ Covering the overburden with a layer of clay. This material acts as the subsoil.
- ❑ Contour ripping to increase moisture infiltration and thus improving and prolonging the available moisture to the establishing vegetation. This process provides the complementary benefit of reducing surface runoff thereby reducing erosion hazard. This operation will also promote tree root penetration which would otherwise be limited due to the effects of compaction.
- ❑ To improve the structure of the material and to avoid surface sealing, an application of gypsum at a rate of approximately 8 tonnes/ha may be required.
- ❑ Addition of an appropriate fertiliser prior to cultivation to achieve at least a partial burial of the fertiliser below the seed. This encourages early root development down towards the fertiliser. The principal aim of cultivation is to produce a very coarse seed bed with deep furrows which trap and retain runoff and resist the formation of a surface crust or seal.
- ❑ Topsoil will be spread at a minimum depth of 10 cm. Depending on the availability of topsoil, the depth may be increased to a maximum of 30 cm.

Revegetation works will be monitored continuously in order to fine tune rehabilitation methodologies.

8.2.5 Revegetation Works

For permanent rehabilitation works, especially in areas requiring long-term stability, a mixture of native trees and shrub seed will be included in the initial sowing operation. A combination of broadcast sowing and seed drilling will be used. Prepared areas will be harrowed to incorporate seed into the soil.

Advice will be sought from the DPI for an appropriate species list. In order to gain rapid revegetation of all disturbed areas, a mixture of improved pasture seed as described in Section 2.6.2, will also be applied in the initial sowing operation. Once tree and shrub species are established, improved pasture species will phase out naturally.

Revegetation works will be monitored for a period of two years, in order to verify that long term revegetation occurs. During this period maintenance works may be required.

8.2.6 Final Land Use

Following completion of the currently proposed open cut development, further economic assessment may indicate other coal reserves are viable, however these will be subject to further planning approvals.

In the event that additional developments are not considered viable, all buildings, infrastructure and stockpiles associated with the open cut will be removed. Some reshaping of the final coal extraction area will be required as well as shaping of the final void.

The principal objective of the rehabilitation plan is to form a stable landform which will pose no long-term environmental hazard. However, when determining the appropriate final land use for the site, a number of other factors need to be taken into account, namely:

- ☐ Compatibility with surrounding land uses;
- ☐ Physical constraints;
- ☐ Soil availability or suitability of alternative top dressing materials;
- ☐ Visual implications and landscape compatibility;
- ☐ Existing ecological values;
- ☐ Existing land capability for the site and surrounding areas; and
- ☐ Requirements of state and local authorities and community organisations

It is therefore proposed to rehabilitate the open cut site into a native forest ecosystem, similar to that immediately surrounding the site. This would exclude the area to the north which is required for additional ash emplacement and to accommodate the future Council Waste Emplacement.

8.2.7 Additional Rehabilitation Initiatives

There are several old mining areas which have not been rehabilitated. These represent a legacy of old mining on site. In recognition that some, albeit highly disturbed, vegetation will be cleared as a result of the proposed works, an offset

strategy has been developed involving additional rehabilitation and revegetation works on site. These areas are shown on Figure 6 and include:

- ❑ Rehabilitation of the old mining contractors area located to the north west of the main coal stockpile.
- ❑ Rehabilitation of the Upper Huon Open Cut which extends along the western edge of the proposed Application Area.
- ❑ Revegetation in the form of tree planting above the Lamberts Gully Dam between the dam and the Ben Bullen State Forest boundary.
- ❑ Additional tree planting on the eastern side of the current tailings dams and pollution control dams to assist in shielding the operation from residents in Blackmans Flat.
- ❑ Additional tree planting between the main pollution control ponds and the Castlereagh Highway to further assist with screening the entrance of the mine site.

These works will be designed to enhance the habitat value of the site during its lifetime as well as provide a more robust final rehabilitation program when the open cut operations have ceased. The areas have been chosen to link with the existing woodland within Ben Bullen State Forest and the remainder of the site.

9. Heritage Impact Assessment

Potential impacts on Aboriginal and Non-Aboriginal heritage within the proposed mining area were identified by the Department of Planning as key issues to be addressed in the Environmental Assessment. These issues have been the subject of a separate assessment by OzArk Environmental Heritage Management which is attached in full as Appendix B. Also contained in Appendix B are the results of additional surveys and assessments conducted as part of the ongoing management of heritage issues at the Lamberts Gully Mine.

9.1 Archaeology

The Indigenous heritage component of the current study recorded no new Indigenous sites within the Application Area. Several sites have, however, been recorded within ML 1448 in the past, of which only one was re-located and assessed during the current study.

