NARRABRI COAL OPERATIONS PTY LTD

(ABN 76 107 813 963)

ANNUAL ENVIRONMENTAL MANAGEMENT REPORT

for the

NARRABRI UNDERGROUND COAL MINE (ML 1609)

01 April 2008 – 31 March 2009

Narrabri Coal Operations PtyLtd

Annual Environmental Management Report for the Narrabri Underground Coal Mine (ML 1609)

MOP Commencement Date 08-02-2008 – MOP Completion 31-12-2011

AEMR Commencement Date 01.04.08 – AEMR Completion Date 31.03.09

Narrabri Coal Operations Pty Ltd

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Distribution: Department of Planning
Department of Primary Industries - Mineral Resources
Department of Environment and Climate Change - EPA
Department of Water and Energy
Narrabri Shire Council
Narrabri Coal Mine Community Consultative Committee

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Section 1: INTRODUCTION AND OBJECTIVES

1.1 Scope

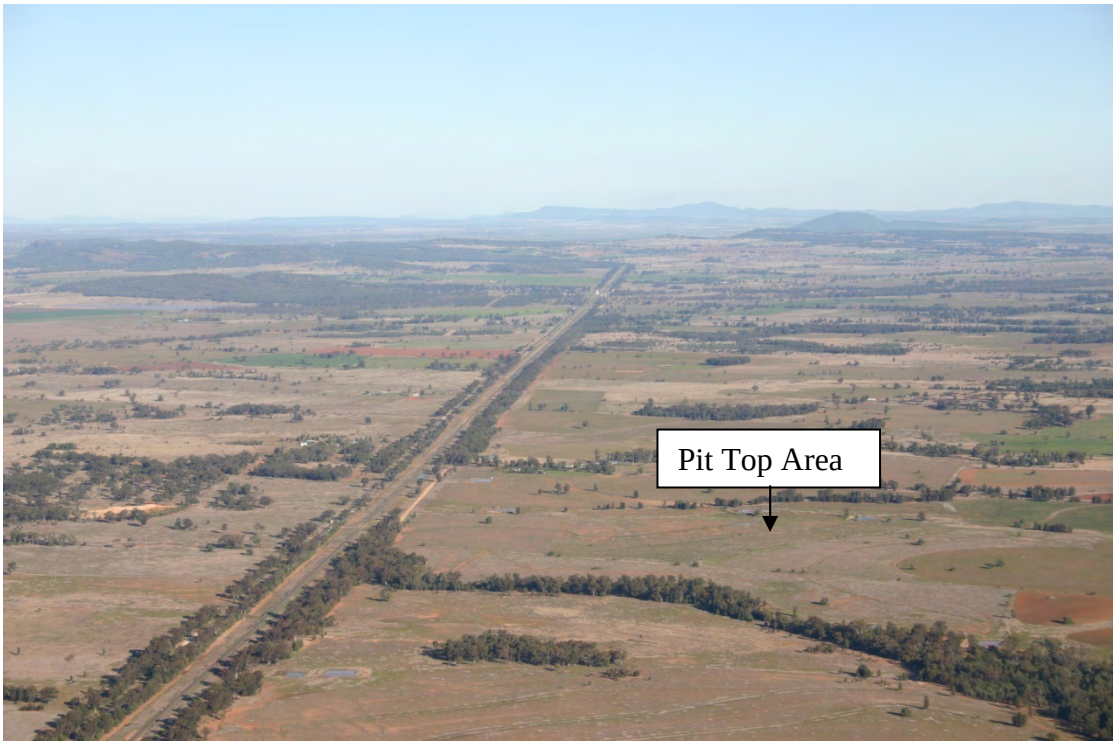
1.1.1 Introduction and Period of Reporting

This Annual Environmental Management Report (AEMR) is the first for the Narrabri Underground Coal Mine, and has been prepared in accordance with Condition 4 of Mining Lease (ML 1609) (Mining Act 1992) and Condition 5 (Schedule 4) of PA 05_0102. The AEMR generally follows the format identified in the Department of Primary Industry - Mineral Resources document entitled "Guidelines to the Mining, Rehabilitation and Environmental Management Process" Version 3, dated January 2006.

Though primarily covering the period from 01 April 2008 to 31st March 2009 (the Reporting Period), where relevant the AEMR provides information on historical aspects of the operations, longer term trends in environmental monitoring results and provides relevant information on activities to be undertaken during the ensuing period, i.e. from 01 April 2009 to 31 March 2010, or beyond.

The Narrabri Underground Coal Mine is located within the Narrabri Shire, approximately 30 km south-southeast of Narrabri, and 10 km north-northwest of Baan Baa. Plates 1 and 2 present a series of aerial photographs of the pit top area prior to its development.

Plate 1: Pit Top Area pre-development



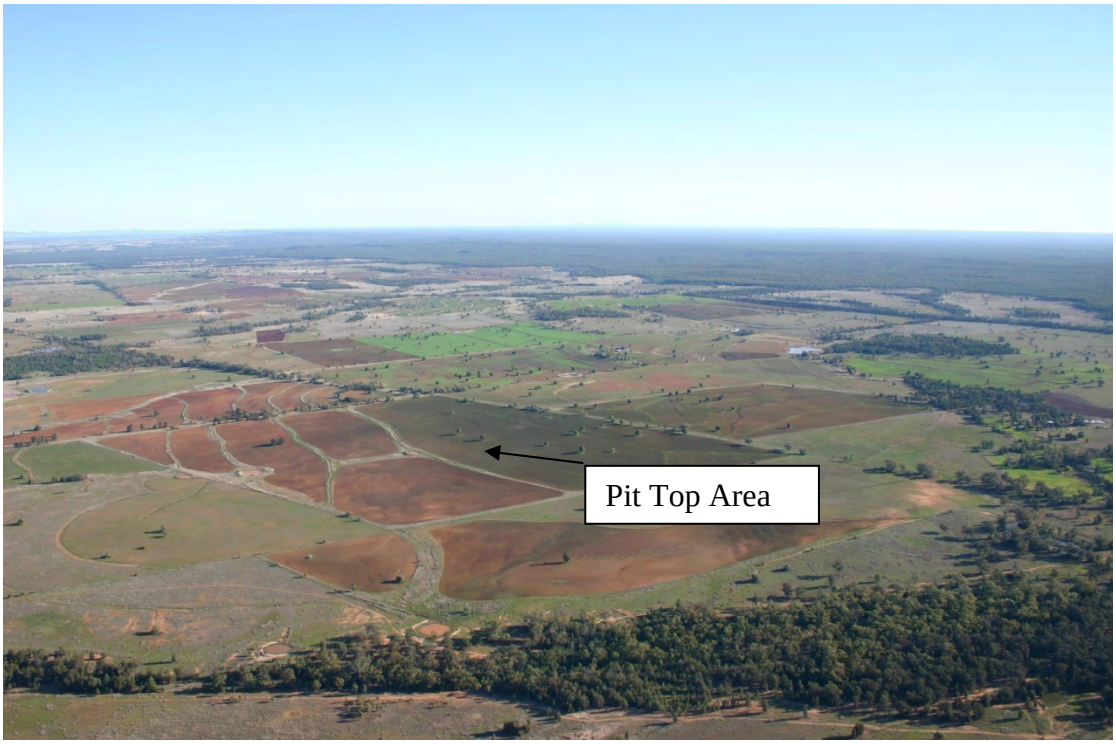


Plate 2: Pit Top Area – Pre development

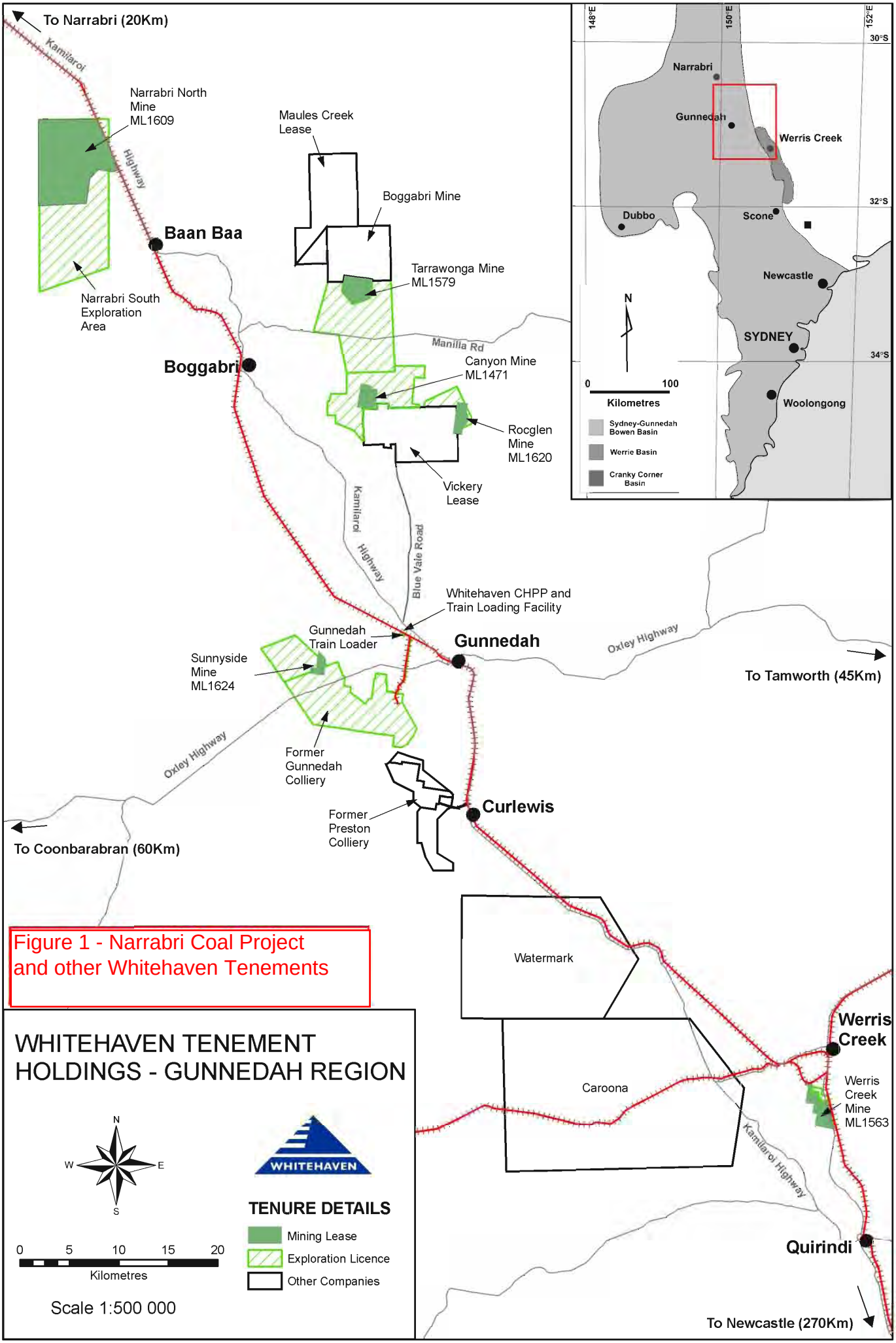


Figure 1 - Narrabri Coal Project and other Whitehaven Tenements

1.1.2 The Company

Narrabri Coal Operations Pty Ltd is a subsidiary of Whitehaven Coal Limited (WCL), which is a listed public company initially formed to explore and potentially develop the coal resource centred on the "Whitehaven" property near Boggabri. Whitehaven Coal Limited has been operating the Whitehaven or Canyon Open Cut Coal Mine since 2000.

WCL also owns and operates a number of other open cut coal projects in the Gunnedah basin. The Whitehaven operations comprise the Whitehaven Siding and CHPP approximately 6 km west of Gunnedah, the Rocglen Open Cut Coal Mine, the former Gunnedah Colliery and Sunnyside Open Cut Coal Mine (through subsidiary company Namoi Mining Pty Ltd), the Tarrawonga Open Cut Coal Mine (through subsidiary company Tarrawonga Coal Pty Ltd) and Werris Creek Open Cut Coal Mine (through subsidiary company Werris Creek Coal Pty Ltd).

The Narrabri Underground Coal Mine is a joint venture between Narrabri Coal Operations Pty Ltd (77.5%) and Upper Horn Investments (Australia) Pty Ltd (7.5%), J-Power (7.5%) and EDF Trading (7.5%) and began construction in 2008.

1.1.3 Background and History of the Narrabri Project

The Narrabri Coal Project was developed after substantial investigations were undertaken under Exploration Licence 6243, granted in May 2004. This exploration program comprised an extensive drilling campaign of 160 rotary, fully and partly cored drill holes, totalling in excess of 6000m. Following completion of relevant assessments and feasibility studies, and the determined in-situ coal resource of 229M tonnes, it was determined that the proposal proceed to an application under the Environmental Planning and Assessment Act. An Environmental Assessment was subsequently prepared and submitted to the Department of Planning in March 2007. Project Approval 05_0102 was subsequently granted for the project on 13th November 2007. On approval, Mining Lease 1609 was granted on 18th January 2008 and Environment Protection Licence 12789 was granted on 20th February 2008.

The project approval provided for the extraction of no more than 2.5 million tonnes of ROM coal per year. The consent requires all coal to be transported from the site via rail.

Over the life of the approved mine, the total area that may be affected by surface disturbance for construction and operation of mine surface facilities will equate to 457.4ha. ML 1609 covers a total area of 5,298ha.

1.1.4 Products and Markets

Coal within the Narrabri coal deposit can be described as being relatively free of major structural disturbance. The basal 4-4.2m of the seam generally averages 8 to 10 percent raw ash. The product for stage 1 operations will not require a coal preparation plant but will require general crushing and screening facilities for processing prior to despatch.

Gas desorption testing of coal core samples indicates gas levels of between 2.0 and 8.0m^3/tonne, with CO_2 being the dominant gas at generally >80%.

The coal produced from the Narrabri project will be destined for the export market.

1.1.5 Operational and Environmental Management

1.1.5.1 Contacts

The management personnel responsible for operational and environmental performance at the Narrabri Underground Coal Mine and their relevant contacts are as follows.

- Mr Greig Duncan – General Manager, retains overall responsibility for all activities and performance at the mine. Contact: 0458 944751.
- Mr Ben Bomford – Project Manager, oversees mine production, and operational performance. Contact: 02 67944755, 0447 424338.

- Mr Danny Young, Group Environmental Manager is responsible for the environmental and rehabilitation activities on site. Contact: 02 67424337, 0427 497710.

Mining operations will be undertaken by Narrabri Coal Mine personnel. Construction activities have been undertaken by Narrabri Coal Mine personnel with additional contract operations provided by LDO for drift development and Agcon for surface construction works.

FIGURE 2 -
ENVIRONMENTAL MONITORING SITES

WB3b
WB3a
WB4
P5
P6
P4
PC
P7
P17
P16
WB8
P15
P14
WB1
N4
P20
P19
P18
ND-4
ND-3
KC1US2
ND-6
ND-5
KC1DS
N1
P9
P13
KC2DS
P3
N2
WB2
ND-9
ND-7
P12
ND-2
KC2US
ND-1
KCDS
ND-10
N5
ND-8
N3
P8
KCUS
WB7
WB5a
WB5b
P10
P11
P2
WB6a
WB6b
P1

0 500 1,000 1,500 2,000
Metres

Legend

Site Boundary

- Pit Top Area
- ML1609

Groundwater Sites

- Peizometer
- Water Bore

Air Quality Monitoring

- Deposited Dust
- PM10 HVAS

Wet Weather Discharge

- Licenced Discharge Points
- Noise Monitoring

Narrabri Coal Operations Pty Ltd

NARRABRI COAL MINE

Environmental Monitoring Locations

Author: T. Thompson

Date: 19-Dec-2008

Coordinate System:
Map Grid Australia
Zone 55

Scale: **1:80,000**

2,000 1,000 0 2,000 4,000 6,000
Meters

1.1.5.2 Support Personnel

In addition to the personnel identified in Section 1.1.5.1, Narrabri Coal utilise specialist assistance as and when required. Specialist environmentally-based or related companies or consultants involved in activities at the mine during the Reporting Period included:

- Geoff Cunningham Natural Resource Consultants Pty Ltd;
- Ecotone;
- Ecowise Environmental Pty Limited;
- RCA Australia;
- Carbon Based Environmental Services;
- Orica Blasting Limited;
- Soil Services;
- EA Systems;
- Spectrum Acoustics;
- URS Australia Pty Ltd;
- Aquaterra.
- EcoLogical Australia Pty Ltd
- GSS Environmental Pty Ltd.

All mining and environmental management activities are undertaken generally in accordance with the MOP, management plans and procedures prepared in satisfaction of Narrabri Coal's Mining Lease, Environment Protection Licence (EPL 12789), Project Approval and the relevant legislation.

1.1.6 Corporate Environmental Policy

WCL has a documented environmental policy which states:

"*Whitehaven Coal Limited is committed to responsible environmental management and to be a leader in pursuing acceptable and sound environmental practices within the community.*

At all times, the operations at Narrabri Underground Coal Mine will be undertaken in compliance with the requirements of environmental legislation and any development consent, lease and licence conditions. Whitehaven Coal Limited will seek continuous improvement in performance by taking into account community concerns and advances in environmental knowledge. This commitment will extend to all areas of the operation, whether performed directly by the Company or contractors.

Management will provide employees and contractors with details of legislative and other requirements that apply to their work situation and provide the necessary training and resources to enable them to carry out their responsibilities.

Whitehaven Coal Limited requires all employees and contractors to operate in an environmentally responsible manner and to immediately communicate breaches of environmental practice to management. It is the responsibility of every employee, whether permanent or non-permanent, and contractor to take all necessary steps to report any incident which breaches environmental legislation, consent, licence requirements or good practice with the utmost urgency.

Whitehaven Coal Limited demands the active co-operation of all levels of management, all employees and contractors to ensure the above goals are achieved at all times."

1.2 Approval Status

1.2.1 Leases, Licences and Approvals

Table 1 identifies the leases, licences and approvals in place for the Narrabri Underground Coal Mine at the end of the Reporting Period, the issuing / responsible

Authority, dates of issue, duration (where limited) and relevant comments. The list is presented chronologically according to the date of issue.

Reviews of compliance/performance with the conditions identified in PA 05_0102, Environment Protection Licence 12789, and ML 1609, are presented in Appendix 3, Tables A3-1, A3-2 and A3-3 respectively.

TABLE 1

Tenements Licences and Approvals

Issuing / Responsible Authority	Type of Lease, Licence, Approval	Date of Issue	Expiry	Comments
Department of Primary Industries	Exploration Licence (EL 6243)	21 May 2004	21 May 2009	Approval for exploration.
Minister for Planning	Project Approval (PA) 05_0102 (Appendix 1(a))	13th November 2007	18th January 2029	Approval for the Mine
Department of Environment and Climate Change	Environment Protection Licence No. 12789 (Appendix 2)	20th February 2008	Nil Anniversary date: 20th February Next review: 20th February 2013	Approval granted for Coal Mine and Coal Works to 3.5 Mtpa.
Department of Primary Industries	ML 1609	18th January 2008	18th January 2029	Approval of underground mine
Department of Primary Industries	Mining Operations Plan	8th February 2008	31st December 2011	Approval of proposed mining and rehabilitation methods
Department of Water and Energy	Water Licence 90BL254481 90BL254482 90BL254483 90BL254484 90BL254485 90BL254486 90BL254487 90BL254660 90BL254661 90BL254662 90BL254663 90BL254658 90BL254659 90BL254679 90BL254701 90BL254967 90BL254958 90BL254959 90BL254960 90BL254961 90BL254962	6th March 2008	Nil	Used for groundwater monitoring purposes and mining purposes.

	90BL254963 90BL254964 90BL254965 90BL254966			

1.2.2 Amendments to Leases, Licences and Approvals

An amendment was made to the Mining Operations Plan which gave approval to additional topsoil stockpiling locations as compared to that originally approved. Approval to Amendment 1 to the Mining Operations Plan was granted on 6th July 2008.

1.3 Actions Requested at Previous AEMR Review

As this is the first AEMR submitted for the Narrabri Underground Coal Mine, no review of former AEMR documentation has been undertaken. As a consequence there have been no modification requests.

Section 2: SUMMARY OF OPERATIONS

2.1 Exploration, Resources / Reserves and Mine Life

2.1.1 Exploration

During the reporting period 33 drill holes of varying type were established across the Narrabri project site. Thirteen HQ cored holes were drilled into the first two panels in order to better define coal seam gas composition and quantity over what will be the initial working section of the mine.

Seven open holes were drilled in the eastern sub-crop area which identified an increased thickness of the coal seam and potential additional areas of mining to the north and east.

Five open holes were drilled to establish an area of potential fault in the northern panels area. Eight conventional 100mm core holes were drilled in the eastern part of the mine to identify coal characteristics for washery, conveyor and bin design.

A surface to seam exploration and gas drainage program has also commenced in the pit bottom area.

2.1.2 Resources and Reserves

The coal resource of the Narrabri Coal Mine is contained within the Hoskissons Coal Seam. The seam is between 8-10m thick over the western half of the MLA. The seam strikes generally north-south, and dips gently to the west.

The Hoskissons coal seam has been modelled as two plies, HC1 and HC2. The lower part of the seam contains low ash coal suitable for thermal applications. The lower 4.0-4.2m of the seam (HC2) is the preferred working section for mining. The upper section of the seam (HC1) is the higher ash coal that will remain in the roof where seam thickness exceeds 4.2m.

It has been estimated that approximately 230 million tonnes of coal occurs within the lower HC2 ply, with up to 160 million tonnes recoverable by continuous miner methods.

2.1.3 Estimated Mine Life

Based on an average production rate of 2.5Mtpa using continuous miner methods, mine life would exceed 50 years. Investigations are currently underway with regard to development of a longwall operation, and if successful, annual production rates and estimated mine life would change.

2.2 Land Preparation

Land preparation activities undertaken at the Narrabri Coal Mine during the Reporting Period were conducted in accordance with commitments identified in Section 3 of the MOP and included:

- Vegetation removal (predominantly open grassland) with small isolated trees comprising areas designated for surface infrastructure (offices, workshops, amenities, ROM and product coal stockpile pads, internal roads, surface water storage and mine water storage areas, visual amenity bund, rail loop and box cut). Clearing for these areas was undertaken during the reporting period with approximately 80% of surface disturbance works completed during the period. Soil stripping was undertaken across all areas designated for infrastructure requirements, with surplus soil stockpiled in locations as specified in the MOP. All surplus soil stockpiles have been seeded to cover crop. Additional cover crop seeding will be undertaken on stockpiles currently being utilised in completion of the evaporation ponds. During the Reporting Period, no woodland tree clearing campaigns were required due to the majority of activity occurring in open grassland communities. Overall, the surface or pit top area comprises approximately 450 ha with surface disturbance activities over the reporting period over approximately half that area.
- Soil stripping has been undertaken across disturbed areas within the pit top in accordance with the methodology outlined in the MOP. Soil stripped throughout the reporting period was placed in stockpiles in close proximity to the area from

which it was stripped for subsequent replacement. During construction of the amenity bund, topsoil was pushed out from the base of the bund area and then pushed back over the bund on completion. All retained stockpiles of soil have been appropriately shaped to reduce potential for erosion and seeded to cover crop.

- During the Reporting Period, a total of 135,000m^3 topsoil was stripped during surface construction activity with 66,000m^3 respread across reprofiled areas, with 69,000m^3 retained in stockpiles on site. Soil stockpile locations are shown on Plan 3.
- During the Reporting Period, a total of 213,000m^3 subsoil was stripped during surface construction activity with 50,000m^3 respread across reprofiled areas, and 163,000m^3 retained in stockpiles on site. Soil Stockpile locations are shown on Plan 3.
- During the Reporting Period, a total of 577,000m^3 overburden was removed from the Box Cut with all material retained on site for use in construction of the amenity bund and for fill in other areas across the construction site.
- During the Reporting Period, a total of 10,000m^3 of material was excavated during drivage of the 3 drifts at the base of the Box Cut. This material is being used in the development of the amenity bund on the western side of the Box Cut.

Table 2, the "Production and Waste Summary", shows that at the end of the Reporting Period, a total of 348,000 m^3 subsoil and topsoil had been stripped from the pit top area, with 116,000m^3 respread across reprofiled areas. A further 232,000 m^3 topsoil and subsoil remains stockpiled on site for future rehabilitation purposes.

TABLE 2

Production and Waste Summary

	Cumulative Production (cubic metres)		
	Start of Reporting Period	**At end of Reporting Period**	**End of next Reporting Period (estimated)**
Soil Stripped (m^3)	0	348,000	420,000
Soil Used/spread (m^3)	0	116,000	160,000
Waste Rock (m^3)	0	577,000	640,000
ROM Coal (t)	0	0	300,000
Processing Waste (t)	0	0	0
Product (t)	0	0	300,000

Soil removal activities were undertaken specific to the footprint of required surface infrastructure.

2.3 Construction

All activities undertaken throughout the term of the AEMR reporting period related to the construction phase of the project. It is expected that this will continue through to the final quarter of 2009 which is when first coal production is expected.

Plate 3: Aerial view of pit top area under construction – Narrabri Coal Mine – November 2008

Plate 4: Narrabri Permanent Site Office Facilities under Construction – April 2009

Plate 5: Narrabri Permanent Workshop Facilities under Construction – April 2009

2.4 Mining

2.4.1 Mining Method

No actual coal mining took place during the reporting period with all works undertaken to date associated with construction of the mine site. Upon completion of construction and commencement of mining operations, all mining will be undertaken by underground continuous miner methods as specified in the MOP.

During this AEMR period, excavation of the box cut was undertaken by the following process:

- removal of topsoil and subsoil by Scraper operations
- removal of weathered rock by dozer and scraper operations
- removal of low strength sand/siltstone by free dig excavator and truck
- removal of high strength sand/siltstone by drill and blast and excavator and truck.

On excavation of the Box Cut, the slope sections were jute meshed and seeded to establish appropriate groundcover.

Drift development also commenced during the reporting period, with three drifts currently under construction. Drift 1 will provide vehicle/personnel access, Drift 2 will provide the conveyor for the transport of coal from the pit bottom area, and Drift 3 will provide ventilation accommodating the main fans. The three drifts have been established at the base of the western face of the box cut as shown in plate 7. As at the end of the reporting period, the drifts were 420m below ground, with completion to pit bottom expected in October 2009.

Upon establishment of pit bottom a ROM coal bin with associated transfer chutes and conveyers will be established together with personnel facilities, minor workshop area, compressed air reticulation system, electrical substation and distribution system, water reticulation system and primary groundwater sump.

Upon completion of infrastructure construction a separate infrastructure plan will be developed for inclusion in next years AEMR.

Plate 6: Three Portals within Box Cut – Narrabri Underground Coal Mine – April 2009

Plate 7: Box Cut – Narrabri Underground Coal Mine – April 2009

2.4.2 Mining Constraints

Mining activities at the Narrabri Coal Mine will be determined, to an extent, by economic considerations which, in turn, are determined to a large extent by factors beyond Narrabri Coal Operations control, i.e. coal price and demand. Economic factors will ultimately determine the continued viability of the operation over the proposed life of mine.

Exploration data obtained to date has identified a number of northwest, northeast and more locally north-northwest trending structural zones in the eastern portion of the mine site, however these are not expected to pose any significant operational issues with regard to productivity or mine roof instability.

There have been no igneous intrusions identified as intersecting within the Hoskissons Coal Seam to date.

The occurrence of three massive strata units, being the Garrawilla volcanics, a Basalt Sill, and the Digby Formation have been considered in the mine plan layout. This layout has been optimised for Stage 1 operations as well as the commencement of Stage 2 operations, if approved. The occurrence of this strata is therefore not expected to impact on mine operations.

Groundwater inflow predictions were made for Stage 1 operations, with adequate contingencies in place for the storage and treatment of groundwater on the surface. Actual mining operations will verify if predictions were accurate. First reporting against these predictions can be made in next years AEMR.

2.4.3 Mining Equipment

Table 3 presents a list of mining equipment in use at the Narrabri Coal Mine at the end of the Reporting Period, together with its principal function(s) and frequency of use.

TABLE 3

Mining Equipment

ITEM	NUMBER IN OPERATION	FUNCTION
Hitachi EX1800 Excavator	1	Box Cut Excavation
Hyundai Excavator	1	Drift material loading to Volvo Dumpers
Kutu Excavator	1	Trim/shape
CAT 777 Dump Truck	3	Overburden removal – Box Cut
Terex SK50 Drill	1 (p/t)	Blasthole Drilling
CAT D11R Dozer	1	Clearing; overburden pushing; amenity bund construction
D10	2	Clearing; overburden pushing, amenity bund construction
Water Cart	3	Dust Suppression
CAT 14H Grader	2	Road maintenance
637E Scraper	4	Soil removal and stockpiling
Service Truck	1	Machinery servicing
IT38G Loader	1	Loading
Lighting Plant	6	Lighting

2.4.4 Hours of Operations

Surface construction and site establishment activities occurred between the following hours:-

Vegetation clearing/Soil removal – 7am to 6pm (7 days)

Surface Infrastructure and Pit Top Area construction – 7am to 10pm (7 days)

Pit Bottom Area development – 24 hours (7 days)

Raw materials/supply delivery – 7am to 10pm (7 days)

Underground mining has not yet commenced on site.

The above hours of operation are consistent with, and within those identified in Project Approval PA 05_0102.

2.5 Processing

2.5.1 Outline

There has been no processing of coal undertaken on site during the reporting period.

2.5.2 Changes or Additions to the Process or Facilities

As this is the first year of the development, all activities on site have been in accordance with the commitments provided in the Mining Operations Plan and in accordance with the conditions of consent. The only minor variation that was sought and approved during this period was a minor modification to the Mining Operations Plan to provide additional stockpile areas for topsoil within the surface construction zone. This was approved by the Department of Primary Industries on the 6th July 2008.

2.6 Waste Management

2.6.1 Introduction

Wastes produced from the Narrabri Coal Mine during the Reporting Period remain unchanged from those identified in the Mine EA and Mining Operations Plan and comprised:

- general domestic-type wastes from on-site buildings and routine maintenance consumables;
- oils and grease;
- sewage;
- overburden from Box Cut and Drift development;

The following sub-sections identify the management procedures adopted for each of these wastes throughout the Reporting Period. Management procedures remain

unchanged from those previously identified and will be continued for the ensuing reporting period.

2.6.2 Domestic Type Wastes

All paper and general wastes originating from the surface facilities area have been disposed of in mobile garbage bins located adjacent to the various buildings. These bins have been collected and disposed of off site by Namoi Waste Corp on a regular basis. Over the course of the reporting period, the total volume of waste transferred off site comprised 77 tonnes as identified through the waste contractors waste volume tracking. This quantity of waste is expected to be reduced over time based on the completion of construction activity, the demobilisation of construction fleets and personnel and the ongoing management of waste volumes in accordance with the existing waste management strategy. The waste contractor has been requested to formalise waste tracking arrangements to ensure sign off against individual waste collections as well as definition of waste type.

2.6.3 Oil Containment and Disposal

Waste oils and grease from the current temporary maintenance building were pumped via oil separator to waste oil containers and removed off site by licensed contractor, Northern Lubequip. When breakdown maintenance was undertaken away from this location, oil was pumped from the equipment to a tank on the service truck from which it was subsequently transferred to the bulk storage tank. During the reporting period 4,500 litres of waste oil was collected by the waste contractor for recycling.

2.6.4 Sewage Treatment and Disposal

Effluent from the sewage and ablutions facilities at the Narrabri Coal Mine was managed through the Council-approved septic system, with pump outs undertaken by a licensed waste disposal contractor on an as-needs-basis.

2.6.5 Mine Equipment Tyres

During the reporting period, the predominant activity pertained to surface construction works. Any tyres requiring disposal during this period were transported off site for disposal at licensed facilities.

2.6.6 Overburden and Interburden

During the construction of the Box Cut, overburden material was shifted by excavator and dump truck for placement in the visual amenity bund located on the southern and western boundary of the surface construction zone.

Additional material was obtained during the excavation of the drift portals with that material being deposited in the ongoing amenity bund construction on the western side of the Box Cut.

2.7 Stockpile Capacity

The ROM Coal stockpile area has been partially developed through the establishment of a hardstand area. The ROM stockpile will enable storage of up to 110,000t of coal at a maximum height of 12m. In addition, the product coal stockpile, also of 110,000t capacity has also been partially developed with the establishment of a hardstand area as per the specification in the Mining Operations Plan. Further development of these areas will be undertaken over the next 6 months, prior to commencement of coal production scheduled for October 2009.

2.8 Water Management

2.8.1 Objectives

The Narrabri Coal Mine lies within the catchment of the Namoi River. Locally, and within proximity of the project site, Kurrajong Creek and Pine Creek provide flows to the Namoi River during runoff events. The design of sediment detention basins

within the disturbed area of the pit top area limits the opportunity of discharge of runoff from mine-disturbed area, i.e. after appropriate detention time to satisfy licensed discharge criteria. 3 discharge points exist within the project area, i.e. Storage Dams SD-2, SD-4, SD-5 (Plan 4) have been nominated in a variation application to Environment Protection Licence (EPL) 12789, together with upstream and downstream monitoring locations within the adjacent creek systems.

The management of water at the Narrabri Coal Mine is undertaken with the following objectives.

(i) The quantity of water exhibiting elevated suspended solids loadings is minimized.

(ii) Erosion is minimized.

(iii) Sediment-laden water is contained for a sufficient period that discharges, if occurring, satisfy the discharge criteria identified in EPL 12789.

(iv) Surface water is harvested off-site to the extent permissible, thereby minimizing water extraction from bores or other sources.

(v) Groundwaters are not contaminated.

(vi) Downstream water users are not adversely affected by the Mine's operations, either in terms of quantity or quality.

(vii) The water management system is consistent with planned rehabilitation objectives and long-term land use.

2.8.2 Surface Water Management

Water within the DA Area is nominally classified either as "clean", "sediment-laden" or "dirty", or "contaminated" and "saline" depending on the source of the flow and its potential for physical or chemical contamination.

"**Clean water**" comprises water which emanates from areas undisturbed by mining activities, flows from sediment basins following its clarification in those structures or is contained within or discharges from storage dams. Within the DA Area, clean surface water flows either pass to natural drainage lines and hence off-site or are

collected by diversion banks and directed to the storage dams for use on-site. All water flowing from sediment basins ultimately flows to storage dams.

At the end of the Reporting Period, a total of 6 surface water storages were currently in place within the DA Area, with a combined storage capacity of approximately 123ML. In addition to this surface water storage, Pond D within the Rail Loop complex has a storage capacity of 128ML for transfer of water from the surface storages as required.

Of the storage dams, SB1 will collect water from the Box Cut Sump and flows from off the ROM pad and surface facilities area prior to pumping to the Pond A1. This water will be evaporated in the pond complex A1-A3 as a means of managing saline groundwater flows. Upon completion of the surface construction phase, the remaining surface water storages will predominantly collect clean water flows.

"**Dirty water**" comprises water which does or could potentially contain elevated levels of suspended solids originating from areas of mining-related disturbance, including water pumped from the Box Cut sump within the Box Cut.

Dirty water collected in SB1 will receive treatment through a settling and transfer process into Pond A1. The discharge monitoring points may also receive some sediment laden water in the early stages of the project prior to full establishment of groundcover. These discharge points will be monitored during discharge to confirm water quality objectives are met.

The storage dams will be monitored on a regular basis in order to reduce the potential for discharge. This will be achieved by the establishment of water level markers in the final site storages to provide indicative measures as to when water will need to be pumped from storages into Pond D. Each of the Ponds will also have marker boards to define water level in the ponds for management purposes. Gauge boards had yet to be established in the ponds at the end of the reporting period.

The principal components of the water management systems in place at the end of the Reporting Period are shown on Plan 4.

"**Contaminated Water Management**". A single 68,000 L self bunded diesel fuel tank is maintained adjacent to the Narrabri workshop area. The current facility is a temporary arrangement until the industrial pad currently under construction is completed. Once completed, the fuel storage will transfer to the permanent location. An additional concrete bund will be established adjacent to the fuel tank to house other oils and lubricants in a safe and efficient manner. Any associated spills within the bund then report to an oil separating unit for disposal by an appropriately licensed contractor. Waters potentially contaminated with hydrocarbons from the workshop area are also diverted to the oil separator, with clean water reporting to SB1 for later use across the site. Spill kits will be maintained within the workshop area.

The likelihood of localised spills of fuel or oil external to bunded areas is kept to a minimum. In the event that localised spills do occur, immediate action would be undertaken to ensure appropriate clean-up and minimisation of harm.

2.8.3 Discharges

During the construction phase of the development, and in consultation with the DECC, there have been no registered discharge locations within the mine site, and no concentration thresholds applied. However, Narrabri Coal has undertaken monitoring of surface water qualities during rainfall events at the upstream and downstream monitoring points for the purposes of obtaining background water quality information. The analysis of this sampling is presented and discussed in Section 3.3.2.

A variation to the EPL has been submitted to DECC for approval which will identify the registered discharge locations from the mine site, as well as establish the concentration threshold criteria applicable to future surface water discharge. It is expected that this licence variation will be approved in the near future.

2.8.4 Water Sources, Demand and Use

Within the DA Area and immediate vicinity of Narrabri Coal Mine, surface water resources are limited to a number of ephemeral drainage lines which flow for a short period after substantial rainfall, farm dams, and newly constructed water storage dams and groundwater sources.

Water is required on the mine site primarily for dust suppression purposes, with minor quantities required for potable and toilet ablutions purposes. Where practicable, water collected on-site is retained or reused, with water for dust suppression sourced from a combination of on-site water harvesting, inflows from the overburden during drift development, and groundwater extraction. Water for potable, toilet and ablutions purposes is trucked to the site from Narrabri.

During the Reporting Period, a total of approximately 38 ML was used for mine site dust suppression purposes. Water was sourced from on site surface water storages, and, at times when there was insufficient surface water, it was trucked to site from other supplies, including Narrabri Shire supply and off-site company owned bore supply.

- Offsite supply - 10 ML
- Surface flows to sediment basins and storage dams within the DA Area - 28 ML

During the Reporting Period:

(i) the water from offsite was pumped directly to water tanker and trucked to site for placement in storage dams for subsequent access for dust suppression purposes; and

(ii) Surface water was also collected in on site storages during surface water flow events and utilised across the site for dust suppression purposes.

The above water use is indicative of dust suppression requirements during the construction phase of the project and not representative of water use requirements

upon commencement of production. Additional water use will be required on commencement of production both underground and on the surface, particularly on machinery, conveyors and stockpile locations. On this basis, a true indication of water requirements as an operational mine will not be gauged until the completion of the first 12 months of production. Commencement of production will enable a more rigorous assessment of water use against predictions in next years AEMR.

2.8.5 Stored Water

Table 4 presents an estimate of the volume of stored water at the beginning and end of the Reporting Period.

TABLE 4

Stored Water

	Volumes Held (m^3)		
	Start of Reporting Period	**At end of Reporting Period**	**Storage Capacity at the end of the Reporting Period (m^3)**
Clean Water (in Storage Dams)*	8000	46000	112000
Dirty Water (in Sediment Basins)	nil	10900	10900
Controlled Discharge Water (salinity trading schemes)	N/A	N/A	N/A
Evaporation Ponds	Nil	747000	747000
N/A = Not applicable for the Narrabri Coal Mine			
* = Additional 46ML storage in containment bund of rail loop and 128.4ML in Pond D.			

2.8.6 Groundwater Management

Inflows into the box cut and portals are irregular and result from a combination of:

- direct rainfall over the Box Cut and entrance;
- where the box cut and drift workings expose water stored within fractures in the rock mass.

During the Reporting Period, the volume of water pumped from the Box Cut was insignificant (<1ML), all of which was used directly or indirectly for dust suppression purposes.

Contamination of groundwater is controlled by the management of chemical, oil and grease spills and storage, with:

- vehicle maintenance carried out in designated areas;
- any spills being cleaned up; and
- fuels, oil and greases being stored within a bunded area, constructed in accordance with AS 1240-2004 (also see Section 2.8.2) and/or DECC requirements, whichever are the more stringent.

Groundwater from surrounding bores is monitored on a regular basis to detect and assess any changes in groundwater quality or level that may be attributable to the mine (see Section 3.4.2).

2.9 Hazardous and Explosive Material Management

No explosive materials are retained within the Narrabri Mine Site. Orica Mining Services undertook 4 minor blasts during the box cut excavation for which all explosives were transported to site on the day of the blast from Orica's precursor storage facility located near the Whitehaven mine.

Materials Safety Data Sheets (MSDS) are retained on-site for all hazardous materials, independent of the quantity. Additionally, all contractors are required to supply MSDS sheets for any hazardous goods they may bring onto the site.

2.10 Infrastructure Management

Management of infrastructure i.e. buildings, roads, generators, pumps etc and other facilities not specified elsewhere within this AEMR, is undertaken on an as-needs basis or in accordance with Statutory requirements in order to maintain them in an operationally efficient, safe, neat and tidy condition, and one which does not result in the direct or indirect generation of unacceptable environmental impacts.

Section 3: ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

The following sub-sections document the implementation and effectiveness of the various control strategies adopted at the Narrabri Coal Mine, together with monitoring data for the Reporting Period. A risk identification matrix and the relevant Environmental Management procedures are identified in the Mine's MOP.

3.1 Air Pollution

3.1.1 Criteria

The air quality criteria applicable to the Narrabri Coal Mine are specified in PA 05-0102 Schedule 3, Tables 4, 5 & 6 and summarized below.

- Acceptable mean annual increase in deposited dust of 2g/m^2/month.
- Mean annual dust deposition (all sources) of 4g/m^2/month.
- Mean annual TSP (all sources) concentration – 90 μg/m^3.
- Mean annual PM_{10} particulate level of 30 μg/m^3.
- 24 hour average PM^{10} particulate level of 50 μg/m^3.

Additionally, exhaust gases on earthmoving / mining equipment should not be visible for more than 10 seconds continuously.

Notwithstanding the diversity of the criteria identified above, routine air quality monitoring at the Narrabri Coal Mine is required for deposited dust and PM_{10} particulates. Monitoring of deposited dust is undertaken on a monthly basis whilst PM10 levels are monitored every 6 days.

3.1.2 Control Procedures

In order to satisfy the criteria identified above, Narrabri Coal employs a range of air pollution control measures including:

- No burning of materials on site. Any vegetation removed as part of the construction phase retained for subsequent replacement on the rehabilitated landscape;
- limiting groundcover removal to areas required for immediate operational and construction requirements;
- groundcover removal as part of the topsoil removal activities;
- where practicable, limiting soil stripping activities to periods when there is sufficient soil moisture to prevent significant dust lift-off and avoiding periods of high winds;
- soil stripping using open bowl scrapers, thereby eliminating the dust generated from elevators;
- application of water to exposed surfaces, with emphasis on those areas subject to frequent vehicle / equipment movements which may cause dust generation and dispersal;
- use of water injection on the drilling rig;
- use of imported aggregates for blast hole stemming;
- progressive shaping and rehabilitation of areas post construction;
- speed limit restrictions on all vehicles and equipment on the mine site;
- equipment exhaust positioning to avoid exhausts impinging on the ground and causing dust lift-off; and

3.1.3 Dust Monitoring

Table 5 presents a summary of the deposited dust monitoring data for the Reporting Period while Appendix 4 presents the results of all dust monitoring over the life of the mine to date. A graphical representation of the total insoluble solids and ash content data for each of the sites monitored during the Reporting Period is also included in

Appendix 4. Figure 2 identifies the locations of the various deposited dust gauges maintained during the Reporting Period.

TABLE 5

Deposited Dust Monitoring Data

April 2008 to March 2009

Site (see Figure 2)	Property	Total Insoluble Solids g/m^2/month		Ash Content g/m^2/month	
		Mean	Standard Deviation	Mean	Standard Deviation
ND-1	Turrabaa	5.65	7.90	2.10	1.43
ND-2	Claremont	2.38	3.60	1.55	1.66
ND-3	Bow Hills	1.95	1.35	0.94	0.51
ND-4	Matopppo	9.0	9.40	3.58	3.18
ND-5	Claremont	4.95	9.65	2.66	3.67
ND-6	Willarah	2.96	3.90	1.4	1.62
ND-7	Claremont	1.10	0.84	0.74	0.46
ND-8	Claremont	1.06	0.86	0.74	0.58

A review of Table 5 and Appendix 4 shows that:

- the mean annual total insoluble solids (deposited dust) criterion was satisfied at all monitoring locations excluding ND1 and ND4.
- Deposited dust levels at all sites remained reasonably consistent throughout the reporting period. The mean result from ND1 was skewed following high level readings in October and November 2008. Laboratory analysis indicated the samples during these months were heavily contaminated with vegetative matter and bird droppings. Analysis form ND4 also indicated heavy sample contamination from vegetative matter and bird droppings. Deposited dust levels at these two monitors have shown higher dust levels during months of significant rainfall and at a time when surface construction works have decreased significantly. They are therefore not truly representative of the quantity of dust generated that is applicable to the project.
- Other factors contributing to dust levels in the general locality include ongoing farming operations at adjacent properties and road dust generation from the adjacent Kurrajong Creek Road.

Narrabri Coal Operations Pty Ltd also has High Volume Air Samplers (PM10) located at the properties "Claremont" and "Turrabaa" located to the south-east and south-west of the mine site. The samplers run for 24 hours every 6 days, with filter papers sent to an accredited laboratory for analysis. To date, the PM10 results have indicated compliance with the 24 hour criteria and the annual average, excluding one occasion at the "Turrabaa" monitor when the 24 hour criteria was exceeded as indicated in Figure 3 below. The full data set for the PM10 is contained within Appendix 4. The single exceedance at "Turrabaa" was believed to be associated with the use of an access track adjacent to the monitor by personnel travelling from the former temporary site office at "Turrabaa" to the Project site. The track was subsequently decommissioned and all results since this time have been compliant.

FIGURE 3

High Volume Air Sampler PM10 Data - "Claremont"

December 2007 – March 2009

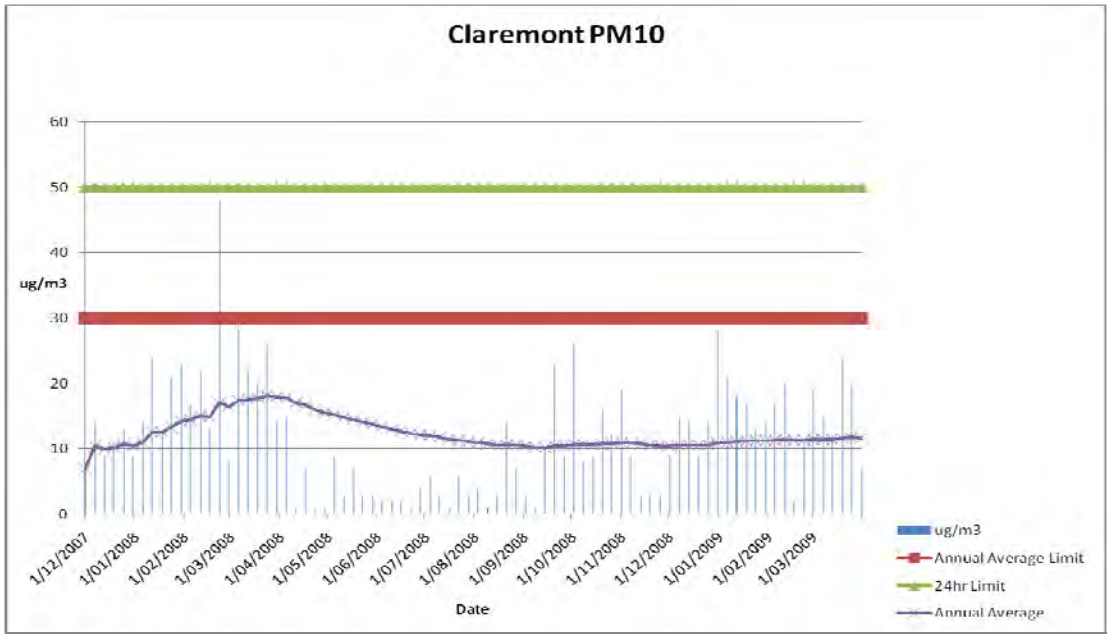
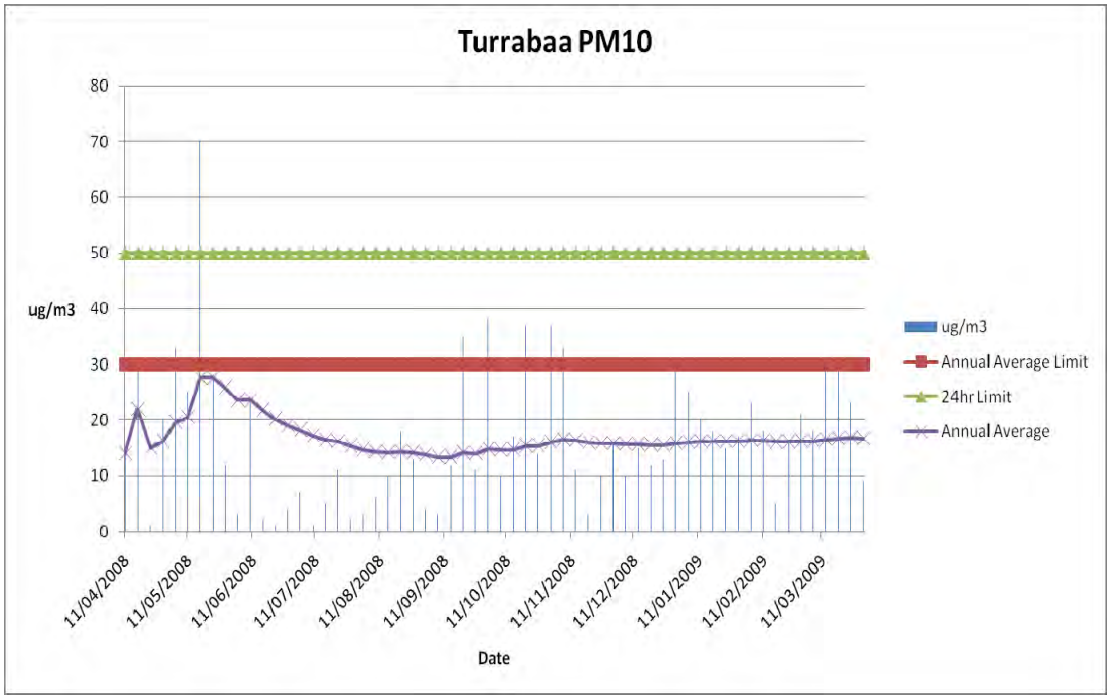


FIGURE 4

High Volume Air Sampler PM10 Data – "Turrabaa"

December 2007 – March 2009



3.2 Erosion and Sedimentation

3.2.1 Management

Methods for the management of erosion and sediment control at the Narrabri Coal Mine are presented in the MOP, and the Water Management Plan prepared in accordance with PA 05_0102.

Control of erosion and sediment generation is achieved on the Narrabri Coal Mine site primarily through the implementation of water management controls identified in Section 2.8.2 and shown on Plan 4, and water usage for dust suppression which ensures adequate storage capacity is available within the various water containment structures to receive inflows. Additional measures which assist in the control of erosion and sedimentation include:

- minimizing the extent of disturbance consistent with operational and construction requirements;

- revegetation of long-term subsoil and topsoil stockpiles, and establishment of cover crops across areas of disturbance post construction activity;
- undertaking soil management activities generally in accordance with the recommendations from Geoff Cunningham Natural Resource Consultants.

Soil stockpiles have been placed in gently sloping or near flat areas surrounded by grassland which effectively reduces the runoff velocity, and hence erosive potential, from any run-on waters. However, Narrabri Coal is cognizant of the potential for stockpile erosion and will adopt stockpile protective procedures to minimize impacts as required over the remaining life of the mine. Establishment of cover crops and pasture grasses across rehabilitated areas will be monitored over the life of the mine and additional works undertaken as required to ensure appropriate cover at all times.

3.2.2 Performance

The effectiveness of the procedures for erosion and sedimentation management are assessed visually as part of routine mine operations and supervision undertaken by Narrabri Coal Operations, with any ameliorative works initiated as and when required.

During the Reporting Period, all necessary controls were in place and operating as per design. The main features during the reporting period included the establishment of cover in drainage channels and banks of water management structures, the establishment of cover along the visual amenity bund, establishment of cover on the inside grade of the Box Cut and general cover establishment across topsoil stockpiles and other areas of disturbance.

3.3 Surface Water Pollution

3.3.1 Management

The prevention of surface water pollution is achieved through the management of surface water as presented in Section 2.8.2.

3.3.2 Performance

Surface water management controls have operated effectively throughout the Reporting Period, with water management controls operating in accordance with the construction phase site water management plan. Narrabri Coal Operations has obtained water samples from the adjacent creek systems during wet weather events for the purposes of assessing water quality parameters as background data. This will used for comparison with any future wet weather discharge event off site for which sampling and concentration thresholds will be required to be met on issue of the modified Environment Protection Licence currently under consideration by DECC.

TABLE 6

Surface Water Analyses

Water Source	Monitoring Site ID	Sampling Date	pH	Conductivity (µS/cm	Suspended Solids (mg/L)	Grease & Oil (mg/L)
Kurrajong Creek	KC2US	23.09.08	6.5	65	35	<2
Kurrajong Creek	KC1US	23.09.08	8.0	65	320	<2
Kurrajong Creek	KCUS	23.09.08	7.7	315	168	<2
Kurrajong Creek	KCDS	23.09.08	7.2	230	150	<2
Kurrajong Creek	KC1DS	23.09.08	7.1	220	1280	<2
Pine Creek	PC	23.09.08	7.2	125	12	<2
Pine Creek	PC1	23.09.08	7.0	90	62	<2
Kurrajong Creek	KCDS	15.12.08	7.1	355	21	<2
Kurrajong Creek	KC2DS	15.12.08	6.9	95	8	<2
Kurrajong Creek	KCUS	15.12.08	7.5	55	6	<2
Kurrajong Creek	KC1DS	15.12.08	8.2	315	42	<2
Kurrajong Creek	KC2DS	15.12.08	7.4	185	289	<2
Pine Creek	PC	15.12.08	7.2	125	12	<2

Pine Creek	PC1	15.12.08	6.9	255	23	<2
Kurrajong Creek	KC1US	29.12.08	6.9	95	48	<2
Kurrajong Creek	KC2US	29.12.08	6.8	90	17	<2
Kurrajong Creek	KCDS	29.12.08	7.1	450	26	<2
Kurrajong Creek	KCUS	17.02.09	7.2	280	123	<2
Kurrajong Creek	KC2US	17.02.09	6.7	70	14	<2
Kurrajong Creek	KCDS	17.02.09	6.9	180	132	<2
Kurrajong Creek	KC1DS	17.02.09	7.1	145	142	<2
Kurrajong Creek	KC2DS	17.02.09	7.1	105	1130	<2
Pine Creek	PC	17.02.09	7.1	60	57	<2
Pine Creek	PC1	17.02.09	7.1	180	38	<2

A review of Table 6 shows that the quality of water in the adjacent creek systems is variable with pH ranging from 6.5 to 8.2, EC ranging from 55 to 450 and TSS ranging from 6 to 1280. This is indicative of natural variability as a consequence of the highly intermittent nature of the creek systems with flows only occurring during significant wet weather events. This background information will provide a valuable tool to Narrabri Coal in assessing any water quality impacts associated with the project as the development progresses. The issue of the variation to the Environment Protection Licence will also enable Narrabri Coal to assess any surface water discharge from the site against concentration threshold criteria to be established in the licence.

Narrabri Coal Operations will also undertake regular surface water samples from the surface water storages on site. This has not occurred to date on the basis that these storages have been under construction during the reporting period. As the structures are now complete, results from surface water storage sampling will be included in next years AEMR.

3.4 Groundwater Pollution

3.4.1 Management

With the exception of fuels and oils, no materials occur or are retained on the mine site which are likely to be a source of groundwater pollution.

The methods for management of potential pollutants are summarized in Section 2.8.6. Ongoing monitoring to assess trends in groundwater chemistry will enable assessment of potential contaminants to groundwater, with particular emphasis on Total Petroleum Hydrocarbons, Heavy Metals, and major cations and anions. Groundwater monitoring requirements are identified in Table 7.

3.4.2 Performance

Throughout the construction phase of the development, Narrabri Coal's performance with respect to groundwater management, the prevention of pollution and the assessment of impacts on groundwater availability to other surrounding users, has been assessed through groundwater level and chemistry monitoring undertaken at a series of operating and monitoring bores within the mining lease area, on properties adjacent to the mining lease and in the alluvial system adjacent to the Namoi River. The frequency of monitoring and the parameters monitored are all identified in Table 7.

TABLE 7

Groundwater Monitoring

Site (see Figure 1.6)	Registered Bore No.	Property	Frequency	
			SWL	E.C. pH, TDS, Major Cations, Anions and selected Heavy Metals
P-1	90BL246067	"Claremont"	Quarterly	Six Monthly
P-2	90BL254482	"Mayfield"	"	"
P-3	90BL254483	"Bow Hills"	"	"
P-4	90BL254484	"Darjeeling"	"	"
P-5	90BL254485	"Old Narrabri Rd"	"	"
P-6	90BL254486	"Moon Hill"	"	"

P-7	90BL254487	“Scratch Road”	“	“
P-8	90BL254663	“Scratch Road”	“	“
P-9	90BL254958	“Claremont”	“	“
P-10	90BL254658	“Mayfield”	“	“
P-11	90BL254959	“Mayfield”	“	“
P-12	90BL254659	“Claremont”	“	“
P-13	90BL254960	“Claremont”	“	“
P-14	90BL254661	“Omeo”	“	“
P-15	90BL254961	“”Omeo”	“	“
P-16	90BL254660	“Scratch Road”	“	“
P-17	90BL254962	“:Scratch Road”	“	“
P-18	90BL254662	“Willarah”	“	“
P-19	90BL254963	“Willarah”	“	“
P-20	90BL254964	“Willarah”	“	“
P-21	90BL254965	“Willarah”	“	“
P-22	90BL254966	“Claremont”	“	“
P-23	90BL254967	“Claremont”	“	“
P-24	90BL254701	“Claremont”	“	“
WB1	90BL028774	“Greylands”	“	“
WB2	90BL246067	“Claremont”	“	“
WB3a	DWE	“Old Narrabri Road”	“	“
WB3b	DWE	“Old Narrabri Road”	“	“
WB4	DWE	“Old Narrabri Road”	“	“
WB5a	DWE	“Old Narrabri Road”	“	“
WB5b	DWE	“Old Narrabri Road”	“	“
WB6a	DWE	“Old Narrabri Road”	“	“
WB6b	DWE	“Old Narrabri Road”	“	“
WB7	90BL100346	“Allaway”	“	“
WB8	90BL100778	“Omeo”	“	“
WB9	90BL252290	“Willarah”	“	“

Appendix 5 presents the results of the groundwater monitoring undertaken since the commencement of construction at the Narrabri Coal Mine. Monitoring sites are shown on Figure 2.

A review of the groundwater monitoring results presented in Appendix 5 shows that groundwater levels within the monitored bores closest to the mining operations, and therefore most susceptible to any mine-induced drawdown effect have fluctuated marginally and most likely associated with seasonal variation given there has been no extraction of coal to date with minimal extraction of water from the workings.

It is also noteworthy that there has been no suggestion from local landowners that Narrabri Coal's activities are adversely affecting groundwater availability or quality.

A review of the groundwater quality data presented in Appendix 5 identifies that the data obtained to date is predominantly for background water quality and water level purposes for future comparative analysis once production commences. Generally speaking, the water quality of the monitored bores can be described as moderately saline, with EC levels ranging from <100 us/cm to >24000 us/cm. Narrabri Coal has identified a range of monitoring points surrounding the site to provide for appropriate data sources for future assessment of impact, and has incorporated a range of DWE bores adjacent to the Namoi river to the east to assess impact, if any, of the operation on the Namoi alluvium system.

To date, one full water quality analysis has been undertaken across the range of monitoring sites, with the next full suite assessment scheduled for May 2009.

3.5 Contaminated or Polluted Land

Prior to mining, the area was a green-fields site, utilised for grazing and agriculture. Discussion with landowners during the preparation of the Environmental Assessment for Stage 1 revealed that no environmentally harmful products had been used on their landholding nor had there been any disposal of potential environmental contaminants. This situation has remained unchanged throughout surface construction activities. Consequently there is no reason to expect that contaminated lands would be present within the Project Site.

3.6 Threatened Flora

Investigations undertaken by Ecotone Pty Ltd as part of the Environmental Assessment identified that the project site was of no specific significance in terms of threatened flora as none of the vegetation communities on site constituted an endangered ecological community, with only one threatened flora species having potential to occur on site.

Notwithstanding the findings of the initial flora investigations, all activities during the surface construction program have been undertaken to minimise the impact on flora species. This has been achieved by limiting areas of surface disturbance to those areas specifically required for construction purposes. As the pit top area comprised predominantly of open pasture and previously cultivated areas, the only timber removal has comprised isolated individual trees which were all assessed for habitation by fauna prior to removal.

No flora monitoring within or external to the project site has been undertaken to date. A Landscape Management Plan is currently being prepared for the site which will identify specific actions to occur over the life of the mine pertaining to flora management. It is expected this plan will be submitted for agencies for endorsement by July 09, prior to the commencement of production. The production of this plan is being undertaken by specialist consultants, EcoLogical Australia Pty Ltd and GSS Environmental Pty Ltd.

3.7 Threatened Fauna

Investigations into the occurrence of Threatened fauna within the Project Area were undertaken by Ecotone Pty Ltd as part of the EA preparation phase. Those investigations identified that the proposed development was unlikely to significantly affect threatened species found or likely to occur in or around the mine site. This was on the basis of no previous recordings of threatened species within 2 kilometres of the mine site.

Notwithstanding the findings of the initial fauna investigations, all activities during the surface construction program have been undertaken to minimise the impact on fauna species. This has been achieved by limiting areas of surface disturbance to those areas specifically required for construction purposes. As the pit top area comprised predominantly of open pasture and previously cultivated areas, the only timber removal has comprised isolated individual trees which were all assessed for habitation by fauna prior to removal.

No fauna monitoring within or external to the project site has been undertaken to date. A Landscape Management Plan is currently being prepared for the site which will identify specific actions to occur over the life of the mine pertaining to fauna management. It is expected this plan will be submitted for agencies for endorsement by July 09, prior to the commencement of production.

3.8 Weeds

3.8.1 Management

Weed management within the Project Area involves regular inspections by a Whitehaven Coal employee who also holds the required tickets for weed control via chemical applications.

3.8.2 Performance

During the Reporting Period, weed control measures centred around the control of an outbreak of the noxious weed "Mother of Millions", which was located within the Kurrajong Creek waterway. Whilst this area was not subject to any surface disturbance activity during the reporting period, it was clear that under previous land ownerships, little had been done to control this weed. Access to the infestation area has proved difficult, however, over a 6 month period of regular chemical application, significant progress has been made. Further assessment of the infestation will be made over the winter/spring period in preparation for chemical application during the growing phase.

3.9 Blasting

3.9.1 Blast Criteria and Control Procedures

3.9.1.1 Blast Criteria

Blasting criteria for the Narrabri Coal Mine are nominated in Project Approval 05_0102, and Condition L7 of Environment Protection Licence 12789 (Appendix 2) and specify that:

- blasting must only be carried out between 10.00 am and 4.00 pm, Monday to Friday and must not take place on Saturday's, Sundays or Public Holidays without the prior approval of the EPA.
- the overpressure level from blasting operations must not:

  (a) exceed 115dB (Lin Peak) for more than 5% of the total number of blasts over each reporting period; and

  (b) exceed 120dB (Lin Peak) at any time.

  At any point within 30 metres of any non-project related residential building or other noise sensitive location.
- ground vibration peak particle velocity from the blasting operations must not:

  (a) exceed 5mm/s for more than 5% of the total number of blasts during each reporting period; and

  (b) exceed 10mm/s at any time,

  at any point within 3.5 metres of any affected non-project related residence or other noise sensitive location.

Licence No. 12789 does, however, note that the hours of blasting operations may be varied with the written consent of the EPA.

Licence No. 12789 also limits the number of blasts to two per day without the written approval of the DECC (EPA).

3.9.1.2 Control Procedures

Flyrock, air vibration, ground vibration and dust from blasting are controlled using a combination of design and operational methods which are detailed in the MOP and/or documented blasting procedures.

3.9.2 Performance

During the Reporting Period, a total of 4 blasts were initiated (all of which were monitored). There have been no incidences of blasts resulting in peak overpressure or ground vibration exceeding the consent condition limits. Blasting undertaken during the reporting period was specific to the establishment of the Box Cut and Rail Loop. To date, the maximum recorded peak overpressure was 113.3 dBL recorded at "Kurrajong" on 16th May 2008. The maximum recorded ground vibration was 1.44 mm/s recorded at "Kurrajong" on the 23rd May 2008. Blast monitoring results for the Reporting Period, including the time of initiation are presented in Appendix 6.

Plate 8 - Blast for Box Cut - May 2008

3.10 Operational Noise

3.10.1 Criteria

3.10.1.1 EPA Criteria

The EPA-nominated noise emission criteria, identified in Environment Protection Licence 12789 as applicable to the Narrabri Coal Mine, are as follows.

L6.1 *"Noise from the premises must not exceed:*

(a) 35dB(A) $L_{Aeq(15\ minute)}$ *during the day (7am to 6pm), evening (6pm to 10pm) and night (10pm to 7am) for construction activities.*

where L_{Aeq} *means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.*

L6.2 *Noise from the premises is to be measured at any residence not on the premises to determine compliance with this condition."*
Note: For the purpose of noise measures required for this condition, the L_{Aeq} *noise limit must be measured or computed at any point within 30 metres of any residence not on the premises over a period of 15 minutes using "FAST" response on the sound level meter.*

L6.3 *The noise emission limits identified in this licence apply under all meteorological conditions except:*
(a) during rain and wind speeds (at 10m height) greater than 3m/s; and
(b) under "non-significant weather conditions".

L6.3.1 *Noise impacts where wind speed exceeds 3 metres per second at 10 metres above the ground must be addressed by:*

a) documenting noise complaints received to identify any higher level of impacts or wind patterns;

Where levels of noise complaints indicate a higher level of impact then actions to quantify and ameliorate any enhanced impacts where wind speed exceeds 3 metres per second at 10 metres above the ground should be developed and implemented.

L6.4 *The noise limits set by condition L6.1 of the licence do not apply where a current legally binding agreement exists between the licensee and the occupant of a residential property that:*

a) agrees to an alternative noise limit for that property; or

b) provides an alternative means of compensation to address noise impacts from the premises.

A copy of any agreement must be provided to the EPA before the licensee can take advantage of the agreement.

3.10.1.2 Consent Criteria

Noise emission criteria nominated in Project Approval 05_0102 (Condition Schedule 3(12) is as follows:

3(12) "The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately owned residence.

Day $L_{Aeq(15\ minute)}$	***Evening*** $L_{Aeq(15\ minute)}$	***Night*** $L_{Aeq(15\ minute)}$	***Night*** $L_{A1(1\ minute)}$
35	*35*	*35*	*45*

Table 1: Impact Assessment Criteria dB(A)

3.10.2 Control Procedures

Control of noise generation and propagation on the Narrabri Coal Mine site is by a combination of general source and propagation path methods including:

- installation and maintenance of appropriate mufflers on plant and equipment;
- where operationally feasible, scheduling activities to minimize operation of equipment in exposed locations when winds are blowing towards residences;
- equipment removal or replacement;
- changing operational procedures;
- restricting hours of operations;
- enclosure of fixed items of plant, eg generators;
- bunding close to noise sources to create obstructions to the propagation path;
- sealing of mine access road;
- regular equipment maintenance;
- Demobilising surface plant with bulk of operations underground.

Narrabri Coal also regularly liaises with the majority of surrounding neighbours to seek feedback on the mining activities. It is noted that over the life of the mine to-date, i.e. since March 2008, operational noise has only been raised as an issue of concern by one adjoining landholder.

3.10.3 Operational Noise Monitoring

3.10.3.1 Introduction

In order to indicate to mine management the need, or otherwise, to further address noise-related matters, quarterly routine attended and unattended construction noise monitoring programs were undertaken throughout the reporting period by Spectrum Acoustics. In addition to these monitoring events, attended noise monitoring was undertaken on a monthly basis over the winter period in response to ongoing noise

related complaints at the "Kurrajong" residence. Due to the landholder not allowing monitoring at the "Kurrajong" property, all monitoring associated with the "Kurrajong" property had to be performed at the boundary of the "Claremont" and "Kurrajong" property. The noise monitoring sites are identified on Figure 2.

A copy of each of the routine monitoring reports is presented in Appendix 7.

The following sub-sections present a summary of the outcomes of each programme.

3.10.3.2 May 2008 Noise Monitoring

On the 15th May 2008, attended monitoring was undertaken at "Kurrajong"(property boundary) and "Bow Hills" in response to a request from the Department of Planning following noise related complaints from the "Kurrajong" property. Spectrum Acoustics reported that:

- During the monitoring event, winds were gusting above 3m/s thereby impacting on noise measurements;
- During the measurement period, noise level from the mine was estimated at 34 dB(A) at the "Kurrajong"/"Claremont" boundary. Applying the noise model constructed for the operation, and extrapolating noise levels back to the "Kurrajong" residence resulted in a mine noise level of approximately 26dB(A) ; ie an 8dB(A) difference. This is indicative of compliance with noise levels at the "Kurrajong" residence.
- Noise levels at "Bow Hills" were measured at 29dB(A) during the monitoring event and well within compliance limits.

3.10.3.3 June 2008 Noise Monitoring

On the 20th June 2008, attended monitoring programmes were undertaken at "Bow Hills" (N1), "Westhaven" (N2), "Naroo" (N3), "Greylands" (N4) and "Kurrajong" (N5). "Kurrajong" measurements were taken from the "Kurrajong"/"Claremont" boundary. Spectrum Acoustics reported that:

- L_{Aeq} noise levels (all sources) ranged from 27 dB(A) to 48 dB(A), all sources;

- Mine noise emissions at "Bow Hills" (34)dB(A) and "Naroo" (34)dB(A) were within compliance limits;
- Mine noise emissions at "Westhaven" (36)dB(A), "Greylands" (38) dB(A) and "Kurrajong" (48) exceeded the mine noise criteria by between 1 and 13 dB(A). All measurements were undertaken during the period 7:30am – 8:40am during which a temperature inversion was prevalent. Additional monitoring at the "Kurrajong" monitoring point during different times of the day confirmed compliance with noise levels indicating temperature inversion early in the morning was a cause of additional noise impacts.

3.10.3.4 July 2008 Noise Monitoring

On the 11th July 2008, attended noise monitoring was undertaken at the boundary between "Kurrajong" and "Claremont" in response to complaints from the "Kurrajong" residence. Again, access to the "Kurrajong" property was denied for the purposes of noise monitoring. Noise measurements were taken over a defined period from 7am to 9am to confirm the impact of inversion events on noise propagation. Spectrum Acoustics reported that:

- During the survey, the temperature was 4° at 7am, increasing to 11° by 9am. Wind was from the south west at 0.5m/s. Conditions were clear.
- L_{Aeq} noise levels (mine related) ranged from 41 dB(A) at 7:02am to <30 dB(A) at 9:00am;
- The resulting reduction in noise levels over time coincided with warming temperature and cessation of temperature inversion conditions.

3.10.3.5 August 2008 Noise Monitoring

On the 12th August 2008, attended noise monitoring was undertaken at the boundary between "Kurrajong" and "Claremont" in response to complaints from the "Kurrajong" residence. Again, access to the "Kurrajong" property was denied for the purposes of noise monitoring. Noise measurements were taken over a defined period from 7:30am to 9:00am to confirm the impact of inversion events on noise propagation. Spectrum Acoustics reported that:

- During the survey period, ground level temperature rose from 1° to 9°
- Mine noise ranged from 47dB(A) at 7:39am to 27 dB(A) at 8:53am.
- Warming surface temperature during the survey would have removed an intense nocturnal inversion, hence the noise propagating conditions were reduced during the survey.

3.10.3.6 September 2008 Noise Monitoring

On the 30th September 2008, attended monitoring programs were undertaken at "Bow Hills" (N1), "Westhaven" (N2), "Naroo" (N3) "Greylands" (N4) and "Kurrajong" (N5). "Kurrajong" measurements were taken from the "Kurrajong"/"Claremont" boundary. Spectrum Acoustics reported that:

- L_{Aeq} noise levels (mine related) ranged from 20 dB(A) to 26 dB(A).
- Mine noise was compliant at all receivers during the survey.
- Results from this round of monitoring indicated the winter inversion period had subsided with noise propagation potential back to normal atmospheric conditions.

3.10.3.7 December 2008 Operational Noise Monitoring

On the 17th December 2008, attended monitoring was undertaken at "Bow Hills" (N1), "Westhaven" (N2), "Naroo" (N3), "Greylands" (N4) and "Kurrajong" (N5). "Kurrajong" measurements were taken from the "Kurrajong"/"Claremont" boundary. Spectrum Acoustics reported that:

- L_{Aeq} noise levels (all sources) ranged from 37.3 dB(A) to 58.2 dB(A) during the morning of 17th December 2008.
- Mine noise was inaudible at "Westhaven" and "Naroo" during the survey, and measured <20 dB(A) at "Kurrajong", <25 dB(A) at "Bow Hills" and 25 dB(A) at "Greylands".
- Noise emissions from NCM did not exceed the noise criterion of 35 dB(A) at any time throughout the attended survey.

3.10.3.8 March 2009 Operational Noise Monitoring

On the 23rd and 24th March 2009, attended monitoring programs were undertaken at "Bow Hills" (N1), "Westhaven" (N2), "Naroo" (N3), "Greylands" (N4) and "Kurrajong" (N5). "Kurrajong" measurements were taken from the "Kurrajong"/"Claremont" boundary. Spectrum Acoustics reported that:

- L_{Aeq} noise levels (all sources) ranged from 31.4 dB(A) to 42.3 dB(A) during the morning survey between 7:45am and 9:28am.
- Mine noise was inaudible at "Westhaven" and "Greylands" during the morning survey, with measurements of 27 dB(A) at "Bow Hills" and <15 dB(A) at "Kurrajong".
- L_{Aeq} noise levels (all sources) ranged from 38.9 dB(A) to 47 dB(A) during the evening survey between 7:31pm and 9:14pm.
- Mine noise was inaudible at "Naroo" and "Westhaven" during the evening survey, with measurements of <15 dB(A) at "Kurrajong", 23 dB(A) at "Greylands", and 25dB(A) at "Bow Hills".
- L_{Aeq} noise levels (all sources) ranged from 26.1 dB(A) to 46.8 dB(A) during the night survey between 10:29pm and 11:49pm.
- Mine noise was inaudible at "Naroo", "Westhaven", "Greylands", and "Bow Hills", with a reading of <15 dB(A) at "Kurrajong". Additional measurements were taken at the "Kurrajong" monitoring point through to 2:13am in the morning, with the highest measured result being 19 dB(A).
- Noise emissions did not exceed the noise criteria at any time throughout the survey.

Unattended noise monitoring was also carried out throughout the reporting period. These results are contained within Appendix 7. In general, the attended monitoring results confirms general compliance at the Narrabri site albeit it confirmed temperature inversion conditions over the winter period contributed to higher than expected noise levels at the Kurrajong/Claremont boundary. Recent monitoring has identified that noise levels have reduced significantly since the de-mobilisation of the surface construction fleet. Narrabri Coal intend to place a Barn Owl monitor at the Kurrajong/Claremont boundary for 1 month over May/June to assess noise levels post

surface construction over the winter period in order to assess ongoing temperature inversion impacts.

In terms of continued improvement with regard to noise mitigation the following activities have occurred at the Narrabri site in an effort to reduce noise impacts:-

- Surface construction fleet noise tested to ascertain sound power levels were within specification for that type of equipment prior to coming onto site.
- Surface construction activity confined generally to daytime operations.
- Frequency of monitoring increase to monthly to assess noise levels at sensitive receptors during the winter period.
- Modified start up hours for surface machinery in an effort to reduce noise impact during cold winter mornings.
- Tar sealing of access road and 7km of adjacent Kurrajong Creek Road.
- Rail loop at loading point cut below natural surface level to reduce noise impact from load-out.
- Establishment of Barn Owl monitor at “Kurrajong”/”Claremont” boundary to assess real time monitoring results over a monthly period to determine if further actions are required.

Surface construction activity over the winter period proved to have greater impact due to presence of severe temperature inversion conditions. It is expected that the de-mobilisation of the surface construction fleet will significantly reduce noise propagation from surface as the operation progresses. Narrabri Coal made every effort to assess noise impacts at the “Kurrajong” property, however, the inability to monitor within reasonable proximity to the residence created difficulties in assessment of actual impact. Consideration to the impacts at “Kurrajong” is still under way, with a Barn Owl monitor currently logging 24 hours 7 days per week for a monthly period to generate suitable data for analysis.

Over the life of the operation to date, there have only been noise related complaints from the owner of the “Kurrajong” property.

3.11 Visual, Light

3.11.1 Management

The Narrabri Coal Mine is positioned to the west of the Kamilaroi Highway, upslope of the main road, and is thereby visible to passing motorists and to adjacent property holders to the east. Lights from the mine site are visible during the night, however, is not considered as a significant detrimental impact given the distance from adjacent non-project related residences. Additional lighting has also been established at the intersection of the highway with the mine access road to illuminate the adjacent rail crossing and in this regard this lighting is more prevalent as opposed to lighting on the mine site itself. Over the course of the construction phase, there have been no complaints pertaining to the visual impact of the development. The project site is maintained in a clean and tidy condition at all times, with areas of disturbance reshaped and rehabilitated as soon as practicable. The constructed amenity bund, as shown in Plate 9, on the southern and western boundary of the project site obscures views of the development site from the south and west, whilst vegetation associated with Kurrajong Creek obscures views to the site from the north. Narrabri Coal has undertaken strategic tree planting across the project site to further enhance visual screening from adjacent areas.

Plate 9: Visual Amenity Bund – adjacent to Kurrajong Creek Road

3.11.2 Performance

The surface construction phase of the development will be the most visual aspect of the whole development. Given the level of construction activity that has occurred over the last 12 months, the site has responded well to reshaping and revegetation programs which has reduced the overall visual impact of the project.

At the end of the 2008/2009 Reporting Period, a total of 12.5 ha had been reshaped and seeded at the Narrabri Coal Mine. This comprised the amenity bund, dam walls and the inside walls of the Box Cut. In addition to these areas, seeding was also carried out on surface flow channels, contour banks and road verges. It is expected that these reshaped areas will be further enhanced as groundcover and tree establishment progresses. The next reporting period will result in the additional development of coal stockpiles and loading bins which are expected to blend with the existing development with minimal visual impact.

3.12 Aboriginal Heritage Management

3.12.1 Sites Management and Performance

An investigation of Aboriginal cultural heritage was undertaken as part of the Environmental Assessment for the Narrabri Coal Mine and identified 7 sites of significance within the project area. Five of these are associated with the adjacent Kurrajong Creek, and not subject to surface disturbance activity, one site within the cleared open area of the pit top, and one site within the heavily vegetated area of the adjacent Forest, again not subject to surface disturbance activity. The sites are described as follows:-

- Site 1 – Wild Orange trees associated with the bank of Kurrajong Creek.
- Site 2 – Low density artefact scatter on creek terrace.

- Site 3 – Dead Tree with scar on standing section of tree.
- Site 4 – Low density artefact scatter on creek terrace.
- Site 5 – Isolated find along gully adjoining Kurrajong Creek.
- Site 6 – 1 Silcrete flake located in cleared paddock.
- Site 7 – Cultural scar on fallen tree.

Following negotiations with the Narrabri Local Aboriginal Land Council and the Gomeroi Narrabri People, it was determined that those sites most likely impacted by operations comprised sites 1, 4, 5 and 6 which all occur within the pit top area. Sites 1, 4 and 5 are associated with Kurrajong Creek, and to ensure avoidance of this area by operations, this section of the creek was fenced and signage placed declaring it to be of Aboriginal significance. Site 6 is located in an area of open paddock not likely to be impacted by surface construction activity. It was intended to fence around the subject site prior to construction works commencing, however a reconnaissance survey by Narrabri Local Aboriginal Land Council, Gomeroi Narrabri People and the Archaeological consultant were unable to locate the artefact. Sites 2 and 3, whilst outside the Pit Top Area, have also been protected via the fencing undertaken for Sites 1, 4 and 5 and in this regard should not be subject to disturbance associated with mining activities. Site 7 is located in dense vegetation and not subject to surface disturbance, in this regard no additional management action was required.

During construction activities, representatives of the Narrabri Local Aboriginal Land Council and the Gomeroi Narrabri People were present throughout soil stripping campaigns to ensure appropriate survey for additional items of Aboriginal significance. No additional artefacts were found.

3.12.2 Consultation

Narrabri Coal maintains contact with the representative Aboriginal groups in order to ensure appropriate engagement with the Aboriginal community prior to surface disturbance activity. This will continue throughout the life of the operation. The representative groups have also recently been involved in the additional survey works

as undertaken for the ongoing Stage 2 Assessment work for progression to the a longwall operation.

To date, the measures in place to protect Aboriginal Cultural Heritage are considered satisfactory, with all measures identified in the Environmental Assessment, the Aboriginal Cultural Heritage Management Plan, and the project approval in place. No additional Aboriginal Cultural Heritage items have been discovered during the operation of the mine over the reporting period.

3.13 Natural Heritage

There are no features of Natural Heritage within the DA Area and hence, no specific management procedures are required.

3.14 Spontaneous Combustion

3.14.1 Management

Coal from the Narrabri Project is from the Hoskissons Coal Seam which has been identified as being within the high to very high risk category for spontaneous combustion. As a consequence, a Spontaneous Combustion Management Plan was developed for the site which details the measures to be taken to reduce the potential for spontaneous combustion incidents to occur, and the personnel responsible for these processes. The management plan will be managed as a living document to ensure the most up to date information and experience is incorporated into all measures associated with reducing the potential for spontaneous combustion incidents.

3.14.2 Performance

As the site is not yet producing coal there have been no incidents of spontaneous combustion over the reporting period.

3.15 Bushfire Management

3.15.1 Management

Narrabri Coal Operations is equipped to attend to emergency fire situations with appropriate machinery and personnel. Any such involvement in such situations would be at the discretion of the local Rural Fire Service (Baan Baa).

3.15.2 Performance

There were no bushfire incidents on or adjacent to the Project Area during the 2008/2009 Reporting Period.

3.16 Mine Subsidence

As active mining has not yet commenced there has been no mine subsidence. Under Stage 1 operations, mine subsidence has been predicted to approximate 20mm.

3.17 Hydrocarbon Contamination

3.17.1 Management

It is Narrabri Coal's objective that:

- all bulk hydrocarbons, i.e. fuel, oils, grease etc (both new and waste) retained at the Narrabri Coal Mine be contained within bunded areas within the contained water management system as described in Section 2.8.2;
- all fixed or portable equipment incorporate self-contained bunding;
- hydrocarbon-contaminated materials be disposed of appropriately; and
- minor spillages, if occurring, are cleaned up and the contaminated soil either bio-remediated or transferred off-site to an appropriately licensed waste disposal area.

Major spillages, if occurring, would be treated in accordance with a three-phase system of containment, collection and remediation.

3.17.2 Performance

Narrabri Coal's procedures for hydrocarbon management have been effective throughout the Reporting Period with:

- no surface or groundwater contamination evident or reported by landowners; and
- no requirement for off-site disposal of contaminated materials.

3.17.3 Greenhouse Gas Emissions

Narrabri Coal remains committed to minimising emission levels as much as possible throughout the life of the development. To date, greenhouse gas emissions have been predominantly associated with diesel consumption through the surface construction fleet and diesel generators for power supply. Efficiency of operations has been the only means available to reduce greenhouse gas emissions to date, with specific attention given to minimising haul distance for overburden and soil materials, and maximising machine operations where possible rather the demobilising plant and remobilising at a later date. The main example of this being the construction of Ponds B and C within the rail loop whilst suitable equipment was immediately available as opposed to the original schedule of delaying construction of these ponds until later in the development. This also has the added benefit of reducing costs by removing the additional mobilisation costs.

During the reporting period, a total of 2,295,479 litres of diesel was used at the Narrabri Coal Mine Site for construction related purposes. Assuming an energy content of Automotive Diesel Oil of 38.6MJ/L and using Table 3 of the National Greenhouse Accounts NGA Factors – January 2008, the estimated direct – Scope 1 Greenhouse Gas emissions including all CO^2 and non CO^2 gasses are as follows:-

	Diesel Fuel Usage (KL)	Emission Factor t CO^2 –e/KL	Equivalent Tonnes
GHG 2008/2009	2,295	2.7	6196

Whilst Narrabri Coal did initiate 4 blasts during the reporting period, the size of these blasts were relatively small. With only four blasts during the period, the estimation of emissions against blasting was considered minimal and not likely to impact on the equivalent tonnes of emissions as presented above.

As the Narrabri operation will connect to mains power in the coming months, the scope of emissions will change over the next reporting period reducing overall diesel consumption and increasing mains power consumption. Narrabri Coal Operations has developed an Energy Savings Action Plan which defines energy savings initiatives and measurables, which will directly feed into next years AEMR once mains power consumption commences. The Narrabri operation also forms part of the wider Whitehaven group which is registered under the Greenhouse Challenge Plus Program and committed to reporting emission levels and improvement initiatives on an annual basis.

Narrabri Coal will also be developing a Greenhouse Gas Minimisation Plan as required under the Project Approval. This will be completed prior to the commencement of production and will be developed utilising the services of an appropriately qualified consultant.

3.18 Gas Drainage / Ventilation

Construction of the ventilation drift commenced in conjunction with the drivage of the other 2 drifts for vehicle/personnel transport and the conveyor drift for transport of coal from pit bottom. It is expected that drift construction to pit bottom will be completed during October 2009.

In conjunction with the drift drivage, actions have commenced with regard to in seam gas drainage including design and procurement of a gas vacuum plant. This work commenced at the end of the current reporting period and will be discussed in greater detail in next year's AEMR.

3.19 Public Safety

3.19.1 Management

The Narrabri Coal Mine surface facilities area is located wholly on WCL owned land and is appropriately signed allowing authorised access only. The site is visible from the Kamilaroi Highway and accessible via an access road from the Highway across the main northern railway line. The Pit Top area is fully fenced.

Visitors to the mine are required to report to the mine office and unauthorized personnel are not permitted to move around the mine area unaccompanied.

3.19.2 Performance

The procedures in place have been effective throughout the Reporting Period with no reported instances of unauthorised entry or access across the site.

3.20 Feral Animal Control

Feral animals are not a significant land management issue on WCM's landholding and are limited to isolated occurrences of foxes, hares and rabbits.

In view of the low frequency of occurrence, and in the absence of an extensive programme by all surrounding landowners, no broad scale feral animal control programme was considered warranted during this Reporting Period.

Narrabri Coal will continue to monitor feral animal occurrences and implement necessary control programmes if and when necessary.

3.21 Land Capability

The majority of land currently disturbed by construction activity is classified as Land Capability Class III.

On completion of all mining activities, the successful rehabilitation of areas of disturbance and the relinquishment of the mining leases, the land affected by mining within the project area will, in the main, be returned to a classification similar to that prior to mining. As a consequence, the area comprised within the Pit Top will be returned to a Class III land capability. At the end of the reporting period, rehabilitation works such as reshaping and seeding of previously disturbed areas had been undertaken ensuring the visual impact of the development was kept to a minimum and that the soil resources of the area is appropriately managed for future land use requirements.

3.22 Meteorological Monitoring

3.22.1 Introduction

In June 2006, a meteorological station was commissioned on the "Claremont" property. The station has been operating continuously since that time recording 15 minute wind speed, wind direction, temperatures, humidity and rainfall.

Daily meteorological data for the Reporting Period is presented in Appendix 8.

3.22.2 Rainfall

Rainfall data for the Reporting Period is presented in Table 8.

TABLE 8

Rainfall Data 01 April 2008 – 31 March 2009

Month	Monthly Rainfall Reporting Period	Mean *[1]	Raindays Reporting Period	Mean *[1]
April 2008	12.2	39.1	5	2.2
May 2008	6.8	48.3	5	2.6
June 2008	49.8	49.2	6	3.3
July 2008	25.4	47.1	7	3.1
August 2008	55.2	41.6	5	3.0
September 2008	89.0	41.5	6	3.0
October 2008	49.0	53.0	6	3.5
November 2008	129.6	60.9	14	3.8
December 2008	189.4	75.6	11	4.0
January 2009	35.6	83.8	5	3.6
February 2009	105.2*	61.9	7	3.1
March 2009	3.4	54.7	1	2.8
TOTAL	750.6	656.7	78	38

* Data obtained from Narrabri Airport due to site weather station malfunction

*[1] Narrabri West Post Office Averages from 1891-2009.

A review of Table 8 shows that the total rainfall at the mine site during the Reporting Period was 750.6 mm and 93.9mm above the long term average for Narrabri West Post Office. Below average rainfall was experienced for 5 months of the year, with above average falls occurring on 5 months, with average falls on 2 months. It is clear the majority of the rainfall was associated with events during the summer months, with significant falls occurring during isolated storm events through December 08 and February 09. Total raindays during the reporting period was well above average, albeit many of these rain-days were associated with measurements between 0.2mm – 5mm. Ongoing monitoring from the meteorological station will provide for comparative analysis of weather information over time, and will be of relevance particularly to success of rehabilitation activity.

3.22.3 Temperature

Average maximum and minimum temperatures for the Reporting Period are presented in Table 9 together with long-term monthly averages for Narrabri West Post Office (Bureau of Meteorology Station 055023).

TABLE 9

Average Temperatures – Narrabri Coal Mine

April 2008 to March 2009

Month	Average Daily Temperature			
	Reporting Period (°C)		Station 053030 (°C)	
	Min	Max	Min	Max
April 2008	2.1	28.6	11.9	27.3
May 2008	3.4	25.7	8.3	22.5
June 2008	1.8	22.5	5.2	18.7
July 2008	-0.7	22.7	3.7	18.0
August 2008	-2.3	24.7	4.6	19.8
September 2008	-1.5	29.9	7.6	23.4
October 2008	4.6	36.7	11.7	27.1
November 2008	7.6	34.1	14.8	30.1
December 2008	9.9	36.7	17.7	33.0
January 2009	14.9	38.4	19.3	33.8
February 2009	19.4*	33.4*	19.1	33.2
March 2009	9.5	33.8	16.4	31.2

*Temp from Narrabri West Post Office due to malfunction with Narrabri Site Meteorological Station.

Table 9 shows that:

- average minimum temperatures at the mine site were generally much cooler than the long term average minimum temperatures from the Narrabri Post Office Station.
- average maximum temperatures at the mine site were generally much warmer than the long term average maximum temperature from the Narrabri Post Office Station.
- Colder than expected temperatures over the winter period would have contributed to the incidence of inversion over the winter period which resulted in more significant noise impacts as measured at the “Claremont”/”Kurrajong” boundary. These inversion incidents also coincided with the presence of the surface

construction fleet for the pit top development. Noise level measurements conducted throughout June and July 2008 were assessed in conjunction with temperature measurements from the meteorological station and confirmed temperature variations between the 2m and 10m temperature sensor of between 1.6°C and 5.9°C early of a morning. This level of difference in temperature over the 2m and 10m temperature sensors equates to an inversion incidence well above 3°C/100m.

3.22.4 Wind Speed and Direction

Fifteen minute average wind speed and direction data is collected from the Narrabri meteorological station as it, together with operational records and environmental monitoring results, can be used to assess the environmental effects or consequences of specific activities undertaken at the mine or in surrounding areas.

Wind roses for the 12 months from April 2008 to March 2009 are included in Appendix 8. The wind roses confirm the following trends.

- During Autumn 2008 (April-May), winds were predominantly from the South East, and predominantly in the wind speed range of slight to moderate.
- During Winter 2008 (June-August), winds were split from the South East to the North West, generally of slight to moderate velocity.
- During Spring 2008 (September – November) winds were predominantly from the North West and South East, generally of slight to moderate velocity.
- During Autumn 2009 (March 2009) winds were predominantly from the South East.

The annual wind rose shows South-East winds as the dominant wind direction, with north westerly winds co-dominant. Calm conditions prevailed for 15.27% of the time.

3.22.5 Inversions

Narrabri Coal established an additional temperature sensor at its meteorological station during May 2008 in order to establish temperature variation over 2m and 10m to assess for incidence of inversion. On review of the temperature data inversion conditions >3°C were encountered on numerous occasions throughout the winter period from May through to October 2008, and most notably during the night and early morning. It is for this reason the noise levels as measured at the "Claremont"/"Kurrajong" boundary were more acute than expected from the initial modelling undertaken. Specific assessment of inversion strength found temperature variation between the 2m and 10m temperature sensor of 5.9° during June 2008. This equates to an inversion strength significantly greater than 3°/100m when extrapolating out from the 2m-10m temperature range. Advice pertaining to this was referred to the Department of Environment and Climate Change and the Department of Planning at the time. As the majority of surface construction works are now completed across site, the noise impacts associated with ongoing operations at the Narrabri site are expected to be significantly reduced, even under inversion conditions. A Barn Owl monitor has recently been established at the Kurrajong/Claremont boundary to assess noise levels on a continuous basis for a short term to assess ongoing noise compliance.

Section 4: COMMUNITY RELATIONS

4.1 Environmental Complaints

Narrabri Coal Operations maintains a designated complaints line, with messages checked on a daily basis by site personnel. In the event of a complaint, details pertaining to the complainant, complaint and action taken are recorded on a "Complaints Form".

During the Reporting Period, several complaints were received on the complaints line, with others received direct from the Environmental Manager or Project Manager. The nature of the complaint, details and response are presented in Table 10.

TABLE 10

Complaints Summary 2008 / 2009 AEMR Reporting Period

Method	Complainant	Date/Time of Complaint	Nature of Complaint	Investigation	Action Taken / Follow-up
Complaints line	Mark Lennox	15/02/2008 12:15pm	Speed limit along Kurrajong Creek Road.	The speed limit on Kurrajong Creek Road is a matter for Council. Council were advised of the complainants concerns.	Council to follow up with complainant.
Complaint to DECC	Mark Lennox	10/06/2008	Noise from site operations	DECC advised Mr Lennox to allow consultants on site so noise measurements could be taken. Mr Lennox indicated he may allow it if DECC were also on site at the time.	Subsequent requests to allow monitoring on site were refused.
Complaints line	Warren Chapman	25/07/2008 12:30pm	ARTC vehicles blocking view down rail line at rail crossing on Kurrajong Creek Road.	ARTC immediately contacted and asked to relocate vehicles.	Vehicles relocated – no further actions required.
Complaint to Environmental Manager	Mark Lennox	26/08/2008 8:00am	Mine Noise & request for real time monitor	Advised Mr Lennox of incidence of inversion and impact on noise levels	Advised Mr Lennox of change to start up procedure to reduce noise impact and that the company would initiate real time monitoring if required by the Dept.
Complaint to Environmental Manager	Mark Lennox	27/09/2008 7:00am	Noise from Mine site	Environmental Manager out of service range at time of call so no contact made with complainant until 29/09/08. Advised Mr Lennox to use Complaints Line or Emergency Contact on mine site. Auxillary fans found to be the cause of the	Met with complainant on 1st October to discuss issues further at which time no resolution to on site monitoring could be resolved.

Method	Complainant	Date/Time of Complaint	Nature of Complaint	Investigation	Action Taken / Follow-up
				noise.	
Complaint to Environmental Manager	Mark Lennox	29/10/2008 7:40am	Low frequency vibration through his house	No identified change in operating activity, however may have been from auxillary fan.	Advised Mr Lennox that a formal letter would issue pertaining to noise and request for on site monitoring
Complaint to Project Manager	Mark Lennox	19/11/2008 1:30am	Noise from mine site causing sleep disturbance	Project Manager travelled out to Lennox property – only underground equipment operating with no specific noise source identified	Sought agreement for access to site to revisit noise model. This was received favourably at time of request. Subsequent discussions not favourable to on site monitoring.
Complaint to Project Manager	Mark Lennox	8/03/2009 8:00am	Grinding noise from mine site	Investigation could not determine noise source.	Arrangements made with Spectrum Acoustics to monitor at site boundary.
Complaint to Project Manager	Mark Lennox	15/03/2009 8:30am	Grinding noise from mine site	Again – source could not be identified	Discussed issue with DoP and formalised arrangements for placement of a Barn Owl monitor at boundary for real time monitoring.

Any complaints that are made are reported to the Community Consultative Committee and documented in the AEMR.

4.2 Employment Status, Demography and Socio-Economic Contributions

4.2.1 Employment Status and Demography

During the Reporting Period, an average of 70 personnel were engaged daily in the operations of the Narrabri Project. This comprised both contract personnel for construction operations as well as Narrabri Coal Operations staff. The number of personnel is steadily increasing with approximately 100 personnel employed at the end of the Reporting Period.

Narrabri Coal has a preference for sourcing personnel from the local area however certain activities requiring specialist knowledge and experience had to be sourced from other locations. Approximately 70% of personnel on site would be considered local.

4.2.2 Social and Economic Contributions

In addition to direct and indirect employment, and the purchase of goods and services from local suppliers, during the Reporting Period Narrabri Coal also contributed to the local community through the provision of funds to both Gunnedah and Narrabri Shire Council's as follows:-

Narrabri Shire Council:	$7,000 for provision of bushfire services
	$13,000 for community infrastructure
	Sealing of 7km of Kurrajong Creek Road
Gunnedah Shire Council:	$20,000 for Gunnedah urban riverine scheme.

As the Narrabri Project has been in construction phase without yet producing any revenue stream, Narrabri Coal Operations Pty Ltd has a deliberate strategy of not providing additional community funding until such time as the operation is producing coal. Upon commencement of production, consideration will then be given to funding of community based projects.

As members of the Gunnedah / Narrabri area community, mine-related employees also contribute socially and economically through their involvement in community sporting, educational and social organizations and expenditure of a component of their disposable income.

4.3 Community Liaison

In accordance with Condition 9 of Schedule 4 of PA 05_0102 a Community Consultative Committee (CCC) was formed within 3 months of the project approval. The committee comprises representatives of Narrabri Shire Council, Narrabri Coal Operations Pty Ltd and the community. The CCC is chaired by an Independent Chairperson Mr Terry Miller.

Since its inception, the CCC has met on a regular basis, meeting 4 times per year in accordance with the condition of consent. Meetings have been held on 14th May 2008, 13th August 2008, 19th November 2008, 25th February 2009.

Narrabri Coal Operations representatives continue to maintain contact with the neighbours in the vicinity of the mine site. These contacts not only provide a means of information dissemination, but also enable Narrabri Coal Operations to ascertain and address any potential issues which may arise from time to time.

Narrabri Coal has run two community open days during the reporting period allowing the community access to the mine site to get an appreciation of the development being undertaken. These open days have been highly successful and have provided the community with an understanding of the scale of development being undertaken.

Section 5: REHABILITATION

5.1 Buildings

During the reporting period, the administration area was relocated from the "Turrabaa" residence into relocatable buildings within the pit top area. The "Turrabaa" residence remains for ongoing use, so no rehabilitation of building areas has been required during the reporting period.

5.2 Rehabilitation of Disturbed Land

5.2.1 Objectives

Narrabri Coal's rehabilitation / land use objectives for the Project Area, i.e. the area within the boundary of ML 1609 are as follows.

(a) Areas affected by mining – short term

(i) Stabilize all earthworks, drainage lines and disturbed areas that are required for mine related activities to minimise erosion and sedimentation.

(ii) Reduce the visibility of mining activities from adjacent properties and the local road network.

(b) Areas affected by mining – long term

(i) Decommissioning and removal of all project-related infrastructure not required for the future use of the site;

(ii) The creation of a low maintenance, geotechnically stable, safe and vegetated landform which blends with the surrounding natural landscape;

(iii) Backfilling the Box Cut and blending the final landform with the surrounding topography such that the visual impact of the post-mining landform is minimised;

(iv) remediating any land contaminated by accumulated salts or hydrocarbon spills;

(v) re-establishment of agricultural land of comparable land capability to that of the pre-disturbance environment, ie. Class III.

5.2.2 Achievements During the Reporting Period

Tables 11 and **12** present a Rehabilitation Summary and listing of maintenance activities undertaken during the reporting period. Rehabilitation of disturbed land undertaken during the Reporting Period comprised seeding of the inside bank of the Box Cut, cover crop establishment on stockpiled topsoil, cover crop establishment on the visual amenity bund, cover crop establishment on dam banks and grass seeding on inside banks of dams, general seeding of areas no longer required during the construction phase. Approximately 320 seedlings were also planted in strategic locations across the pit top area to aid in visual amenity of the surface facilities area.