During the 1992 Springvale Overland Conveyor study, Rich & Gorman (1992) identified four sites which are located within the current Application Area, with a further three being recorded during Rich's subsequent 1993 assessment for the conveyor belt realignment route. During assessment of Lamberts Gully, Brayshaw and Haglund recorded 2 sites within the current Application Area, of which one was a re-recording of a site previously documented by Rich & Gorman. In total, there are eight (8) previously recorded sites within the Application Area. Of these, four sites have been issued with Section 90 permits (#45-6-2355, 45-1-0243, 45-6-2355, 45-6-2354) and subsequently destroyed. The remaining four sites are discussed below, as they should remain unaffected within the current Application Area boundaries. The location of these sites can be found on figure 7 of Appendix B.

9.1.1 Site 5 (DEC # 45-1-0208) – 225550E 6303050N

This site was previously recorded by Rich and Gorman in 1992. This open camp site was recorded on the toe slope of a ridgeline south-east of Lamberts Creek. Two quartz artefacts were found on a track within 5 m of each other, one being a whole flake the other broken and many other quartz pieces were noted nearby.

OzArk attempted to relocate this site through using the co-ordinates provided as well as the map on which Rich and Gorman recorded the site. At what appeared to be the appropriate location, there were indeed many quartz pieces, but none that could be definitively identified as being artefactual in nature.

9.1.2 Site 6 (DEC # 45-1-0203) – 225180E 6308220N

This open camp site was recorded by Rich and Gorman in 1992 on a flat area on a steep sloping spur leading down to Lamberts Creek. An area of approximately 100 x 30 m along a vehicle track was described as bearing 16 artefacts. All of the artefacts were quartz with the exception of two being quartzite. Cores, flakes and flaked pieces were present with one quartzite piece demonstrating a utilised edge.

Three of the four pebble cores present were bipolar and two had flake scars across the surface of the platforms (Rich and Gorman 1992: 46). The site was assessed as likely to bear more artefacts, although not substantial numbers and deposits were not noted as likely due to the stony nature of the ground.

Again, OzArk attempted to relocate this site through using the co-ordinates provided as well as the map on which Rich and Gorman had recorded the site. According to the coordinates, this site has been destroyed by the existing Lamberts Gully open cut mine. According to the map, the site may still remain extant on the edge of the open cut pit, however, concentrated attempts to relocate this site were unsuccessful. As a result, it appears most appropriate to consider this site as no longer extant.

9.1.3 Site 7 (DEC # 45-1-0218) – 224400E 6303650N

This open camp site was recorded by Rich and Gorman in 1992 on a gently sloping spur leading down to a small creek line along the western edge of the Application Area. Approximately ten artefacts were recorded here, all but one were made of quartz, while the last was of a fine grained white material, and included 8 flakes and 2 cores. Visibility was assessed as low and more artefacts were thought likely to be present with the further possibility of intact sub-surface deposit.

OzArk relocated this site using both co-ordinates and the maps provided. Not all of the artefacts were relocatable, but they did find several of the previously recorded artifacts as well as three artefacts not previously recorded:

1. Broken flake - Fine grained, creamy-grey material, flake scars on dorsal surface, measuring 5 x 4 x 1 cm;
2. Flake – White quartz, 2 x 0.8 x 0.7 cm; and
3. Flake – Creamy chert, 2.5 x 1 x .6 cm.

OzArk generally agrees with the previous assessment of this site by Rich and Gorman (1992: 48) that overall impacts to this site are potentially minimal in terms of disturbance, and that there is limited potential for intact archaeological deposit.

9.1.4 Site IF2 (not registered on DEC)

This isolated find was recorded by Rich in 1993 on a track near the existing conveyor belt in the central portion of the Application Area along the northern boundary. It comprises a single quartz broken flake and was never registered on the DEC AHIMS database. It was impossible to relocate this artefact and thought unlikely that it will be relocated despite several attempts.

9.1.5 Archaeological Significance

A general discussion was held on site to initiate a determination of the cultural significance of the sites previously recorded within the Application Area. As

noted above, Site 5 (DEC # 45-0- 0208) and IF 2 (not registered) were not relocated and were assessed as being of low cultural significance. Site 7 (DEC # 45-0-0218) was relocated and considered to have limited potential for sub-surface deposits. This site was assessed as having cultural significance to the local Aboriginal community.

Site 5 (DEC # 45-0-0208) was originally recorded as a site with two quartz artefacts while IF 2 (not registered) comprised a single broken quartz artefact. Artefacts said to comprise these sites were not found during the current survey, although the site locations were found. Both were situated on tracks where quartz is quite prevalent and where much non-artefactual quartz was also noted. These sites were assessed as being of low scientific significance during the initial survey (Rich and Gorman 1992: 81). As they could not be relocated, these sites must retain their original designation as being of low scientific significance. Although located within the Application Area the site it is outside the proposed mining strips.