The visual amenity bund was constructed from materials removed from the Box Cut and then reprofiled using a dozer prior to seeding. The bund will be removed on final rehabilitation of the site with that material used in backfilling of the Box Cut.

Plate 10:General reshaping works around rail loop – March 2009

Plate 11: Pit Top Area – seedlings planted in drainage line.

TABLE 11
Rehabilitation Summary

		Area Affected (hectares)			
		This Report Period (as of 31.03.09	**Last Report Period (N/A)**	**Next Report Period (estimated)**	
A:	**MINE LEASE AREA**				
A1	**Mine Lease(s) Area**				
B:	**DISTURBED AREAS**				
B1	**Infrastructure area** (other disturbed areas to be rehabilitated at closure including facilities, roads)	24.1	N/A	30	
B2:	**Active Mining Area** (excluding items B3 - B5 below)	4.7	N/A	4.7	
B3	**Waste emplacements**, (active/unshaped/in or out-of-pit)	5	N/A	0	
B4	**Tailings emplacements,** (active/unshaped/uncapped)	N/A	N/A	N/A	
B5	**Shaped waste emplacement** (awaits final vegetation)	15.53	N/A	21	
ALL DISTURBED AREAS		49.33	N/A	55.7	F1
C	**REHABILITATION PROGRESS**				
C1	**Total Rehabilitated area** (except for maintenance)	10	N/A	20.53	F2
D:	**REHABILITATION ON SLOPES**				
D1	**10 to 18 degrees**	14	N/A	19	
D2	**Greater than 18 degrees**	3	N/A	3	
E:	**SURFACE OF REHABILITATED LAND**				
E1	**Pasture and grasses**	10	N/A	21	
E2	**Native forest/ecosystems**	0	N/A	0	
E3	**Plantations and crops**	0	N/A	0	
E4	**Other** (include non vegetative outcomes)				

TABLE 12
Maintenance Activities on Rehabilitated Land

NATURE OF TREATMENT	Area Treated (ha)		
	Report period	Next period	Comment/control strategies/ treatment detail
Additional erosion control works (drains re-contouring, rock protection**)**	Nil	Nil	
Re-covering (detail - further topsoil, subsoil sealing etc)	Nil	Nil	
Soil treatment (detail - fertilizer, lime, gypsum etc)	Nil	Nil	
Treatment/Management (detail - grazing, cropping, slashing etc)	Nil	Nil	
Re-seeding/Replanting (detail - species density, season etc)	5	5	Retreatment of area of amenity bund due to cover crop failure.
Adversely Affected by Weeds (detail - type and treatment)	Nil		
Feral animal control (detail - additional fencing, trapping, baiting etc)	*	Nil	* See Section 3.20

5.3 Rehabilitation Monitoring and Performance

Internal rehabilitation / revegetation monitoring undertaken to date has primarily been limited to inspections of water management structures, soil stockpiles and seeded areas for evidence of instability / erosion or poor germination. This process will continue over the life of the mine, with the extent and nature of activities undertaken being consistent with the relevant Mine Operations Plan and management plans prepared in satisfaction of Narrabri Coal's Project Approval.

Given the nature of the operations undertaken at the Narrabri Coal Mine in its first year of operation, the rehabilitation activities undertaken to date are as identified within the current Mining Operations Plan and assessed as being appropriate. A Landscape Management Plan is currently being developed for the site which will formalise ongoing land management activities and ongoing monitoring requirements over the life of the project. The approval of this plan will provide the impetus for more stringent monitoring requirements to be included in the reporting for the next AEMR.

Section 6: CONTINUOUS IMPROVEMENT AND TARGET INITIATIVES

6.1 Objectives

Narrabri Coal Operations Pty Ltd has an ongoing commitment to environmental management and aims to minimize any adverse impacts on the physical, biological, cultural and socio-economic environment in the area of the mine and in surrounding areas.

Improvements in environmental management will be achieved through the effective implementation of the operational and monitoring aspects of the Mining Operations Plan and Landscape Management Plan which, in turn, will incorporate relevant aspects of the various management plans and monitoring programs prepared in accordance with the Mine's relevant Project Approval.

6.2 Achievements to Date

Achievements at the mine in its first year of operations have included:

- the establishment of a working environmental management program and the establishment of culture of environmental awareness / responsibility within all levels of the workforce;
- routine implementation of all relevant aspects of the approved management plans;
- the establishment and maintenance of an open and honest relationship with the neighbours, community in general, regulatory authorities, Local Government and other groups such as the local Aboriginal community. Narrabri Coal Operations recognises that it is part of the community and that its activities have the potential to create benefits which extend beyond the life of the mine. The isolated nature of complaints received to date is indicative of the success of this approach;

- progressive shaping and rehabilitation of the pit top area: The surface facilities area is maintained in a neat and tidy condition and not considered intrusive to local and immediate viewpoints given the scale of operations.
- Inclusion of the operation into the Whitehaven Group Greenhouse Challenge Plus Program and a commitment to reporting greenhouse gas emissions and investigating means of reducing emissions in accordance with that Federal Government initiative.

6.3 Targets and Goals

Targets and goals for the 2009 / 2010 Reporting Period include:

- Maintenance of established groundcover across areas of disturbance on the pit top area;
- Implementation of a Landscape Management Plan across the site to define monitoring requirements and ongoing rehabilitation activities;
- continued improvement in noise management and amenity;
- continued community liaison, support and involvement / education in the Mine's activities;
- compliance with all relevant conditions of all leases, licences and consents; and
- Planting of tubestock across the eastern portion of the visual amenity bund to improve visual aspects of the site and to provide additional screening from the adjacent Kurrajong Creek Road.

NARRABRI COAL OPERATIONS PTY LTD

WHITEHAVEN

50 00 100 200 300 400 450

REDUCTION RATIO
1:4000 @ A0

LEGEND

- Soil Stripping Area (to 28/2/08)
- Soil Stripping Area (2008/2009 AEMR)
- Topsoil Stockpile
- Subsoil Stockpile
- Sediment Basin (Dirty) SB1
- Evaporation/Storage Pond
- Storage Dam (Clean)
- 15cm Topsoil Stripping Depth
- 25cm Subsoil Stripping Depth
- Flow (Dirty)
- Flow (Clean)
- Mining Lease Boundary
- Mining Surface Lease & Colliery Holding Boundary
- P2 Soil Test Pit Site
- (2) Soil Mappng Unit
- Soil Mapping Unit Boundary

ML 1609

KAMILAROI HIGHWAY

ROAD

115 DP757124

60 DP757124

40.235

Amenity Bund

Kurrajong Creek Tributary

SD3 4.7ML

SD4 35ML

P2

ROM PAD

BOX CUT

P6

POND A3 30.8ML

POND A2 30.6ML

POND A1 129.8ML

POND B 209.1ML

POND C 218.3ML

POND D 128.4ML

Containment Bund 16ML

Rail Loop

P1

PRODUCT PAD

P4

SB1 10.9ML

152 DP816020

INDUSTRIAL HARDSTAND

P5

Temporary Site Facilities

Helicopter Pad

Access

Main

SD1 5.9ML

SD2 55.2ML

SD5 11.2ML

151 Creek DP 816020

Kurrajong Tributary

P3

Amenity Bund

WIDE

KURRAJONG CREEK RD

MAYFIELD RD

9 DP757104

3 DP 757104

N6621000

N6620500

N6620000

N6619500

N6619000

E776500 E777000 E777500 E778000 E778500 E779000 E779500

100 00 100 200 300 400 500 600 700 800 900 1000

Scale Bar metres

AEMR PLAN 3
LAND PREPARATION
NARRABRI NORTH MINE

File Ref:	NCAEMR090228
Surveyor:	Todd Shumack
Compiled & Drafted by:	Tim Suter
Date:	28/2/2009

NARRABRI COAL OPERATIONS PTY LTD

WHITEHAWEN

REDUCTION RATIO 1:4000 @ A0

LEGEND

- Soil Covered Slopes (>18°)
- Soil Covered Slopes (10°-18°)
- Soil Covered Slopes (<10°)
- Infrastructure Areas
- Sediment Basin (Dirty) SB1
- Evaporation/Storage Pond
- Storage Dam (Clean)
- Flow (Dirty)
- Flow (Clean)
- Mining Lease Boundary
- Mining Surface Lease & Colliery Holding Boundary
- Contour banks
- Contour (m AHD) (Interval = 5m)
- Aboriginal Site
- Discharge Monitoring Point

ML 1609

ML 1609

KAMILAROI HIGHWAY

KURRAJONG CREEK RD

MAYFIELD RD

ROAD

WIDE

40.235

Amenity Bund

Kurrajong Creek Tributary

115 DP757124

60 DP757124

152 DP816020

9 DP757104

151 DP816020

N6621000

N6620500

N6620000

E778000

E778500

E779000

E779500

SD1 5.9ML

SD2 55.2ML

SD3 4.7ML

SD4 35ML

SD5 11.2ML

SB1 10.9ML

POND A1 129.8ML

POND A2 30.6ML

POND A3 30.8ML

POND B 209.1ML

POND C 218.3ML

POND D 128.4ML

Containment Bund 46ML

BOX CUT

ROM PAD

PRODUCT PAD

INDUSTRIAL HARDSTAND

Temporary Site Facilities

Helicopter Pad

Rail Loop

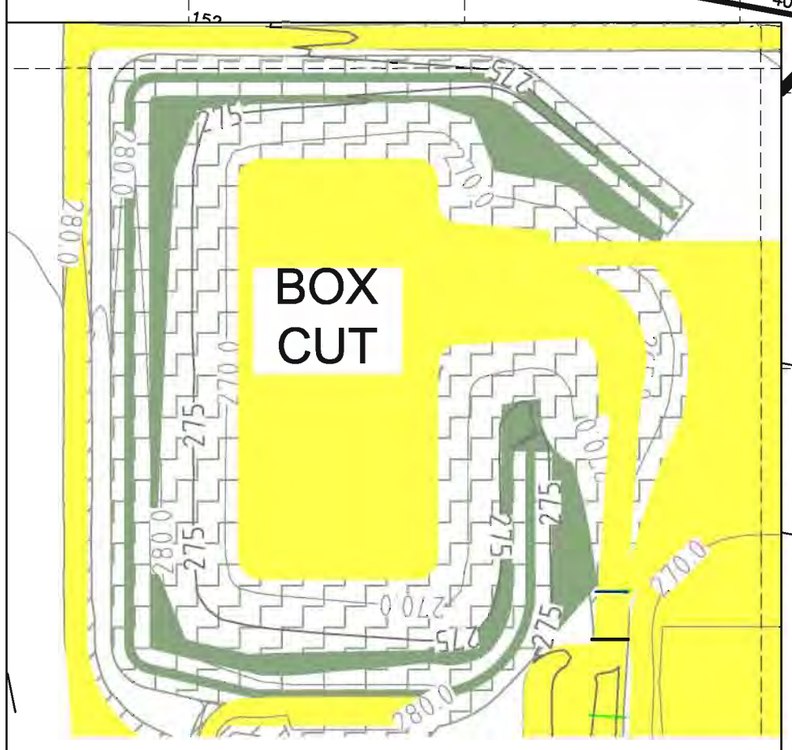
Access Road

Main

Scale Bar metres

100 00 100 200 300 400 500 600 700 800 900 1000

BOX CUT DETAIL



20 00 20 40 60 80 100

Scale Bar metres

AEMR PLAN 4
MINING & REHABILITATION
NARRABRI NORTH MINE

File Ref:	NCAEMR090228
Surveyor:	Todd Shumack
Compiled & Drafted by:	Tim Suter
Date:	28/2/2009

NARRABRI COAL OPERATIONS PTY LTD

WHITEHAVEN

50 00 100 200 300 400 450

REDUCTION RATIO
1:4000 @ A0

LEGEND

- Soil Stripping Area (to 28/2/08)
- Soil Stripping Area (2008/2009 AEMR)
- Topsoil Stockpile
- Subsoil Stockpile
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- Evaporation/Storage Pond
- Storage Dam (Clean)
- 15cm Topsoil Stripping Depth
- 25cm Subsoil Stripping Depth
- Flow (Dirty)
- Flow (Clean)
- Mining Lease Boundary
- Mining Surface Lease & Colliery Holding Boundary
- P2 Soil Test Pit Site
- (2) Soil Mappng Unit
- Soil Mapping Unit Boundary

ML 1609

ROAD

115 DP757124

60 DP757124

KAMILAROI HIGHWAY

Kurrajong Creek Tributary

40.235

Amenity Bund

N6621000

N6620500

N6620000

N6619500

N6619000

152 DP816020

3 DP 757104

9 DP757104

151 Creek DP 816020

Kurrajong Tributary

SD3 4.7ML

SD4 35ML

SD1 5.9ML

SD2 55.2ML

SD5 11.2ML

POND A3 30.8ML

POND A2 30.6ML

POND A1 129.8ML

POND B 209.1ML

POND C 218.3ML

POND D 128.4ML

Containment Bund 16ML

ROM PAD

BOX CUT

PRODUCT PAD

INDUSTRIAL HARDSTAND

SB1 10.9ML

Temporary Site Facilities

Helicopter Pad

Rail Loop

Road

Access

Main

P1 P2 P3 P4 P5 P6

WIDE

MAYFIELD RD

KURRAJONG CREEK RD

E776500 E777000 E777500 E778000 E778500 E779000 E779500

100 00 100 200 300 400 500 600 700 800 900 1000

Scale Bar metres

AEMR PLAN 3
LAND PREPARATION
NARRABRI NORTH MINE

File Ref:	NCAEMR090228
Surveyor:	Todd Shumack
Compiled & Drafted by:	Tim Suter
Date:	28/2/2009

NARRABRI COAL OPERATIONS PTY LTD

WHITEHAVEN

50 00 100 200 300 400 450

REDUCTION RATIO 1:4000 @ A0

LEGEND

- Soil Covered Slopes (>18°)
- Soil Covered Slopes (10°-18°)
- Soil Covered Slopes (<10°)
- Infrastructure Areas
- Sediment Basin (Dirty) SB1
- Evaporation/Storage Pond
- Storage Dam (Clean)
- Flow (Dirty)
- Flow (Clean)
- Mining Lease Boundary
- Mining Surface Lease & Colliery Holding Boundary
- Contour banks
- Contour (m AHD) (Interval = 5m)
- Aboriginal Site
- Discharge Monitoring Point

ML 1609

ML 1609

KAMILAROI HIGHWAY

ROAD

KURRAJONG CREEK RD

WIDE

MAYFIELD RD

40.235

Amenity Bund

Kurrajong Creek Tributary

Kurrajong Creek DP 816020

Kurrajong Tributary

115 DP757124

60 DP757124

152 DP816020

151 DP816020

9 DP757104

N6621000

N6620500

N6620000

E778000

E778500

E779000

E779500

BOX CUT

ROM PAD

PRODUCT PAD

INDUSTRIAL HARDSTAND

Temporary Site Facilities

Helicopter Pad

SB1 10.9ML

SD1 5.9ML

SD2 55.2ML

SD3 4.7ML

SD4 35ML

SD5 11.2ML

POND A1 129.8ML

POND A2 30.6ML

POND A3 30.8ML

POND B 209.1ML

POND C 218.3ML

POND D 128.4ML

Containment Bund 46ML

Rail Loop

Access Road

Main

Scale Bar metres: 100 00 100 200 300 400 500 600 700 800 900 1000

BOX CUT DETAIL

BOX CUT

Scale Bar metres: 20 00 20 40 60 80 100

AEMR PLAN 4
MINING & REHABILITATION
NARRABRI NORTH MINE

File Ref:	NCAEMR090228
Surveyor:	Todd Shumack
Compiled & Drafted by:	Tim Suter
Date:	28/2/2009

Appendix 1

Project Approval 05_0102

Project Approval

Section 75J of the *Environmental Planning and Assessment Act 1979*

I approve the project referred to in schedule 1, subject to the conditions in schedules 2 to 4.

These conditions are required to:

- prevent and/or minimise adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

Frank Sartor MP
Minister for Planning

Sydney 13th Nov, 2007

SCHEDULE 1

Application No:	05_0102
Proponent:	Narrabri Coal Pty Limited
Approval Authority:	Minister for Planning
Land:	See Appendix 1
Project:	Narrabri Coal Project

TABLE OF CONTENTS

DEFINITIONS

AEMR	Annual Environmental Management Report
BCA	Building Code of Australia
CCC	Community Consultative Committee
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
DECC	Department of Environment and Climate Change
Department	Department of Planning
Director-General	Director-General of Department of Planning, or delegate
DPI	Department of Primary Industries
DWE	Department of Water and Energy
EA	Environmental Assessment prepared for Narrabri Coal Pty Limited entitled *Narrabri Coal Project Environmental Assessment* and *Specialist Consultant Studies Compendium*, Volumes 1&2 (April 2007), including the *Response to Public and Government Agency Submissions* (June 2007) and *Preferred Project Report* (June 2007)
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPL	Environment Protection Licence issued under the *Protection of the Environment Operations Act 1997*
Evening	The period from 6pm to 10pm
GSC	Gunnedah Shire Council
Kamilaroi Highway Intersection	The intersection of the Kamilaroi Highway and the mine access road and "Bow Hills" quarry access road (see Figure 4 of Appendix 2)
km	Kilometre
Land	The whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval
Material harm to the environment	Material harm to the environment as defined in *Protection of the Environment Operations Act 1997*
Mining operations	The extraction, processing and transportation of coal on the site, including the formation of mine access drifts
Minister	Minister for Planning, or delegate
NSC	Narrabri Shire Council
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
Privately-owned land	Land that is not owned by a public agency, or a mining company (or its subsidiary)
Proponent	Narrabri Coal Pty Limited or any other person or persons who rely on this approval to carry out the project that is subject to this approval
Project	The Narrabri Coal Project described in the EA
RTA	Roads and Traffic Authority
ROM	Run-of-mine
Site	Land to which the project application applies (see Appendix 2)
Statement of Commitments	The Proponent's commitments in Appendix 4
Subsidence	Subsidence of the land surface caused by underground coal mining

SCHEDULE 2
ADMINISTRATIVE CONDITIONS

Obligation to Minimise Harm to the Environment

1. The Proponent shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.

Terms of Approval

2. The Proponent shall carry out the project generally in accordance with the:
   (a) EA;
   (b) statement of commitments (see Appendix 3); and
   (c) conditions of this approval.

   Note: The general layout of the project is shown in Figure 1 of Appendix 2.

3. If there is any inconsistency between the above documents, the later document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.

4. The Proponent shall comply with any reasonable and feasible requirements of the Director-General arising from the Department's assessment of:
   (a) any reports, plans, programs, strategies or correspondence that are submitted in accordance with the conditions of this approval; and
   (b) the implementation of any actions or measures contained in these reports, plans, programs, strategies or correspondence.

Limits on Approval

5. Mining operations may take place on the site for 21 years from the grant of the mining lease for the project.

   Note: Under this Approval, the Proponent is required to rehabilitate the site to the satisfaction of the Director-General and DPI. Consequently this approval will continue to apply in all other respects other than the right to conduct mining operations until the site has been rehabilitated to a satisfactory standard.

6. The Proponent shall not extract more than 2.5 million tonnes of ROM coal a year from the site.

7. The Proponent shall transport all coal from the site by rail.

Management Plans / Monitoring Programs

8. With the approval of the Director-General, the Proponent may submit any management plan or monitoring program required by this approval on a progressive basis.

Structural Adequacy

9. The Proponent shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

   Notes:
   - *Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works.*
   - *Part 8 of the EP&A Regulation sets out the requirements for the certification of the project.*

Demolition

10. The Proponent shall ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures*, or its latest version.

Operation of Plant and Equipment

11. The Proponent shall ensure that all plant and equipment used on site is:
    (a) maintained in a proper and efficient condition; and
    (b) operated in a proper and efficient manner.

Planning Agreements

12. Within 12 months of this approval, the Proponent shall enter into a planning agreements with Narrabri Shire Council (NSC), Gunnedah Shire Council (GSC) and the Minister in accordance with:
    (a) Division 6 of Part 4 of the EP&A Act; and
    (b) the terms of the Proponent's offer to the Minister on 7 September 2007, which includes the matters set out in Appendix 4.

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

WATER MANAGEMENT

Note: These conditions should be read in conjunction with sections 6, 7, 8 and 11 of the Statement of Commitments.

Great Artesian Basin

1. Within 5 years of the date of this approval, the Proponent shall ensure that any loss of water flow into the Great Artesian Basin aquifers (equal to the maximum predicted impact, or the measured impact of the project, whichever is the greater), is managed, licensed or offset to the satisfaction of DWE.

   Note: The EA predicts a maximum impact of 100 megalitres a year for Great Artesian Basin aquifers in year 50 of the project.

Groundwater Model

2. Within 12 months of the commencement of mining operations, the Proponent shall undertake a transient calibration of the groundwater model presented in the EA, in consultation with DWE and DECC, and to the satisfaction of the Director-General.

3. Following the completion of the transient calibration of the groundwater model and the first annual review of the water balance, the Proponent shall prepare a Dewatering Contingency Plan. This plan must:
   (a) be prepared in consultation with DWE and DECC and to the satisfaction of the Director-General;
   (b) identify the freeboard required to prevent the evaporation/storage ponds from discharge of water under weather conditions of a 1 in 100 year 72 hour storm event for the site;
   (c) contain measures to ensure minewater is not pumped to the evaporation/storage ponds once this freeboard level is reached;
   (d) identify lead times required for the construction of a water conditioning plant to ensure the capacity of the site's evaporation /storage ponds is not exceeded (see below);
   (e) refine its estimates of quantities of salts that would be accumulated within the evaporation/storage ponds over the life of the project;
   (f) identify how it would manage and/or dispose of these accumulated salts, in consultation with DWE and DECC, and to the satisfaction of the Director-General.

4. The Proponent must commence construction of the water conditioning plant identified in condition 10(d) when daily mine dewatering volumes exceed 0.88 megalitres, or an alternative trigger point based on a review of the water balance and model and established in consultation with DWE and DECC, and approved by the Director-General.

Discharge

5. Except as may be expressly provided for by an EPL, the Proponent shall not discharge any surface waters from the site. However, product water from the water conditioning plant may be transferred to water users in accordance with an approved Water Management Plan (see below).

Evaporation/Storage Ponds

6. The Proponent shall:
   (a) construct evaporation/storage ponds incorporating the use of low permeability layers to manage minewater generated by the project;
   (b) prior to commencement of construction, submit pond designs and a construction QA/QC program to DECC; and
   (c) prior to commissioning the ponds, summit an "as constructed" report, produced by an experienced and qualified engineer, to DECC;
   to the satisfaction of the Director-General.

Water Management Plan

7. The Proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Director-General. This plan must be submitted to the Director-General for approval prior to the commencement of construction activities (not including the construction of the Kamilaroi Highway

intersection) in consultation with DECC and DWE by suitably qualified expert/s whose appointment/s have been approved by the Director-General and include a:

(a) Site Water Balance;
(b) Erosion and Sediment Control Plan;
(c) Surface Water Monitoring Plan;
(d) Groundwater Monitoring Program; and
(e) Surface and Groundwater Response Plan, setting out the procedures for:
    - investigating, and if necessary mitigating, any exceedances of the surface or groundwater assessment criteria (see below); and
    - responding to any unforeseen impacts of the project.

Site Water Balance

8. The Site Water Balance must:
   (a) include details of:
       - sources and security of water supply;
       - water use on site;
       - water management on site;
       - off-site water transfers;
       - reporting procedures;
   (b) describe measures to minimise water use by the project; and
   (c) be reviewed and recalculated each year in the light of the most recent water monitoring data.

Erosion and Sediment Control

9. The Erosion and Sediment Control Plan must:
   (a) be consistent with the requirements of *Managing Urban Stormwater: Soils and Construction* manual (Landcom, 2004), or its latest version;
   (b) identify activities that could cause soil erosion and generate sediment;
   (c) describe measures to minimise soil erosion and the potential for transport of sediment to downstream waters;
   (d) describe the location, function, and capacity of erosion and sediment control structures; and
   (e) describe what measures would be implemented to monitor and maintain the structures over time.

Surface Water Monitoring Program

10. The Surface Water Monitoring Plan must include:
   (a) detailed baseline data on surface water flows and quality in creeks and other waterbodies that could be affected by the project;
   (b) surface water impact assessment criteria;
   (c) a program to monitor the impact of the project on surface water flows and quality;
   (d) procedures for reporting the results of this monitoring.

Groundwater Monitoring Program

11. The Groundwater Monitoring Program must include:
   (a) further development of the regional and local groundwater model;
   (b) detailed baseline data to benchmark the natural variation in groundwater levels, yield and quality (including at any privately owned bores in the vicinity of the site);
   (c) groundwater impact assessment criteria;
   (d) a program to monitor the impact of the project on groundwater levels, yield and quality;
   (e) a program to monitor, (by the use of shallow piezometers/lysimeters), detect, and quantify any leakage from the site's evaporation/storage ponds; and
   (f) procedures for reporting the results of this monitoring.

NOISE

Note: These conditions should be read in conjunction with section 15 of the Statement of Commitments.

Impact Assessment Criteria

12. The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately-owned residence.

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
All privately owned residences	35	35	35	45

Table 1: Impact assessment criteria dB(A)

Notes:

- *To determine compliance with the $L_{Aeq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Noise Policy.*
- *To determine compliance with the $L_{A1(1\ minute)}$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

Continuous Improvement

13. The Proponent shall:
    (a) implement all reasonable and feasible best practice noise mitigation measures;
    (b) investigate ways to reduce the noise generated by the project, including off-site road and rail noise and maximum noise levels which may result in sleep disturbance; and
    (c) report on these investigations and the implementation and effectiveness of these measures in the AEMR,

    to the satisfaction of the Director-General.

Monitoring

14. The Proponent shall prepare and implement a Noise Monitoring Program for the project to the satisfaction of the Director-General. This program must:
    (a) be submitted to the Director-General for approval prior to the commencement of construction activities;
    (b) be prepared in consultation with the DECC;
    (a) use attended noise monitoring measures to monitor the performance of the project
    (c) include a protocol to establish whether the project is complying with the noise impact assessment criteria in Table 1.

BLASTING AND VIBRATION

Note: These conditions should be read in conjunction with section 2 of the Statement of Commitments.

Airblast Overpressure Limits

15. The Proponent shall ensure that the airblast overpressure level from blasting at the project does not exceed the criteria in Table 2 at any residence on privately-owned land.

Airblast overpressure level (dB(Lin Peak))	Allowable exceedance
115	5% of the total number of blasts in a 12 month period
120	0%

Table 2: Airblast overpressure impact assessment criteria

Note: The overpressure values in Table 2 apply when the measurements are performed with equipment having a lower cut-off frequency of 2 Hz or less. If the instrumentation has a higher cut-off frequency a correction of 5 dB should be added to the measured value. Equipment with a lower cut-off frequency exceeding 10 Hz should not be used.

Ground Vibration Impact Assessment Criteria

16. The Proponent shall ensure that the ground vibration level from blasting, or any other activity at the project does not exceed the criteria in Table 3 at any residence on privately-owned land.

Peak particle velocity (mm/s)	Allowable exceedance
5	5% of the total number of blasts in a 12 month period
10	0%

Table 3: Ground vibration impact assessment criteria

Blasting Hours

17. The Proponent shall only carry out blasting associated with construction activities on site between 10 am and 4pm Monday to Friday.

Blasting Frequency

18. The Proponent may carry out:
    (a) a maximum of 2 blasts a day associated with construction activities; and
    (b) 5 blasts a week associated with construction activities, averaged over a 12 month period;
    on site without the written approval of the Director-General.

Property Inspections

19. Before carrying out any blasting, the Proponent shall advise all landowners within 2 km of proposed blasting activities, and any other landowner nominated by the Director-General, that they are entitled to a property inspection.

20. If the Proponent receives a written request for a property inspection from any landowner within 2 km of proposed blasting activities, or any other landowner nominated by the Director-General, the Proponent shall within 3 months of receiving this request:
    (a) commission a suitably qualified person, whose appointment has been approved by the Director-General, to inspect the condition of any building or structure on the land, and recommend measures to mitigate any potential blasting impacts; and
    (b) give the landowner a copy of this property inspection report.

Property Investigations

21. If any landowner within a 2 km of proposed blasting activities, or any other landowner nominated by the Director-General, claims that his/her property, including vibration-sensitive infrastructure such as water supply or underground irrigation mains, has been damaged as a result of blasting at the project, the Proponent shall within 3 months of receiving this request:
    (a) commission a suitably qualified person whose appointment has been approved by the Director-General to investigate the claim; and

(b) give the landowner a copy of the property investigation report.

If this independent investigation confirms the landowner's claim, and both parties agree with these findings, then the Proponent shall repair the damages to the satisfaction of the Director-General.

If the Proponent or landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Director-General for resolution.

Monitoring

22. Prior to the commencement of blasting, the Proponent shall prepare and implement a detailed Blasting Monitoring Program for the project to the satisfaction of the Director-General.

AIR QUALITY

Note: These conditions should be read in conjunction with section 13 of the Statement of Commitments.

Impact Assessment Criteria

23. The Proponent shall ensure that dust emissions generated by the project does not cause additional exceedances of the criteria listed in Tables 4 to 6 at any residence on privately owned land, or on more than 25 percent of any privately-owned land.

Pollutant	Averaging period	Criterion
Total suspended particulate (TSP) matter	Annual	90 $\mu g/m^3$
Particulate matter < 10 µm (PM_{10})	Annual	30 $\mu g/m^3$

Table 4: Long term impact assessment criteria for particulate matter

Pollutant	Averaging period	Criterion
Particulate matter < 10 µm (PM_{10})	24 hour	50 $\mu g/m^3$

Table 5: Short term impact assessment criteria for particulate matter

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

Table 6: Long term impact assessment criteria for deposited dust

Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS/NZS 3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.

Monitoring

24. The Proponent shall prepare and implement an Air Quality Monitoring Program for the project to the satisfaction of the Director-General. This program must:
    (a) be submitted to the Director-General prior to the commencement of construction activities (not including the construction of the Kamilaroi Highway intersection);
    (b) be prepared in consultation with the DECC; and
    (c) use a combination of high volume samplers and dust deposition gauges to monitor the performance of the project.

METEOROLOGICAL MONITORING

25. During the project, the Proponent shall ensure there is a suitable meteorological station on site that complies with the requirements in *Approved Methods for Sampling of Air Pollutants in New South Wales* (DECC, 2007), or its latest version.

SUBSIDENCE

Subsidence Impact Limits

26. The Proponent shall ensure that the project does not result in subsidence impacts of greater than 20 mm vertical subsidence on any land.

Notification of Landowners

27. Six months prior to mining occurring under each privately owned property, the Proponent shall notify the relevant landowner/s of the extent of planned mining operations under their property.

LANDSCAPE MANAGEMENT

Note: These conditions should be read in conjunction with sections 5, 9 and 11 of the Statement of Commitments.

Rehabilitation

28. The Proponent shall rehabilitate the site to the satisfaction of the Director-General and DPI.

Landscape Management Plan

29. The Proponent shall prepare and implement a detailed Landscape Management Plan for the site to the satisfaction of the Director-General and DPI. This plan must:
    (a) be submitted to the Director-General for approval within 12 months of this approval;
    (b) be prepared by suitably qualified expert/s whose appointment/s have been endorsed by the Director-General;
    (c) be prepared in consultation with DWE, DECC and NSC; and
    (d) include a:
        - Rehabilitation Management Plan; and
        - Mine Closure Plan.

Rehabilitation Management Plan

30. The Rehabilitation Management Plan must include:
    (a) the rehabilitation objectives for the site;
    (b) a strategic description of how the rehabilitation of the site would be integrated with surrounding land use;
    (c) a general description of the short and long term measures that would be implemented to rehabilitate the site;
    (d) a detailed description of the measures that would be implemented to rehabilitate the site, including the measures to be implemented for:
        - managing the remnant vegetation and habitat on site;
        - minimising impacts on fauna;
        - minimising visual impacts;
        - conserving and reusing topsoil;
        - controlling weeds, feral pests, and access;
        - managing bushfires; and
        - managing any potential conflicts between the rehabilitation works and Aboriginal cultural heritage.
    (e) detailed performance and completion criteria for the rehabilitation of the site;
    (f) a detailed description of how the performance of the rehabilitation works would be monitored over time to achieve the stated objectives and against the relevant performance and completion criteria; and
    (g) details of who is responsible for monitoring, reviewing and implementing the plan.

Mine Closure Plan

31. The Mine Closure Plan must:
    (a) define the objectives and criteria for mine closure;
    (b) investigate options for the future use of the site;
    (c) provide a detailed methodology for decommissioning the site's evaporation/storage ponds and the treatment of any accumulated salt within or around those ponds;
    (d) investigate ways to minimise the adverse socio-economic effects associated with mine closure, including reduction in local and regional employment levels;
    (e) describe the measures that would be implemented to minimise or manage the on-going environmental effects of the project; and
    (f) describe how the performance of these measures would be monitored over time.

HERITAGE

Note: These conditions should be read in conjunction with section 10 of the Statement of Commitments.

Aboriginal Cultural Heritage Management Plan

32. The Proponent shall not destroy any known Aboriginal objects (as defined in the *National Parks and Wildlife Act 1974*) without the written approval of the Director-General.

33. The Proponent shall prepare and implement an Aboriginal Cultural Heritage Management Plan for the project to the satisfaction of the Director-General. This plan must:
    (a) be submitted the Director-General prior to the commencement of construction activities (not including the construction of the Kamilaroi Highway intersection);
    (b) be prepared in consultation with the DECC and the Narrabri Local Aboriginal Land Council;
    (c) include a protocol for the ongoing consultation and involvement of Aboriginal communities in the conservation and management of Aboriginal heritage on site;
    (d) describe the measures that would be implemented to protect Aboriginal sites on site, or if any new Aboriginal objects or skeletal remains are discovered during the project.

TRANSPORT

Note: These conditions should be read in conjunction with section 14 of the Statement of Commitments.

Kamilaroi Highway Intersection

34. The Proponent shall construct the Kamilaroi Highway intersection in consultation with NSC and to the satisfaction of RTA. This intersection must:
    (a) be completed, other than for items listed in (c) below, prior to the commencement of construction activities on site (with the exception of construction of the Access Road);
    (b) be constructed in accordance with a Traffic Management Plan approved by NSC and RTA;
    (c) include boom gates, flashing lights and warning bells for the Kurrajong Creek Road level crossing, to the satisfaction of ARTC and NSC;
    (d) include illumination of the Kurrajong Creek Road level crossing during construction of the intersection;
    (e) provide a information sign on Kurrajong Creek Road to inform road users of likely delays due to train traffic; and
    (f) maintain permanent access for the "Bow Hills" quarry.

Kurrajong Creek Road

35. Within 12 months of commencement of mining operations, the Proponent shall bitumen seal Kurrajong Creek Road (Shire Road 188) for a distance of 7 km south of the Kamilaroi Highway intersection (see Figure 2 of Appendix 2), to the satisfaction of NSC.

VISUAL IMPACT

Note: These conditions should be read in conjunction with section 12 of the Statement of Commitments.

Visual Amenity

36. The Proponent shall minimise the visual impacts of the project to the satisfaction of the Director-General.

Lighting Emissions

37. The Proponent shall ensure that:
    (a) no outdoor lights shine above the horizontal; and
    (b) all external lighting associated with the project complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting.*

GREENHOUSE GAS

Note: These conditions should be read in conjunction with section 13 of the Statement of Commitments.

Energy Savings Action Plan

38. The Proponent shall prepare and implement an Energy Savings Action Plan for the project to the satisfaction of the Director-General. This plan must:
    (a) be prepared in consultation with DECC;
    (b) be prepared in accordance with the *Guidelines for Energy Savings Action Plans* (DEUS, 2005), or its latest version;
    (c) be submitted to the Director-General for approval within 3 months of this approval; and
    (d) include a program to monitor the effectiveness of measures to reduce energy use on site.

Gas Drainage

39. The Proponent shall implement all reasonable and feasible measures to minimise the greenhouse gas emissions from the underground mining operations to the satisfaction of the Director-General.

40. Prior to carrying out underground coal mining operations, the Proponent shall submit a Greenhouse Gas Minimisation Plan to the Director-General. This plan must:
    (a) identify options for minimising greenhouse gas emissions from underground mining operations, with a particular focus on capturing and/or using these emissions;
    (b) investigate the feasibility of implementing each option;
    (c) propose the measures that would be implemented in the short to medium term on site; and
    (d) include a research program to inform the continuous improvement of the greenhouse gas minimisation measures on site.

WASTE

Note: These conditions should be read in conjunction with section 9 of the Statement of Commitments.

Waste Minimisation

41. The Proponent shall prepare and implement a Waste Management Plan for the project to the satisfaction of the Director-General. This plan must:
    (a) be submitted to the Director-General for approval prior to commencing of construction;
    (b) identify the various waste streams of the project;
    (c) describe what measures would be implemented to reuse, recycle, or minimise the waste generated by the project;
    (d) ensure irrigation of treated wastewater is undertaken in accordance with *Environmental Guidelines: Use of Effluent by Irrigation* (DEC, 2004), or its latest version; and
    (e) include a program to monitor the effectiveness of these measures.

SCHEDULE 4

ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING

Note: This schedule should be read in conjunction with sections 18 and 19 of the Statement of Commitments.

ENVIRONMENTAL MANAGEMENT STRATEGY

1. The Proponent shall prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Director-General. This strategy must be submitted to the Director-General prior to the commencement of construction activities, and:
   (a) provide the strategic context for environmental management of the project;
   (b) identify the statutory requirements that apply to the project;
   (c) describe in general how the environmental performance of the project would be monitored and managed;
   (d) describe the procedures that would be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the project;
      - receive, handle, respond to, and record complaints;
      - resolve any disputes that may arise during the course of the project;
      - respond to any non-compliance;
      - manage cumulative impacts; and
      - respond to emergencies; and
   (e) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project.

ENVIRONMENTAL MONITORING PROGRAM

2. The Proponent shall prepare and implement an Environmental Monitoring Program for the project to the satisfaction of the Director-General. This program must be submitted to the Director-General within 6 months of this approval and consolidate the various monitoring requirements in schedule 3 of this approval into a single document.

REPORTING

Incident Reporting

3. As soon as practicable, and in any event within 24 hours of detecting an exceedance of the limits/performance criteria in this approval or the occurrence of an incident that causes (or may cause) material harm to the environment, the Proponent shall notify the Department and other relevant agencies of the exceedance/incident.

4. Within 6 days of notifying the Department and other relevant agencies of an exceedance/incident, the Proponent shall provide the Department and these agencies with a written report that:
   (a) describes the date, time, and nature of the exceedance/incident;
   (b) identifies the cause (or likely cause) of the exceedance/incident;
   (c) describes what action has been taken to date; and
   (d) describes the proposed measures to address the exceedance/incident.

Annual Reporting

5. Within 12 months of this approval, and annually thereafter, the Proponent shall submit an AEMR to the Director-General and to all relevant agencies. This report must:
   (a) identify the standards and performance measures that apply to the project;
   (b) describe the works carried out in the last 12 months;
   (c) describe the works that would be carried out in the next 12 months;
   (d) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;
   (e) include a summary of the monitoring results for the project during the past year;
   (f) include an analysis of these monitoring results against the relevant:
      - impact assessment criteria/limits;
      - monitoring results from previous years; and

- predictions in the EA;

(g) identify any trends in the monitoring results over the life of the project;
(h) identify any non-compliance during the previous year; and
(i) describe what actions were, or are being, taken to ensure compliance.

INDEPENDENT ENVIRONMENTAL AUDIT

6. Within 2 years of this approval, and every 3 years thereafter, unless the Director-General directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:
   (a) be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Director-General;
   (b) include consultation with the relevant agencies
   (c) assess the environmental performance of the project and assess whether it is complying with the relevant requirements of this approval and any relevant mining lease or EPL (including any strategy, plan or program required under these approvals);
   (d) review the adequacy of strategies, plans or programs required under these approvals; and, if appropriate,
   (e) recommend measures or actions to improve the environmental performance of the project, and/or any strategy, plan or program required under these approvals.

   Note: This audit team must be led by a suitably qualified auditor and include experts in the fields of water and noise management.

7. Within 6 weeks of the completing of this audit, or as otherwise agreed by the Director-General, the Proponent shall submit a copy of the audit report to the Director-General, together with its response to any recommendations contained in the audit report.

8. Within 3 months of submitting the audit report to the Director-General, the Proponent shall review, and if necessary revise the strategies/plans/programs required under this approval to the satisfaction of the Director-General.

COMMUNITY CONSULTATIVE COMMITTEE

9. Within 3 months of this approval, the Proponent shall establish a Community Consultative Committee (CCC) for the project to the satisfaction of the Director-General, in general accordance with the *Guideline for Establishing and Operating Community Consultative Committees for Mining Projects (Department of Planning, 2007)*, or its latest version.

ACCESS TO INFORMATION

10. Within 3 months of the approval of any strategy/plan/ program required under this approval (or any subsequent revision of these strategies/plans/ programs), or the completion of the audits or AEMRs required under this approval, the Proponent shall:
    (a) provide a copy of the relevant document/s to the relevant agencies and CCC; and
    (b) put a copy of the relevant document/s on its website.

11. During the project, the Proponent shall:
    (a) make a summary of monitoring results required under this approval publicly available at the mine and on its website; and
    (b) update these results on a regular basis (at least every three months).

APPENDIX 1
SCHEDULE OF PROJECT LAND

Area	*Land Title Reference*
Pit Top Area	*Part Lot 60 DP 757124* *Part Lots 151 & 152 DP 816020.*
Indicative Mining Area	*Part Lots 57, 58, 63 to 65, 81 to 84 & 115 DP 757124* *Lot 61 DP 757124* *Part Lot 1 DP 811171, Lot 2 DP 811171* *Part Lots 3, 8, 25, 67 & 68 DP 757104* *Lot 7 DP 757104* *Part Lot 152 DP 816020* *Lot 1 DP 659899, Part Lot 3 DP 1005608* *Part Pilliga East State Forest* *Various Crown roads.*
Remainder of Project Site	*Lots 381 & 382 DP 1028753* *Part Lot 1 DP 798487* *Part Lots 57, 58, 60, 63 to 65, 81 to 84, 115 DP 757124* *Part Lot 1 DP 811171* *Part Lots 3, 8, 10, 25, 67 & 68 DP 757104* *Part Lot 3 DP 1005608* *Part Lots 151 & 152 DP 816020* *Part Pilliga East State Forest* *Various Crown roads.*

APPENDIX 2
PROJECT MAPS

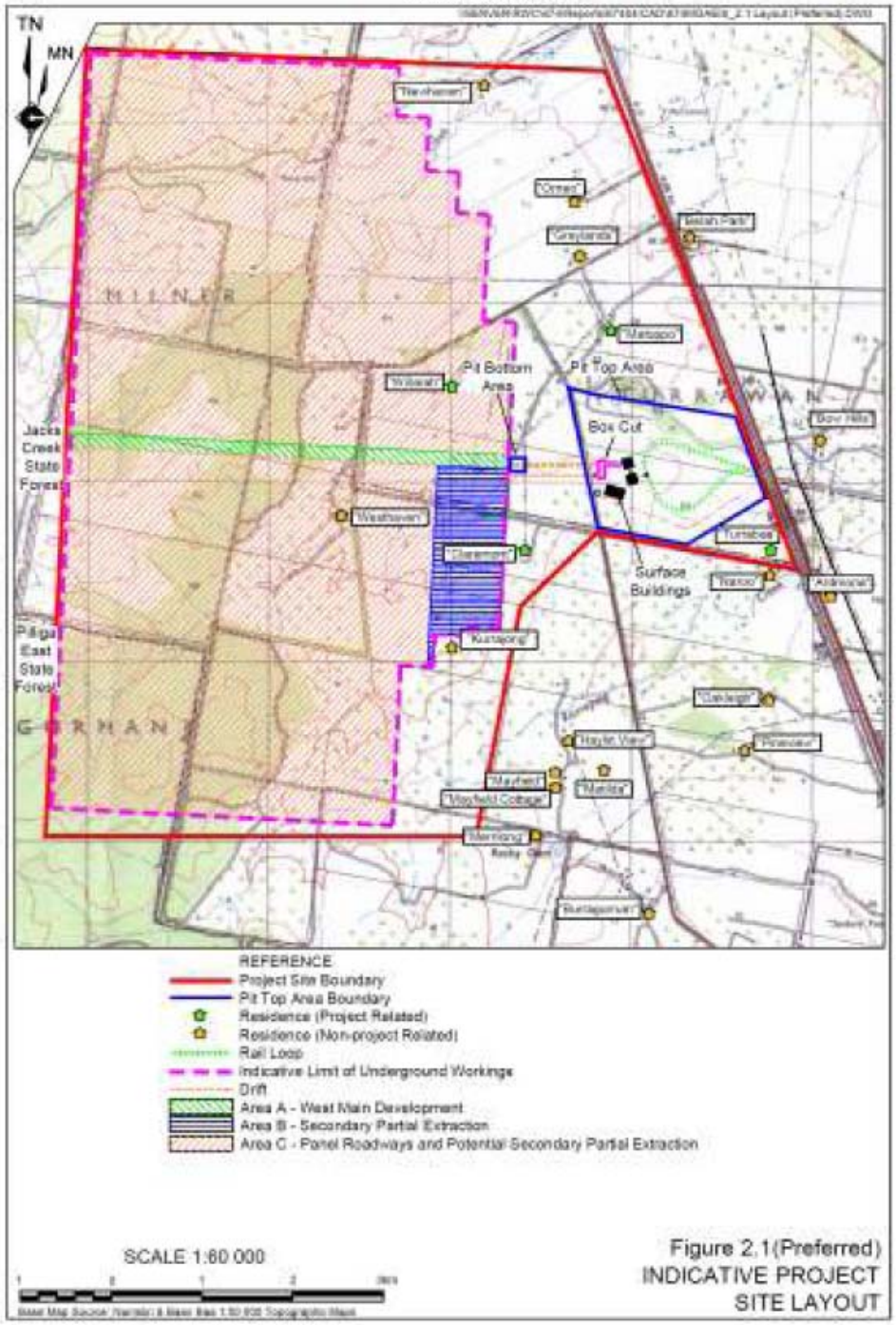

Figure 1: *Project Layout*

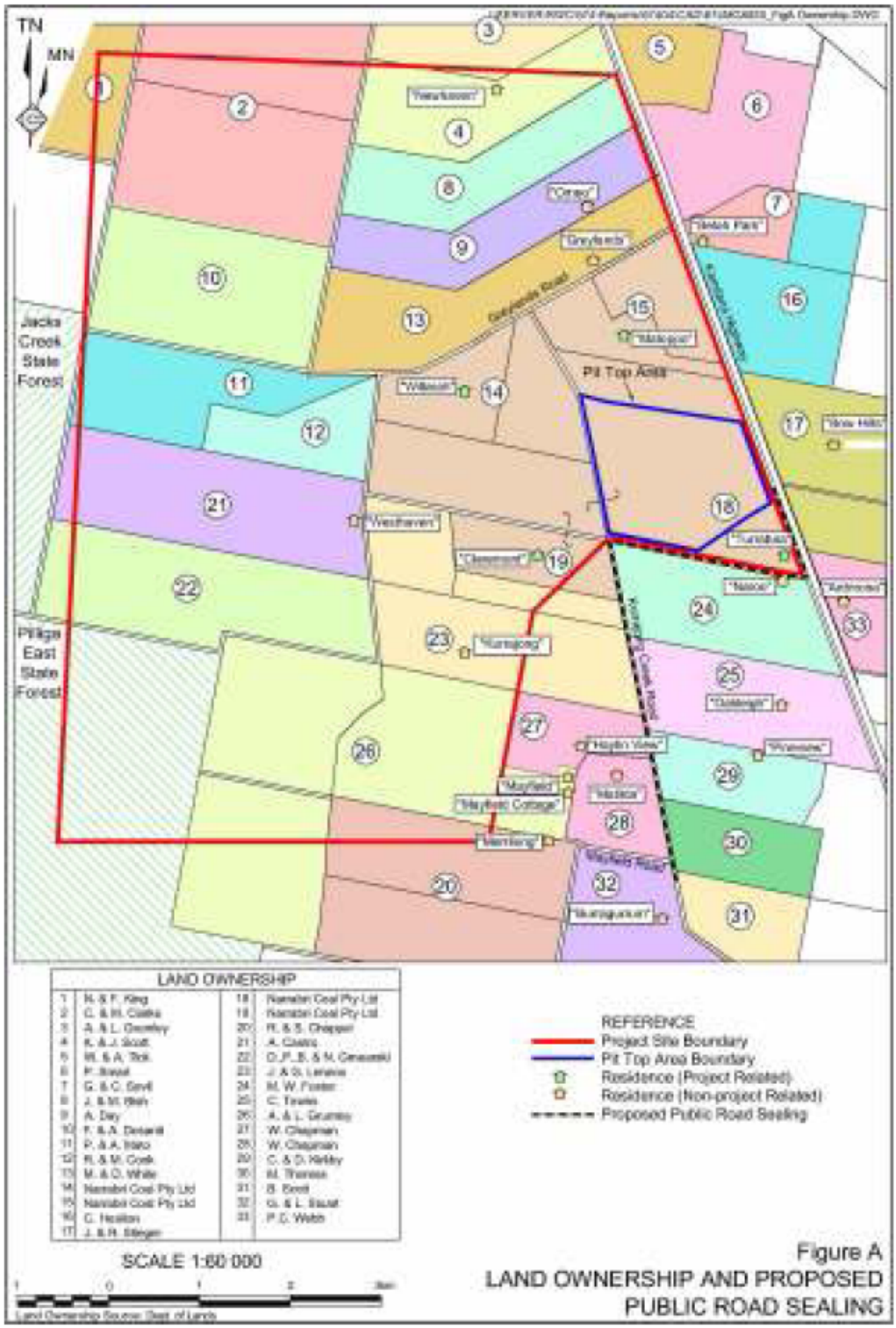

Figure 2: *Section of Kurrajong Creek Road proposed to be sealed*

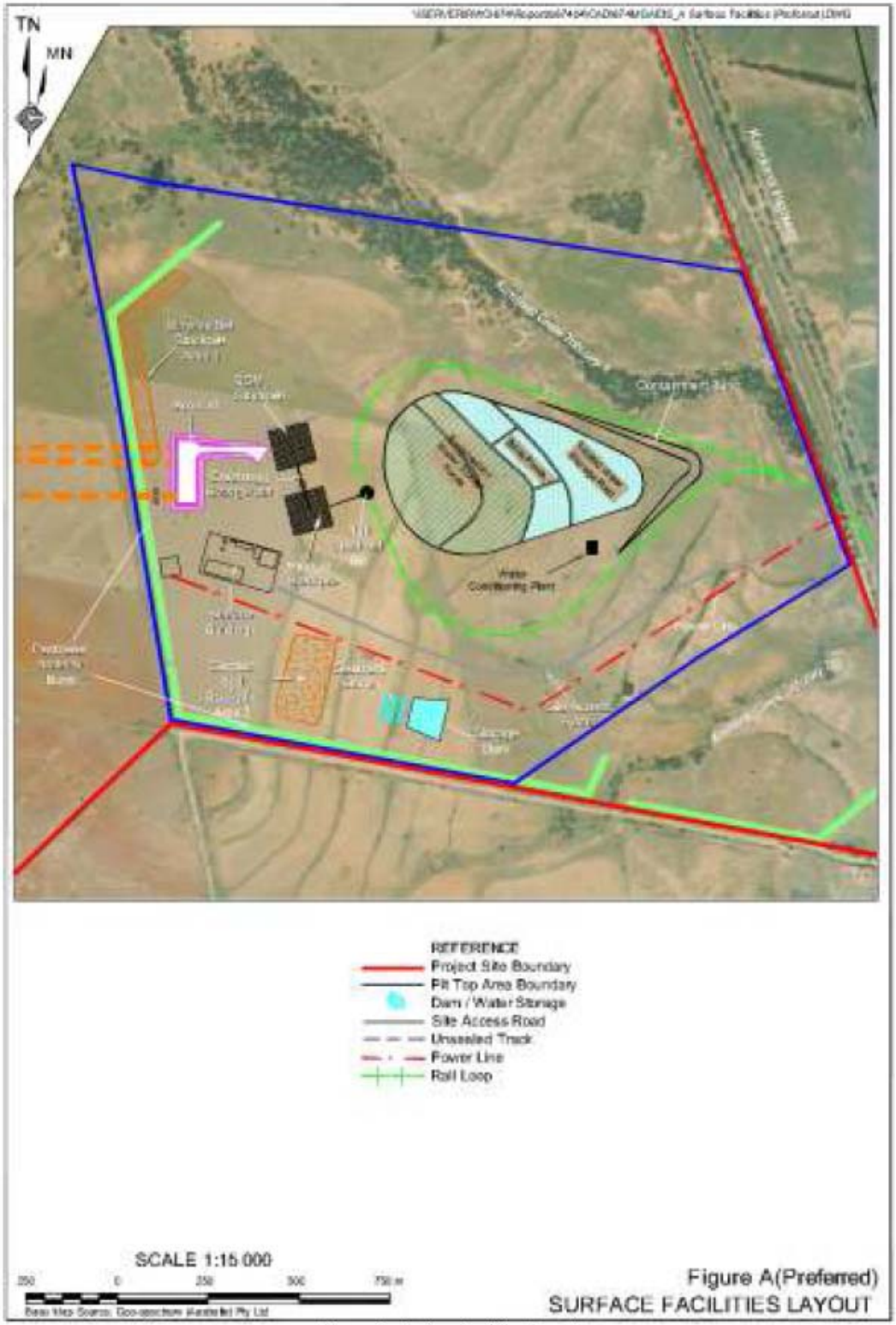

Figure 3: *Surface Facilities Layout*

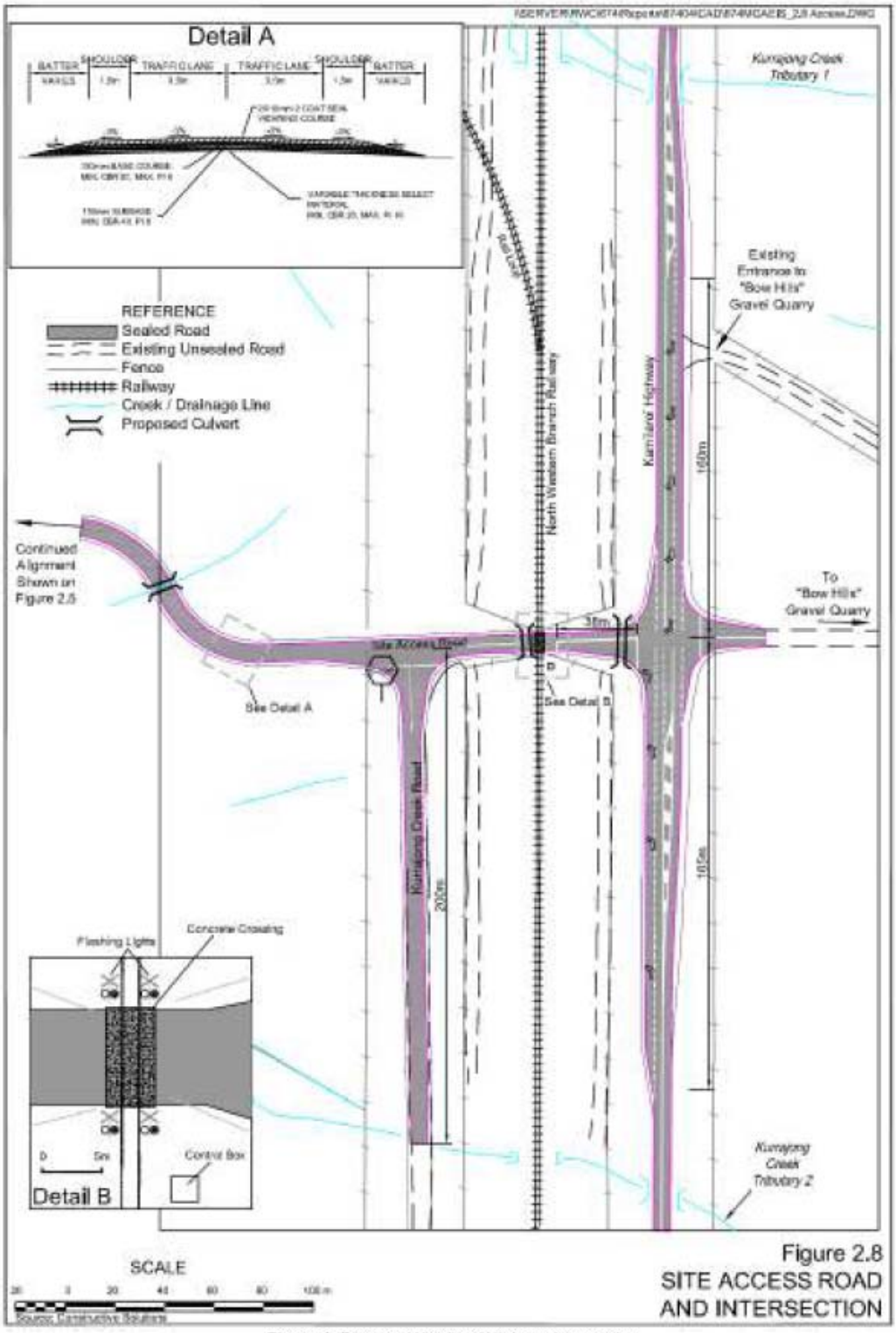

Figure 4: *Proposed Kamilaroi Highway Intersection*

APPENDIX 3
STATEMENT OF COMMITMENTS

APPENDIX 4
GENERAL TERMS OF PLANNING AGREEMENTS

Funding Area	Minimum Proponent Contribution	Funding Time Frame
Narrabri Shire Upgrade and seal Kurrajong Creek Road, adjacent to the Project site	7.0 kilometres length of Kurrajong Creek Road to be upgraded and sealed.	Works to be completed within 12 months of this approval.
Narrabri Shire Monetary Contribution – Provision of bush fire services	$7,000	One instalment to be paid within 12 months of this approval.
Narrabri Shire Community Infrastructure Contribution	$93,000	An initial instalment of $13,000 to be paid within 12 months of this approval with $20,000 to paid for a period of four years on the anniversary of the initial payment.
Gunnedah Shire Monetary Contribution – Gunnedah Urban Riverine Scheme	$100,000	$20,000 each year for a period of 5 years with the first instalment to be paid within 12 months of this approval.

Notes:

- The Gunnedah Urban Riverine Scheme Contributions must be reviewed and adjusted to take into account any increase in the CPI over time, in accordance with the Planning Agreement between the Proponent and Gunnedah Shire Council required under this approval.
- The Community Infrastructure Contribution must be reviewed and adjusted to take into account any increase in the CPI over time, in accordance with the Planning Agreement and Narrabri Shire Council required under this approval.

Appendix 2

Environment Protection Licence 12789

Section 55 Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 12789

Department of **Environment & Climate Change** NSW

Licence Details	
Number:	12789
Anniversary Date:	20-February
Review Due Date:	20-Feb-2013

Licensee

NARRABRI COAL PTY LTD
PO BOX 2440
FORTITUDE VALLEY BC QLD 4006

Licence Type

Premises

Premises

Narrabri Coal Project
"Turrabaa" Kurrajong Creek Road
BAAN BAA NSW 2390

Scheduled Activity

Coal Mines
Coal Works

Fee Based Activity	Scale
Coal Mining (26)	> 2000000 - 3500000 T produced

Region

North West - Armidale
Level 1, NSW Govt Offices, 85 Faulkner Street
ARMIDALE NSW 2350
Phone: 02 6773 7000
Fax: 02 6772 2336

PO Box 494 ARMIDALE
NSW 2350

Environment Protection Licence

Licence - 12789

Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act); and
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

The EPA publication "A Guide to Licensing" contains information about how to calculate your licence fees.

The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

NARRABRI COAL PTY LTD
PO BOX 2440
FORTITUDE VALLEY BC QLD 4006

subject to the conditions which follow.

1 Administrative conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled development work listed below at the premises listed in A2.
Construction of surface infrastructure including but not limited to access road, Intersection and surface facilities prior to commencement of mining.

A1.2 This licence authorises the carrying out of the scheduled activities listed below at the premises

specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity
Coal Mines
Coal Works

Fee Based Activity	Scale
Coal Mining (26)	> 2000000 - 3500000 T produced

A1.3 Not applicable.

A1.4 The licensee must not commence scheduled activities (i.e. coal mining or coal works) on the premises referred to in condition A1.2 of this licence without prior approval from DECC. The licensee must submit a variation of licence application to DECC's Armidale Office to seek this approval. The application must include copies of all relevant approvals and documentation for the proposed scheduled activities.

A2 Premises to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
Narrabri Coal Project
"Turrabaa" Kurrajong Creek Road
BAAN BAA
NSW
2390
SEE DETAILS BELOW

A2.2 The licence applies to the following premises:

Lot 1 DP 816020; Lot 152 DP 816020; Lot 60 DP 757124; Part Lot 60 DP 757124; Part Lots 151 & 152 DP 816020; Part Lot 152 DP 816020; Part Lots 57, 58, 63, 64, 65, 81, 82, 83, 83 &115 DP 757124; Lot 61 DP 757124; Part Lot 1 DP 811171; Lot 2 DP 811171; Part Lots 3, 8, 25, 67 & 68 DP 757104; Lot 7 DP 757104; Part Lot 152 DP 816020; Lot 1 DP 659899; Part Lot 3 DP 1005608; Lots 381 & 382 DP 1028753; Part Lot 1 DP 798487; Part Lots 57,58,60,63,64,65,81,82,83,84 & 115 DP 757124; Part Lots 3, 8, 10, 25, 67 & 68 DP 757104; Part Lots 151 & 152 DP 816020

A3 Other activities

A3.1 Not applicable.

A4 Information supplied to the EPA

A4.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
(a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
(b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Discharges to air and water and applications to land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

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Air

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Description of Location
1	Ambient Air Quality Monitoring		Monitoring point located at "Turrabaa" and labelled ND1 as shown on map titled "Figure 2- Air Quality Monitoring locations" dated 2 January 2008 and on DECC file LIC07/1074-02.
2	Ambient Air Quality Monitoring		Monitoring point located at "Claremont" and labelled ND2 as shown on map titled "Figure 2- Air Quality Monitoring locations" dated 2 January 2008 and on DECC file LIC07/1074-02.
3	Ambient Air Quality Monitoring		Monitoring point located at "Bow Hills" and labelled ND3 as shown on map titled "Figure 2- Air Quality Monitoring locations" dated 2 January 2008 and on DECC file LIC07/1074-02.
4	Ambient Air Quality Monitoring		Monitoring point located at "Matoppo" and labelled ND4 as shown on map titled "Figure 2- Air Quality Monitoring locations" dated 2 January 2008 and on DECC file LIC07/1074-02.
5	Ambient Air Quality Monitoring		Monitoring point located at "Willarah" and labelled ND5 as shown on map titled "Figure 2- Air Quality Monitoring locations" dated 2 January 2008 and on DECC file LIC07/1074-02.
6	Ambient Air Quality Monitoring		Monitoring point located at "Willarah" and labelled ND6 as shown on map titled "Figure 2- Air Quality Monitoring locations" dated 2 January 2008 and on DECC file LIC07/1074-02.

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Description of Location
7	Ambient Air Quality Monitoring		Monitoring point located at "Claremont" labelled ND7 as shown on map titled "Figure 2- Air Quality Monitoring locations" dated 2 January 2008 and on DECC file LIC07/1074-02.
8	Ambient Air Quality Monitoring		Monitoring point located at "Claremont" and labelled ND8 as shown on map titled "Figure 2- Air Quality Monitoring locations" dated 2 January 2008 and on DECC file LIC07/1074-02.
9	Ambient Air Quality Monitoring		Monitoring point located at "Claremont" and labelled ND9 as shown on map titled "Figure 2- Air Quality Monitoring locations" dated 2 January 2008 and on DECC file LIC07/1074-02.
10	Ambient Air Quality Monitoring		Monitoring point located at "Turrabaa" and labelled ND10 as shown on map titled "Figure 2- Air Quality Monitoring locations" dated 2 January 2008 and on DECC file LIC07/1074-02.

P1.2 Not applicable.

P1.3 Not applicable.

P2 Weather monitoring

P2.1 The following point(s) in the table are identified in this licence for the purpose of the monitoring of weather parameters at the point.

EPA identification number	Type of Monitoring Point	Description of Location
W1	Weather analysis	Weather station identified at "Meteorological station" on map titled "Figure B Environmental Monitoring" submitted with the Final Statement of Commitments, dated June 2007.

3 Limit conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Load limits

L2.1 Not applicable.

L2.2 Not applicable.

L3 Concentration limits

L3.1 Not applicable.

L3.2 Not applicable.

L3.3 Not applicable.

L4 Volume and mass limits

L4.1 Not applicable.

L5 Waste

L5.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L5.2 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.

L6 Noise Limits

L6.1 Noise from the premises must not exceed:

(a) 35 dB(A) $L_{Aeq(15\ minute)}$ during the day (7am to 6pm), evening (6pm to 10pm) and night (10pm to 7am) for construction activities.

Where L_{Aeq} means the equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period.

L6.2 Noise from the premises is to be measured at any residence not on the premises to determine compliance with this condition.

Note: For the purpose of noise measures required for this condition, the L_{Aeq} noise limit must be measured or computed at any point within 30 metres of any residence not on the premises over a period of 15 minutes using "FAST" response on the sound level meter.

L6.3 The noise emission limits identified in this licence apply under all meteorological conditions except:
(a) during rain and wind speeds (at 10m height) greater than 3m/s; and
(b) under "non-significant weather conditions".

Note: Field meteorological indicators for non-significant weather conditions are described in the NSW Industrial Noise Policy, Chapter 5 and Appendix E in relation to wind and temperature inversions.

L6.3.1 Noise impacts where wind speed exceeds 3 metres per second at 10 metres above the ground must be addressed by:

a) documenting noise complaints received to identify any higher level of impacts or wind patterns;

where levels of noise complaints indicated a higher level of impact then actions to quantify and ameliorate any enhanced impacts where wind speed exceeds 3 metres per second at 10 metres above the ground should be developed and implemented.

L6.4 The noise limits set out by condition L6.1 of the licence do not apply where a current legally binding agreement exists between the proponent and the occupant of a residential property that:

a) agrees to an alternative noise limit for that property; or
b) provides an alternative means of compensation to address noise impacts from the premises.

A copy of any agreement must be provided to the EPA before the proponent can take advantage of that agreement.

L7 Blasting limits

L7.1 The overpressure level from blasting operations at the premises must not exceed 115dB (Lin Peak) for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L7.2 The overpressure level from blasting operations at the premises must not exceed 120dB (Lin Peak) at any time. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

The airblast overpressure level from blasting operations listed in condition L7.1 and L7.2 must not be exceeded at any point within 30 metres of any non-project related residential building or other noise sensitive location.

L7.4 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 5mm/sec for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L7.5 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 10mm/sec at any time. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

The ground vibration peak particle velocity limits listed in conditions L7.3 and L7.4 must not be exceeded at any point within 3.5 meters of any non-project related residential building or other noise sensitive location.

L7.7 Blasting operations at the premises may only take place between 10:00am-4:00pm Monday to Friday. (Where compelling safety reasons exist, the Authority may permit a blast to occur outside the abovementioned hours. Prior written (or facsimile) notification of any such blast must be made to the Authority).

L7.8 Blasting at the premises is limited to:

a) A maximum of two (2) blasts per day;
b) Five (5) blast a week, averaged over a twelve month period;

on each day on which blasting is permitted.

4 Operating conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.

This includes:
(a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
(b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
(a) must be maintained in a proper and efficient condition; and
(b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 All operations and activities occurring at the premises must be carried out in a manner that will minimise the emission of dust from the premises.

5 Monitoring and recording conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
(a) in a legible form, or in a form that can readily be reduced to a legible form;
(b) kept for at least 4 years after the monitoring or event to which they relate took place; and
(c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
(a) the date(s) on which the sample was taken;
(b) the time(s) at which the sample was collected;
(c) the point at which the sample was taken; and
(d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

Air

POINTS 1,2,3,4,5,6,7,8

Pollutant	Units of measure	Frequency	Sampling Method
Particulates - Deposited Matter	grams per square metre per month	Monthly	AM-19

POINTS 9,10

Pollutant	Units of measure	Frequency	Sampling Method
PM10	micrograms per cubic metre	Every 6 days	AM-18

M3 Testing methods - concentration limits

M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:

(a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or

(b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or

(c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The Protection of the Environment Operations (Clean Air) Regulation 2002 requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M3.2 Not applicable.

M4 Recording of pollution complaints

M4.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M4.2 The record must include details of the following:

(a) the date and time of the complaint;
(b) the method by which the complaint was made;
(c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
(d) the nature of the complaint;

(e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
(f) if no action was taken by the licensee, the reasons why no action was taken.

M4.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M4.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M5 Telephone complaints line

M5.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M5.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M5.3 Conditions M5.1 and M5.2 do not apply until 3 months after:
(a) the date of the issue of this licence or
(b) if this licence is a replacement licence within the meaning of the Protection of the Environment Operations (Savings and Transitional) Regulation 1998, the date on which a copy of the licence was served on the licensee under clause 10 of that regulation.

M6 Requirement to monitor volume or mass

M6.1 Not applicable.

M7 Requirement to monitor weather

M7.1 For each monitoring point specified in the table below, the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1. The licensee must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns.

Point W1

Parameter	Units of Measure	Frequency	Averaging Period	Sampling Method
Rainfall	mm	Continuous	1 hour	AM-4
Wind speed @ 10 metres	m/s	Continuous	15 minute	AM-2 & AM-4
Wind direction @ 10 metres	°	Continuous	15 minute	AM-2 & AM-4
Temperature @ 2 metres	°C	Continuous	15 minute	AM-4
Temperature @ 10 metres	°C	Continuous	15 minute	AM-4

Sigma theta @ 10 metres	°	Continuous	15 minute	AM-2 & AM-4
Solar radiation	W/m²	Continuous	15 minute	AM-4
Additional requirements - Siting - Measurement				 AM-1 & AM-4 AM-2 & AM-4
.	.	.	.	.
.	.	.	.	.

M8 Noise Monitoring

M8.1 For each monitoring point specified below, the Licensee must monitor the noise parameter specified in Column 1. The Licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns.

POINTS: N1, N2, N3, N4, N5

Parameter	Units of measure	Frequency	Sampling Method
Ambient Noise	$L_{Aeq\ (15\ minute)}$ L_{Amax} L_{A1} L_{A10} L_{A90} L_{Amin}	Quarterly frequency of monitoring as detailed in the document "Noise Monitoring Program for the Narrabri Coal Mine including a Noise Monitoring Protocol" report No. 674/12d dated 3 December 2007 and prepared for Narrabri Coal Mine Pty Ltd.	Type 1 Noise Meter – Unattended and/or Attended Monitoring as detailed in the document "Noise Monitoring Program for the Narrabri Coal Mine including a Noise Monitoring Protocol" report No. 674/12d dated 3 December 2007 and prepared for Narrabri Coal Mine Pty Ltd.

For the purpose of this condition, the noise monitoring locations are described as:

EPA Identification No.	Description of Location
N1	Within 30m of the residence on property "Bow Hills"
N2	Within 30m of the residence on property "Westhaven"
N3	Within 30m of the residence on property "Naroo"
N4	Within 30m of the residence on property "Greylands"
N5	Within 30m of the residence on property "Kurrajong"

Note: The location, frequency of monitoring and the parameters to be monitored may be varied by the EPA once the variability of the noise impact is established.

6 Reporting conditions

R1 Annual return documents

What documents must an Annual Return contain?

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
(a) a Statement of Compliance; and
(b) a Monitoring and Complaints Summary.
A copy of the form in which the Annual Return must be supplied to the EPA accompanies this licence. Before the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

Period covered by Annual Return

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:
(a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
(b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
(a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
(b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

Deadline for Annual Return

R1.5 The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

Notification where actual load can not be calculated

R1.6 Not applicable.

Licensee must retain copy of Annual Return

R1.7 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

Certifying of Statement of Compliance and signing of Monitoring and Complaints Summary

R1.8 Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
(a) the licence holder; or
(b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R1.9 A person who has been given written approval to certify a certificate of compliance under a licence issued under the Pollution Control Act 1970 is taken to be approved for the purpose of this condition until the date of first review of this licence.

R2 Notification of environmental harm

Note: The licensee or its employees must notify the EPA of incidents causing or threatening material harm to the environment as soon as practicable after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.1 Notifications must be made by telephoning the EPA's Pollution Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
(a) where this licence applies to premises, an event has occurred at the premises; or
(b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
(a) the cause, time and duration of the event;
(b) the type, volume and concentration of every pollutant discharged as a result of the event;
(c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;

(d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
(e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
(f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
(g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

General conditions

G1 Copy of licence kept at the premises

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

Pollution studies and reduction programs

U1.1 Not applicable.

Special conditions

E1 Quality assurance and verification report

E1.1 Prior to the commissioning of the evaporation and storage ponds, the licensee must provide the DECC Armidale office with an "as constructed" report, produced by an experienced and qualified engineer. The report must include detailed design plans for the ponds and illustrate the use of low permeability layers to manage mine waters generated by the project. The report also must include

a detailed Quality Assurance/Quality Control program that was used throughout the construction of the ponds.

Dictionary

General Dictionary

In this licence, unless the contrary is indicated, the terms below have the following meanings:

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 1998
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales.*
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 1998
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 1998
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales.*
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991

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EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 1998.
flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
industrial waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
inert waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 1998
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
reprocessing of waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
treatment of waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste code	Means the waste codes listed in Appendix 5 of the EPA document A Guide to Licensing Part B.
waste type	Means Group A, Group B, Group C, inert, solid, industrial or hazardous waste

Mr Robert O'Hern

Environment Protection Authority

(By Delegation)

20-Feb-2008

End Notes

Appendix 3

Compliance Reviews

TABLE A3-1 – PROJECT APPROVAL 05_0102

Condition	Conditional Requirement	Compliance	Comments
Schedule 2: Administrative Conditions			
1.	The Applicant shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.	Yes	All measures take to reduce impact of operation.
2.	The Applicant shall carry out the development generally in accordance with the: (a) EA; (b) statement of Commitments (see Appendix 3); and (c) conditions of this approval.	Yes	The activities on site were generally being undertaken in accordance with the nominated documents.
3.	If there is any inconsistency between the above documents, that later document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.	Yes	No determined inconsistency
4.	The proponent shall comply with any reasonable and feasible requirements of the Director General arising from the Department's assessment of: (a) any reports, plans, programs, strategies or correspondence that are submitted in accordance with the conditions of this approval; and (b)the implementation of any actions or measures contained in these reports, plans, programs strategies or correspondence.	Yes	All requests complied with.
5.	Mining Operations may take place on the site for 21 years from the grant of the mining lease for the project.	Yes	Mining Lease granted in January 2008
6.	The proponent shall not extract more than 2.5 million tonnes of ROM coal a year from the site.	Yes	No coal produced over the reporting period.
7.	The proponent shall transport all coal from the site by rail.	Yes	No coal transported from the site over the reporting period.

Condition	Conditional Requirement	Compliance	Comments
8.	With the approval of the Director General, the Proponent may submit any management plan or monitoring program required by this approval on a progressive basis.	Yes	
9.	The proponent shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures are constructed in accordance with relevant requirements of the BCA	Yes	All buildings on site constructed in accordance with Council certification.
10.	The proponent shall ensure that all demolition work is carried out in accordance with *Australian Standards AS 2601-2001: The Demolition of Structures*, or its latest version.	N/A	No demolition works required.
11.	The proponent shall ensure that all plant and equipment used on site is: (a)maintained in a proper and efficient condition; and (b)operated in a proper and efficient manner.	Yes	All equipment used subject to pre-start check.
12.	Within 12 months of this approval, the Proponent shall enter into a planning agreement with Narrabri Shire Council, Gunnedah Shire Council and the Minister in accordance with: (a)Division 6 of Part 4 of the EP&A Act; and (b)the terms of the Proponents offer to the Minister on 7 September 2007, which includes the matters set out in Appendix 4.	Yes	Narrabri Coal has completed initial obligations under the Planning Agreement by provision of funding the Narrabri Shire Council for Bushfire Services, community enhancement and sealing of 7km of Kurrajong Creek Road. The initial contribution to Gunnedah Shire Council urban riverine scheme has also been made.
Schedule 3: Specific Environmental Conditions			
1.	Within 5 years of the date of this approval, the proponent shall ensure that any loss of water flow into the Great Artesian Basin aquifers (equal to the maximum predicted impact, or the measured impact of the project, whichever is the greater), is managed, licensed or offset to the satisfaction of the DWE.	N/A	Not yet triggered
2.	Within 12 months of the commencement of mining operations, the Proponent shall undertake a transient calibration of the groundwater model presented in the EA, in consultation with DWE and DECC, and to the satisfaction of the Director-General.	N/A	Mining not yet commenced
3.	Following the completion of the transient calibration of the groundwater model……	N/A	Calibration not yet required.

Condition	Conditional Requirement	Compliance	Comments
4.	The proponent must commence construction of the water conditioning plant identified in condition 10(d) when daily mine dewatering volumes exceed 0.88 megalitres, or an alternative trigger point based on review of the water balance and model and established in consultation with DWE and DECC, and approved by the Director General.	N/A	Not yet triggered.
5.	Except as may be expressly provided for by an EPL, the Proponent shall not discharge any surface waters from the site. However, product water from the water conditioning plant may be transferred to water users in accordance with an approved Water Management Plan.	Yes	Water retained on site and pumped to retention pond in rail loop. No transfer of water to date.
6.	The Proponent shall: (a) construct evaporation/storage ponds incorporating the use of low permeability layers to manage minewater generated by the project. (b)prior to commencement of construction, submit pond designs and a construction QA/QC program to DECC; and (c)prior to commissioning the ponds, submit an "as constructed" report, produced by an experienced and qualified engineer, to DECC; to the satisfaction of the Director General.	Yes Yes N/A	Ponds constructed to design criteria as approved by DECC. Ponds not yet commissioned.
7.	The proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Director General. This plan must be submitted to the Director General for approval prior to the commencement of construction activities (not including the construction of the Kamilaroi Highway intersection) in consultation with DECC and DWE by suitably qualified expert/s whose appointments have been approved by the Director General and include a: (a)site water balance; (b)Erosion and Sediment Control Plan (c)Surface Water Monitoring Program; and (d)Surface and Groundwater Response Plan, setting out procedures for:……	Yes	Director General approved the implementation of a Construction Phase Surface Water Management Plan on 20th February 2008 conditional on a full Site Water Management Plan being submitted prior to commencement of mining operations. Development of the plan is currently under way.
8.	The Site Water Balance must….	N/A	To be addressed in surface water management plan prior to commencement of mining.
9.	The Erosion and Sediment Control Plan must….	Yes	Construction phase plan included Erosion and Sediment control to be further enhanced in long term SWMP.

Condition	Conditional Requirement	Compliance	Comments
10.	The Surface Water Monitoring Plan must….	Yes	As per above – to be enhanced through development of SWMP.
11.	The Groundwater monitoring program must……..	Yes	As per above – to be enhanced through development of SWMP.
12.	The proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately owned residence.	Yes	Noise assessment undertaken at required intervals. Temperature inversion conditions impacted on monitoring results associated with the "Kurrajong" monitoring point.
13.	The Proponent shall: (a)implement all reasonable and feasible best practice noise mitigation measures; (b)investigate ways to reduce the noise generated by the project, including off-site road and rail noise and maximum noise levels which may result in sleep disturbance; and (c)report on these investigations and the implementation and effectiveness of these measures in the AEMR; to the satisfaction of the Director General.	Yes	Monitoring frequency increased to assess inversion strength and associated impacts. Start up times modified to assess noise implications. Surface construction activity ceased at 10pm. Access road sealed. Rail loop and loading point cut below surface level to assist noise reduction. Barn Owl monitor established at boundary of "Claremont" and "Kurrajong" property to assess real time noise levels over monthly period.
14.	The Proponent shall prepare and implement a Noise Monitoring Program for the project to the satisfaction of the Director-General. This program must: (a)be submitted to the Director-General for approval prior to the commencement of construction activities; (b)be prepared in consultation with the DECC; (c)use attended noise monitoring measures to monitor the performance of the project; (d)include a protocol to establish whether the project is complying with the noise impact assessment criteria in Table 1.	Yes	Noise monitoring program underway in accordance plan approved by DG on 15th January 2008.
15.	The proponent shall ensure that the airblast overpressure level from blasting at the project does not exceed the criteria in Table 2 at any residence on privately owned land.	Yes	All monitoring confirms compliance.
16.	The proponent shall ensure that the ground vibration level from blasting, or any other activity at the project does not exceed the criteria in Table 3 at any residence on privately owned land.	Yes	All monitoring confirms compliance.

Condition	Conditional Requirement	Compliance	Comments
17.	The proponent shall only carry out blasting associated with construction activities on site between 10am and 4pm Monday to Friday.	Yes	All blasts were within this timeframe.
18.	The proponent may carry out: (a)a maximum of 2 blasts a day associated with construction activities; and (b)5 blasts a week associated with construction activities, average over a 12 month period; on site without the written approval of the Director General.	Yes	Blasts undertaken in accordance with these requirements.
19.	Before carrying out any blasting, the Proponent shall advise all landowners within 2km of proposed blasting activities, and any other landowner nominated by the Director-General, that they are entitled to a property inspection.	Yes	Letters sent to nominated landholders advising of rights to an inspection, with inspections completed by Kelley Covey Pty Ltd.
20.	If the proponent receives a written request for a property inspection from any landowner with 2km of proposed blasting activities, or any other landowner nominated by the Director General, the proponent shall within 3 months of receiving this request: (a)commission a suitably qualified person, whose appointment has been approved by the Director General, to inspect the condition of any building or structure on the land, and recommend measures to mitigate any potential blasting impacts; and (b)give the landowner a copy of this property inspection report.	Yes	All reports provided to landowners.
21.	If any landowner within 2km of proposed blasting activities or any other landowner as nominated by the Director General claims that his/her property, including vibration sensitive infrastructure……..	N/A	Not triggered.
22.	Prior to the commencement of blasting, the proponent shall prepare and implement a detailed Blasting Monitoring Program for the project to the satisfaction of the Director General.	Yes	Blast Monitoring Program approved by DG 15th January 2008.
23.	The proponent shall ensure that dust emissions generated by the project does not cause additional exceedances of the criteria listed in Tables 4 to 6 at any residence on privately owned land, or on more than 25% of privately owned land.	Yes	Annual average deposited dust readings compliant, albeit outlier readings on project related property resulted in annual average>4g/m^2/month. One 24hr exceedance in PM10 at "Turrabaa" monitor.

Condition	Conditional Requirement	Compliance	Comments
24.	The proponent shall prepare and implement an Air Quality Monitoring Program for the project to the satisfaction of the Director General. This program must: (a)be submitted to the Director-General prior to the commencement of construction activities; (b)be prepared in consultation with the DECC; and (c)use a combination of high volume air samplers and dust deposition gauges to monitor the performance of the project.	Yes	Air Quality Monitoring program in place and approved by the DG on 15th January 2008.
25.	During the project, the Proponent shall ensure there is a suitable meteorological station on site that complies with the requirements in *Approved Methods for Sampling of Air Pollutants in New South Wales (DECC, 2007)*, or its latest version.	Yes	Meteorological Station is in place and functioning to required standards specified in the Narrabri EPL.
26.	The proponent shall ensure that the project does not result in subsidence impacts of greater than 20mm vertical subsidence on any land.	Yes	No subsidence impacts to date.
27.	Six months prior to mining occurring under each privately owned property, the proponent shall notify the relevant landowners of the extent of planned mining operations under their property.	Yes	No mining under privately owned property at this stage.
28.	The Proponent shall rehabilitate the site to the satisfaction of the Director General.	N/A	Only minor works undertaken to date to pit top area.
29.	The proponent shall prepare and implement a detailed Landscape Management Plan for the site to the satisfaction of the Director-General and DPI. This plan must: (a)be submitted to the Director-General for approval within 12 months of this approval; (b)be prepared by suitably qualified expert/s whose appointment have been endorsed by the Director General; (c)be prepared in consultation with DWE, DECC and NSC; and (d)include a Rehabilitation Management Plan and Mine Closure Plan.	No	Landscape Management Plan currently in production following approval by DG to experts. Expect plan completion in June 2009.
30.	The Rehabilitation Management Plan must……..	No	See response to 29 above.
31.	The mine closure plan must…….	No	See response to 30 above.

Condition	Conditional Requirement	Compliance	Comments
32.	The proponent shall not destroy any known Aboriginal objects (as defined in the NPWA 1974) without the written approval of the Director General.	Yes	No known objects destroyed.
33.	The proponent shall prepare and implement an Aboriginal Cultural Heritage Management Plan to the satisfaction of the Director General. This plan must: (a)be submitted to the Director General prior to the commencement of construction activities; (b)be prepared in consultation with DECC and the Narrabri Local Aboriginal Land Council; (c)include a protocol for the ongoing consultation and involvement of Aboriginal communities in the conservation and management of Aboriginal heritage on site; (d)describe the measures that would be implemented to protect Aboriginal sites on site, or if any new Aboriginal objects or skeletal remains are discovered during the project.	Yes	ACHMP prepared and implemented, approved by DG on 4th February 2008.
34.	The Proponent shall construct the Kamilaroi Highway intersection in consultation with NSC and to the satisfaction of RTA. This intersection must: (a)be completed, other than for items listed in (c) below, prior to the commencement of construction activities on site; (b)be constructed in accordance with a Traffic Management Plan approved by NSC and RTA; (c)include boom gates, flashing lights and warning bells for the Kurrajong Creek Road level crossing, to the satisfaction of ARTC and NSC; (d)include illumination of the Kurrajong Creek Road level crossing during construction of the intersection; (e)provide a information sign on Kurrajong Creek Road to inform road users of likely delays due to train traffic; and (f)maintain permanent access for the "Bow Hills" quarry.	Yes	Intersection works completed by the RTA. Boom gates, lights and bells installed at rail crossing. Lighting illuminated the intersection. Access to Bow Hills quarry remains. Only outstanding item is notice board on Kurrajong Creek road.
35.	Within 12 months of commencement of mining operations, the proponent shall bitumen seal Kurrajong Creek Road for a distance of 7km south of the Kamilaroi Highway intersection, to the satisfaction of the NSC.	Yes	Kurrajong Creek Road sealed.
36.	The proponent shall minimize the visual impacts of the project to the satisfaction of the Director-General.	Yes	Pit Top Area managed to reduce visual impact with completed areas rehabilitated to extent practicable.
37.	The proponent shall ensure that: (a)no outdoor lights shine above the horizontal; and (b)all external lighting associated with the project complies with *Australian Standard AS4282(INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting.*	Yes	Lighting maintained in accordance with these provisions.

Condition	Conditional Requirement	Compliance	Comments
38.	The proponent shall prepare and implement an Energy Savings Action Plan for the project to the satisfaction of the Director General. This plan must: (a)be prepared in consultation with DECC; (b)be prepared in accordance with the *Guidelines for Energy Savings Action Plans (DEUS, 2005)*, or its latest version; (c)be submitted to the Director-General for approval within 3 months of this approval; and (d)include a program to monitor the effectiveness of measures to reduce energy on site.	Yes	Energy Savings Action Plan developed and approved by DG on 13th October 2008.
39.	The proponent shall implement all reasonable and feasible measures to minimize the greenhouse gas emissions from the underground mining operations to the satisfaction of the Director General.	Yes	Gas drainage measures being thoroughly investigated to determine most feasible method to reduce impact. Composition of gas significantly minimizes options.
40.	Prior to carrying out underground coal mining operations, the Proponent shall submit a Greenhouse Gas Minimisation Plan to the Director General. This plan must: (a)identify options for minimizing greenhouse gas emissions from underground mining operations, with a particular focus on capturing and/or using these emissions; (b)investigate the feasibility of implementing each option; (c)propose the measures that would be implemented in the short to medium term on site; and (d)include a research program to inform the continuous improvement of the greenhouse gas minimization measures on site.	Not Yet Applicable	Preliminary investigations have commenced, however formal plan not yet prepared. Will be prepared over the next 3 months.
41.	The proponent shall prepare and implement a waste management plan for the project to the satisfaction of the Director-General. This plan must: (a)be submitted to the Director General for approval prior to commencing construction; (b)identify the various waste streams for the project; (c)describe what measures would be implemented to reuse, recycle or minimize the waste generated by the project; (d)ensure irrigation of treated wastewater is undertaken in accordance with *Environmental Guidelines: Use of Effluent by Irrigation (DEC, 2004)*, or its latest version; and (e)include a program to monitor the effectiveness of these measures,	Yes	Waste Management Plan approved by DG on 15th January 2008.
Schedule 4: Environmental Management, Monitoring, Auditing and Reporting			

Condition	Conditional Requirement	Compliance	Comments
1.	The proponent shall prepare and implement and Environmental Management Strategy for the project to the satisfaction of the Director General. This strategy must be submitted to the Director General prior to the commencement of construction activities and: (a)provide the strategic context for environmental management of the project; (b)identify the statutory requirements that apply to the project; (c)describe in general how the environmental performance of the project would be monitored and managed; (d)describe the procedures that would be implemented to: - keep the local community and relevant agencies informed about the operation and environmental performance of the project; - receive, handle, respond to and record complaints; - resolve any disputes that may arise during the course of the project; - respond to any non compliance; - manage cumulative impacts; and - respond to emergencies; and (e)describe the role, responsibility, authority and accountability of all key personnel in the environmental management of the project.	Yes	Environmental Management Strategy approved by DG on 15th January 2008.
2.	The proponent shall prepare and implement an Environmental Monitoring Program for the project to the satisfaction of the Director General. This program must be submitted to the Director General within 6 months of this approval and consolidate the various monitoring requirements in Schedule 3 of this approval into a single document.	No	Environmental Monitoring Program was referred to the DoP on 9th January 2009. No formal response received.
3.	As soon as practicable, and in any event within 24 hours of detecting an exceedance of the limits/performance criteria in the approval, or the occurrence of an incident that causes (or may cause) material harm to the environment, the proponent shall notify the Department and other relevant agencies of the exceedance/incident.	Yes	All occurrences reported – specifically individual PM10 exceedance, and noise issues associated with “Kurrjong” property.
4.	Within 6 days of notifying the Department and other relevant agencies….	Yes	Advice documented as required.

Condition	Conditional Requirement	Compliance	Comments
5.	Within 12 months of this approval, and annually thereafter, the proponent shall submit an AEMR to the Director General and to all relevant agencies. This report must: (a)identify the standards and performance measures that apply to the project; (b)describe works carried out in last 12 months; (c)describe the works that would be carried out in the next 12 months; (d)include a summary of complaints received during the past year, and compare this to complaints from previous years; (e)include a summary of the monitoring results for the project during the past year; (f)include an analysis of these monitoring results against the relevant: - impact assessment criteria/limits; - monitoring results from previous years; and - predictions in the EA; (g)identify any trends in the monitoring results over the life of the project; (h)identify any non-compliance during the previous year; and (i)describe what actions were, or are being taken to ensure compliance.	Yes	AEMR reporting period deferred to coincide with commencement of construction activity to provide account for full 12 months of site activity.
6.	Within 2 years of this approval, and every 3 years thereafter, unless the Director General directs otherwise, the proponent shall commission and pay the full cost of an independent Environmental Audit of the project	N/A	Not yet triggered.
7.	Within 6 weeks of completing this audit….	N/A	Not yet triggered.
8.	Within 3 months of submitting the audit….	N/A	Not yet triggered.
9.	Within 3 months of this approval, the Proponent shall establish a Community Consultative Committee (CCC) for the project to the satisfaction of the Director-General, in general accordance with the *Guideline for Establishing and Operating Community Consultative Committees for Mining Projects (Department of Planning, 2007)* or its latest version.	Yes	CCC established and operating as per guidelines.

Condition	Conditional Requirement	Compliance	Comments
10.	Within 3 months of the approval of any strategy/plan/program required under this approval, or the completion of audits or AEMR's required under this approval, the Proponent shall: (a)provide a copy of the relevant documents to the relevant agencies and CCC; and (b)put a copy of the relevant documents on its website.	Yes	As per requirements.
11.	During the project, the proponent shall: (a)make a summary of monitoring results required under this approval publicly available at the mine and on its website; and (b)update these results on a regular basis (at least every three months)	No	Not yet provided on website – will address over next month as website currently being redeveloped.

TABLE A3-2

Compliance Review – Environment Protection Licence 12789

Condition	Conditional Requirement	Compliance	Comments
A1.1	Construction of surface infrastructure including but not limited to access roads….	Yes	Intersection and access roads completed prior to commencement of mining activity.
A1.2	Carry out Coal Mining not exceeding 3500000T	Yes	No coal production within reporting period.
A1.4	The licensee must not commence scheduled activities on the premises without prior approval from DECC.	Yes	Licence variation application pending approval.
P1.1	Comply with monitoring/discharge points and areas. Setting of limits for the emission of pollutants.	Yes	Monitoring of all dust sampling points undertaken throughout term.
P2.1	Comply with weather monitoring.	Yes	Weather station in place and logging data.
L1.1	Comply with Section 120 of the POEO Act 1997 (re water quality)	Yes	No discharge from site, or non compliance with Section 120 of POEO Act 1997.
L5.1	Ensure no waste receival or disposal at premises, except as permitted by licence	Yes	No receival or disposal of waste at premises.
L6.1	Ensure noise compliance: (a) 35 dB(A) $L_{Aeq(15\ minute)}$ during the day (7am to 6pm), evening (6pm to 10pm) and night (10pm to 7am) for construction activities.	No	Inversion events resulted in noise levels >35dBA at individual receiver albeit these instances were outside normal atmospheric conditions. DECC has been informed with measures taking place to address inversion impact.
L6.2	To determine compliance, measure noise within 30m of noise sensitive residences or receptors.	Yes	At all monitoring points except “Kurrajong” as there was no access.
L7.1/2	Do not exceed blasting overpressure levels: • 115dBL for more than 5% of total number of blasts over 12 months • 120dB at any time	Yes	Compliant with overpressure during all blasts.

L7.4/5	Do not exceed vibration particle velocity from blasting by: (a) 5mm/s for more than 5% of total blasts during reporting period; and (b) 10mm/s at any time; At any point within 30m of any affected residential boundary or noise sensitive location.	Yes	Compliant with ground vibration for all blasts.
L7.7	Carry out blasting between 10:00am-4:00pm Monday to Friday	Yes	Blasts undertaken during this timeframe
L7.8	Blasting is limited to: a) Maximum two (2) blasts per day b) Five (5)blasts a week	Yes	A maximum of one blast per day.
O1.1	Carry out licensed activities in a competent manner, i.e. (a) Processing, handling, movement and storage of materials and substances; and (b) Treatment, storage, processing, reprocessing, transport and disposal of generated waste.	Yes	All measures undertaken in competent manner
O2.1	Maintain and operate all plant and equipment at premises in proper and efficient condition.	Yes	Adequate maintenance scheduling.
O3.1	Minimise or prevent emission of dust	Yes	Dust lift off kept to minimum throughout operations.
M1.1	Record and retain monitoring results required as per this licence.	Yes	Monitoring results recorded and retained.
M1.2	Keep all monitoring records associated with this licence: (a) In a legible form; (b) For at least 4 years; for production to any EPA authorized officer.	Yes	As above

M1.3	(a) Sampling date; (b) Sampling time (c) Sampling location (d) Sample collectors name	Yes	All details recorded and retained
M2.1	Monitor each monitoring point for pollutants as specified in licence	Yes	Monitoring points included in Environmental Monitoring Program at required intervals
M3.1	Monitor air pollutants in accordance with the Approved Methods publication or as approved by EPA.	Yes	In accordance with guidelines
M4.1	Keep a legible record of all complaints re pollution arising from licenced activity.	Yes	Complaints record held
M4.2	Keep the following records of complaint. (a) Date and time of complaint (b) Method complaint made (c) Any personal details of complaint (d) Nature of complaint (e) Licensee's action in response, any follow up contact; and (f) If no action-reason why	Yes	All details recorded.
M4.3	Keep records of complaints for 4 years	Yes	Complaints retained on site.
M4.4	Present records to EPA on request	Yes	All records will be provided on request.
M5.1	Operate telephone complaints line for receipt of complaints from the public	Yes	Complaints line operational.
M5.2	Notify the public of the complaints telephone line	Yes	Complaints line advertised.

R1.1	Complete and supply Annual Return to EPA comprising: (a) Statement of Compliance (b) Monitoring & Complaints Summary	Yes	Annual Return completed.
R1.5	Provide EPA with Annual Return no later than 60 days after end o each reporting period.	Yes	Annual Return supplied.
R1.7	Retain copy of Annual Return for 4 years.	Yes	Annual Return retained.
R1.8	Certify the Statement of Compliance within the Annual Return and sign the Monitoring and Complaints Summary by: (a) Licence holder; or (b) Approved person	Yes	Return signed by authorized company representatives.
R2.1	Notify EPA of threatening or harmful incidents as soon as practicable by phoning EPA's Pollution Line Service	Yes	All incidents will be reported
R2.2	Provide written details of the incident to EPA within 7 days of incident	Yes	Written details will be supplied.
R3.1	Upon an EPA officer suspecting that an event is causing or likely to cause environmental harm: (a) At the premises; or (b) In connection with vehicles or plant associated with the licenced activities; A request may be made for a written report of the event.	Yes	Any requests for information will be complied with.
R3.2	The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within the time specified	Yes	Report will be supplied.

R3.3	The report may be required to include: (a) Event cause, time and duration; (b) Type, volume and concentration of every pollutant discharged; (c) Contact details of employees or agents of licensee who witnessed event; (d) Contact details of any other persons witnessing the event; (e) The action taken and follow-up action with complainants in relation to event; (f) Mitigation measures proposed to prevent recurrence; (g) Ant other relevant matter	Yes	Reporting will supply with required information.
R3.4	EPA may request further details- must be supplied within specified time	Yes	Timeframes will be met.
G1.1	Retain a copy of this licence at premises to which the licence applies	Yes	Licence retained at site office.
G1.2	Produce licence to EPA officer on request	Yes	Licence available at site office on request
G1.3	The licence must be available for inspection by any employee or agent of the licensee working at the premises.	Yes	As above
E1.1	Prior to the commissioning of the evaporation and storage ponds, the licensee must provide the DECC Armidale with an “as constructed” report	Yes	As constructed report will be supplied to DECC.

TABLE A3-3

Compliance Review – ML 1609

1	Within a period of three months from the date of grant/renewal of the lease a notice in writing must be served on each landholder.	Yes	To be confirmed
2	All practicable measures to prevent and/or minimize any harm to the environment.	Yes	All measures taken to reduce impact.
3	Conduct mining operations in accordance with a MOP.	Yes	MOP approved with all measures in accordance with MOP.
4	EMR to be lodged with the DG annually.	Yes	AEMR supplied annually
7	Disturbed land must be rehabilitated to a sustainable/agreed end land use to the satisfaction of the DG.	Yes	Areas disturbed on pit top have been rehabilitated to the extent practicable.
8(a)	Prepare a Subsidence Management Plan prior to commencing any underground mining operations.	Yes	Subsidence Management Plan under development for Stage 2 operations. Negligible subsidence from Stage 1 operations.
9(a)	Ensure that at least 212 competent people are efficiently employed on the lease area on each week day except Sunday or Public Holiday; or	Yes	The highest average number of competent persons employed each day was 117 during May 2009. This will gradually increase as the site commences and moves into full production. Expenditure as per 9(b) below exceeded the minimum requirement.
9(b)	Expend on operations carried out in the course of prospecting or mining the lease area, an amount of not less than $3,710,000 per annum whilst the lease is in force.	Yes	Annual expenditure to date exceeds required minimum.
11	Exploration Report to be submitted to the DG each year within 28 days of the anniversary.	Yes	Submitted annually

15 (a)	Monitor ground vibration generated by any blasting that it does not exceed 10mm/second in more than 5% of the total blasts over a period of 12 months.	Yes	Monitored and compliant.
15 (b)	Overpressure noise level generated by any blast is not to exceed 120 dB (linear) and 115 dB (linear) in more than 5% of the total blasts over a period of 12 months.	Yes	Monitored and compliant
16	Ensure the safety of persons or stock.	Yes	Safety measures a priority on site.
17.2	Exploratory drill holes must satisfy the DG: 1.Cored holes surveyed 2.Cored Holes sealed to prevent collapse 3.Drill holes permanently sealed with cement plugs 4.If drill hole meets natural or noxious gases it is plugged or sealed. 5.If drill hole meets an artesian or sub-artesian flow it is effectively sealed. 6.Unused drill holes are to be sealed in accordance with Department guidelines. 7.Once any drill hole ceases to be used the land and its immediate vicinity is left in a clean, tidy and stable condition.	Yes	As per requirements
18	Operations must be carried out in a manner that does not cause or aggravate air pollution, water pollution or soil contamination or erosion.	Yes	As per requirement
19	Transmission line, communication line, pipeline or any other utility must not be interfered with.	Yes	As per requirement

20	Fences must not be damaged or interfered with. Gates must be closed or left open in accordance with the requirements of the landholder.	Yes	As per requirement
21(a)	Operations must not affect any road.	Yes	No roads affected.
21(b)	The cost incurred in fixing any damage to roads must be paid to the designated authority.	Yes	No costs incurred.
22	Access tracks must be kept to a minimum.	Yes	Access tracks are minimized.
27(a)	A security of $100,000 must be given and maintained with the Minister by the lease holder for the purpose of ensuring the fulfillment by the lease holder of obligations under this lease.	Yes	Security Paid.
27(b)	Security: Cash Security Certificate	Yes	Security Certificate in place
28	A person must not remove, damage, destroy, displace, obliterate or deface any marks in connection with any trigonometrical station, permanent mark or survey mark.	Yes	No damage occurred.