Site 7 (DEC # 45-0-0218), however, was relocated and was originally considered to have limited potential for sub-surface deposits, an assessment that has been confirmed by the current re-survey. This site consequently has moderate potential for the presence of intact, sub-surface deposits that are likely to be of low-moderate scientific significance. It is important to note here that the significance of sub-surface deposits is impossible to determine from surface manifestations alone, hence the preliminary nature of this assessment. It is also relevant, however, that there are many open sites in the vicinity of the Application Area, several of which have been explored in detail through test excavation, the closest being Lamberts Creek 6 and 7, excavated in 1992.

Site 7 is located on a mining lease, and is inaccessible to the public. Generally the artifacts present would require interpretation for non-specialists and as a result this site is assessed as having low public significance.

9.1.6 Predicted Impacts

The proposed continuation of the Lamberts Gully Open Cut Coal Mine will result in extensive ground surface disturbance over the majority of the Application Area. Complete removal of all vegetation and overburden will occur resulting in total alteration of the landscape and the destruction of all recorded sites or their remnants.

As noted above, 8 sites have been previously recorded in the Application Area, including the existing Lamberts Gully mine area. Of these, 4 have had Consent to Destroy permits issued over them, 2 of which included a test excavation component. Of the remaining 4 sites, 1 may have been inadvertently destroyed by the mining operations, 2 are minor (one an isolated find, the other an open site with 2 artefacts) and have been assessed as having low significance, leaving one site, Site 7 (# 45-0-0218) with moderate potential still extant within the current Application Area.

As a result of further archaeological investigations (see Appendix B), Site 7 is now protected and will not be impacted by the proposed development.

9.1.7 Mitigation Measures

Centennial Coal has made an undertaking to protect those archaeological sites remaining within the development area. The main site, Site 7 has been flagged with tape and noted on mining plans to be avoided. There is now no longer any need for further approvals under the National Parks and Wildlife Service Act and consequently no need for inclusion of such approvals within the Part 3A consent.

9.2 Heritage

A heritage assessment was carried out by OzArk EHM. A search of the NSW State Heritage Office website; the EPBC Protected Matters Report and the Greater Lithgow City Council LEP 1994 (search date 14.6.05) did not detail any item of non-Indigenous heritage as occurring within or immediately adjacent to Application Area.

Neither the current nor previous field surveys of the Application Area recorded any evidence of non-Indigenous heritage.

10. Conclusion

The assessment has shown that the continuation of the Lamberts Gully Open Cut will not increase noise or dust impacts, will not result in adverse impacts on flora and fauna and no archaeological heritage issues exist. A summary of the proposed mitigation measures are provided below.

Table 4.1 – Summary of Mitigation Measures

Issue	Existing and Proposed Mitigation Measures
Noise	- Noise Management Plan to be updated for the site to accommodate the works. - Site attended noise audits be conducted should noise complaints increase and to assess compliance with noise goals - Noise levels from plant and equipment to be monitored and the noise assessment model to be re-run if appropriate
Dust	- regular watering of all hardstand areas and unsealed haul roads - disturbed areas to be kept to a minimum at all times - rehabilitation should be conducted as soon as practicable
Water	- continuation of the existing water management system involving separation of clean and dirty water systems, pollution control ponds to contain contaminated runoff and the provision of temporary erosion and sedimentation controls
Archaeology	- commitment to avoid known sites on the edge or near the proposed extraction area - apply for a Section 90/87 for site 7 (45-1-0218) prior to disturbance if cannot be avoided - apply for a Section 90/87 for site 5 (45-1-0208) prior to mining strips F1 and F2.
Flora	- collection of Capertee Stringybark seed for use in rehabilitation - rehabilitation work should seek to replicate original woodland community - Commitment to rehabilitate additional mining areas as well as supplementary tree planting near residential receptors at Blackmans Flat as shown on Figure 6
Fauna	- Revegetation work to recreate habitat value compatible with surrounding ecosystems - minimise clearing as far as possible - Implementation of tree clearing protocol as described in Section 5.5.5
Rehabilitation	- open cut areas to be rehabilitated as soon as possible following coal extraction - the rehabilitation program as described in this document is to be followed or otherwise amended by annual AMER documents
Soil Resources	- all available topsoil resources will be identified and stripped in advance of open cut extraction for later use in rehabilitation - topsoil will be preferentially on prepared rehabilitation surfaces or temporarily stockpiled in accordance with this document

The continuation of the open cut is consistent with the requirements of the Department of Primary Industries (Mineral Resources) for the efficient utilisation of coal resources within NSW. The development can meet all environmental assessment criteria and will provide significant economic benefits to employees, shareholders, customers and the local and regional economy.

Potential environmental impacts associated with the project have been demonstrated to be acceptable. The project is justified on the grounds of efficient utilisation of an available coal resource with negligible environmental consequences. Accordingly, the balance between environmental impact and the benefits resulting from the proposal supports a favourable determination of this application.

Declaration:

This document has been prepared by:

Robert Byrnes
Director
International Environmental Consultants Pty Limited

A handwritten signature in black ink, appearing to read 'R Byrnes', written in a cursive style.

29 January 2006