Appendix 4

Dust Monitoring

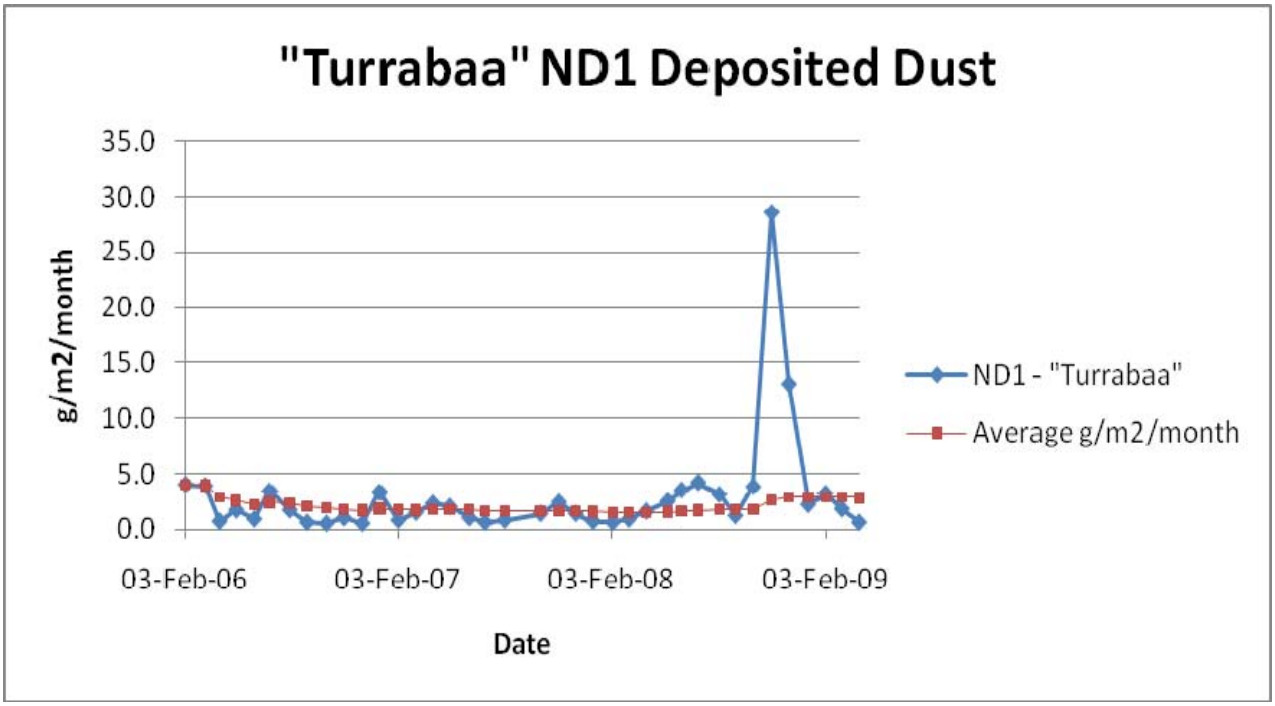
Sample Number	Sample Location	Sample Date	Sampler	Time: (d)	Volume Collected mLs	Total Insoluble Matter g/m²/mth	Ash g/m²/mth
29219.01	ND1	04-Feb-08	Client	1315	1480	0.6	0.5
29219.02	ND2	04-Feb-08	Client	1325	1410	0.5	0.4
29219.03	ND3	04-Feb-08	Client	1400	1365	0.4	0.4
29219.04	ND4	04-Feb-08	Client	1415	1535	1.4	0.6
29219.05	ND5	04-Feb-08	Client	1425	1235	0.2	0.2
29219.06	ND6	04-Feb-08	Client	1440	925	1.6	0.9
29219.07	ND7	04-Feb-08	Client	1335	1580	0.6	0.5
29219.08	ND8	04-Feb-08	Client	1345	1230	0.4	0.3
29519.01	ND1	03-Mar-08	Client	1035	2485	0.9	0.6
29219.02	ND2	03-Mar-08	Client	1045	2065	0.8	0.4
29219.03	ND3	03-Mar-08	Client	1630	1885	0.5	0.4
29219.04	ND4	03-Mar-08	Client	1515	1505	1.0	0.5
29219.05	ND5	03-Mar-08	Client	1545	1985	2.3	0.8
29219.06	ND6	03-Mar-08	Client	1600	1750	6.2	2.7
29219.07	ND7	03-Mar-08	Client	100	1565	1.3	0.6
29219.08	ND8	03-Mar-08	Client	1125	1585	0.6	0.3
29767.01	ND1	02-Apr-08	Client	1155	140	1.6	1.0
29767.02	ND2	02-Apr-08	Client	1110	85	3.7	1.2
29767.03	ND3	02-Apr-08	Client	1210	130	1.5	0.8
29767.04	ND4	02-Apr-08	Client	1220	80	1.1	0.7
29767.05	ND5	02-Apr-08	Client	1245	100	1.3	0.9
29767.06	ND6	02-Apr-08	Client	1255	160	1.7	1.3
29767.07	ND7	02-Apr-08	Client	1130	105	1.2	0.7
29767.08	ND8	02-Apr-08	Client	1120	70	1.1	0.7

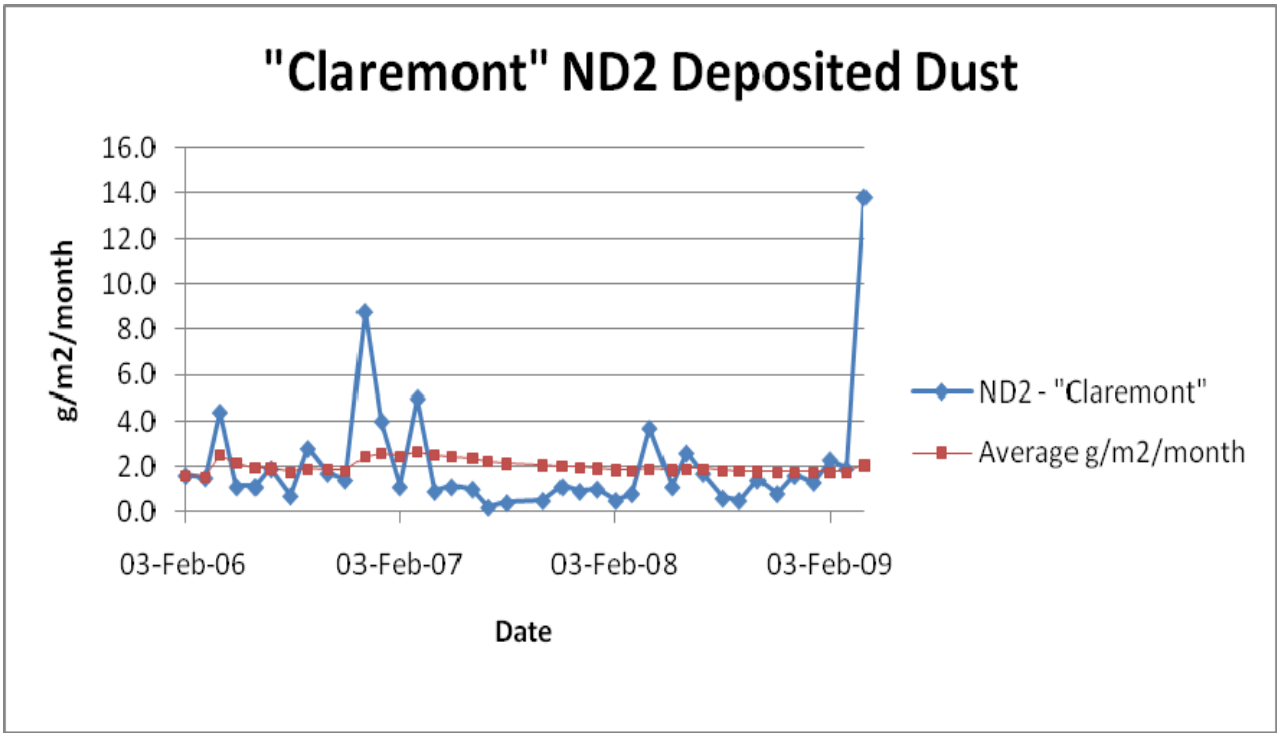
Sample Number	Sample Location	Sample Date	Sampler	Time: (d)	Volume Collected mLs	Total Insoluble Matter g/m²/mth	Ash g/m²/mth
30049.01	ND1	09-May-08	Client	945	530	2.5	1.8
30049.02	ND2	09-May-08	Client	855	480	1.1	0.8
30049.03	ND3	09-May-08	Client	1005	405	0.9	0.7
30049.04	ND4	09-May-08	Client	1020	455	1.2	0.9
30049.05	ND5	09-May-08	Client	1050	425	1.7	1.3
30049.06	ND6	09-May-08	Client	1055	345	1.0	0.7
30049.07	ND7	09-May-08	Client	920	355	1.0	0.7
30049.08	ND8	09-May-08	Client	910	410	0.6	0.4
30380-01	ND1	02-Jun-08	Client	1342	320	3.5	2.0
30380-02	ND2	02-Jun-08	Client	1230	175	2.6	2.0
30380-03	ND3	02-Jun-08	Client	1400	220	2.2	1.2
30380-04	ND4	02-Jun-08	Client	1410	120	2.1	1.2
30380-05	ND5	02-Jun-08	Client	1440	190	2.3	1.9
30380-06	ND6	02-Jun-08	Client	1450	190	1.0	0.7
30380-07	ND7	02-Jun-08	Client	1255	170	0.6	0.6
30380.08	ND8	02-Jun-08	Client	1245	50	1.5	1.2
30654.01	ND1	01-Jul-08	Client	1330	1115	4.2	2.6
30654.02	ND2	01-Jul-08	Client	1225	1075	1.7	1.4
30654.03	ND3	01-Jul-08	Client	1350	1060	3.5	1.0
30654.04	ND4	01-Jul-08	Client	1400	790	0.9	0.8
30654.05	ND5	01-Jul-08	Client	1425	870	1.7	1.7
30654.06	ND6	01-Jul-08	Client	1435	885	0.4	0.3
30654.07	ND7	01-Jul-08	Client	1250	985	1.3	1.0
30654.08	ND8	01-Jul-08	Client	1235	795	0.6	0.4

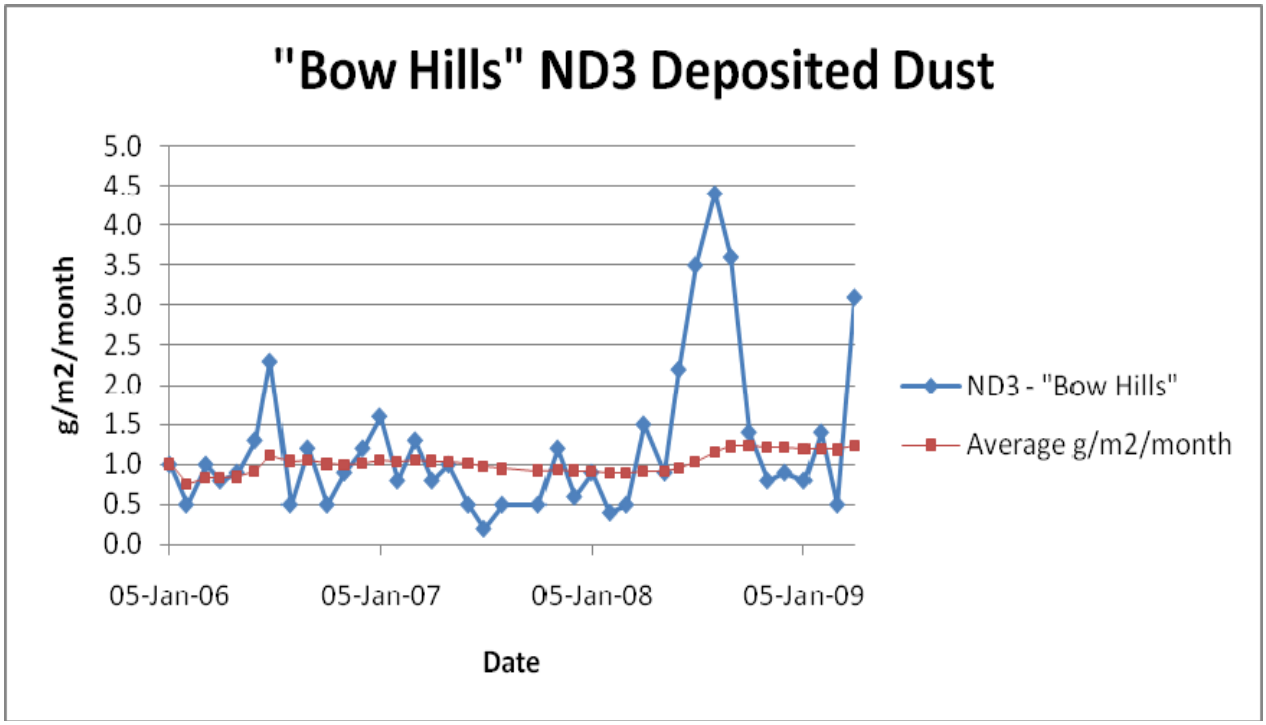
Sample Number	Sample Location	Sample Date	Sampler	Time: (d)	Volume Collected mLs	Total Insoluble Matter g/m²/mth	Ash g/m²/mth
30896.02	ND2	04-Aug-08	Client	1010	625	0.6	0.5
30896.03	ND3	04-Aug-08	Client	1055	685	4.4	1.4
30896.04	ND4	04-Aug-08	Client	1105	455	0.5	0.5
30896.05	ND5	04-Aug-08	Client	1115	510	1.9	1.7
30896.06	ND6	04-Aug-08	Client	1120	595	0.4	0.4
30896.07	ND7	04-Aug-08	Client	1040	475	0.3	0.3
30896.08	ND8	04-Aug-08	Client	1030	465	0.3	0.3
31204.01	ND1	01-Sep-08	Client	1030	890	1.2	1.0
31204.02	ND2	01-Sep-08	Client	1040	980	0.5	0.4
31204.03	ND3	01-Sep-08	Client	1147	945	3.6	1.3
31204.04	ND4	01-Sep-08	Client	1200	800	1.6	1.2
31204.05	ND5	01-Sep-08	Client	1210	840	3.3	2.4
31204.06	ND6	01-Sep-08	Client	1215	695	0.4	0.2
31204.07	ND7	01-Sep-08	Client	1115	695	0.5	0.3
31204.08	ND8	01-Sep-08	Client	1050	835	0.5	0.3
31522.01	ND1	02-Oct-08	Client	830	1925	3.8	2.3
31522.02	ND2	02-Oct-08	Client	840	1815	1.4	0.8
31522.03	ND3	02-Oct-08	Client	1000	1645	1.4	0.6
31522.04	ND4	02-Oct-08	Client	945	1285	8.6	5.8
31522.05	ND5	02-Oct-08	Client	935	1495	4.3	3.4
31522.06	ND6	02-Oct-08	Client	920	1465	1.0	0.6
31522.07	ND7	02-Oct-08	Client	910	1340	0.8	0.5
31522.08	ND8	02-Oct-08	Client	850	1510	0.6	0.4

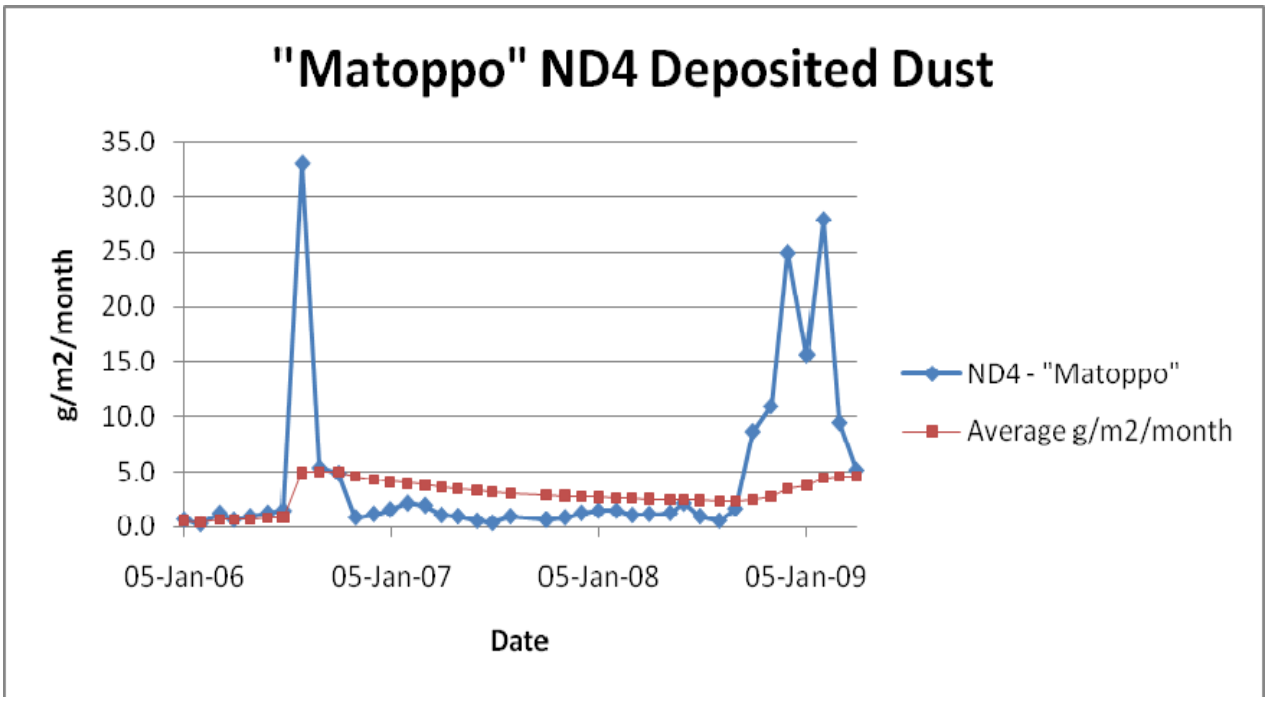
Sample Number	Sample Location	Sample Date	Sampler	Time: (d)	Volume Collected mLs	Total Insoluble Matter g/m²/mth	Ash g/m²/mth
31769.01	ND1	03-Nov-08	Client	1049	1365	28.6	5.9
31769.02	ND2	03-Nov-08	Client	1106	1080	0.8	0.8
31769.03	ND3	03-Nov-08	Client	1222	1395	0.8	0.6
31769.04	ND4	03-Nov-08	Client	1236	1350	10.9	4.0
31769.05	ND5	03-Nov-08	Client	1250	1220	1.9	1.1
31769.06	ND6	03-Nov-08	Client	1300	1295	4.6	1.2
31769.07	ND7	03-Nov-08	Client	1140	1290	0.9	0.6
31769.08	ND8	03-Nov-08	Client	1120	1455	0.6	0.5
32017.01	ND1	03-Dec-08	Client	1115	1525	13.1	3.5
32017.02	ND2	03-Dec-08	Client	1200	1675	1.6	1.0
32017.03	ND3	03-Dec-08	Client	1106	1710	0.9	0.5
32017.04	ND4	03-Dec-08	Client	1310	1455	24.9	11.1
32017.05	ND5	03-Dec-08	Client	1250	1440	1.3	0.7
32017.06	ND6	03-Dec-08	Client	1300	1505	1.5	0.7
32017.07	ND7	03-Dec-08	Client	1220	1345	1.4	0.8
32017.08	ND8	03-Dec-08	Client	1210	1460	1.1	0.7
32512.01	ND1	05-Jan-09	Client	935	2770	2.2	1.3
32512.02	ND2	05-Jan-09	Client	943	2765	1.3	1.0
32512.03	ND3	05-Jan-09	Client	1108	2760	0.8	0.5
32512.04	ND4	05-Jan-09	Client	1057	2175	15.6	5.6
32512.05	ND5	05-Jan-09	Client	1030	2760	1.5	0.9
32512.06	ND6	05-Jan-09	Client	1022	2750	2.3	1.1
32512.07	ND7	05-Jan-09	Client	1009	2495	1.1	0.7
32512.08	ND8	05-Jan-09	Client	955	2740	1.1	0.7

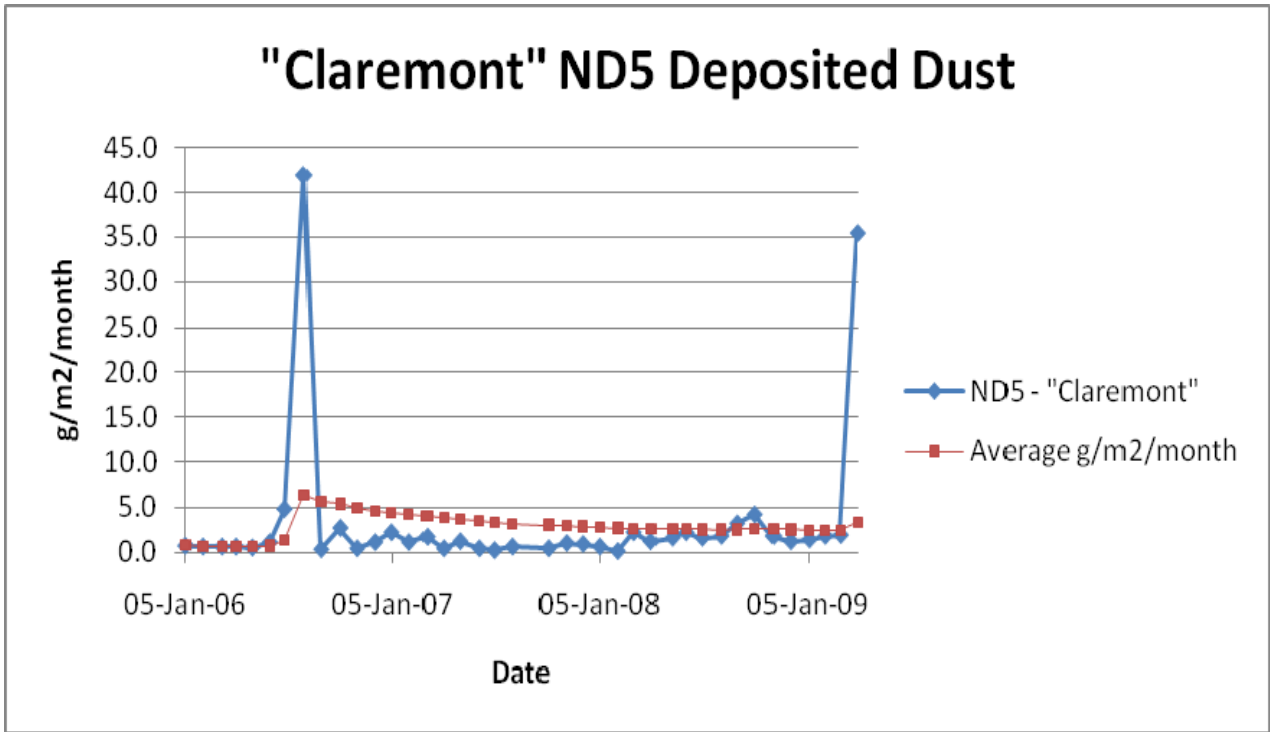
Sample Number	Sample Location	Sample Date	Sampler	Time: (d)	Volume Collected mLs	Total Insoluble Matter g/m²/mth	Ash g/m²/mth
32240.01	ND1	02-Feb-09	Client	930	595	3.2	1.7
32440.02	ND2	02-Feb-09	Client	950	635	2.3	1.9
32440.03	ND3	02-Feb-09	Client	1145	465	1.4	1.1
32440.04	ND4	02-Feb-09	Client	1130	440	27.9	6.5
32440.05	ND5	02-Feb-09	Client	1115	450	1.9	1.4
32440.06	ND6	02-Feb-09	Client	1103	480	2.6	1.7
32440.07	ND7	02-Feb-09	Client	1027	695	0.8	0.6
32440.08	ND8	02-Feb-09	Client	1007	725	1.6	1.2
32857.01	ND1	02-Mar-09	Client	815	2600	1.8	1.2
32857.02	ND2	02-Mar-09	Client	845	2580	1.9	1.4
32857.03	ND3	02-Mar-09	Client	1118	2420	0.5	0.,3
32587.04	ND4	02-Mar-09	Client	1045	1970	9.4	2.4
32587.05	ND5	02-Mar-09	Client	100	2300	2.0	1.4
32587.06	ND6	02-Mar-09	Client	950	1900	13.8	2.7
32587.07	ND7	02-Mar-09	Client	926	1950	1.0	0.7
32587.08	ND8	02-Mar-09	Client	906	2250	0.8	0.5
2600-1003-00	ND1	01-Apr-09	ALS		15	0.6	0.4
2600-1003-00	ND2	01-Apr-09	ALS		15	13.8	6.6
2600-1003-00	ND3	01-Apr-09	ALS		100	3.1	2.1
2600-1003-00	ND4	01-Apr-09	ALS		100	5.1	3.0
2600-1003-00	ND5	01-Apr-09	ALS		100	35.5	14.1
2600-1003-00	ND6	01-Apr-09	ALS		100	6.6	5.6
2600-1003-00	ND7	01-Apr-09	ALS		100	3.6	2.1
2600-1003-00	ND8	01-Apr-09	ALS		100	3.5	2.3

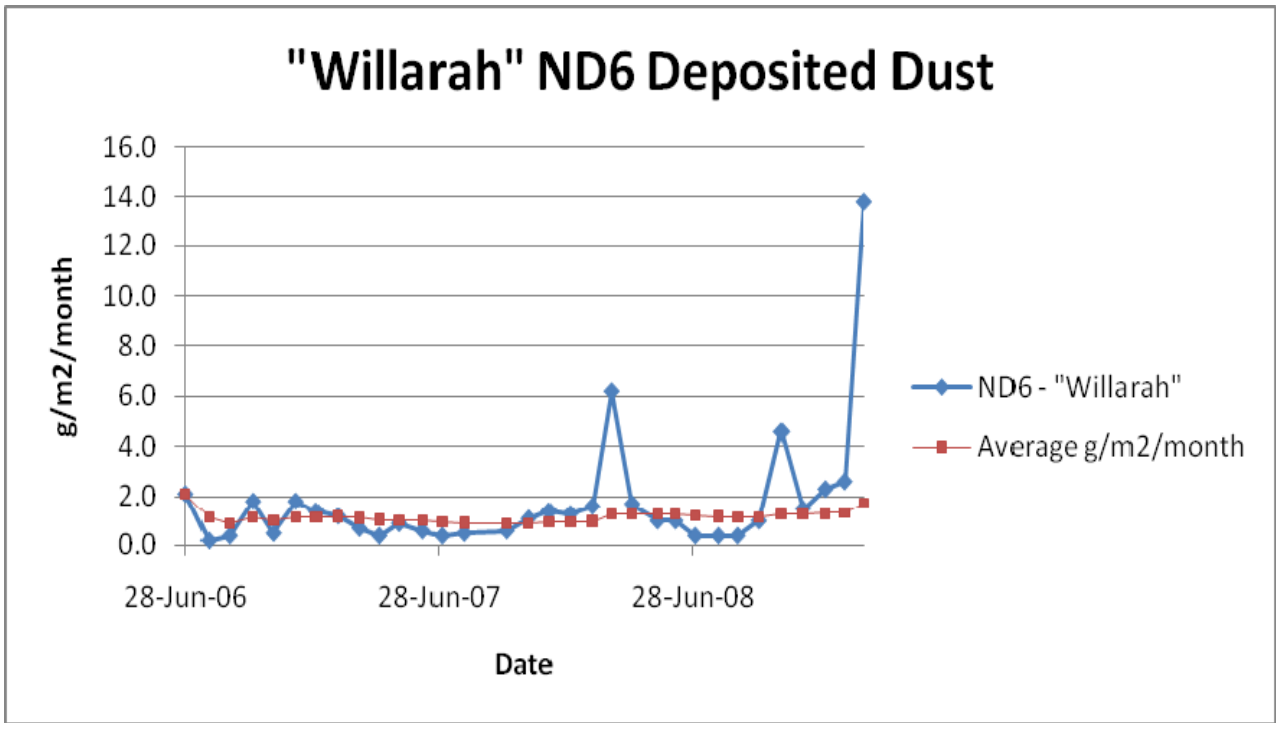

"Turrabaa" ND1 Deposited Dust
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
g/m2/month
03-Feb-06
03-Feb-07
03-Feb-08
03-Feb-09
Date
ND1 - "Turrabaa"
Average g/m2/month

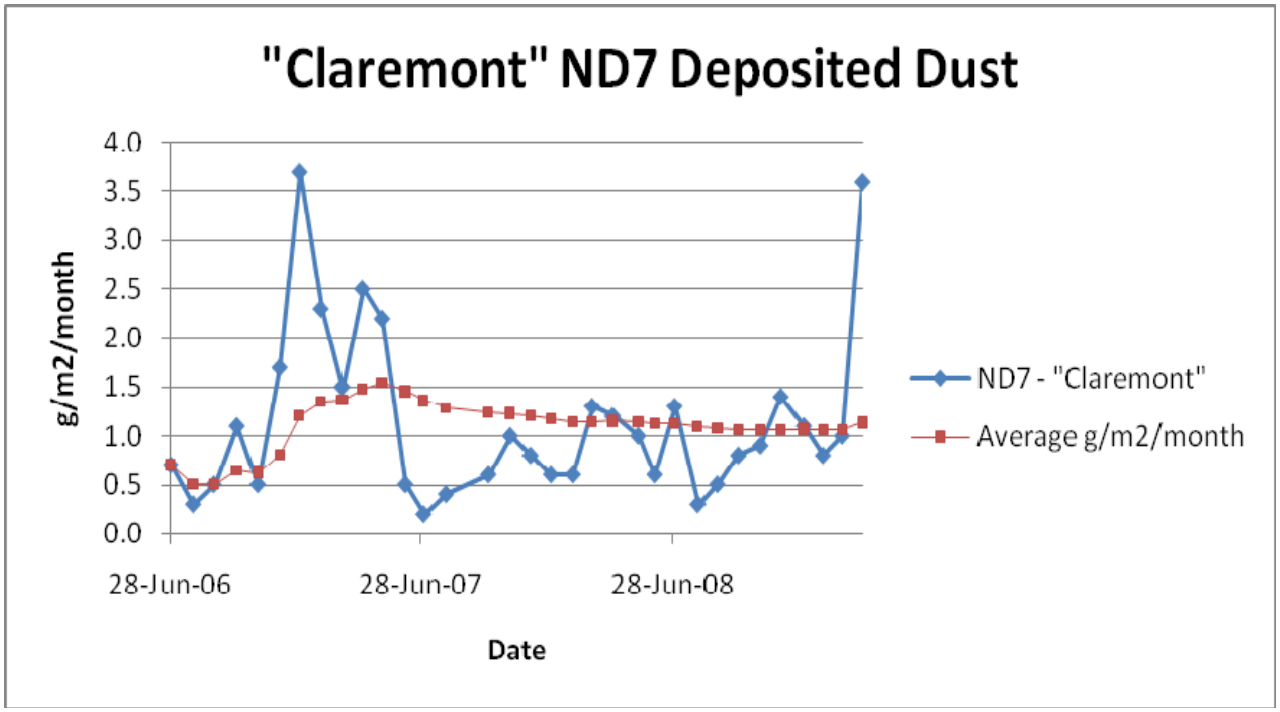

"Claremont" ND2 Deposited Dust
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
g/m2/month
03-Feb-06
03-Feb-07
03-Feb-08
03-Feb-09
Date
ND2 - "Claremont"
Average g/m2/month

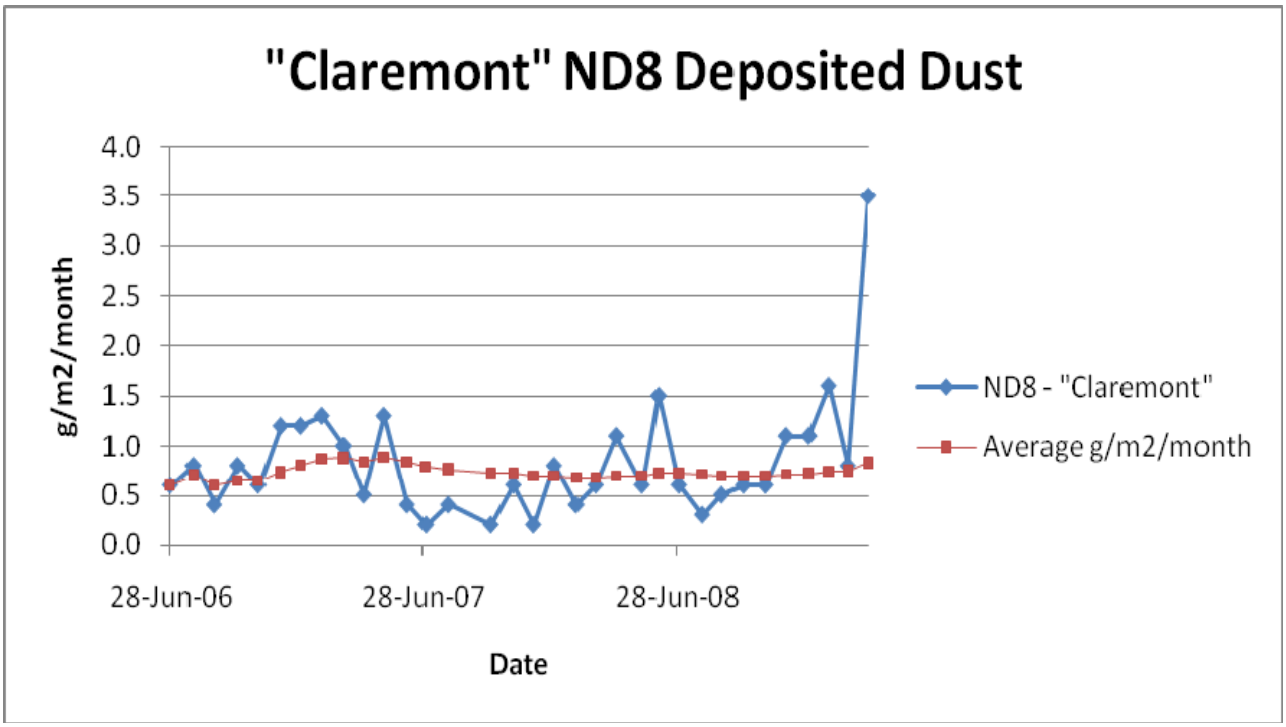

"Bow Hills" ND3 Deposited Dust
g/m2/month
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
05-Jan-06
05-Jan-07
05-Jan-08
05-Jan-09
Date
ND3 - "Bow Hills"
Average g/m2/month


"Matoppo" ND4 Deposited Dust
g/m2/month
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
05-Jan-06
05-Jan-07
05-Jan-08
05-Jan-09
Date
ND4 - "Matoppo"
Average g/m2/month


"Claremont" ND5 Deposited Dust
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
g/m2/month
05-Jan-06
05-Jan-07
05-Jan-08
05-Jan-09
Date
ND5 - "Claremont"
Average g/m2/month


"Willarah" ND6 Deposited Dust
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
g/m2/month
28-Jun-06
28-Jun-07
28-Jun-08
Date
ND6 - "Willarah"
Average g/m2/month


"Claremont" ND7 Deposited Dust
g/m2/month
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
28-Jun-06
28-Jun-07
28-Jun-08
Date
ND7 - "Claremont"
Average g/m2/month


"Claremont" ND8 Deposited Dust
g/m2/month
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
28-Jun-06
28-Jun-07
28-Jun-08
Date
ND8 - "Claremont"
Average g/m2/month

PM10

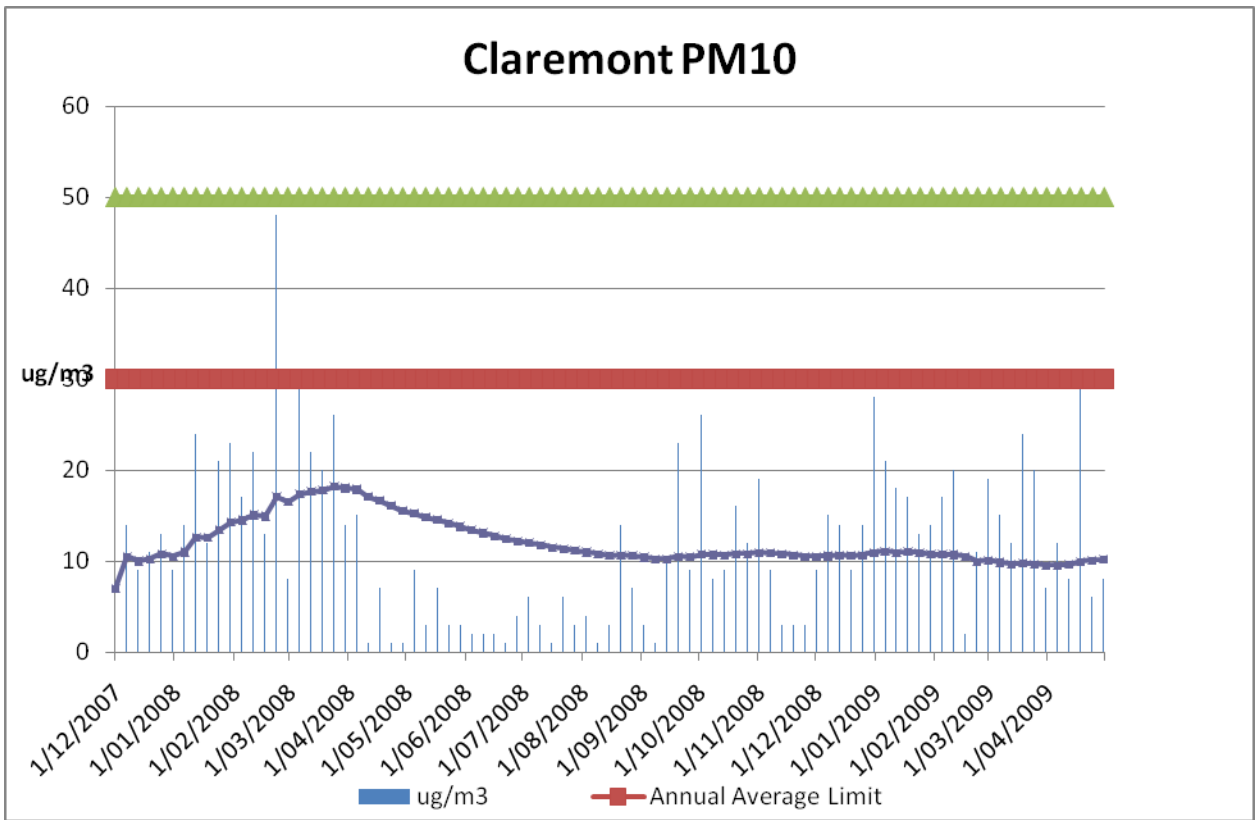
Monitoring

Claremont PM10 High Volume Air Sampler

Site	Site Id	Datum	Zone	Easting	Northing
Claremont PM10	ND-9	MGA	55	777047	6619621

Date	mg/paper	µg/m3	Annual Average	Annual Average Limit	24hr Limit
5/02/2008	26.6	17	14.50	30	50
11/02/2008	34	22	15.08	30	50
17/02/2008	20.2	13	14.93	30	50
23/02/2008	74.3	48	17.13	30	50
29/02/2008	13.1	8	16.56	30	50
6/03/2008		31	17.41	30	50
12/03/2008		22	17.67	30	50
18/03/2008		20	17.79	30	50
24/03/2008		26	18.20	30	50
30/03/2008		14	18.00	30	50
5/04/2008	24	15	17.86	30	50
11/04/2008	1.7	1	17.13	30	50
17/04/2008	11.4	7	16.71	30	50
23/04/2008	2	1	16.08	30	50
29/04/2008	1.8	1	15.50	30	50
5/05/2008	14	9	15.26	30	50
11/05/2008	5.3	3	14.82	30	50
17/05/2008	10.9	7	14.55	30	50
23/05/2008	5.7	3	14.17	30	50
29/05/2008	4.1	3	13.81	30	50
4/06/2008	2.5	2	13.44	30	50
10/06/2008	2.5	2	13.09	30	50
16/06/2008	2.4	2	12.76	30	50
22/06/2008	1.3	1	12.43	30	50
28/06/2008	6.7	4	12.19	30	50
4/07/2008	9.4	6	12.03	30	50
10/07/2008	4.3	3	11.79	30	50
16/07/2008	1.8	1	11.51	30	50
22/07/2008	9.2	6	11.38	30	50
28/07/2008	5.7	3	11.17	30	50
3/08/2008	6.5	4	11.00	30	50
9/08/2008	1.2	1	10.77	30	50

Date	mg/paper	µg/m3	Annual Average	Annual Average Limit	24hr Limit
15/08/2008	5.5	3	10.59	30	50
21/08/2008	22.2	14	10.67	30	50
27/08/2008	12	7	10.59	30	50
2/09/2008	5.3	3	10.43	30	50
8/09/2008	2	1	10.23	30	50
14/09/2008	17	10	10.22	30	50
20/09/2008	36.7	23	10.48	30	50
26/09/2008	14.7	9	10.45	30	50
2/10/2008	41	26	10.75	30	50
8/10/2008	12.9	8	10.70	30	50
14/10/2008	14.7	9	10.67	30	50
20/10/2008	24.5	16	10.76	30	50
26/10/2008	19.5	12	10.79	30	50
1/11/2008	29.3	19	10.93	30	50
7/11/2008	13.4	9	10.90	30	50
13/11/2008	5	3	10.76	30	50
19/11/2008	3.9	3	10.63	30	50
25/11/2008	2.6	3	10.51	30	50
1/12/2008	14	9	10.54	30	50
7/12/2008	23.5	15	10.56	30	50
13/12/2008	21.2	14	10.64	30	50
19/12/2008	14.5	9	10.61	30	50
25/12/2008	21.6	14	10.62	30	50
31/12/2008	42.3	28	10.93	30	50
6/01/2009	29.2	21	11.05	30	50
12/01/2009	27.4	18	10.95	30	50
18/01/2009	27.2	17	11.03	30	50
24/01/2009	19	13	10.90	30	50
30/01/2009	21.9	14	10.75	30	50
5/02/2009	25.1	17	10.75	30	50
11/02/2009	31.2	20	10.72	30	50
17/02/2009	3.8	2	10.54	30	50
23/02/2009	16.8	11	9.93	30	50
01/03/2009	29.2	19	10.11	30	50
07/03/2009	23.3	15	9.85	30	50
13/03/2009	19.1	12	9.69	30	50
19/03/2009	36.8	24	9.75	30	50
25/03/2009	31	20	9.66	30	50
31/03/2009	11.7	7	9.54	30	50

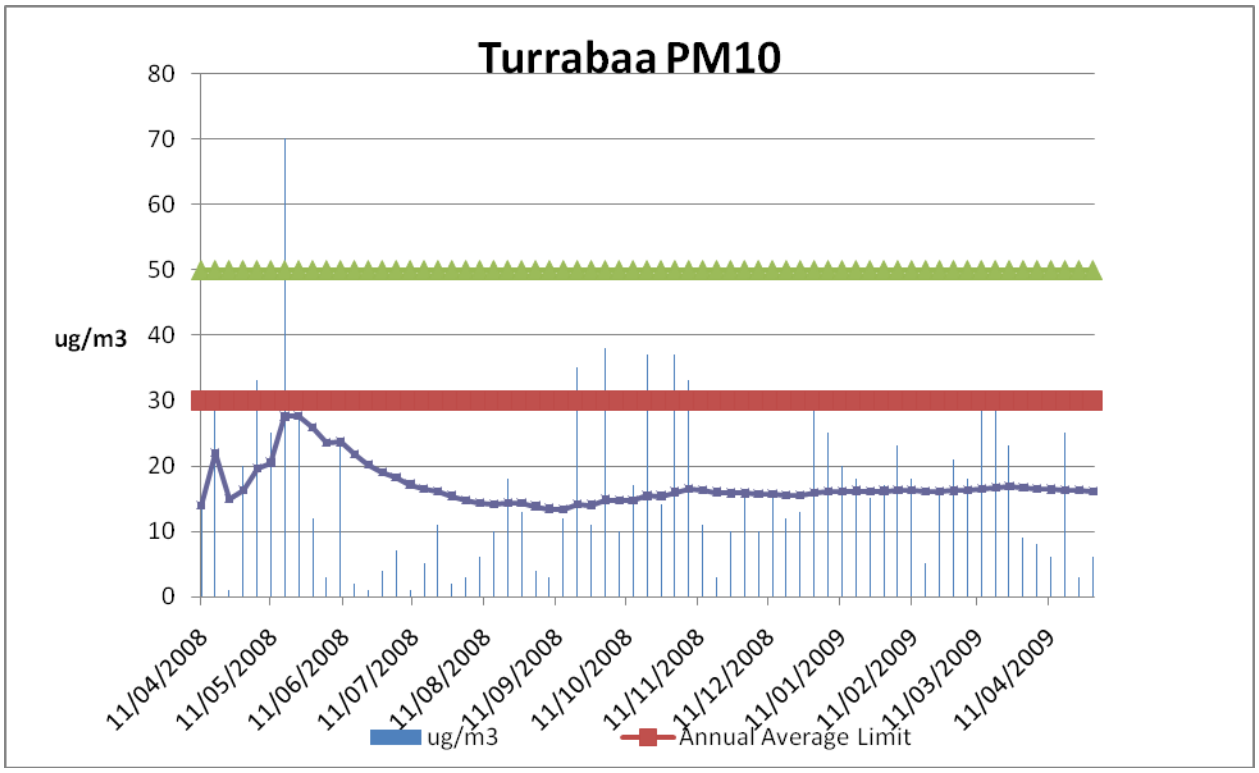

Claremont PM10
60
50
40
ug/m3
30
20
10
0
1/12/2007
1/01/2008
1/02/2008
1/03/2008
1/04/2008
1/05/2008
1/06/2008
1/07/2008
1/08/2008
1/09/2008
1/10/2008
1/11/2008
1/12/2008
1/01/2009
1/02/2009
1/03/2009
1/04/2009
ug/m3
Annual Average Limit

Turrabaa PM10 High Volume Air Sampler

Site	Site Id	Datum	Zone	Easting	Northing
Turrabaa PM10	ND-10	MGA	55	779775	6619367

Date	mg/paper	µg/m3	Annual Average	Annual Average Limit	24hr Limit
11/04/2008	20.9	14	14.00	30	50
17/04/2008	45.8	30	22.00	30	50
23/04/2008	0.9	1	15.00	30	50
29/04/2008	32.4	20	16.25	30	50
5/05/2008	51.4	33	19.60	30	50
11/05/2008	38.7	25	20.50	30	50
17/05/2008	106.6	70	27.57	30	50
23/05/2008	43.9	28	27.63	30	50
29/05/2008	19.4	12	25.89	30	50
4/06/2008	5	3	23.60	30	50
10/06/2008	38.1	24	23.64	30	50
16/06/2008	3.6	2	21.83	30	50
22/06/2008	1.7	1	20.23	30	50
28/06/2008	6.8	4	19.07	30	50
4/07/2008	11.6	7	18.27	30	50
10/07/2008	2.3	1	17.19	30	50
16/07/2008	8	5	16.47	30	50
22/07/2008	18.4	11	16.17	30	50
28/07/2008	3.6	2	15.42	30	50
3/08/2008	4.9	3	14.80	30	50
9/08/2008	9.8	6	14.38	30	50
15/08/2008	16	10	14.18	30	50
21/08/2008	28	18	14.35	30	50
27/08/2008	20.1	13	14.29	30	50
2/09/2008	5.6	4	13.88	30	50
8/09/2008	5.1	3	13.46	30	50
14/09/2008	18.9	12	13.41	30	50
20/09/2008	52.6	35	14.18	30	50
26/09/2008	17.4	11	14.07	30	50
2/10/2008	58.7	38	14.87	30	50
8/10/2008	16.1	10	14.71	30	50
14/10/2008	25.8	17	14.78	30	50

Date	mg/paper	µg/m3	Annual Average	Annual Average Limit	24hr Limit
20/10/2008	55.8	37	15.45	30	50
26/10/2008	21.8	14	15.41	30	50
1/11/2008	55.9	37	16.03	30	50
7/11/2008	49.4	33	16.50	30	50
13/11/2008	16.6	11	16.35	30	50
19/11/2008	4.6	3	16.00	30	50
25/11/2008	15.3	10	15.85	30	50
1/12/2008	25	16	15.85	30	50
7/12/2008	14.7	10	15.71	30	50
13/12/2008	22.5	15	15.69	30	50
19/12/2008	19.3	12	15.60	30	50
25/12/2008	19.4	13	15.55	30	50
31/12/2008	47.6	31	15.89	30	50
6/01/2009	36.3	25	16.09	30	50
12/01/2009	30.1	20	16.17	30	50
18/01/2009	27.9	18	16.21	30	50
24/01/2009	21.5	15	16.18	30	50
30/01/2009	24.6	17	16.2	30	50
5/02/2009	33.5	23	16.33	30	50
11/02/2009	27.5	18	16.37	30	50
17/02/2009	7.4	5	16.15	30	50
23/02/2009	24.4	16	16.15	30	50
01/03/2009	31.4	21	16.24	30	50
7/03/3009	27.2	18	16.27	30	50
13/03/2009	44.8	30	16.51	30	50
19/03/2009	43.6	29	16.72	30	50
25/03/2009	34.9	23	16.83	30	50
31/03/2009	14.3	9	16.70	30	50


Turrabaa PM10
80
70
60
50
40
30
20
10
0
ug/m3
11/04/2008
11/05/2008
11/06/2008
11/07/2008
11/08/2008
11/09/2008
11/10/2008
11/11/2008
11/12/2008
11/01/2009
11/02/2009
11/03/2009
11/04/2009
ug/m3
Annual Average Limit

Appendix 5

GROUNDWATER MONITORING DATA

Site ID	Piezometer / Water Bore	Date	Time	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters			NEPM Suite													Major Cations					Major Anions												
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Arsenic (As) - mg/L	Barium (Ba) - mg/L	Beryllium (Be) - mg/L	Cadmium (Cd) - mg/L	Chromium (Cr) - mg/L	Cobalt (Co) - mg/L	Copper (Cu) - mg/L	Maganese (Mn) - mg/L	Nickel (Ni) - mg/L	Lead (Pb) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L	Mercury (Hg) - mg/L	EC - Lab - µs/cm	Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/L	Total Cations - meq/L	Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbonate Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L	Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Total Iron (Fe)	Total Dissolved Solids
P1	NG1	1-Nov-07	1450	52.02	53.00																																	
		17-Dec-07		50.02	51.00																																	
		23-Jan-08	1145	47.43	48.42																																	
		3-Mar-08	1230	46.53	47.51																																	
		2-Apr-08	1040	45.51	46.50																																	
		9-May-08	826	44.25	45.23																																	
		2-Jun-08	1200	43.25	44.24																																	
		1-Jul-08	1150	42.00	42.98																																	
		11-Aug-08	1350	40.24	41.22																																	
		14-Aug-08	1047	40.15	41.13																																	
		19-Aug-08	925	39.96	40.94																																	
		9-Sep-08	830	42.82	43.80	7.6	470	20.8	0.008	0.684	0.003	0.0008	0.094	0.041	0.128	2.33	0.154	0.516	0.11	0.250	0.0001	3710	26	25	933	24	44.6	641	43	<1	<1	1190	1190	42.7	2.06	1.62	56.7	2380
		14-Nov-08	956	45.86	46.84																																	
		3-Dec-08	1505	45.18	46.16																																	
		16-Feb-09	1255	42.24	43.22																																	
P2	NG2	1-Nov-07	1420	30.58	31.50																																	
		17-Dec-07		29.58	30.50																																	
		23-Jan-08	1120	28.97	29.90																																	
		3-Mar-08	1655	29.48	30.40																																	
		2-Apr-08	1100	29.46	30.38																																	
		9-May-08	846	29.45	30.38																																	
		2-Jun-08	1224	29.46	30.39																																	
		1-Jul-08	1215	29.43	30.35																																	
		11-Aug-08	1435	29.44	30.36																																	
		14-Aug-08	1105	29.45	30.37																																	
		19-Aug-08	1055	29.45	30.37																																	
		9-Sep-08	1030	29.88	30.80	7.2	15.7	20.8	0.010	1.40	0.004	0.0006	0.024	0.029	0.057	2.96	0.048	0.091	0.06	0.093	<0.0001	17100	189	453	4060	126	227	5650	366	<1	<1	2550	2550	218	1.97	4.52	33.4	12900
		14-Nov-08	1012	29.64	30.56																																	
		16-Feb-09	1329	29.32	30.23																																	
P3	NG3	01/Nov/07	1530	9.92	10.85																																	
		17/Dec/07		10.07	11.00																																	
		23/Jan/08	1400	9.32	10.25																																	
		03/Mar/08	1640	9.87	10.80																																	
		02/Apr/08	1200	9.89	10.83																																	
		09/May/08	1002	9.90	10.83																																	
		02/Jun/08	1353	9.90	10.84																																	
		01/Jul/08	1345	9.91	10.84																																	
		11/Aug/08	1610	9.92	10.85																																	
		09/Sep/08	1300	9.77	10.70	7.07	1340	20.2	0.005	0.092	0.002	0.0002	0.004	0.006	0.002	0.496	0.014	0.030	<0.01	0.014	<0.0001	15800	331	504	3190	60	198	5250	1230	<1	<1	1310	1310	200	0.44	0.94	0.76	11700
		14/Nov/08	930	9.89	10.83																																	
		01/Dec/08	1120	9.86	10.80																																	
		12/Jan/09	1223	9.86	10.80																																	
P4	NG4	1-Nov-07	1610	18.49	19.40																																	
		11-Dec-07		18.09	19.00																																	
		17-Dec-07		18.09	19.00																																	
		23-Jan-08	1225	17.82	18.73																																	
		3-Mar-08	1505	18.3	19.21																																	
		2-Apr-08	1305	18.29	19.20																																	
		9-May-08	1110	18.26	19.17																																	
		2-Jun-08	1505	18.275	19.19																																	
		1-Jul-08	1448	18.24	19.15																																	
		11-Aug-08	1703	18.19	19.10																																	
		9-Sep-08	1400	17.99	18.9	6.7	1560	21.2	0.008	0.265	0.003	<0.0001	0.005	0.033	0.006	6.20	0.024	0.027	<0.01	0.013	<0.0001	17700	355	699	4550	124	276	7650	1700	<1	<1	1840	1840	288	2.10	1.70	3.93	16800
		14-Nov-08	920	18.16	19.06																																	
		1-Dec-08	1315	18.12	19.02																																	
		12-Jan-09	1239	18.10	19.00																																	
		23-Feb-09	1045	18.06	18.96																																	
P5	NG5	1-Nov-07	1620	29.06	30.00																																	
		11-Dec-07		29.06	30.00																																	
		17-Dec-07		29.06	30.00																																	
		23-Jan-08	1240	28.36	29.30																																	
		3-Mar-08	1455	27.97	28.91																																	
		2-Apr-08	1315	27.475	28.42																																	
		9-May-08	1120	26.92	27.86																																	
		2-Jun-08	1516	26.605	27.55																																	
		1-Jul-08	1500	26.26	27.20																																	
		14-Aug-08	1515	25.78	26.72																																	
		12-Sep-08	1015	26.56	27.5	7	1050	20.8	0.007	0.368	0.003	0.0002	0.004	0.019	0.007	1.92	0.051	0.081	<0.01	0.031	<0.0001	24600	456	494	3960	71	238	7300	719	<1	<1	1860	1860	258	4.16	2.03	2.01	12700
		14-Nov-08	908	27.06	28																																	
		1-Dec-08	1109	26.81	27.75																																	
		12-Jan-09	1249	26.41	27.35																																	
		16-Feb-09	1356	25.79	26.72																																	
P6	NG6	1-Nov-07	1640	90.21	91.10																																	
		11-Dec-07		90.11	91.00																																	
		17-Dec-07		90.11	91.00																																	
		23-Jan-08	1315	89.37	90.26																																	
		3-Mar-08	1440	89.91	90.80																																	
		2-Apr-08	1330	89.93	90.82																																	
		9-May-08	1145	89.91	90.80																																	
		2-Jun-08	1533	89.92	90.81																																	
		1-Jul-08	1519	89.92	90.81																																	
		12-Aug-08	1055	89.86	90.75																																	
		10-Sep-08		89.11	90.00				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Nov-08	1204	89.04	90.02																																	
		3-Dec-08	1336	89.05	90.03																																	
		23-Feb-09	1214	89.17	90.05																																	
P7	NG7	1-Nov-07	1700	62.87	63.80																																	
		11-Dec-07		62.07	63.00																																	
		17-Dec-07		62.07	63.00																																	
		23-Jan-08	1335	90.47	91.40																																	
		3-Mar-08	1425	90.00	90.93																																	
		2-Apr-08	1400	91.07	92.00																																	
		9-May-08	1202	89.52	90.45																																	
		2-Jun-08	1553	92.07	93.00																																	
		1-Jul-08	1544	92.07	93.00																																	
		12-Aug-08	1135	91.07	92.00																																	
		10-Sep-08	1115	62.87	63.80	7.95	1170	20.5	<0.001	0.031	<0.001	<0.0001	0.005	0.003	0.006	0.095	0.005	0.117	<0.01	0.033	<0.0001	149	1	1	25	3	1.33	26	4	<1	<1	19	19	1.20		0.55	0.79	101
		14-Nov-08	1213	91.08	92.00																																	
		3-Dec-08	1350	91.08	92.00																																	
		23-Feb-09	1240	89.17	90.10																																	
P8	NC-110S	3-Mar-08	1345	62.23	63.00																																	
		2-Apr-08	1415	50.52	51.29																																	
		9-May-08	1220	50.59	51.36																																	

		12-Sep-08	830	50.53	51.30	7.85	1120	21.2	<0.001	0.057	<0.001	<0.0001	<0.001	<0.001	0.001	0.037	<0.001	0.004	<0.01	0.007	<0.0001	805	33	10	121	9	7.96	64	20	<1	<1	276	276	7.74	1.35	0.14	0.09	455
		14-Nov-08	1247	50.55	51.33																																	
		3-Dec-08	1414	50.44	51.22																																	
		23-Feb-09	1326	50.48	51.30																																	
P9	GWB5S	3-Mar-08	1105	19.88	20.52																																	
		2-Apr-08	1135	19.88	20.52																																	
		9-May-08	929	19.87	20.51																																	
		2-Jun-08	1300	19.89	20.53																																	
		1-Jul-08	1255	19.86	20.50																																	
		14-Aug-08	1217	19.90	20.54																																	
		12-Sep-08	1230	19.66	20.30	6.8	1210	22.1	0.002	0.059	<0.001	0.0001	0.004	0.003	0.014	0.037	0.012	0.036	<0.01	0.042	<0.0001	451	30	12	43	5	4.51	42	24	<1	<1	139	139	4.46	0.52	0.13	1.32	295
		14-Nov-08	1103	19.80	20.44																																	
		01-Dec-08	1219	19.77	20.41																																	
		12-Jan-09	930	19.79	20.43																																	
		23-Feb-09	938	19.80	20.45																																	
P10	NC-030D	3-Mar-08	1315	15.56	16.53																																	
		2-Apr-08	1425	15.64	16.61																																	
		9-May-08	1230	15.88	16.85																																	
		2-Jun-08	1623	16.03	17.00																																	
		1-Jul-08	1610	15.13	16.10																																	
		14-Aug-08	1635	16.31	17.28																																	
		9-Sep-08	1700	20.03	21.00	7.92	1130	20.8	0.002	1.59	0.001	<0.0001	0.006	0.002	0.004	2.13	0.005	0.024	<0.01	0.023	<0.0001	6800	155	80	1490	30	79.9	2410	188	<1	<1	546	546	82.9	1.88	1.73	0.92	4170
		14-Nov-08	1301	53.36	54.33																																	
		3-Dec-08	1432	51.73	52.70																																	
		12-Jan-09	1130	47.89	48.86																																	
		23-Feb-09	1355	43.72	44.68																																	
P11	NC-030S	3-Mar-08	1320	22.18	23.17																																	
		2-Apr-08	1430	22.14	23.13																																	
		9-May-08	1232	22.26	23.25																																	
		2-Jun-08	1620	22.30	23.29																																	
		1-Jul-08	1612	22.33	23.32																																	
		12-Aug-08	1248	22.39	23.38																																	
		12-Sep-08	730	22.91	23.90	8.23	980	17.6	0.004	0.162	<0.001	<0.0001	<0.001	0.089	0.004	2.98	0.159	0.006	<0.01	0.016	<0.0001	2490	89	40	341	4	22.7	581	16	<1	<1	248	248	21.7	2.24	0.04	0.81	1330
		14-Nov-08	1258	23.02	24.01																																	
		3-Dec-08	1430	23.01	24.00																																	
		12-Jan-09	1125	23.01	24.00																																	
		23-Feb-09	1400	22.98	23.95																																	
P12	NC-098D	3-Mar-08	1135	36.70	37.51																																	
		2-Apr-08	1145	37.72	38.53																																	
		9-May-08	937	36.75	37.56																																	
		2-Jun-08	1312	36.78	37.59																																	
		1-Jul-08	1300	36.79	37.60																																	
		11-Aug-08		36.54	37.35																																	
		12-Sep-08	1130	36.49	37.30	6.8	1020	21.5	0.007	0.022	<0.001	<0.0001	0.002	0.008	0.002	0.053	0.002	0.132	<0.01	0.189	<0.0001	367	30	10	28	5	3.62	24	16	<1	<1	131	131	3.63	0.14	0.08	0.67	226
		14-Nov-08	1047	36.72	37.61																																	
		01-Dec-08	1200	36.67	37.56																																	
		12-Jan-09	915	36.66	37.57																																	
		18-Feb-09	1233	36.72	37.52																																	
P13	NC-098S	3-Mar-08	1140	8.51	9.38																																	
		2-Apr-08	1147	8.62	9.49																																	
		9-May-08	939	8.88	9.75																																	
		2-Jun-08	1308	9.00	9.88																																	
		1-Jul-08	1303	9.18	10.05																																	
		11-Aug-08		9.34	10.21																																	
		12-Sep-08	1045	9.43	10.30	7.1	1180	20.1	<0.001	0.153	<0.001	<0.0001	0.001	<0.001	0.001	0.134	0.002	0.007	<0.01	0.023	<0.0001	2040	50	89	253	7	21.0	279	30	<1	<1	556	556	19.6	3.47	0.24	0.11	1040
		14-Nov-08	1045	8.35	9.21																																	
		01-Dec-08	1202	8.48	9.34																																	
		12-Jan-09	920	7.53	8.39																																	
		18-Feb-09	1241	7.35	8.23																																	
P14	NC-100D	3-Mar-08																																				
		2-Apr-08																																				
		9-May-08																																				
		2-Jun-08																																				
		1-Jul-08																																				
		11-Aug-08																																				
		12-Sep-08							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Nov-08																																				
		3-Dec-08																																				
		12-Jan-09	945	58.42	58.77																																	
P15	NC-100S	3-Mar-08																																				
		2-Apr-08																																				
		9-May-08																																				
		2-Jun-08																																				
		1-Jul-08																																				
		11-Aug-08																																				
		12-Sep-08							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Nov-08																																				
		3-Dec-08																																				
		12-Jan-09	950	16.21	16.56																																	
P16	NC-119D	3-Mar-08	1410	51.25	52.03																																	
		2-Apr-08	1345	51.24	52.02																																	
		9-May-08	1152	51.21	51.99																																	
		2-Jun-08	1542	51.20	51.98																																	
		1-Jul-08	1525	51.12	51.90																																	
		12-Aug-08	1145	51.08	51.86																																	
		12-Sep-08	930	50.52	51.30	7.45	1085	20.5	0.001	0.029	<0.001	<0.0001	0.002	<0.001	0.002	0.070	0.036	0.394	<0.01	0.204	<0.0001	132	5	1	14	3	1.05	22	<1	<1	<1	25	25	1.12		2.00	4.43	109
		14-Nov-08	1227	56.22	57.00																																	
		3-Dec-08	1400	55.22	56.00																																	
		12-Jan-09	1055	48.67	49.45																																	
		23-Feb-09	1250	48.45	49.24																																	
P17	NC-119S	3-Mar-08	1405	55.96	56.56																																	
		2-Apr-08	1350	59.40	60.00																																	
		9-May-08	1157	59.05	59.65																																	
		2-Jun-08	1539	59.40	60.00																																	
		1-Jul-08	1527	43.40	44.00																																	
		12-Aug-08	1150	58.40	59.00																																	
		12-Sep-08		57.30	57.90				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Nov-08	1233	57.39	58.00																																	
		3-Dec-08	1404	57.39	58.00																																	
		12-Jan-09	1100	58.40	59.00																																	
		23-Feb-09	1258	48.88	49.50																																	
P18	NC-122	3-Mar-08	1530	13.40	14.24																																	
		2-Apr-08	1225	13.40	14.24																																	
		9-May-08	1027	13.45	14.29																																	
		2-Jun-08	1425	13.53	14.37																																	
		1-Jul-08	1414	13.56	14.40																																	
		11-Aug-08	1650	13.66	14.50																																	
		11-Sep-08	1030	13.16	14.00	6.75	1410	22.9	0.003	0.817	<0.001	<0.0001	0.008	0.032	0.007	0.137	0.059	0.046	0.03	0.022	<0.0001	3650	30	27	824	38	40.6	80	38	<1	<1	1870	1870	40.5	0.04	2.61	3.75	2370
		14-Nov-08	1123	12.70	13.49																																	
		01-Dec-08	1251	12.79	13.58																																	
		12-Jan-09	1015	12.88	13.67																																	

		2-Jun-08	1432	16.30	17.24																															
		1-Jul-08	1421	16.38	17.32																															
		14-Aug-08	1335	16.34	17.29																															
		17-Sep-08	1445	16.16	17.10	6.7	1340	23.2	0.001	1.26	<0.001	0.0001	0.018	0.043	0.005	0.728	0.320	0.015	<0.01	0.066	<0.0001	11000	99	141	1040	1400	97.6	1880	28	<1	<1	1880	1880	91.2	3.40	6.15	3.19	6220
		14-Nov-08	1130	19.19	20.18																															
		01-Dec-08	1244	17.26	18.21																															
		12-Jan-09	1025	16.87	17.82																															
		23-Feb-09	1008	24.20	24.60																															
P20	NC-127	3-Mar-08	1610	13.52	14.39																															
		2-Apr-08	1235	13.52	14.39																															
		9-May-08	1039	13.62	14.49																															
		2-Jun-08	1420	13.68	14.55																															
		1-Jul-08	1408	13.64	14.51																															
		11-Aug-08	1640	13.70	14.57																															
		9-Sep-08	1000	13.48	14.35	6.7	1140	19.6	<0.001	4.80	0.002	0.0003	0.003	0.001	0.005	0.035	0.014	0.004	<0.01	0.009	<0.0001	10500	62	68	2860	118	136	425	<1	<1	<1	5970	5970	131	1.83	10.3	1.57	9630
		14-Nov-08	1118	13.79	14.68																															
		01-Dec-08	1257	13.88	14.77																															
		12-Jan-09	1010	13.97	14.86																															
		23-Feb-09	920	14.06	14.95																															
WB1		14-Aug-08	1445	8.34	9.00																															
		12-Sep-08	1330	8.34	9.00	7.9	1060	23.5	0.005	3.96	0.002	0.0003	0.001	<0.001	0.002	0.015	<0.001	0.002	<0.01	0.091	<0.0001	14200	102	209	3740	204	190	53	3	<1	<1	8700	8700	175	4.06	11.9	0.64	8510
		14-Nov-08	1139	8.46	9.12																															
		01-Dec-08	1303	8.46	9.12																															
WB2		11-Aug-08	1515	9.22	9.41																															
		11-Sep-08	930	8.81	9.00	7.2	1010	20.7	<0.001	0.033	<0.001	<0.0001	<0.001	<0.001	0.001	0.003	0.002	<0.001	<0.01	<0.005	<0.0001	239	12	6	32	1	2.53	16	6	<1	<1	101	101	2.61		0.06	<0.05	153
		14-Nov-08	1056	6.12	6.31																															
		01-Dec-08	1212	6.30	6.49																															
		18-Feb-09	1250	4.41	4.60																															
WB3a		11-Sep-08	1230	8.09	8.60	7.7	1050	20.1	<0.001	0.179	<0.001	<0.0001	<0.001	<0.001	0.002	0.259	0.002	0.002	<0.01	0.009	<0.0001	703	39	20	78	4	7.11	54	10	<1	<1	268	268	7.08	0.10	0.26	0.34	431
		14-Nov-08	856	8.14	8.65																															
		01-Dec-08	1055	8.14	8.65																															
		12-Jan-09	1301	7.94	8.45																															
WB3b		11-Sep-08	1245	7.99	8.50	7.6	1250	19.8	<0.001	0.175	<0.001	<0.0001	<0.001	<0.001	0.002	0.255	0.001	0.001	<0.01	0.007	<0.0001	706	38	20	77	4	7.01	52	10	<1	<1	268	268	7.02	0.17	0.18	0.31	415
		14-Nov-08	854	8.05	8.56																															
		01-Dec-08	1057	7.99	8.50																															
		12-Jan-09	1303	7.84	8.33																															
WB4		12-Sep-08	1430	8.35	8.90	7.3	1120	19.8	<0.001	0.042	<0.001	<0.0001	<0.001	<0.001	0.002	0.003	0.002	<0.001	<0.01	0.006	<0.0001	1040	61	35	116	1	11.0	93	30	<1	<1	360	360	10.4	2.39	0.06	<0.05	461
		14-Nov-08	902	8.30	8.85																															
		12-Jan-09	1258	8.25	8.80																															
WB5a		12-Sep-08	1430	9.98	11.10	7.5	1200	21	<0.001	0.026	<0.001	<0.0001	<0.001	<0.001	0.004	0.033	<0.001	0.006	<0.01	0.008	<0.0001	510	36	18	32	2	4.66	29	28	<1	<1	160	160	4.59	0.72	0.05	0.10	281
		14-Nov-08	832	10.29	11.41																															
		01-Dec-08	1035	10.15	11.27																															
		12-Jan-09	1319	9.89	11.01																															
WB5b		12-Sep-08	1430	10.08	11.20	7.6	1150	21	<0.001	0.028	<0.001	<0.0001	<0.001	<0.001	0.003	0.031	0.001	0.006	<0.01	0.007	<0.0001	505	35	17	31	2	4.56	28	28	<1	<1	166	166	4.68	1.39	0.05	<0.05	278
		14-Nov-08	833	10.43	11.55																															
		01-Dec-08	1037	10.15	11.27																															
		12-Jan-09	1321	10.21	11.33																															
WB6a		12-Sep-08	1530	13.93	14.80	6.8	1120	20.4	<0.001	0.050	<0.001	<0.0001	<0.001	<0.001	0.008	0.302	0.002	0.029	<0.01	0.022	<0.0001	706	45	22	77	3	7.48	33	21	<1	<1	294	294	7.24	1.55	0.09	0.22	389
		12-Sep-08	1530	13.93	14.80	6.8	1120	20.4	<0.001	0.052	<0.001	<0.0001	<0.001	<0.001	0.005	0.419	0.004	0.014	<0.01	0.017	<0.0001	981	58	36	74	3	9.13	89	53	<1	<1	266	266	8.94	1.04	0.87	0.29	525
		14-Nov-08	823	14.31	15.19																															
		01-Dec-08	1030	14.29	15.17																															
		12-Jan-09	1326	14.24	15.12																															
WB6b		12-Sep-08	1530	11.33	12.20	7.2	1080	20.7	<0.001	0.052	<0.001	<0.0001	<0.001	<0.001	0.007	0.297	0.006	0.028	<0.01	0.050	<0.0001	781	45	22	83	3	7.78	35	21	<1	<1	305	305	7.52	1.62	0.09	0.28	405
		14-Nov-08	825	12.21	13.09																															
		01-Dec-08	1032	11.21	12.09																															
		12-Jan-09	1328	17.89	18.77																															
WB7		11-Sep-08	1330			6.9	1175	20.5	<0.001	0.006	<0.001	<0.0001	<0.001	<0.001	0.013	<0.001	<0.001	<0.001	<0.01	0.040	<0.0001	765	33	18	92	2	7.16	60	23	<1	<1	250	250	7.16	0.06	0.04	<0.05	410
		14-Nov-08	841	4.11	4.99																															
		01-Dec-08	1045	2.27	3.15																															
		12-Jan-09	1315	4.30	5.18																															
WB8		12-Sep-08							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14-Nov-08																																			
WB9	NC-008	1-Dec-08	1235	19.2	19.67				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix 6

BLAST MONITORING

Narrabri Coal Operations Pty Ltd

Environmental Blast Monitoring

SHOT NO	DATE	MONITOR LOCATION	PEAK GROUND PRESSURE	PEAK OVERPRESSURE	TIME
1	7/05/2008	Kurrajong	DNT	DNT	15:11:00
1	7/05/2008	Naroo	DNT	DNT	15:11:00
1	7/05/2008	Front Gate	DNT	DNT	15:11:00
2	16/05/2008	Kurrajong	0.10mm/s	113.3 dBL	12:03:53
2	16/05/2008	Naroo	DNT	DNT	
2	16/05/2008	Front Fate	0.63mm/s	dBL	12:04:00
3	23/05/2008	Kurrajong	1.44mm/s	99.7 dBL	11:36:13
3	23/05/2008	Naroo	DNT	DNT	11:36:00
3	23/05/2008	Front Gate	DNT	DNT	11:36:00
4	30/05/2009	Kurrajong	0.27mm/s	93.7 dBL	15:13:46
4	30/05/2009	Naroo	0.30mm/s	95.2 dBL	15:13:59
4	30/05/2009	Bow Hills	DNT	DNT	

Appendix 7

ROUTINE OPERATIONAL NOISE MONITORING

Attended Noise Monitoring

May 2008

June 2008

July 2008

August 2008

September 2008

December 2008

March 2009

Unattended Noise Monitoring

July 2008

September 2008

December 2008

March 2009

29 May 2008

Ref: 05168/2617

Mr Danny Young
Narrabri Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

RE: MAY 2008 NOISE MONITORING RESULTS

This letter report presents the results of attended noise compliance monitoring conducted for the Narrabri Coal Mine (NCM) on Thursday 15th May 2008. The purpose of the monitoring was to determine mine construction noise levels at the "Kurrajong" residence, owned my Mr M Lennox, to the south of the site. The survey was not a full compliance monitoring survey as detailed in the Narrabri Coal Mine Noise Monitoring Program. Rather, the measurements were conducted at the request of DoP to determine the level of noise impact at "Kurrajong" in response to complaints. A full compliance survey will be conducted in June 2008. A measurement was also taken on the entry road to "Bow Hills".

NOISE CRITERIA

The following is an extract from the Narrabri Coal NMP:

Noise impact assessment criteria for the various stages and activities associated with the mine's development were established in the *Environmental Assessment* using relevant DECC guidelines. These criteria have been incorporated in PA 05_0102 *Condition 3(12)* which is reproduced below. Additionally, PA 05_0102 *Condition 3(13)* identifies criteria for ensuring continuous improvement in noise mitigation actions at the mine site.

Noise Limits

3(12) The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately-owned residence.

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
All Privately owned Residences	35	35	35	45

Table 1: Impact assessment criteria dB(A)

Notes:

- *To determine compliance with the $LA_{eq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Relations Policy.*
- *To determine compliance with the $LA1_{(1\ minute)}$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (See Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

NOISE MONITORING LOCATIONS

It was not possible to conduct monitoring at a point within 30m of the residence, as access to the property was denied by the land owner. An alternative location was chosen at the edge of mine owned land in the direction of “Kurrajong”. Measurements were taken near the entry gate to “Claremont”, which is approximately half way between the equipment forming the box cut and the “Kurrajong” residence.

A noise measurement was also conducted next to the access road to “Bow Hills” at a distance from the Kamilaroi Highway approximately equal to the set-back of the residence. The measurement point was significantly closer to the mine access road construction works than the residence.

NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters”. Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Conditions on the day were very windy with gusts up to 8 m/s. The wind direction was variable, but was generally directly from the drift construction activities to “Kurrajong”. Wind over the microphone was above 50 dB(A) with a 25mm wind sock, so a 75mm wind sock was used to minimise wind noise. The sound meter was placed on a tripod and observed closely for times when the wind dropped sufficiently to allow measurement of noise from the mine, which was audible at most times. A hand held Kestrel weather station was utilised to ensure that noise measurements were taken when the wind speed dropped below 5 m/s.

RESULTS

"Kurrajong"

Due to the gusty nature of the wind there was significant variability in the mine noise. For example, the drill was a constant noise source but varied over time between levels in the mid-30 dB(A) range and inaudible. Noise from the excavator was also variable. Figure 2 below shows three measurement samples in which wind speed dropped to below 5 m/s. The third sample (Specific 3) gives a good indication of mine noise. The wind dropped to around 3 m/s and noise from the excavator peaked at 43 dB(A). The background level of 31 dB(A) during this sample represented drill noise. The L_{Aeq} for the sample was 34 dB(A). Assuming that the sample was representative of operations at the time, noise emissions from the mine are estimated as **34 dB(A),$L_{eq(15\ min)}$** and **43 dB(A),L_{max}**.

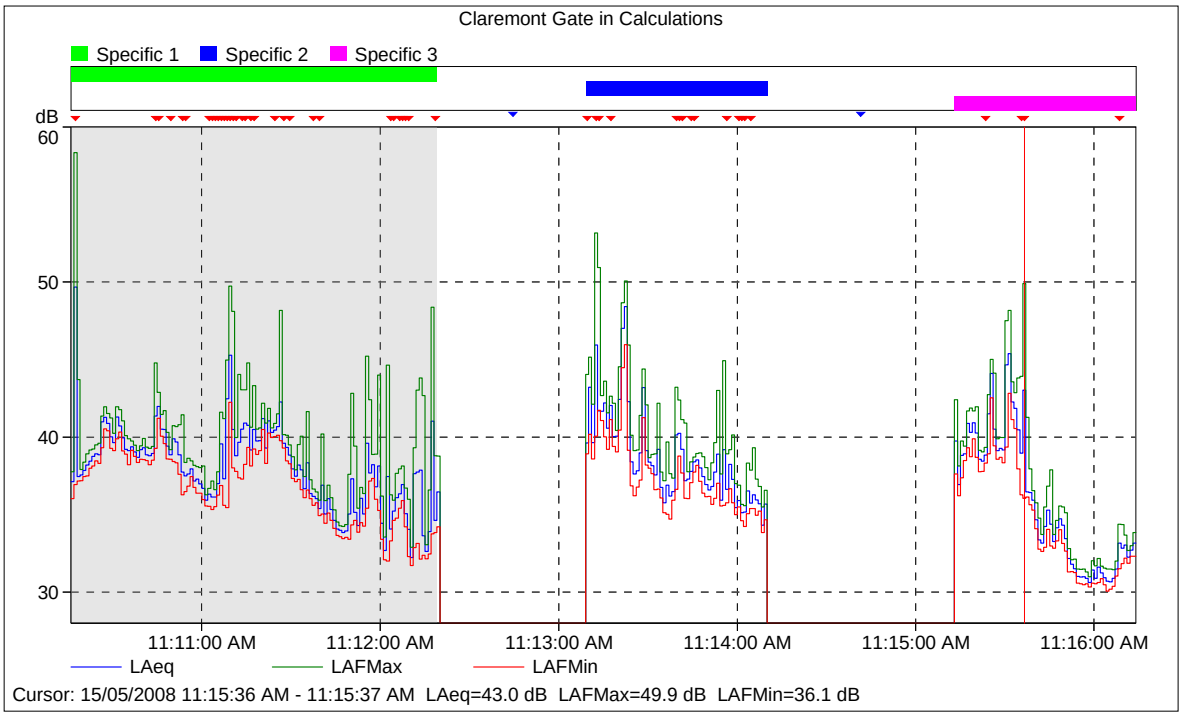


Figure 2. Time trace at Claremont gate.

Noise modelling originally conducted by Spectrum Acoustics for the Narrabri Mine was reviewed to determine the difference in noise level between the gate to "Claremont" (the measurement location) and the "Kurrajong" residence. Although noise contours have not been presented here, each modelled scenario was re-run with a NE wind to correspond with the wind direction on 15 May.

As expected, the model with the NE wind had an 8 dB difference between the measurement point and "Kurrajong", while the noise level difference was greater for all other scenarios. This is because the NE wind represents the worst case in terms of noise enhancement at "Claremont" and "Kurrajong". Applying this level difference to the measured levels discussed above gives **26 dB(A),$L_{eq(15\ min)}$** and **35 dB(A),L_{max}** at "Kurrajong". Without access to "Kurrajong" this is the best estimate of noise levels at this receiver on 15 May.

During the brief period when the wind dropped (see Figure 2) this noise level would have been audible at "Kurrajong" from outside the residence. The same level of noise occurring under calmer conditions

would certainly be audible. The results suggest that noise levels from Narrabri Mine easily satisfied the 35 dB(A) noise criterion. It is hoped that access to "Kurrajong" will be allowed for future compliance monitoring so that an exact measure of noise at this location can be achieved. If access is denied, then an extrapolation approach as applied above will be followed.

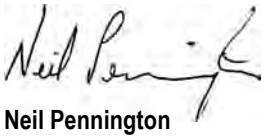
"Bow Hills"

The measurement was interrupted by intermittent traffic on the highway, although this was relatively easily removed from the time trace. Noise from a grader, which was the closest source, was occasionally audible and measured approximately 28 dB(A),L_{eq}. A topsoil scraper was working a large area and came within measurable range twice during a 15 minute period, producing a maximum level of 38 dB(A). The estimated total noise from construction works is **29 dB(A),$L_{eq(15minute)}$**. Again, this is well below the criterion and even lower levels would be experienced at the "Bow Hills" residence.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276 or 0406 670677.

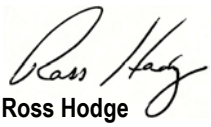
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:



Neil Pennington
Acoustical Consultant

Review:



Ross Hodge
Acoustical Consultant

24 July 2008

Ref: 05168/2684

Mr Danny Young
Narrabri Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

RE: JUNE 2008 ATTENDED NOISE MONITORING RESULTS

This letter report presents the results of attended noise compliance monitoring conducted for the Narrabri Coal Mine (NCM) on Thursday 26th June 2008. Noise monitoring was carried out in accordance with the conditions of the NCM Noise Management Plan (NMP) as detailed below. At the time of monitoring operations at NCM were in the construction phase.

NOISE CRITERIA

The following is an extract from the Narrabri Coal NMP:

Noise impact assessment criteria for the various stages and activities associated with the mine's development were established in the *Environmental Assessment* using relevant DECC guidelines. These criteria have been incorporated in PA 05_0102 *Condition 3(12)* which is reproduced below. Additionally, PA 05_0102 *Condition 3(13)* identifies criteria for ensuring continuous improvement in noise mitigation actions at the mine site.

Noise Limits

3(12) The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately-owned residence.

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
All Privately owned Residences	35	35	35	45

Table 1: Impact assessment criteria dB(A)

Notes:

- *To determine compliance with the $LA_{eq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Relations Policy.*
- *To determine compliance with the $LA1_{(1\ minute)}$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (See Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below:

Location N1: Bow Hills
Location N2: Westhaven
Location N3: Naroo
Location N4: Greylands
Location N5: Kurrajong*

*It was not possible to conduct monitoring at a point within 30m of the residence, as access to the property was denied by the land owner. An alternative location was chosen at the edge of mine owned land in the direction of "Kurrajong". Measurements were taken near the boundary fence with "Claremont", which is approximately half way between the works for construction of the box cut and the "Kurrajong" residence.

NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand held weather station with measurements made at approximately 2m above ground level. The morning of June 26 was cold and clear and early measurements were made whilst there was very little wind.

RESULTS

The total measured Leq is shown in **Table 1**. Where the noise from NCM was audible the Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall.

Noise from NCM is shown in bold type. Where noise from NCM is listed as inaudible, this means the maximum levels from the mine were at least 10 dB below the minimum level during the measurement and not measurable.

Table 1
NCM Noise Monitoring Results – 26 June 2008

Location	Time	dB(A),Leq	Wind speed/ direction	Identified Noise Sources
Bow Hills	9:17 am	41	1.5 m/s, 135°	Traffic (39), NCM (34), birds (27)
Westhaven	8:43 am	41	1.0 m/s, 315°	Birds and cows (38), NCM (36), plane (36),
Naroo	7:51 am	47	0.5 m/s, 45°	Traffic (45), birds (41), NCM (34)
Greylands	8:14 am	40	1.0 m/s, 315°	Traffic (43), NCM (38), birds (34)
Kurrajong*	7:32 am	50	0.5 m/s, 45°	NCM (48), birds (42), farm animals (35)

The results shown in table 1 indicate that noise emission from the construction works at NCM exceeded the day time noise criterion when measured at Westhaven, Greylands and the monitoring location adopted for Kurrajong.

At Westhaven and Greylands the noise was audible as general engine hum and occasional engine revs and reverse alarms. At the monitoring point for Kurrajong the noise was dominated by engine noise and general plant noise.

Additional noise measurements were made at the Kurrajong monitoring point to determine potential impacts under different atmospheric conditions.

At 3.20 pm on Wednesday June 25 the measured noise level was 30 dB(A) with noise from NCM contributing less than 25 dB(A). At the time there was a light breeze at less than 1m/s from the north west. Noise from NCM was audible as a low hum.

At 9.40 am on Thursday June 26 the measured noise level was 38 dB(A) with noise from NCM contributing 38 dB(A). At the time there was a breeze at approximately 1.5 m/s from the north west.

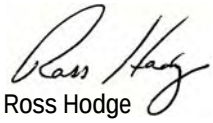
We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Neil Pennington
Acoustical Consultant

Review:



Ross Hodge
Acoustical Consultant

24 July 2008

Ref: 05168/2685

Mr Danny Young
Narrabri Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

RE: JUNE 2008 ADDITIONAL NOISE MONITORING RESULTS

This letter report presents the results of attended noise compliance monitoring conducted for the Narrabri Coal Mine (NCM) on Friday 11th July 2008. The purpose of the monitoring was to determine mine construction noise levels at the "Kurrajong" residence, owned my Mr M Lennox, to the south of the site. The survey was not a full compliance monitoring survey as detailed in the Narrabri Coal Mine Noise Monitoring Program. Rather, the measurements were conducted at the request of NCM to determine the level of noise impact at "Kurrajong" in response to complaints.

NOISE CRITERIA

The following is an extract from the Narrabri Coal NMP:

Noise impact assessment criteria for the various stages and activities associated with the mine's development were established in the *Environmental Assessment* using relevant DECC guidelines. These criteria have been incorporated in PA 05_0102 *Condition 3(12)* which is reproduced below. Additionally, PA 05_0102 *Condition 3(13)* identifies criteria for ensuring continuous improvement in noise mitigation actions at the mine site.

Noise Limits

3(12) The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately-owned residence.

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	**$L_{Aeq(15\ minute)}$**	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
All Privately owned Residences	35	35	35	45

Table 1: Impact assessment criteria dB(A)

Notes:

- *To determine compliance with the $L_{Aeq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Relations Policy.*
- *To determine compliance with the $L_{A1(1\ minute)}$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (See Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

NOISE MONITORING LOCATIONS

It was not possible to conduct monitoring at a point within 30m of the residence, as access to the property was denied by the land owner. An alternative location was chosen at the edge of mine owned land in the direction of “Kurrajong”. Measurements were taken near the boundary fence with “Claremont”, which is approximately half way between the works for construction of the box cut and the “Kurrajong” residence.

NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters”. Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Conditions on the day were cold and clear with a light breeze at approximately 0.5 m/s from the south west. The wind speed increased slightly throughout the morning. At approximately 7.00 am the temperature was 4°C increasing to 11°C by 9.00 am.

RESULTS

The total measured Leq is shown in **Table 1**. Where the noise from NCM was audible the Bruel & Kjaer “*Evaluator*” analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall.

Noise from NCM is shown in bold type. Where noise from NCM is listed as inaudible, this means the maximum levels from the mine were at least 10 dB below the minimum level during the measurement and not measurable.

Table 1
NCM Noise Monitoring Results – 11 July 2008

Location	Time	dB(A),Leq	Wind speed/ direction	Identified Noise Sources
Kurrajong*	7:02 am	41	0.5 m/s, 135°	NCM (41)
Kurrajong*	7:30 am	37	0.5 m/s, 135°	NCM (37) birds (<30),
Kurrajong*	7:58 am	44	0.5 m/s, 135°	NCM (44)
Kurrajong*	8:31 am	46	1.0 m/s, 135°	Birds (46), NCM (est. 30)
Kurrajong*	9:00 am	43	1.5 m/s, 135°	Birds (43), NCM (est. <30),

*Kurrajong monitoring location at Claremont.

In order to gauge the impacts of various operational scenarios the measurement at 7:30 am was carried out whilst only one dozer and one scraper were working

The results in Table 1 show that the received noise at the monitoring location were in excess of the project noise goal during the early morning period. Changes in atmospheric conditions later in the morning most likely resulted in less noise enhancing conditions and a consequently reduced noise level.

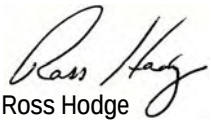
We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Neil Pennington
Acoustical Consultant

Review:



Ross Hodge
Acoustical Consultant

21 August 2008

Ref: 05168/2732

Mr Danny Young
Narrabri Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

RE: AUGUST 2008 ADDITIONAL NOISE MONITORING RESULTS

This letter report presents the results of attended noise compliance monitoring conducted for the Narrabri Coal Mine (NCM) on Tuesday 12th August 2008. The purpose of the monitoring was to determine mine construction noise levels at the "Kurrajong" residence, owned my Mr M Lennox, to the south of the site. The survey was not a full compliance monitoring survey as detailed in the Narrabri Coal Mine Noise Monitoring Program. Rather, the measurements were conducted at the request of NCM to determine the level of noise impact at "Kurrajong".

NOISE CRITERIA

The following is an extract from the Narrabri Coal NMP:

Noise impact assessment criteria for the various stages and activities associated with the mine's development were established in the *Environmental Assessment* using relevant DECC guidelines. These criteria have been incorporated in PA 05_0102 *Condition 3(12)* which is reproduced below. Additionally, PA 05_0102 *Condition 3(13)* identifies criteria for ensuring continuous improvement in noise mitigation actions at the mine site.

Noise Limits

3(12) The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately-owned residence.

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
All Privately owned Residences	35	35	35	45

Table 1: Impact assessment criteria dB(A)

Notes:

- *To determine compliance with the $L_{Aeq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Relations Policy.*
- *To determine compliance with the $L_{A1(1\ minute)}$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (See Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

NOISE MONITORING LOCATIONS

It was not possible to conduct monitoring at a point within 30m of the residence, as access to the property was denied by the land owner. An alternative location was chosen at the edge of mine owned land in the direction of “Kurrajong”. Measurements were taken near the boundary fence with “Claremont”, which is approximately half way between the box cut construction works and the “Kurrajong” residence.

NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 “Sound Level Meters”. Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Conditions on the day were cold and clear with a light breeze from the north increasing from calm to around 0.5 m/s throughout the morning. At 7.39 am the temperature was 1°C increasing to 9°C by 9.00 am.

RESULTS

The total measured Leq is shown in **Table 1**. Where the noise from NCM was audible the Bruel & Kjaer “*Evaluator*” analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall.

Noise from NCM is shown in bold type.

TABLE 1 NCM Noise Monitoring Results – 12 August 2008				
Location	**Time**	**dB(A),Leq**	**Wind speed/ direction**	**Identified Noise Sources**
Kurrajong*	7:39 am	47.1	Calm	**NCM (47)**
Kurrajong*	8:03 am	44.1	Calm	**NCM (42.7)** birds (40),
Kurrajong*	8:18 am	40.7	Calm	**NCM (40.7)**
Kurrajong*	8:31 am	38.6	0.1 m/s, 45°	**NCM (38.4),** Birds (<30),
Kurrajong*	8:53 am	35.3	0.5 m/s, 45°	Birds (34), **NCM (27.6)**

*Kurrajong monitoring location at Claremont southern boundary.

The results in Table 1 show that the received noise levels at the monitoring location were in excess of the project noise goal during the early morning period. Changes in atmospheric conditions later in the morning resulted in less noise enhancing conditions and a consequently reduced noise level. In particular, the ground level temperature increase from 1^0C to 9^0C during the survey corresponded with the 'burning off' of what would have been an intense nocturnal inversion.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

Neil Pennington
Acoustical Consultant

Review:

Ross Hodge
Acoustical Consultant

27 October 2008

Ref: 05168/2828

Mr Danny Young
Narrabri Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

RE: SEPTEMBER 2008 ATTENDED NOISE MONITORING RESULTS

This letter report presents the results of attended noise compliance monitoring conducted for the Narrabri Coal Mine (NCM) on Tuesday 30th September 2008. Noise monitoring was carried out in accordance with the conditions of the NCM Noise Management Plan (NMP) as detailed below. At the time of monitoring activities at NCM were in the construction phase.

NOISE CRITERIA

The following is an extract from the Narrabri Coal NMP:

Noise impact assessment criteria for the various stages and activities associated with the mine's development were established in the *Environmental Assessment* using relevant DECC guidelines. These criteria have been incorporated in PA 05_0102 *Condition 3(12)* which is reproduced below. Additionally, PA 05_0102 *Condition 3(13)* identifies criteria for ensuring continuous improvement in noise mitigation actions at the mine site.

Noise Limits

3(12) The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately-owned residence.

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
All Privately owned Residences	35	35	35	45

Table 1: Impact assessment criteria dB(A)

Notes:

- *To determine compliance with the $L_{Aeq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Relations Policy.*
- *To determine compliance with the $L_{A1(1\ minute)}$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (See Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below:

Location N1: Bow Hills
Location N2: Westhaven
Location N3: Naroo
Location N4: Greylands
Location N5: Kurrajong*

*It was not possible to conduct monitoring at a point within 30m of the residence, as access to the property was denied by the land owner. An alternative location was chosen at the edge of mine owned land in the direction of "Kurrajong". Measurements were taken near the boundary fence with "Claremont", which is approximately half way between the works for construction of the box cut and the "Kurrajong" residence. Noise contours from the project EA showed that the noise level at "Kurrajong" is approximately 8 dB lower than at the measurement point. This correction has been applied to the measured level to estimate the noise level at "Kurrajong".

NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand held weather station with measurements made at approximately 2m above ground level. The morning of September 30 was cool and clear with a 3-4 m/s breeze from the SSE.

RESULTS

The total measured Leq is shown in **Table 1**. Where the noise from NCM was audible the Bruel & Kjaer "***Evaluator***" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall level.

Noise from NCM is shown in bold type. Where noise from NCM is listed as inaudible, this means the maximum levels from the mine were at least 10 dB below the minimum level during the measurement and not measurable.

Table 1
NCM Noise Monitoring Results – 30 September 2008

Location	Time	dB(A),Leq	Wind speed/ direction	Identified Noise Sources
Bow Hills	8:39 am	35.7	1.5 m/s, SSE	Traffic (35), **NCM (26)**
Westhaven	9:36 am	38.5	1.0 m/s, SSE	Birds and cows (38), **NCM Inaudible**
Naroo	8:20 am	47.9	2-3 m/s, SSE	Birds (47), **NCM (<25)**
Greylands	9:11 am	45.0	1.0 m/s, SSE	Birds (43), Traffic (40), **NCM (22)**
Kurrajong*	7:58 am	36.2	3-4 m/s, SSE	Farm animals (35), **NCM (20)**

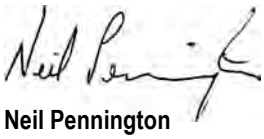
* Correction of -8dB applied to the *mine noise component only* measured at "Claremont" boundary.

The results shown in table 1 indicate that noise emission from the construction works at NCM were below the criterion of 35 dB(A),$L_{eq(15min)}$ at all receivers.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

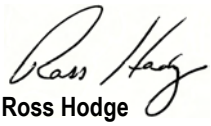
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:



Neil Pennington
Acoustical Consultant

Review:



Ross Hodge
Acoustical Consultant

31 December 2008

Ref: 05168/2909

Mr Danny Young
Narrabri Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

RE: DECEMBER 2008 ATTENDED NOISE MONITORING RESULTS

This letter report presents the results of attended noise compliance monitoring conducted for the Narrabri Coal Mine (NCM) on Wednesday 17th December 2008. Noise monitoring was carried out in accordance with the conditions of the NCM Noise Management Plan (NMP) as detailed below.

NOISE CRITERIA

The following is an extract from the Narrabri Coal NMP:

Noise impact assessment criteria for the various stages and activities associated with the mine's development were established in the *Environmental Assessment* using relevant DECC guidelines. These criteria have been incorporated in PA 05_0102 *Condition 3(12)* which is reproduced below. Additionally, PA 05_0102 *Condition 3(13)* identifies criteria for ensuring continuous improvement in noise mitigation actions at the mine site.

Noise Limits

3(12) The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately-owned residence.

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
All Privately owned Residences	35	35	35	45

Table 1: Impact assessment criteria dB(A)

Notes:

- *To determine compliance with the $L_{Aeq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Relations Policy.*
- *To determine compliance with the $L_{A1(1\ minute)}$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (See Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below:

Location N1: Bow Hills
Location N2: Westhaven
Location N3: Naroo
Location N4: Greylands
Location N5: Kurrajong*

*It was not possible to conduct monitoring at a point within 30m of the residence, as access to the property was denied by the land owner. An alternative location was chosen at the edge of mine owned land in the direction of "Kurrajong". Measurements were taken near the boundary fence with "Claremont", which is approximately half way between the works for construction of the box cut and the "Kurrajong" residence. Noise contours from the project EA showed that the noise level at "Kurrajong" is approximately 8 dB lower than at the measurement point. This correction has been applied to the measured level to estimate the noise level at "Kurrajong".

NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand held weather station with measurements made at approximately 2m above ground level. The morning of December 17 was warm and clear at 26^0C and 40% relative humidity with wind increasing from the west.

RESULTS

The total measured Leq is shown in **Table 1**. Where the noise from NCM was audible the Bruel & Kjaer "***Evaluator***" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall level.

Noise from NCM is shown in bold type. Where noise from NCM is listed as inaudible, this means the maximum levels from the mine were at least 10 dB below the minimum level during the measurement and not measurable.

Table 1
NCM Noise Monitoring Results – 17 December 2008

Location	Time	dB(A),Leq	Wind speed/ direction	Identified Noise Sources
Kurrajong*	8:51 am	37.3	Calm	Traffic (35), Domestic (34), **NCM (<20)**
Bow Hills	9:12 am	58.2	0.5 m/s W	Truck (58), **NCM (<25)**
Greylands	9:35 am	38.8	0.5 m/s W	Birds (37), Traffic (33), **NCM (25)**
Westhaven	9:57 am	38.0	2 m/s W	Wind (35), Domestic (34), **NCM Inaudible**
Naroo	8:20 am	38.0	1.5 m/s W	Traffic (36), Birds (32), **NCM Inaudible**

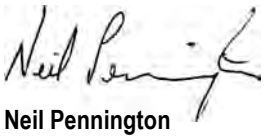
* Correction of -8dB applied to the *mine noise component only* measured at "Claremont" boundary.

The results shown in Table 1 indicate that noise emissions from the NCM were below the criterion of 35 dB(A),$L_{eq(15min)}$ at all receivers.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

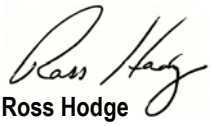
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:



Neil Pennington
Acoustical Consultant

Review:



Ross Hodge
Acoustical Consultant

26 March 2009

Ref: 05168/3011

Mr Danny Young
Narrabri Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

RE: MARCH 2009 ATTENDED NOISE MONITORING RESULTS

This letter report presents the results of attended noise compliance monitoring conducted for the Narrabri Coal Mine (NCM) from Monday 23rd to Tuesday 24th March 2009. Noise monitoring was carried out in accordance with the conditions of the NCM Noise Management Plan (NMP) as detailed below.

NOISE CRITERIA

The following is an extract from the Narrabri Coal NMP:

Noise impact assessment criteria for the various stages and activities associated with the mine's development were established in the *Environmental Assessment* using relevant DECC guidelines. These criteria have been incorporated in PA 05_0102 *Condition 3(12)* which is reproduced below. Additionally, PA 05_0102 *Condition 3(13)* identifies criteria for ensuring continuous improvement in noise mitigation actions at the mine site.

Noise Limits

3(12) The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately-owned residence.

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
All Privately owned Residences	35	35	35	45

Table 1: Impact assessment criteria dB(A)

Notes:

- *To determine compliance with the $L_{Aeq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Relations Policy.*
- *To determine compliance with the $L_{A1(1\ minute)}$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (See Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below:

Location N1: Bow Hills
Location N2: Westhaven
Location N3: Naroo
Location N4: Greylands
Location N5: Kurrajong*

*It was not possible to conduct monitoring at a point within 30m of the residence, as access to the property was denied by the land owner. An alternative location was chosen at the edge of mine owned land in the direction of "Kurrajong". Measurements were taken near the boundary fence with "Claremont", which is approximately half way between the works for construction of the box cut and the "Kurrajong" residence. Noise contours from the project EA showed that the noise level at "Kurrajong" is approximately 8 dB lower than at the measurement point. This correction has been applied to the measured level to estimate the noise level at "Kurrajong".

NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 Precision Sound Analyser. This instrument has Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand held weather station with measurements made at approximately 2m above ground level. The weather was generally warm with clear skies, temperatures above 20^0C, 60-70% relative humidity and no wind.

RESULTS

Measured noise levels are shown in **Tables 1-3**. Where the noise from NCM was audible the Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall level.

Noise from NCM is shown in bold type. Where noise from NCM is listed as inaudible, this means the maximum levels from the mine were at least 10 dB below the minimum level during the measurement and not measurable.

Table 1
NCM Noise Monitoring Results – 24 March 2009 (Day)

Location	Time	dB(A),Leq	Wind speed/ direction	Identified Noise Sources
Naroo	8:32 am	N/A	Calm	Roadworks – no measurement taken
Kurrajong*	8:46 am	39.7	Calm	Birds (39), **NCM (<15)**
Westhaven	9:07 am	31.4	Calm	Birds (31), **NCM inaudible**
Greylands	9:28 am	42.0	Calm	Birds (41), Traffic (35), **NCM inaudible**
Bow Hills	7:45 pm	42.3	Calm	Birds (42), **NCM (27)**

* Correction of -8dB applied to the *mine noise component only* measured at "Claremont" boundary.

Table 2
NCM Noise Monitoring Results – 23 March 2009 (Evening)

Location	Time	dB(A),Leq	Wind speed/ direction	Identified Noise Sources
Bow Hills	7:31 pm	47.0	Calm	Traffic (47), **NCM (25)**
Naroo	7:53 pm	45.2	Calm	Insects (43), Traffic (39), **NCM inaudible**
Kurrajong*	8:16 pm	42.5	Calm	Insects (41), **NCM (<15)**
Westhaven	8.48 pm	38.9	0-0.5m/s SE	Insects (38.9), **NCM inaudible**
Greylands	9.14 pm	46.8	Calm	Insects (46), **NCM (23)**

* Correction of -8dB applied to the *mine noise component only* measured at "Claremont" boundary.

Table 3
NCM Noise Monitoring Results – 23-24 March 2009 (Night)

Location	Time	dB(A),Leq	Wind speed/ direction	Identified Noise Sources
Bow Hills	10:29 pm	44.2	Calm	Insects (42), Traffic (40), **NCM inaudible**
Naroo	10:43 pm	44.8	Calm	Traffic (44), Insects (32), **NCM inaudible**
Kurrajong*	11:03 pm	46.8	Calm	Insects (46), **NCM (<15)**
Westhaven	11:27 pm	26.1	Calm	Insects (26), **NCM inaudible**
Greylands	11:49 pm	40.0	Calm	Cattle (37), Insects (34), **NCM inaudible**
Kurrajong*	12:07 am	46.5	Calm	Insects (46), **NCM (<15)**
Kurrajong*	12:47 am	47.5	Calm	Insects (47), **NCM (<15)**

Kurrajong*	1:18 am	47.8	Calm	Insects (47), **NCM (19)**
Kurrajong*	2:13 am	43.2	Calm	Insects (43), **NCM (18)**

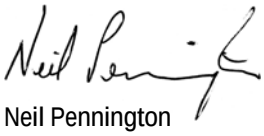
* Correction of -8dB applied to the *mine noise component only* measured at "Claremont" boundary.

The results shown in Tables 1-3 indicate that noise emissions from the NCM were below the criterion of 35 dB(A),$L_{eq(15min)}$ at all receivers.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

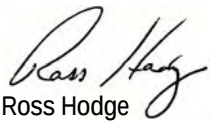
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:



Neil Pennington
Acoustical Consultant

Review:



Ross Hodge
Acoustical Consultant

22 August 2008

Ref: 05168/2737

Mr Danny Young
Narrabri Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

RE: JULY 2008 UNATTENDED NOISE MONITORING RESULTS

This letter report presents the results of unattended operational noise monitoring conducted for the Narrabri Coal Mine (NCM) during July 2008.

NOISE CRITERIA

The following is an extract from the Narrabri Coal NMP:

Noise impact assessment criteria for the various stages and activities associated with the mine's development were established in the *Environmental Assessment* using relevant DECC guidelines. These criteria have been incorporated in PA 05_0102 *Condition 3(12)* which is reproduced below. Additionally, PA 05_0102 *Condition 3(13)* identifies criteria for ensuring continuous improvement in noise mitigation actions at the mine site.

Noise Limits

3(12) The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately-owned residence.

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
All Privately owned Residences	35	35	35	45

Table 1: Impact assessment criteria dB(A)

Notes:

- *To determine compliance with the $LA_{eq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Relations Policy.*
- *To determine compliance with the $LA1(1\ minute)$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (See Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and indicated in Figure 1.

Location N4: Greylands (north of site)
Location N3: Naroo (south of site)

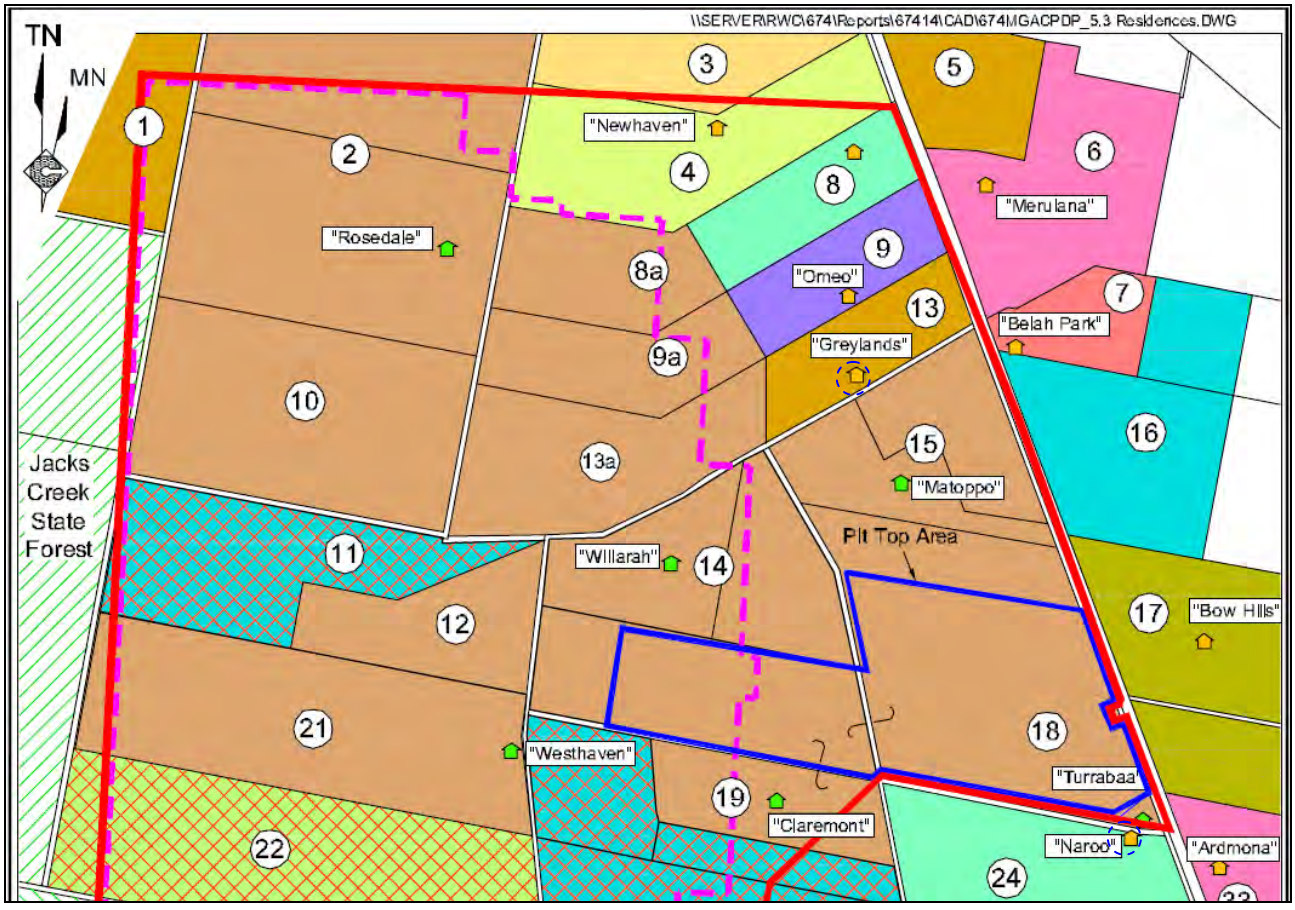


Figure 1. Unattended noise monitoring locations.

NOISE MONITORING PROGRAM

Noise levels were measured at each location for a period of at least seven days. Noise levels were measured at 15 minute statistical intervals using Svan 949 sound and vibration analysers used as environmental noise loggers. The measurements were done in accordance with relevant DECC guidelines and AS 1055-1997 "Acoustics – Description and Measurement of Environmental Noise". The noise loggers used comply with the requirements of AS 1259.2-1990 "Acoustics – Sound Level Meters", and have current NATA calibration certification (see **Appendix B**).

Each logger was programmed to continuously register environmental noise levels over the 15 minute intervals, with internal software calculating and storing Ln percentile noise levels for each sampling period. Calibration of the logger was performed as part of the instrument's initialisation procedures, with calibration results being within the allowable ± 0.5 dB(A) range. Since noise loggers record the total acoustic environment, it is not possible to identify or assign noise levels to the various contributing sources. Accordingly, this report does not attempt to interpret the logger results.

MEASURED NOISE LEVELS

Measured noise levels at each location are summarised below. Tabulated results show overall L_{Aeq} and L_{90} levels for the day, evening and night time periods using procedures specified in the DECC INP. Graphs showing full data sets are shown in **Appendix A**.

Greylands

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
5/7/2008	46.3	41.7	40.9	37.0	36.5	36.0
6/7/2008	46.9	38.3	37.4	33.0	33.5	34.0
7/7/2008	49.9	38.9	40.5	33.0	34.0	34.5
8/7/2008	49.8	47.8	43.0	36.5	36.0	36.0
9/7/2008	46.6	37.1	38.4	34.5	33.8	34.5
10/7/2008	45.5	34.9	41.0	32.5	31.8	33.5
11/7/2008	46.3	37.6	37.6	33.5	31.5	31.0
LAeq	48	42	41	--	--	--
L90	--	--	--	34	34	35

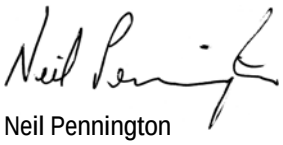
Naroo

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
4-Jul-08	51.0	47.5	44.5	37.3	32.7	33.6
5-Jul-08	48.7	45.7	43.8	30.3	18.3	18.2
6-Jul-08	46.2	46.3	45.5	29.1	19.0	18.2
7-Jul-08	51.6	51.5	43.0	39.3	29.9	18.3
8-Jul-08	54.7	45.8	43.7	40.3	20.0	18.3
9-Jul-08	52.3	46.2	44.3	40.0	19.8	18.7
10-Jul-08	50.8	46.8	45.3	42.4	24.1	18.6
LAeq	52	48	44	--	--	--
L90	--	--	--	39	20	18

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276 or 0406 670677.

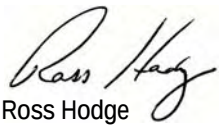
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:



Neil Pennington
Acoustical Consultant

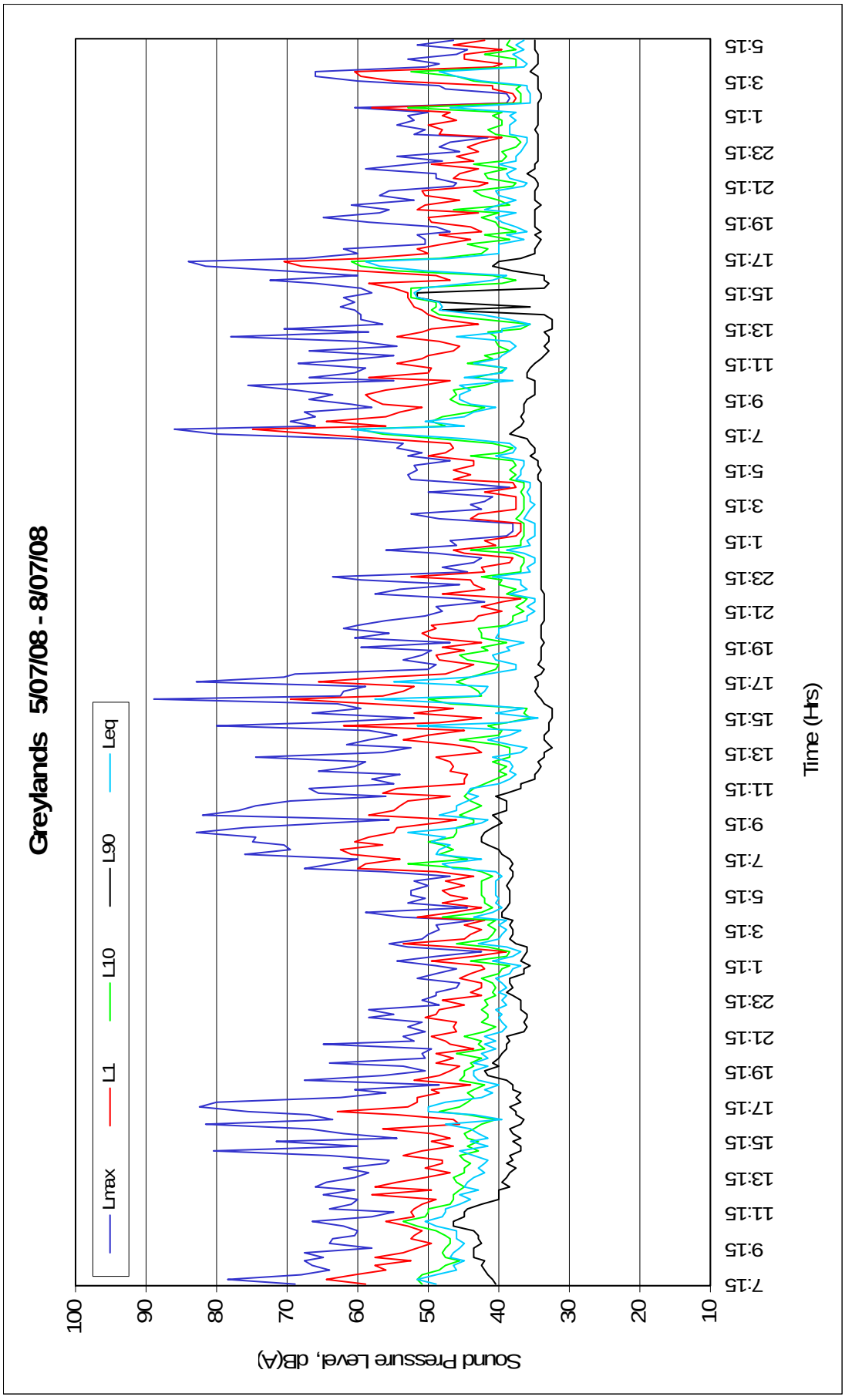
Review:



Ross Hodge
Acoustical Consultant

APPENDIX A

NOISE DATA CHARTS


Greylands 5/07/08 - 8/07/08
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
100
90
80
70
60
50
40
30
20
10
Time (Hrs)
7:15
9:15
11:15
13:15
15:15
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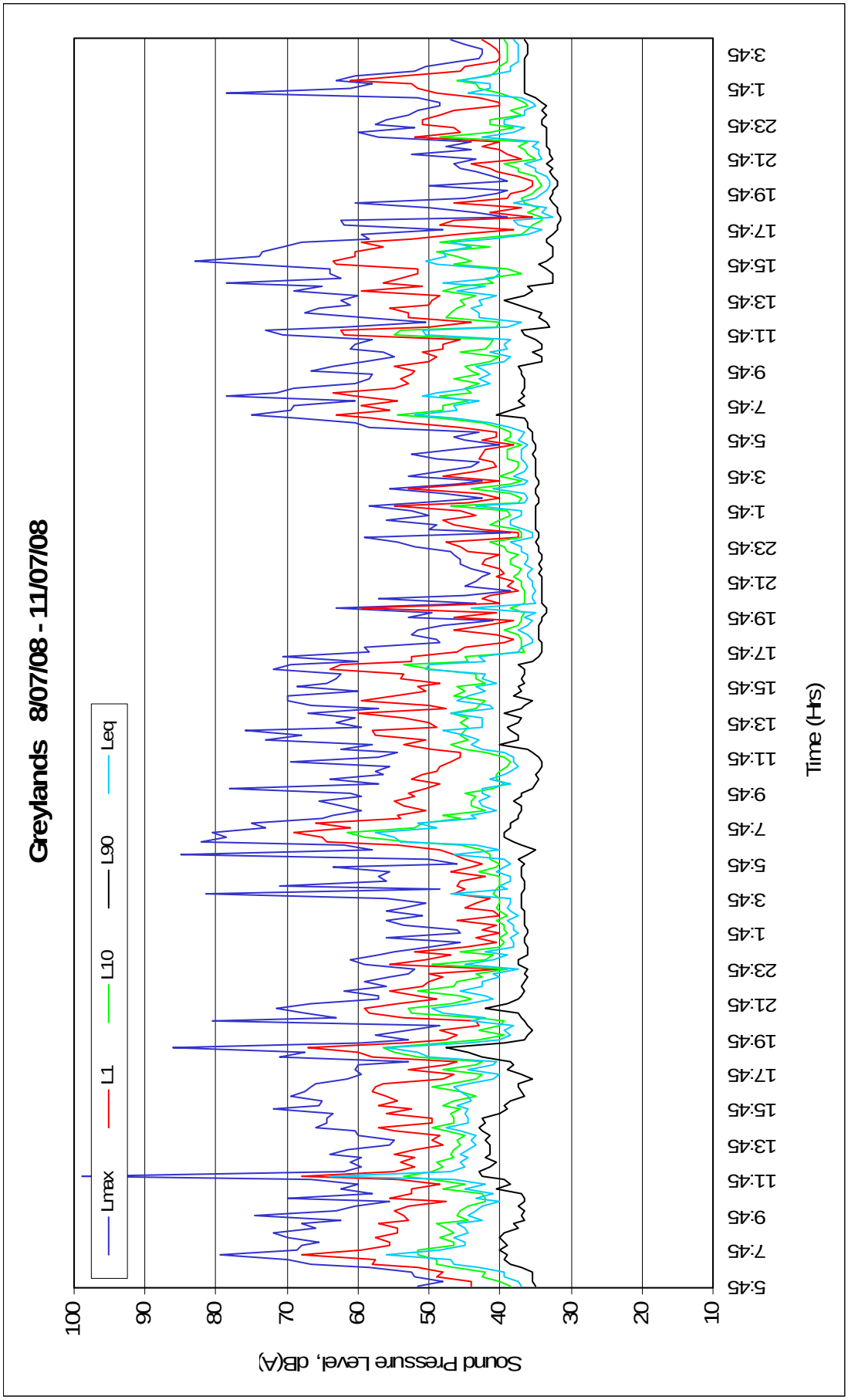
Greylands 8/07/08 - 11/07/08
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
100
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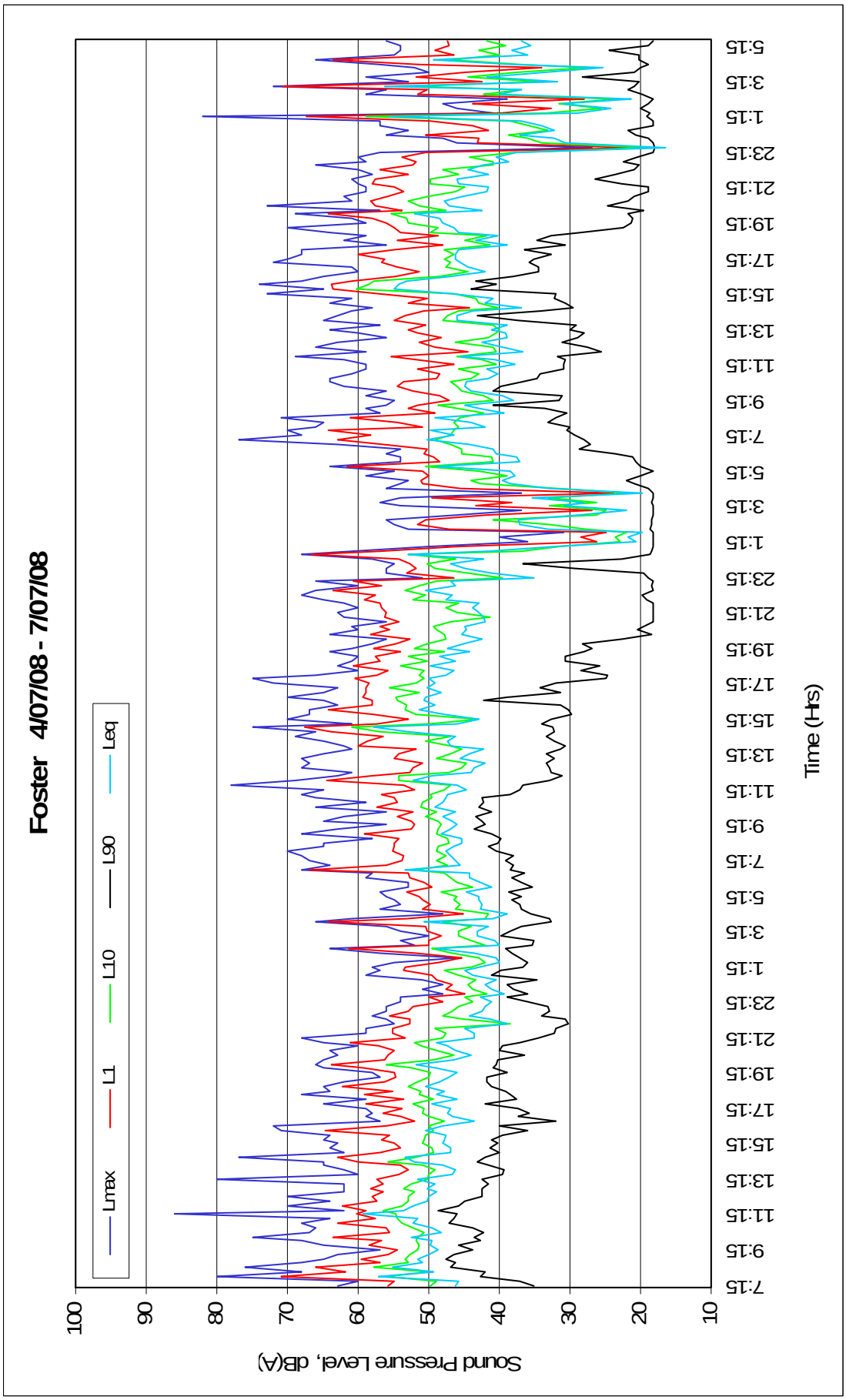
Foster 4/07/08 - 7/07/08
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
100
90
80
70
60
50
40
30
20
10
Time (Hrs)
7:15
9:15
11:15
13:15
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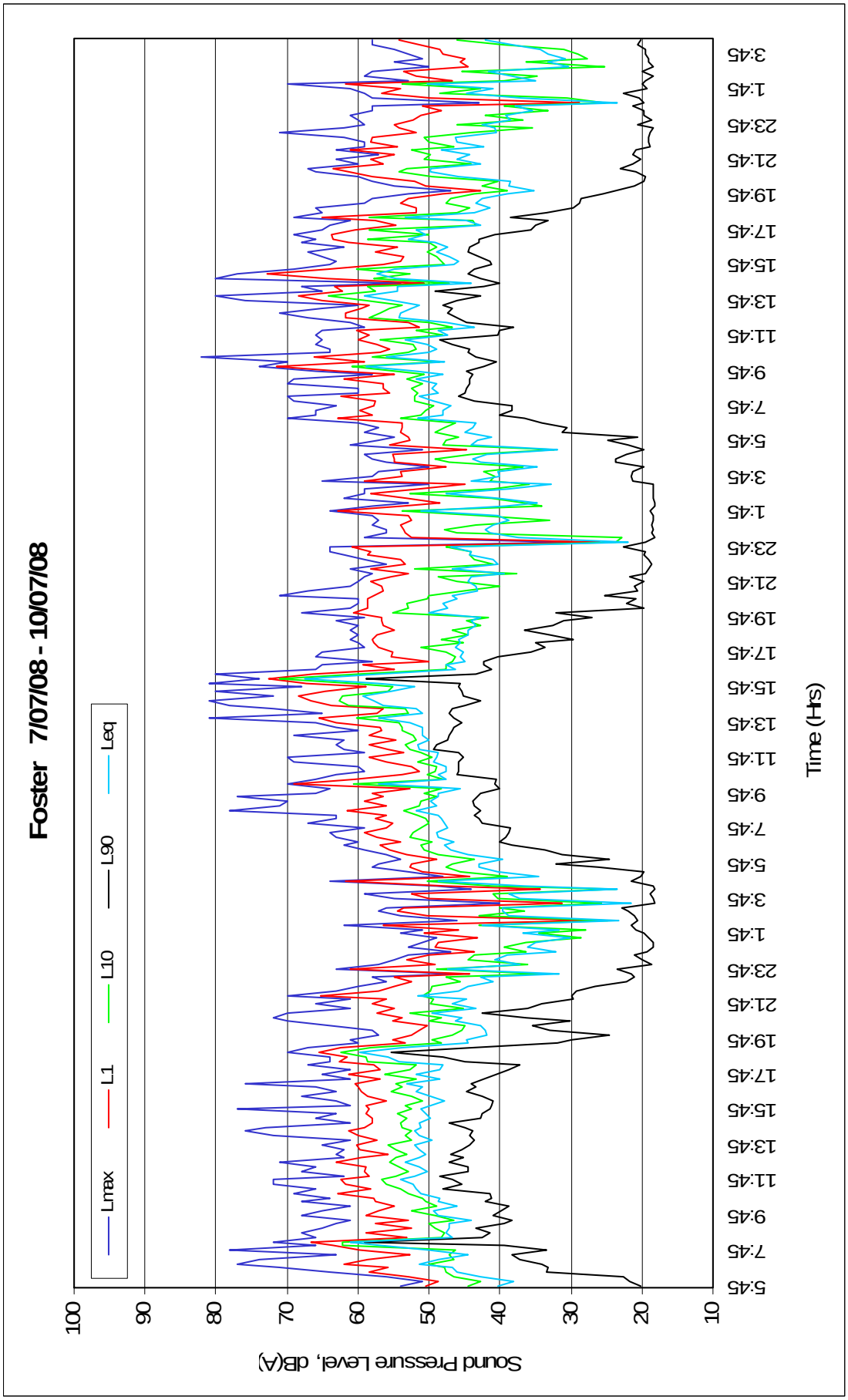
Foster 7/07/08 - 10/07/08
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
100
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Time (Hrs)
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APPENDIX B

CALIBRATION CERTIFICATES

CONFORMANCE CERTIFICATE

We certify that the equipment listed below has been checked, adjusted and aligned to conform to manufacturers specifications.

Certificate No: 7759

INSTRUMENT: Sound & Vibration Anayser
Svantek

Type No: Svan-949 **Serial No:** 9757

Owner: Spectrum Acoustics Pty Ltd
1 Roath St
Cardiff NSW 2285

CONDITION OF TEST:

Ambient Pressure: 1007 **mbar**

Temperature: 23 °C **Relative Humidity:** 37 %

Date of Calibration: 6/10/06

CHECKED BY: JK **AUTHORISED SIGNATORY:** .....
Jack Kielt

The tests, calibrations or measurements covered by this document are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full. The equipment listed above has been calibrated in this laboratory. The equipment performed satisfactorily in all the tests conducted.

NATA
WORLD RECOGNISED ACCREDITATION
Accredited Lab. No. 9262
Acoustic and Vibration Measurements

ACU-VIB
ELECTRONICS

HEAD OFFICE
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
Tel: (02) 9680-8133 Fax: (02) 9680-8233
Mobile: 0413 809 806
web site: www.acu-vib.com.au

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AVCERT4 Rev.1 03.09.04

CONFORMANCE CERTIFICATE

We certify that the equipment listed below has been checked, adjusted and aligned to conform to manufacturers specifications.

Certificate No: 7758

INSTRUMENT: Sound & Vibration Anayser
Svantek

Type No: Svan-949 **Serial No:** 9758

Owner: Spectrum Acoustics Pty Ltd
1 Roath St
Cardiff NSW 2285

CONDITION OF TEST:

Ambient Pressure: 1007 **mbar**

Temperature: 23 **°C** **Relative Humidity:** 37 **%**

Date of Calibration: 6/10/06

CHECKED BY: JK **AUTHORISED SIGNATORY:** .....
Jack Kielt

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CONFORMANCE CERTIFICATE

We certify that the equipment listed below has been checked, adjusted and aligned to conform to manufacturers specifications.

Certificate No: 7757

INSTRUMENT: Sound & Vibration Anayser
Svantek

Type No: Svan-949 **Serial No:** 9756

Owner: Spectrum Acoustics Pty Ltd
1 Roath St
Cardiff NSW 2285

CONDITION OF TEST:

Ambient Pressure: 1007 **mbar**

Temperature: 23 **°C** **Relative Humidity:** 37 **%**

Date of Calibration: 6/10/06

CHECKED BY: JK **AUTHORISED SIGNATORY:** .....
Jack Kielt

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AVCERT4 Rev.1 03.09.04

27 October 2008

Ref: 05168/2829

Mr Danny Young
Narrabri Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

RE: SEPTEMBER 2008 UNATTENDED NOISE MONITORING RESULTS

This letter report presents the results of unattended operational noise monitoring conducted for the Narrabri Coal Mine (NCM) commencing on 30 September 2008.

NOISE CRITERIA

The following is an extract from the Narrabri Coal NMP:

Noise impact assessment criteria for the various stages and activities associated with the mine's development were established in the *Environmental Assessment* using relevant DECC guidelines. These criteria have been incorporated in PA 05_0102 *Condition 3(12)* which is reproduced below. Additionally, PA 05_0102 *Condition 3(13)* identifies criteria for ensuring continuous improvement in noise mitigation actions at the mine site.

Noise Limits

3(12) The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately-owned residence.

Location	Day $L_{Aeq(15\ minute)}$	Evening $L_{Aeq(15\ minute)}$	Night	
			$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
All Privately owned Residences	35	35	35	45

Table 1: Impact assessment criteria dB(A)

Notes:

- *To determine compliance with the $LA_{eq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Relations Policy.*
- *To determine compliance with the $LA1(1\ minute)$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (See Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and indicated in Figure 1.

Location N4: Greylands (north of site)
Location N3: Naroo (south of site)

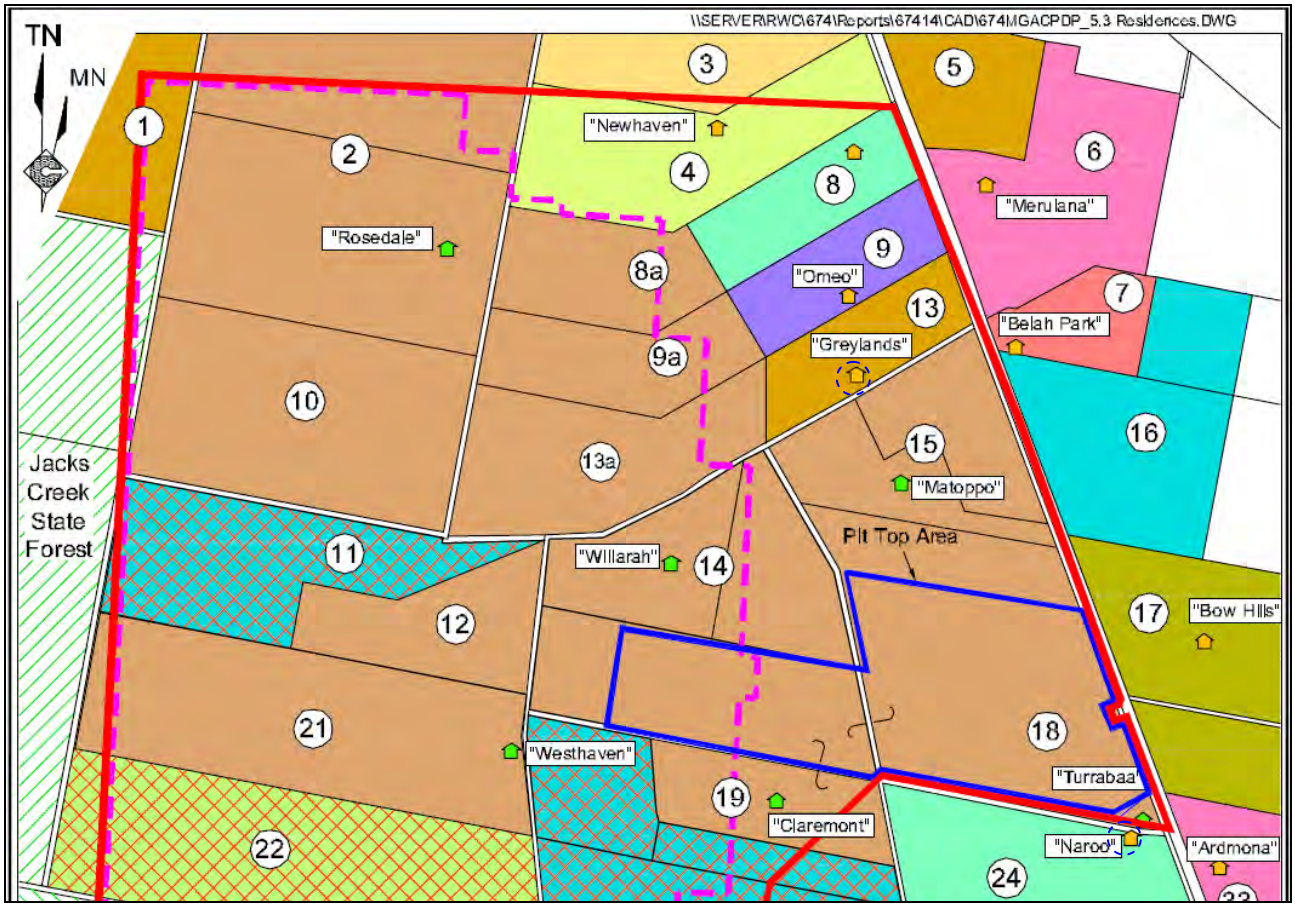


Figure 1. Unattended noise monitoring locations.

NOISE MONITORING PROGRAM

Noise levels were measured at each location for a period of at least seven days. Noise levels were measured at 15 minute statistical intervals using Svan 949 sound and vibration analysers used as environmental noise loggers. The measurements were done in accordance with relevant DECC guidelines and AS 1055-1997 "Acoustics – Description and Measurement of Environmental Noise". The noise loggers used comply with the requirements of AS 1259.2-1990 "Acoustics – Sound Level Meters", and have current NATA calibration certification (see **Appendix B**).

Each logger was programmed to continuously register environmental noise levels over the 15 minute intervals, with internal software calculating and storing Ln percentile noise levels for each sampling period. Calibration of the logger was performed as part of the instrument's initialisation procedures, with calibration results being within the allowable ± 0.5 dB(A) range. Since noise loggers record the total acoustic environment, it is not possible to identify or assign noise levels to the various contributing sources. Accordingly, this report does not attempt to interpret the logger results.

MEASURED NOISE LEVELS

Measured noise levels at each location are summarised below. Tabulated results show overall L_{Aeq} and L_{90} levels for the day, evening and night time periods using procedures specified in the DECC INP. Graphs showing full data sets are shown in **Appendix A**.

Greylands

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
30-Sep-08	50.8	39.4	45.7	25.8	26.9	20.2
1-Oct-08	47.2	41.4	44.1	32.0	29.7	26.2
2-Oct-08	58.4	44.0	45.4	34.1	37.3	35.3
3-Oct-08	48.3	42.2	56.4	30.6	33.7	21.3
4-Oct-08	49.9	51.2	43.6	34.1	29.2	24.9
5-Oct-08	48.4	44.5	52.2	30.6	39.8	31.2
6-Oct-08	52.5	47.3	46.3	36.7	38.4	29.1
LAeq	53	46	50	--	--	--
L90	--	--	--	32	34	26

Naroo

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
30-Sep-08	44.4	52.1	49.2	24.9	23.0	32.7
1-Oct-08	45.9	52.7	54.9	23.6	21.3	33.7
2-Oct-08	48.5	51.2	55.7	28.7	24.1	43.1
3-Oct-08	48.5	51.7	57.3	34.6	38.0	45.8
4-Oct-08	55.3	52.6	54.9	40.9	38.1	40.6
5-Oct-08	47.1	50.9	56.1	36.7	29.5	45.6
6-Oct-08				34.2		
LAeq	50	52	55	--	--	--
L90	--	--	--	34	27	42

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276 or 0406 670677.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:

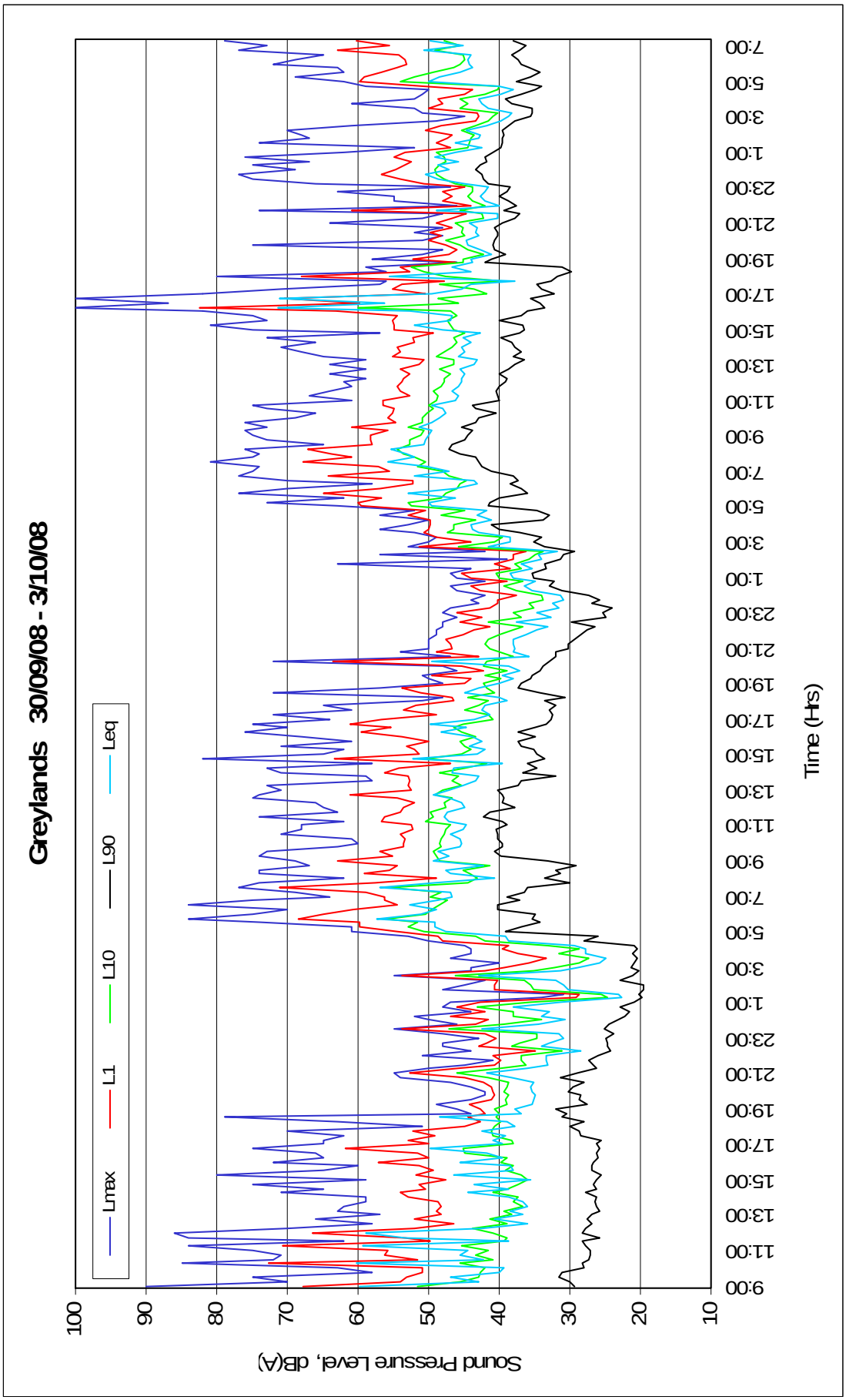
Neil Pennington
Acoustical Consultant

Review:

Ross Hodge
Acoustical Consultant

APPENDIX A

NOISE DATA CHARTS


Greylands 30/09/08 - 3/10/08
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
100
90
80
70
60
50
40
30
20
10
Time (Hrs)
9:00
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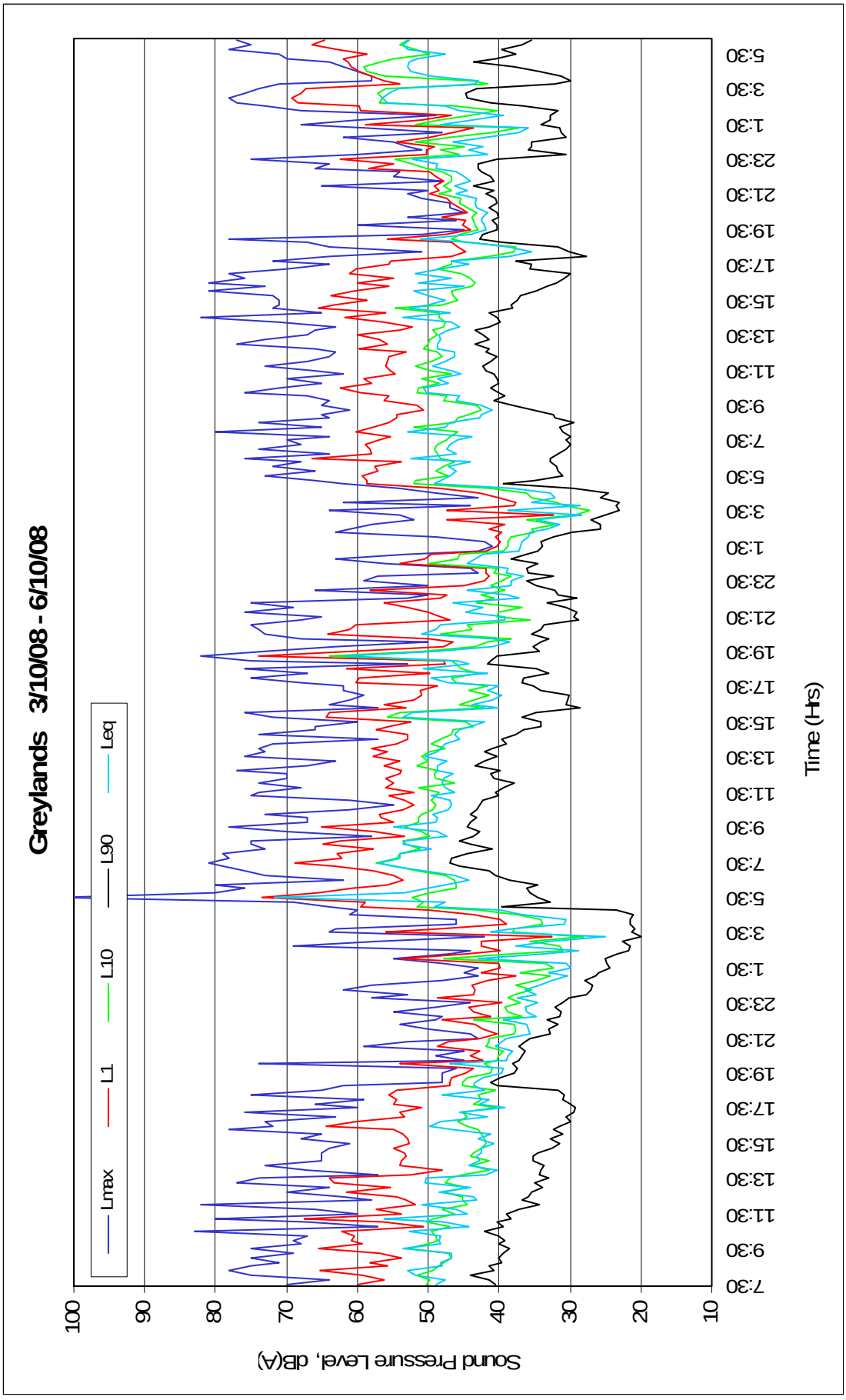
Greylands 3/10/08 - 6/10/08
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
100
90
80
70
60
50
40
30
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10
Time (Hrs)
7:30
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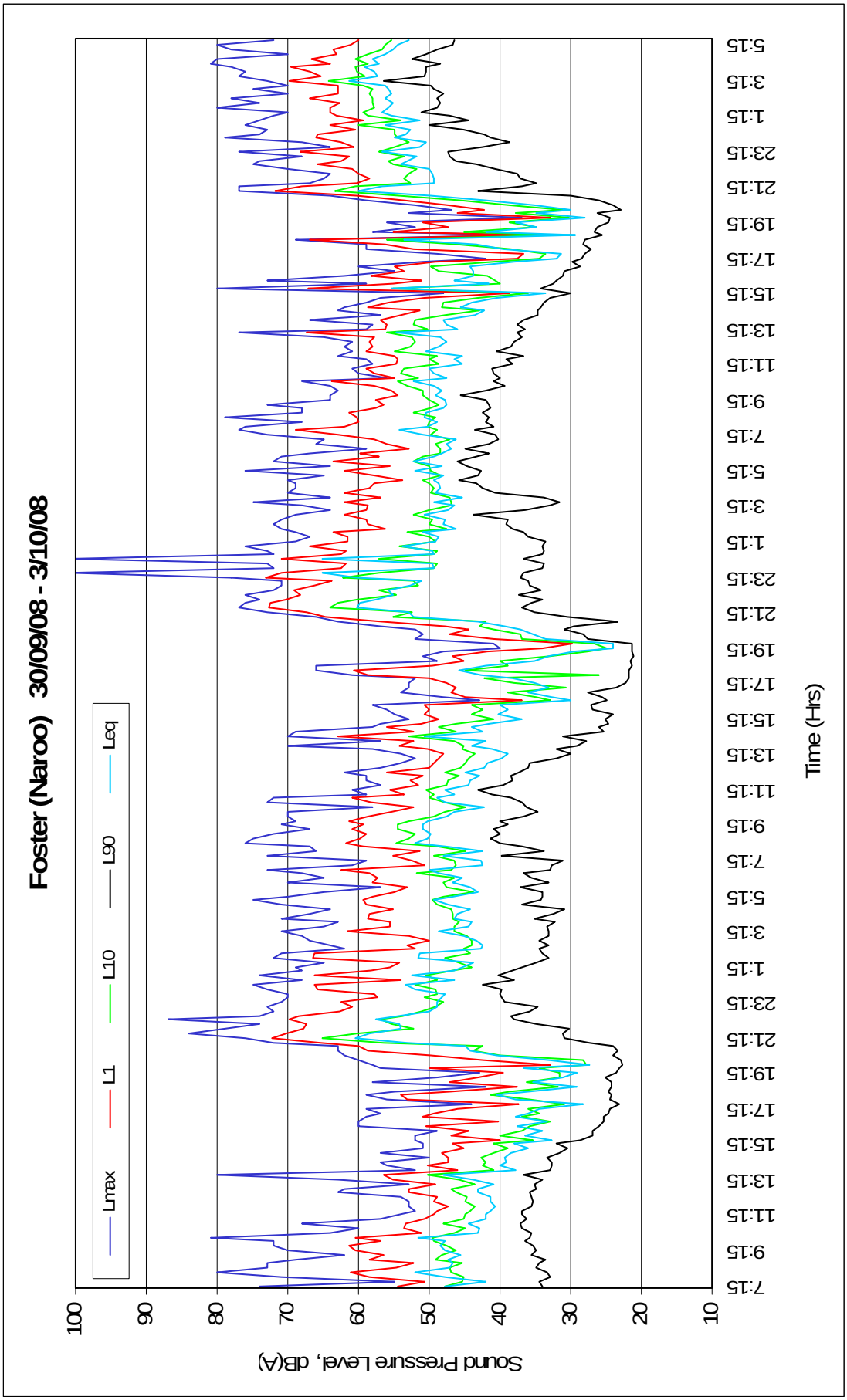
Foster (Naroo) 30/09/08 - 3/10/08
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
100
90
80
70
60
50
40
30
20
10
Time (Hrs)
7:15
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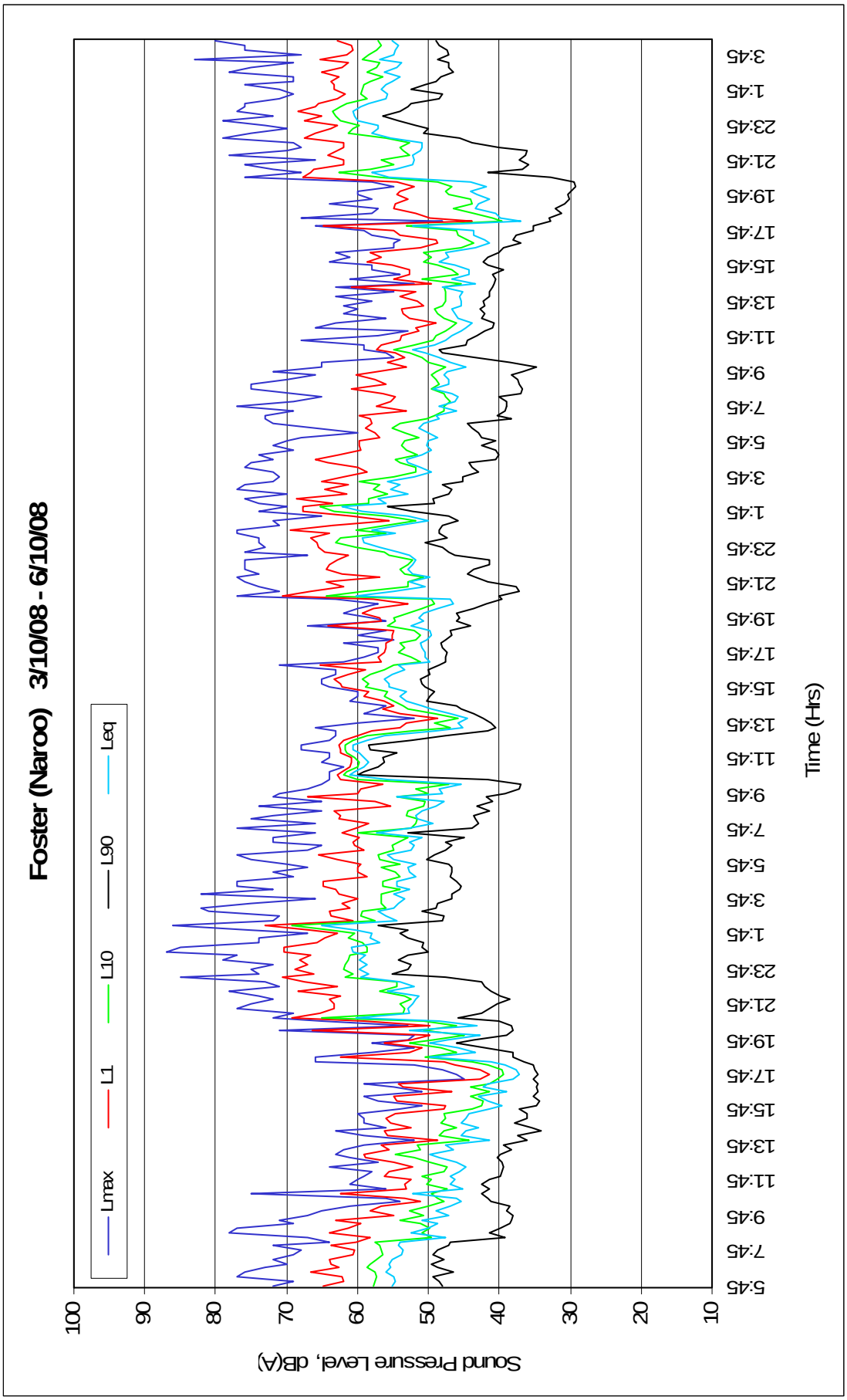
Foster (Naroo) 3/10/08 - 6/10/08
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
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APPENDIX B

CALIBRATION CERTIFICATES

CONFORMANCE CERTIFICATE

We certify that the equipment listed below has been checked, adjusted and aligned to conform to manufacturers specifications.

Certificate No: 7759

INSTRUMENT: Sound & Vibration Anayser
Svantek

Type No: Svan-949 **Serial No:** 9757

Owner: Spectrum Acoustics Pty Ltd
1 Roath St
Cardiff NSW 2285

CONDITION OF TEST:

Ambient Pressure: 1007 **mbar**

Temperature: 23 °C **Relative Humidity:** 37 %

Date of Calibration: 6/10/06

CHECKED BY: JK **AUTHORISED SIGNATORY:** .....
Jack Kielt

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web site: www.acu-vib.com.au

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AVCERT4 Rev.1 03.09.04

CONFORMANCE CERTIFICATE

We certify that the equipment listed below has been checked, adjusted and aligned to conform to manufacturers specifications.

Certificate No: 7758

INSTRUMENT: Sound & Vibration Anayser
Svantek

Type No: Svan-949 **Serial No:** 9758

Owner: Spectrum Acoustics Pty Ltd
1 Roath St
Cardiff NSW 2285

CONDITION OF TEST:

Ambient Pressure: 1007 **mbar**

Temperature: 23 **°C** **Relative Humidity:** 37 **%**

Date of Calibration: 6/10/06

CHECKED BY: JK **AUTHORISED SIGNATORY:** .....
Jack Kielt

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NATA
WORLD RECOGNISED ACCREDITATION
Accredited Lab. No. 9262
Acoustic and Vibration Measurements

ACU-VIB
ELECTRONICS

HEAD OFFICE
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
Tel: (02) 9680-8133 Fax: (02) 9680-8233
Mobile: 0413 809 806
web site: www.acu-vib.com.au

Page 1 of 1
AVCERT4 Rev.1 03.09.04

CONFORMANCE CERTIFICATE

We certify that the equipment listed below has been checked, adjusted and aligned to conform to manufacturers specifications.

Certificate No: 7757

INSTRUMENT: Sound & Vibration Anayser
Svantek

Type No: Svan-949 **Serial No:** 9756

Owner: Spectrum Acoustics Pty Ltd
1 Roath St
Cardiff NSW 2285

CONDITION OF TEST:

Ambient Pressure: 1007 **mbar**

Temperature: 23 **°C** **Relative Humidity:** 37 **%**

Date of Calibration: 6/10/06

CHECKED BY: JK **AUTHORISED SIGNATORY:** .....
Jack Kielt

The tests, calibrations or measurements covered by this document are traceable to Australian national standards of measurement. This document shall not be reproduced, except in full. The equipment listed above has been calibrated in this laboratory. The equipment performed satisfactorily in all the tests conducted.

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AVCERT4 Rev.1 03.09.04

5 February 2009

Ref: 05168/2949

Mr Danny Young
Narrabri Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

RE: DECEMBER 2008 UNATTENDED NOISE MONITORING RESULTS

This letter report presents the results of unattended operational noise monitoring conducted for the Narrabri Coal Mine (NCM) during December 2008.

NOISE CRITERIA

The following is an extract from the Narrabri Coal NMP:

Noise impact assessment criteria for the various stages and activities associated with the mine's development were established in the *Environmental Assessment* using relevant DECC guidelines. These criteria have been incorporated in PA 05_0102 *Condition 3(12)* which is reproduced below. Additionally, PA 05_0102 *Condition 3(13)* identifies criteria for ensuring continuous improvement in noise mitigation actions at the mine site.

Noise Limits

3(12) The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately-owned residence.

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
All Privately owned Residences	35	35	35	45

Table 1: Impact assessment criteria dB(A)

Notes:

- *To determine compliance with the $LA_{eq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Relations Policy.*
- *To determine compliance with the $LA1(1\ minute)$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (See Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and indicated in Figure 1.

Location N4: Greylands (north of site)
Location N3: Naroo (south of site)

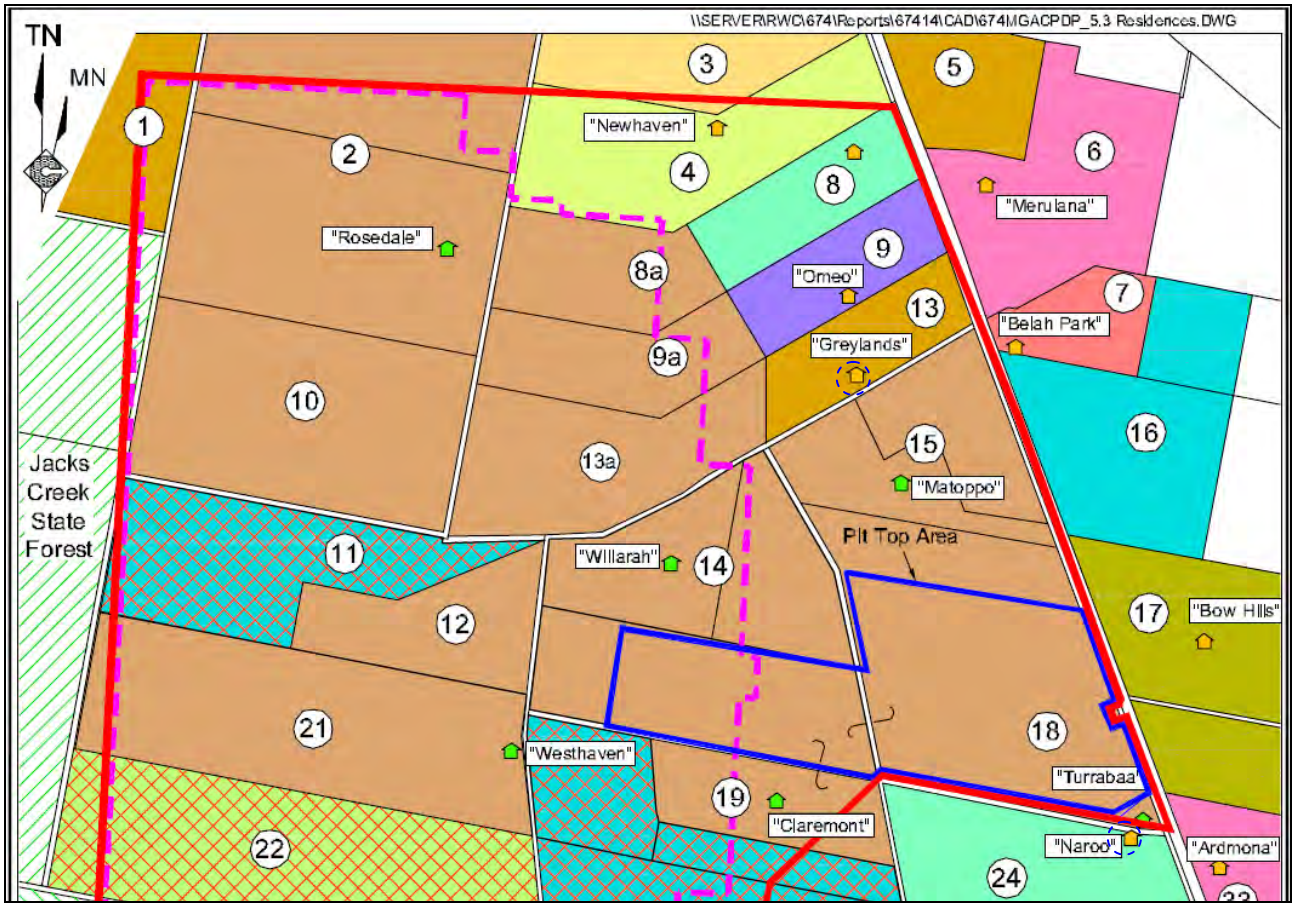


Figure 1. Unattended noise monitoring locations.

NOISE MONITORING PROGRAM

Noise levels were measured at each location for a period of at least seven days. Noise levels were measured at 15 minute statistical intervals using Svan 949 sound and vibration analysers used as environmental noise loggers. The measurements were done in accordance with relevant DECC guidelines and AS 1055-1997 "Acoustics – Description and Measurement of Environmental Noise". The noise loggers used comply with the requirements of AS 1259.2-1990 "Acoustics – Sound Level Meters", and have current NATA calibration certification (see **Appendix B**).

Each logger was programmed to continuously register environmental noise levels over the 15 minute intervals, with internal software calculating and storing Ln percentile noise levels for each sampling period. Calibration of the logger was performed as part of the instrument's initialisation procedures, with calibration results being within the allowable ± 0.5 dB(A) range. Since noise loggers record the total acoustic environment, it is not possible to identify or assign noise levels to the various contributing sources. Accordingly, this report does not attempt to interpret the logger results.

MEASURED NOISE LEVELS

Measured noise levels at each location are summarised below. Tabulated results show overall L_{Aeq} and L_{90} levels for the day, evening and night time periods using procedures specified in the DECC INP. Graphs showing full data sets are shown in **Appendix A**.

Greylands

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
12/12/2008	45.4	49.3	49.4	34.7	31.8	42.2
13/12/2008	52.3	55.8	53.9	42.9	44.4	37.5
14/12/2008	48.2	50.4	47.9	36.1	34.2	36.9
15/12/2008	49.9	48.8	47.9	32.7	32.8	33.5
LAeq	50	52	51			
L90				35	34	37

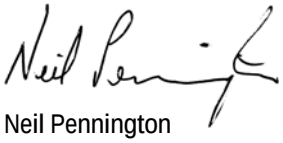
Naroo

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
12/12/2008	50.0	55.7	49.6	36.8	37.7	44.2
13/12/2008	55.5	50.1	46.5	44.3	43.2	36.5
14/12/2008	47.4	48.1	44.0	36.1	37.0	33.6
15/12/2008	52.0	52.6	39.7	32.3	33.3	35.9
LAeq	52	53	46			
L90				36	37	36

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276 or 0406 670677.

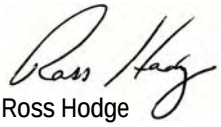
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:



Neil Pennington
Acoustical Consultant

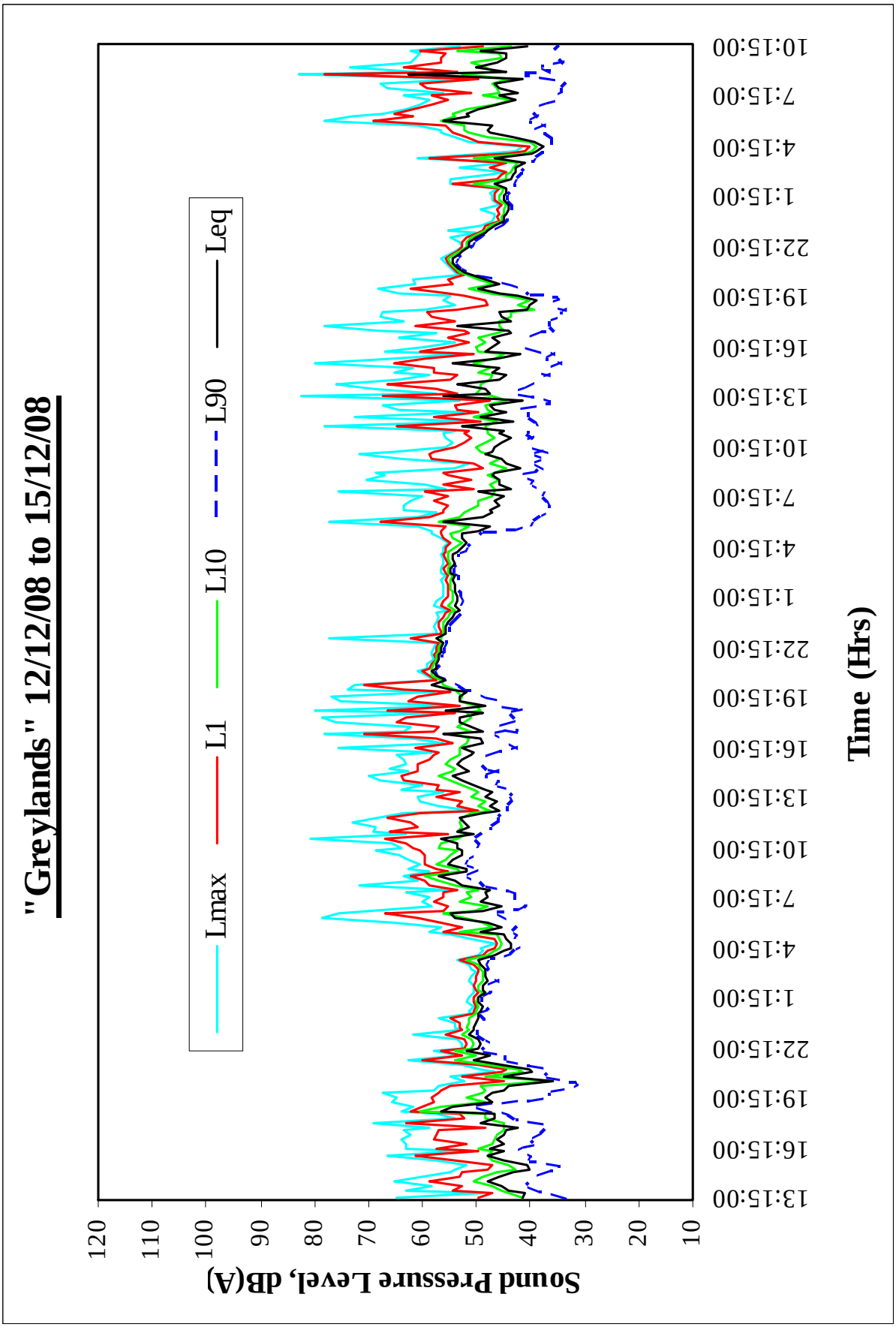
Review:



Ross Hodge
Acoustical Consultant

APPENDIX A

NOISE DATA CHARTS


"Greylands" 12/12/08 to 15/12/08
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
120
110
100
90
80
70
60
50
40
30
20
10
Time (Hrs)
13:15:00
16:15:00
19:15:00
22:15:00
1:15:00
4:15:00
7:15:00
10:15:00
13:15:00
16:15:00
19:15:00
22:15:00
1:15:00
4:15:00
7:15:00
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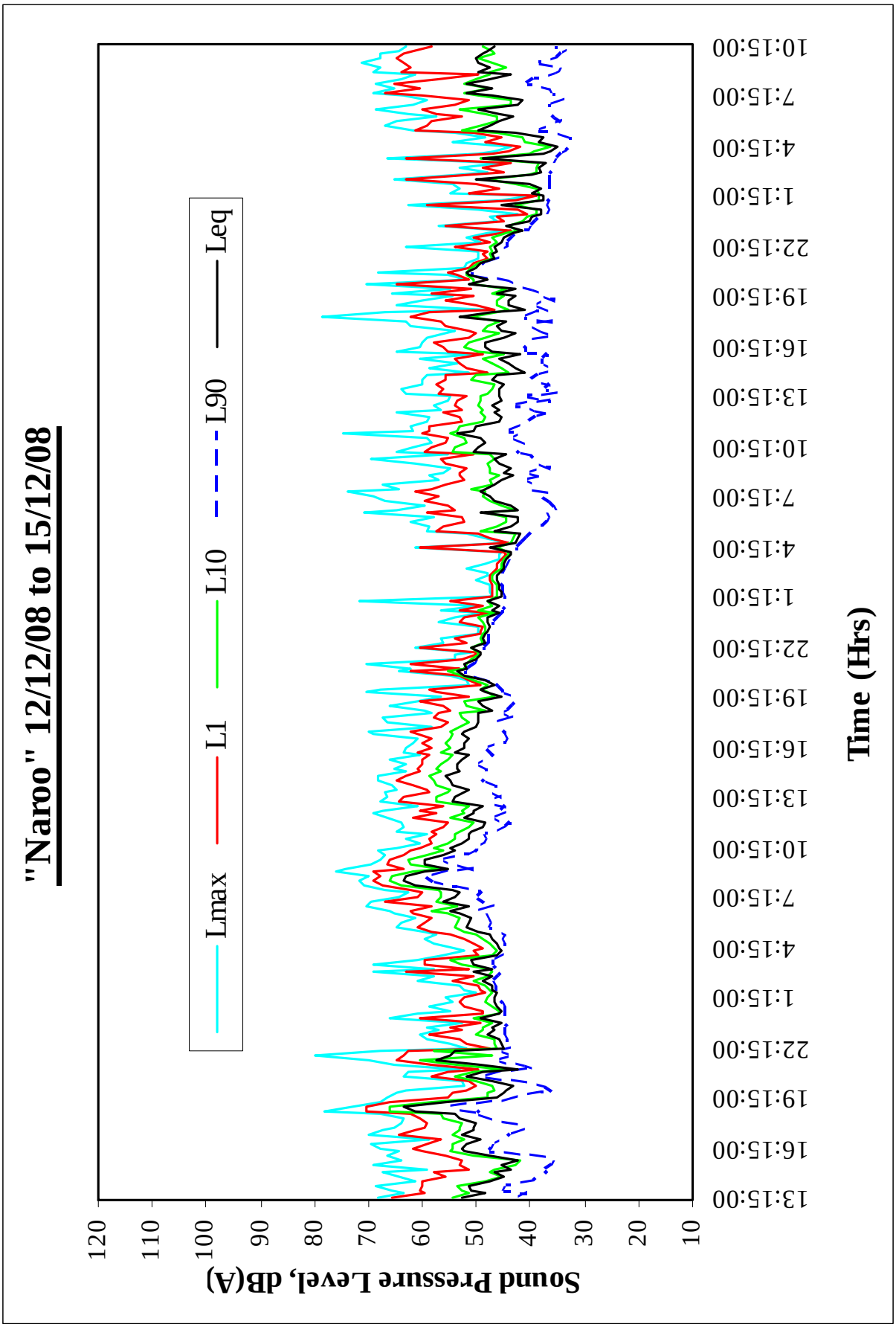
1:15:00
4:15:00
7:15:00
10:15:00


"Narroo" 12/12/08 to 15/12/08
Lmax
L1
L10
L90
Leq
Sound Pressure Level, dB(A)
120
110
100
90
80
70
60
50
40
30
20
10
Time (Hrs)
13:15:00
16:15:00
19:15:00
22:15:00
1:15:00
4:15:00
7:15:00
10:15:00
13:15:00
16:15:00
19:15:00
22:15:00
1:15:00
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7:15:00
10:15:00
13:15:00
16:15:00
19:15:00
22:15:00
1:15:00
4:15:00
7:15:00
10:15:00

APPENDIX B

CALIBRATION CERTIFICATES

CONFORMANCE CERTIFICATE

We certify that the equipment listed below has been checked, adjusted and aligned to conform to manufacturers specifications.

Certificate No: 7759

INSTRUMENT: Sound & Vibration Anayser
Svantek

Type No: Svan-949 **Serial No:** 9757

Owner: Spectrum Acoustics Pty Ltd
1 Roath St
Cardiff NSW 2285

CONDITION OF TEST:

Ambient Pressure: 1007 **mbar**

Temperature: 23 °C **Relative Humidity:** 37 %

Date of Calibration: 6/10/06

CHECKED BY: JK **AUTHORISED SIGNATORY:** .....
Jack Kielt

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Page 1 of 1
AVCERT4 Rev.1 03.09.04

CONFORMANCE CERTIFICATE

We certify that the equipment listed below has been checked, adjusted and aligned to conform to manufacturers specifications.

Certificate No: 7758

INSTRUMENT: Sound & Vibration Anayser
Svantek

Type No: Svan-949 **Serial No:** 9758

Owner: Spectrum Acoustics Pty Ltd
1 Roath St
Cardiff NSW 2285

CONDITION OF TEST:

Ambient Pressure: 1007 **mbar**

Temperature: 23 **°C** **Relative Humidity:** 37 **%**

Date of Calibration: 6/10/06

CHECKED BY: JK **AUTHORISED SIGNATORY:** .....
Jack Kielt

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AVCERT4 Rev.1 03.09.04

8 April 2009

Ref: 05168/3041

Mr Danny Young
Narrabri Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

RE: MARCH 2009 UNATTENDED NOISE MONITORING RESULTS

This letter report presents the results of unattended operational noise monitoring conducted for the Narrabri Coal Mine (NCM) during March 2009.

NOISE CRITERIA

The following is an extract from the Narrabri Coal NMP:

Noise impact assessment criteria for the various stages and activities associated with the mine's development were established in the *Environmental Assessment* using relevant DECC guidelines. These criteria have been incorporated in PA 05_0102 *Condition 3(12)* which is reproduced below. Additionally, PA 05_0102 *Condition 3(13)* identifies criteria for ensuring continuous improvement in noise mitigation actions at the mine site.

Noise Limits

3(12) The Proponent shall ensure that the noise generated by the project does not exceed the levels set out in Table 1 at any privately-owned residence.

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
All Privately owned Residences	35	35	35	45

Table 1: Impact assessment criteria dB(A)

Notes:

- *To determine compliance with the $LA_{eq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Relations Policy.*
- *To determine compliance with the $LA1(1\ minute)$ noise limits, noise from the project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (See Chapter 11 of the NSW Industrial Noise Policy).*
- *These limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.*

NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below and indicated in Figure 1.

Location N4: Entrance gate to Matoppo (north of site)
Location N3: Naroo (south of site)

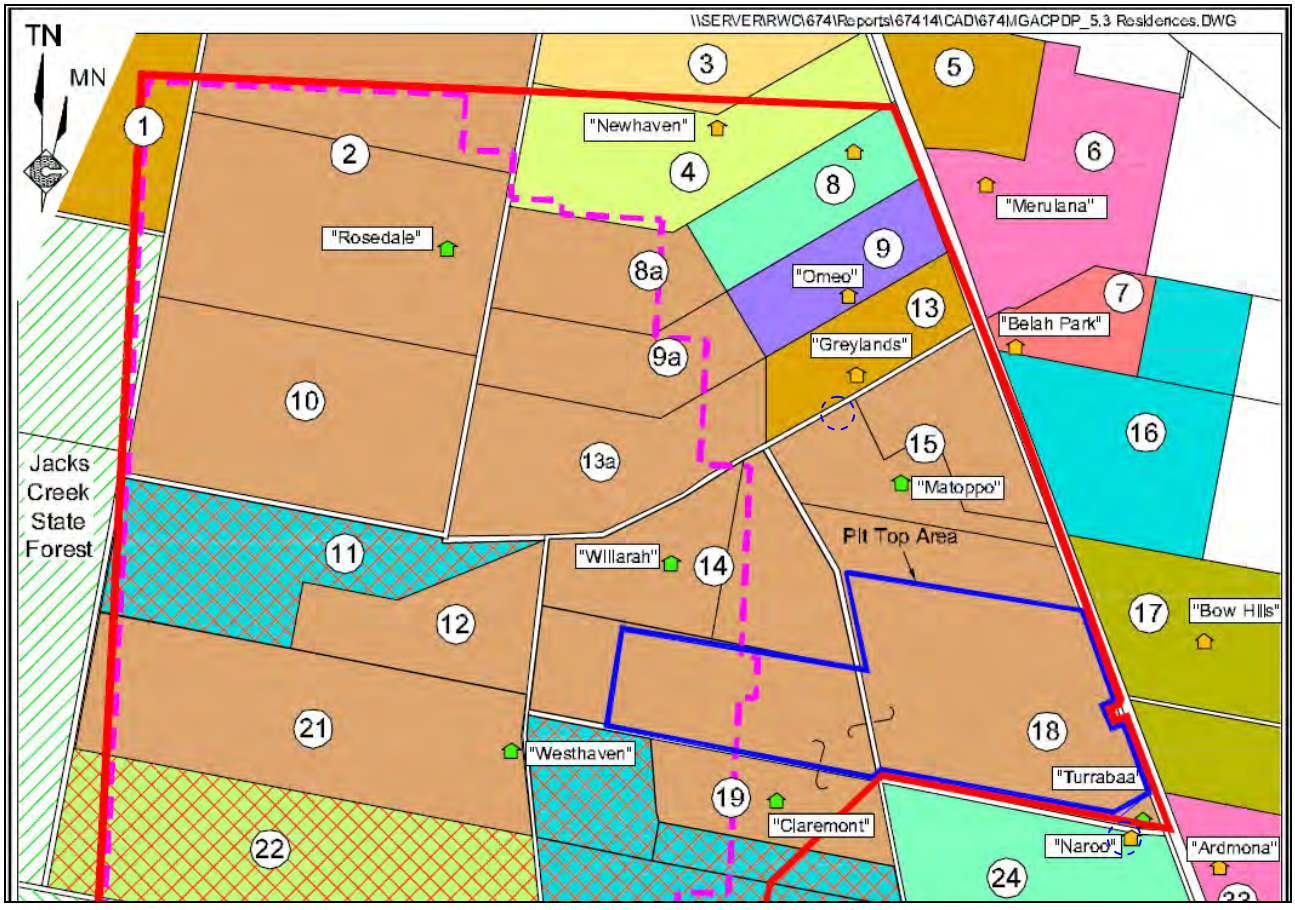


Figure 1. Unattended noise monitoring locations.

NOISE MONITORING PROGRAM

Noise levels were measured at each location for a period of at least seven days. Noise levels were measured at 15 minute statistical intervals using Svan 949 sound and vibration analysers used as environmental noise loggers. The measurements were done in accordance with relevant DECC guidelines and AS 1055-1997 "Acoustics – Description and Measurement of Environmental Noise". The noise loggers used comply with the requirements of AS 1259.2-1990 "Acoustics – Sound Level Meters", and have current NATA calibration certification (see **Appendix B**).

Each logger was programmed to continuously register environmental noise levels over the 15 minute intervals, with internal software calculating and storing Ln percentile noise levels for each sampling period. Calibration of the logger was performed as part of the instrument's initialisation procedures, with calibration results being within the allowable ± 0.5 dB(A) range. Since noise loggers record the total acoustic environment, it is not possible to identify or assign noise levels to the various contributing sources. Accordingly, this report does not attempt to interpret the logger results.

MEASURED NOISE LEVELS

Measured noise levels at each location are summarised below. Tabulated results show overall L_{Aeq} and L_{90} levels for the day, evening and night time periods using procedures specified in the DECC INP. Graphs showing full data sets are shown in **Appendix A**.

Matoppo

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
27-Mar-09	48.4	50.2	44.5	32.8	41.4	24.9
28-Mar-09	44.1	45.9	41.6	28.7	29.1	23.2
29-Mar-09	43.5	47.9	45.1	26.5	28.8	24.4
LAeq	46	48	44	--	--	--
L90	--	--	--	31	29	24

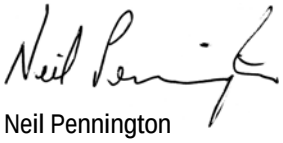
Naroo

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
27-Mar-09	51.0	51.5	44.5	38.6	42.5	27.9
28-Mar-09	49.2	44.9	39.7	32.0	29.3	22.0
29-Mar-09	49.1	46.6	42.3	31.2	30.8	27.2
LAeq	50	49	43	--	--	--
L90	--	--	--	35	31	27

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276 or 0406 670677.

Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:



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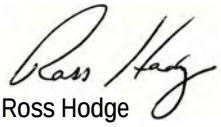
Review:



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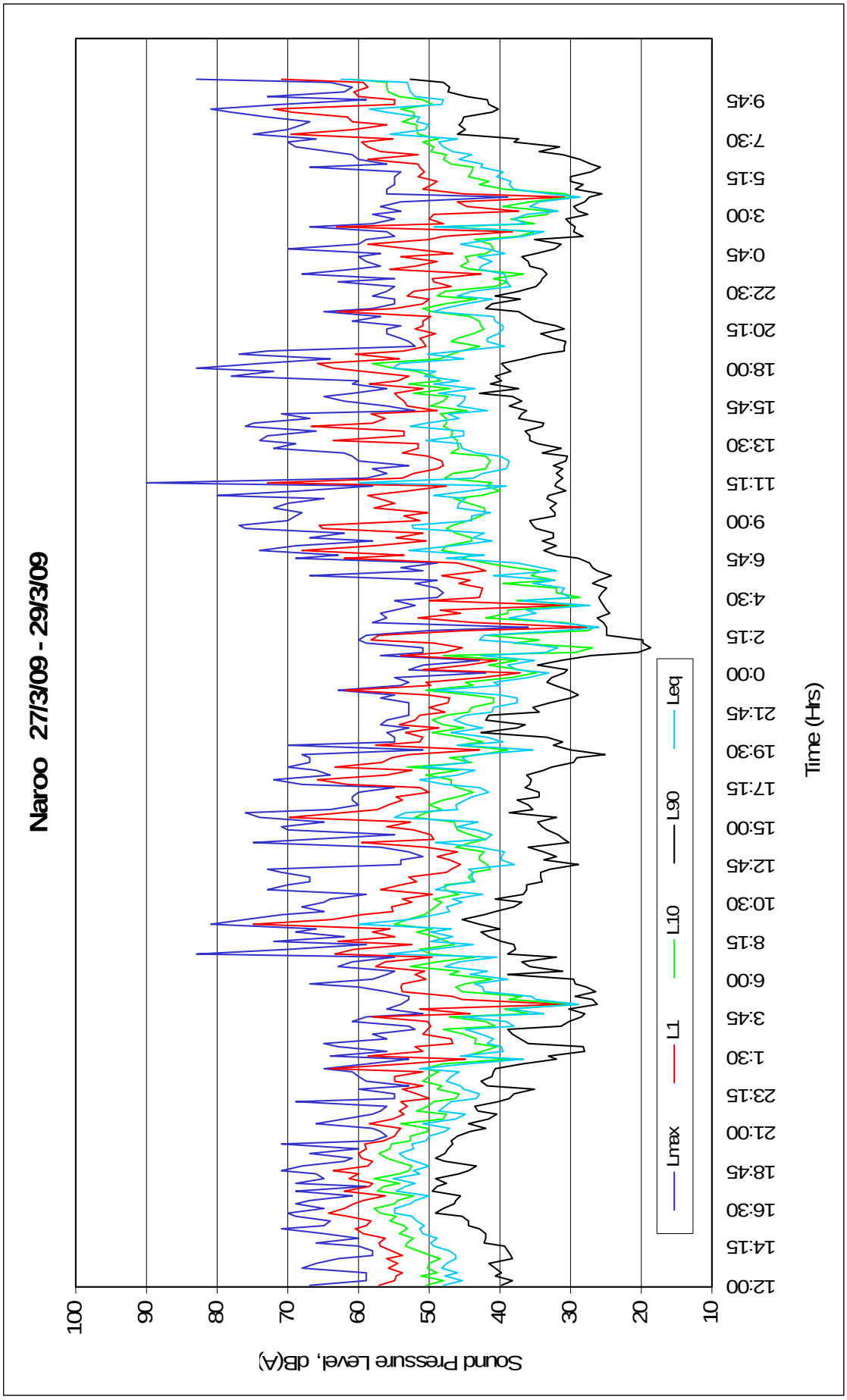
Acoustical Consultant

APPENDIX A

NOISE DATA CHARTS


Naroo 27/3/09 - 29/3/09
Sound Pressure Level, dB(A)
100
90
80
70
60
50
40
30
20
10
Time (Hrs)
12:00
14:15
16:30
18:45
21:00
23:15
1:30
3:45
6:00
8:15
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15:00
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11:15
13:30
15:45
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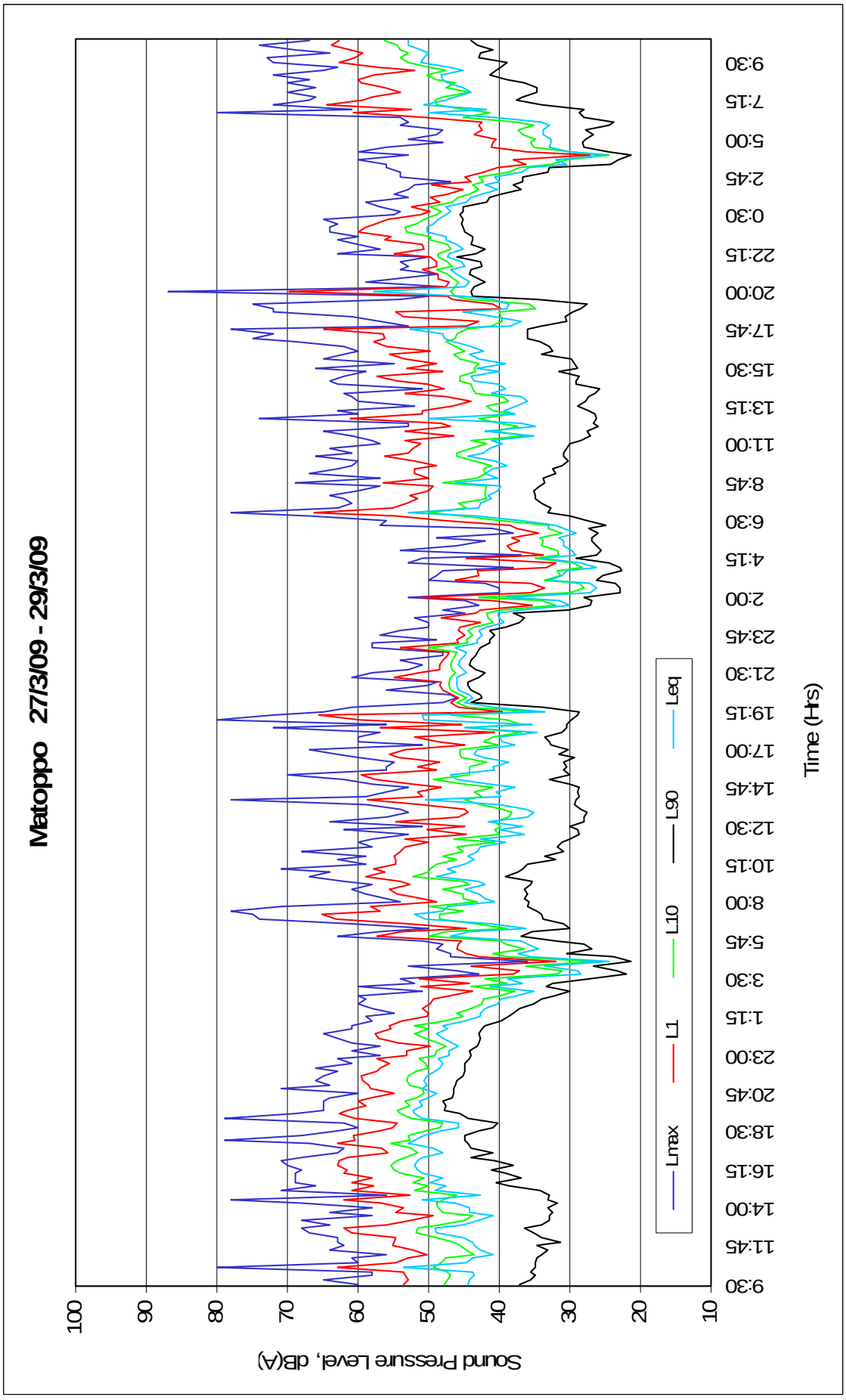
7:30
9:45
Lmax
L1
L10
L90
Leq


Matoppo 27/3/09 - 29/3/09
Sound Pressure Level, dB(A)
100
90
80
70
60
50
40
30
20
10
Time (Hrs)
9:30
11:45
14:00
16:15
18:30
20:45
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17:45
20:00
22:15
0:30
2:45
5:00
7:15
9:30
Lmax
L1
L10
L90
Leq

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Certificate No: 7759

INSTRUMENT: Sound & Vibration Anayser
Svantek

Type No: Svan-949 **Serial No:** 9757

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1 Roath St
Cardiff NSW 2285

CONDITION OF TEST:

Ambient Pressure: 1007 **mbar**

Temperature: 23 °C **Relative Humidity:** 37 %

Date of Calibration: 6/10/06

CHECKED BY: JK **AUTHORISED SIGNATORY:** .....
Jack Kielt

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Certificate No: 7758

INSTRUMENT: Sound & Vibration Anayser
Svantek

Type No: Svan-949 **Serial No:** 9758

Owner: Spectrum Acoustics Pty Ltd
1 Roath St
Cardiff NSW 2285

CONDITION OF TEST:

Ambient Pressure: 1007 **mbar**

Temperature: 23 **°C** **Relative Humidity:** 37 **%**

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Appendix 8

METEOROLOGICAL DATA

Narrabri Coal Mine Monthly Meteorological Summary

Month	Maximum Wind Speed (m/s)	Minimum Air Temperature (°C)	Average Air Temperature (°C)	Maximum Air Temperature (°C)	Minimum Relative Humidity (%)	Average Relative Humidity(%)	Maximum Relative Humidity (%)	Monthly Rainfall (mm)	Cumulative Monthly Rainfall (mm)	Number of Rain Days (>0.2mm)
April 2008	20.1	2.1	16.8	28.6	13.0	52.1	94.0	12.2	12.2	6
May 2008	18.3	3.4	14.4	25.7	19.0	55.6	93.0	6.8	19.0	7
June 2008	13.4	1.8	12.4	22.5	25.0	72.0	95.0	49.8	68.8	10
July 2008	15.6	-0.7	10.1	22.7	21.0	65.3	92.0	25.4	94.2	12
August 2008	17.0	-2.3	9.5	24.7	18.0	60.5	96.0	55.2	149.4	8
September 2008	17.9	1.5	15.4	29.9	19.0	64.0	93.0	89.0	238.4	9
October 2008	21.0	4.6	19.6	36.7	10.0	54.7	92.0	49.0	287.4	7
November 2008	20.6	7.6	21.6	34.1	12.0	57.1	93.0	129.6	417.0	15
December 2008	20.6	9.9	24.0	36.7	13.0	52.9	93.0	189.4	606.4	11
January 2009	17.9	14.9	26.8	38.4	9.0	49.0	90.0	35.6	640.8	5
February 2009		19.4		33.4				105.2	746.0	7
March 2009	17.9	9.5	22.9	33.8	9.0	46.0	89.0	3.4	749.4	1
Minimum	13.4	-2.3	9.5	22.5	9.0	49.0	90.0	3.4		
Average	18.2	6.0	17.1	30.6	15.9	58.3	93.1	62.6		
Maximum	21.0	19.4	26.8	38.4	25.0	72.0	96.0	189.4		
Total								**750.6**	**749.4**	**98.0**

Daily Summary **February 2008** **Narrabri**

Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Feb/08	20.3	24.4	31.6	38	67	85	2.5	0.4	3.4	13.4
02/Feb/08	19.5	25.7	32.2	27	56	87	0	0.4	3.9	10.3
03/Feb/08	21.3	25.7	30.8	42	58	71	0	0	3.6	10.7
04/Feb/08	20.5	22.6	28.3	53	79	90	6.1	0	2.6	11.6
05/Feb/08	18.2	22.5	28.7	55	80	92	17.8	0	3.6	21
06/Feb/08	18.1	20.2	25.2	60	83	91	40.1	0	3.2	12.5
07/Feb/08	16.2	21.5	26.9	43	67	92	11.2	0	3.8	13.9
08/Feb/08	15.9	21.8	28.8	38	64	91	0	0	2.8	10.3
09/Feb/08	13.2	20.2	24.9	27	46	80	0	0	3.6	12.5
10/Feb/08	12.6	19.7	26.4	26	56	86	0	0.4	3.8	9.8
11/Feb/08	16.7	22.6	29.6	31	57	85	1	1.8	4.2	11.2
12/Feb/08	16.9	19.3	22.5	72	85	92	11.4	0	3.5	8.1
13/Feb/08	16.6	22.2	29.2	35	67	91	0	1.3	5.4	13
14/Feb/08	15.6	21.9	28.9	36	60	86	0	4.5	6.2	12.5
15/Feb/08	14	21.1	27.8	31	55	81	0	3.6	5.2	10.3
16/Feb/08	15	21,7	28.1	26	50	77	0	4	5.9	11.2
17/Feb/08	15	22	28.6	35	53	71	0	4	5.6	12.1
18/Feb/08	16.1	22.4	28.2	35	56	79	0.3	1.3	4.1	8.9
19/Feb/08	18.4	23	29.3	32	62	85	0.5	0.4	3.5	9.4
20/Feb/08	16.6	23.4	29.6	29	54	82	0	0	3.6	10.7
21/Feb/08	16.7	24.3	31.2	30	52	81	0	0	2.7	9.8
22/Feb/08	18.7	27.6	37.1	20	46	74	0	0	3.3	12.1
23/Feb/08	22.4	26	30.3	14	30	51	0	0	4.8	13
24/Feb/08	12.5	22.2	29.3	15	29	59	0	0	2.1	8.5
25/Feb/08	14.8	23.6	32.1	22	40	66	0	0	2.3	8.5
26/Feb/08	19.3	24.1	29.5	32	52	72	0	0	4.9	11.2
27/Feb/08	18.9	23.8	29.5	37	58	79	0	2.2	4.5	10.7
28/Feb/08	16.4	20	28.6	48	76	91	36.8	0.4	3.8	16.1
29/Feb/08	14.7	18.5	23.9	43	66	89	0	2.2	5.7	13.4
Average	**16.9**	**22.6**	**28.9**	**35.6**	**58.8**	**81.2**		**0.9**	**4.0**	**11.6**
Maximum	**22.4**	**27.6**	**37.1**	**72.0**	**85.0**	**92.0**	**40.1**	**4.5**	**6.2**	**21.0**
Minimum	**12.5**	**18.5**	**22.5**	**14.0**	**29.0**	**51.0**	**0.0**	**0.0**	**2.1**	**8.1**
Total							**127.7**			

Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Mar/08	11.6	18.1	25.0	23	55	84	0.0	2.7	5.5	11.6
02/Mar/08	12.1	19.2	26.2	23	51	75	0.0	3.6	5.8	11.6
03/Mar/08	12.8	16.1	22.9	41	69	81	0.0	0.0	2.6	9.4
04/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
05/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
06/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
07/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
08/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
09/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
10/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
11/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
12/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
13/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
14/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
15/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
16/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
17/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
18/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
19/Mar/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
20/Mar/08	19.9	22.5	26.6	34	44	52	0.0	0.0	0.3	3.1
21/Mar/08	19.1	23.2	29.6	34	54	70	1.0	0.0	4.5	15.6
22/Mar/08	16.8	22.6	30.3	31	56	77	0.0	3.1	6.3	14.3
23/Mar/08	17.3	23.4	29.8	28	54	79	0.3	0.0	3.7	10.3
24/Mar/08	15.8	23.2	30.8	26	52	84	0.0	0.0	2.2	8.1
25/Mar/08	17.9	22.4	28.4	39	58	88	2.8	0.0	6.2	14.3
26/Mar/08	14.7	20.7	27.9	21	64	92	0.3	0.0	2.4	8.1
27/Mar/08	12.8	19.2	26.3	18	54	88	1.5	0.0	2.9	10.3
28/Mar/08	6.3	16.0	24.9	15	43	77	0.0	0.0	2.5	9,4
29/Mar/08	6.2	16.1	25.2	12	36	70	0.0	0.0	2.5	10.7
30/Mar/08	5.5	16.8	26.0	16	32	61	0.0	0.0	1.8	10.3
31/Mar/08	7.8	17.8	26.1	20	34	58	0.0	0.0	2.4	15.6
Average	**13.1**	**19.8**	**27.1**	**25**	**50**	**76**		**0.7**	**3.4**	**11.0**
Maximum	**19.9**	**23.4**	**30.8**	**41**	**69**	**92**	**2.8**	**3.6**	**6.3**	**15.6**
Minimum	**5.5**	**16.0**	**22.9**	**12**	**32**	**52**	**0.0**	**0.0**	**0.3**	**3.1**
Total							**5.9**			

Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Apr/08	8.9	17.5	27.3	14	34	59	0.0	0.0	1.9	7.1
02/Apr/08	10.1	20.6	28.6	20	37	63	0.0	0.0	4.7	14.3
03/Apr/08	10.9	20.0	23.7	13	32	50	0.0	0.0	6.7	16.1
04/Apr/08	6.2	14.6	23.2	14.0	31.0	53.0	0.0	0.0	3.2	9.4
05/Apr/08	11.1	18.2	26.2	20.0	41.0	61.0	0.0	0.9	3.9	8.5
06/Apr/08	12.8	19.5	26.4	21.0	47.0	69.0	0.0	3.6	5.0	13.9
07/Apr/08	12.0	18.8	25.6	25.0	51.0	79.0	0.0	4.0	5.6	14.8
08/Apr/08	9.8	17.4	25.0	28.0	56.0	85.0	0.0	2.7	6.3	15.2
09/Apr/08	11.6	17.8	24.7	28.0	56.0	85.0	0.0	2.2	4.8	11.6
10/Apr/08	11.1	17.8	25.9	32.0	61.0	84.0	1.0	0.4	4.0	11.2
11/Apr/08	11.8	18.5	26.6	15.0	47.0	84.0	0.0	0.0	3.3	8.5
12/Apr/08	12.6	20.2	27.8	23.0	46.0	79.0	0.0	0.4	3.1	7.1
13/Apr/08	11.8	20.5	28.2	19.0	36.0	55.0	0.0	0.0	3.1	9.8
14/Apr/08	10.6	17.8	24.2	23.0	45.0	72.0	0.0	1.3	4.3	11.6
15/Apr/08	10.9	17.7	25.0	26.0	54.0	76.0	0.0	4.5	6.4	15.2
16/Apr/08	11.9	14.2	19.5	46.0	72.0	81.0	0.0	0.0	2.7	10.7
17/Apr/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
18/Apr/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
19/Apr/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
20/Apr/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
21/Apr/08	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
22/Apr/08	12.6	14.6	17.6	58	70	77	0.2	0.0	1.3	11.2
23/Apr/08	10.9	15.4	21.2	43	68	83	1.2	2.2	4.7	9.4
24/Apr/08	12.8	15.4	19.1	63	78	92	3.6	1.8	5.0	13.4
25/Apr/08	12.3	14.8	17.3	73	85	92	5.8	0.0	3.3	12.5
26/Apr/08	9.5	16.2	24.1	30	70	94	0.4	0.0	1.8	8.9
27/Apr/08	11.2	19.7	27.3	15	38	69	0.0	0.0	7.1	20.1
28/Apr/08	6.2	11.9	16.6	27	50	67	0.0	1.3	4.2	12.1
29/Apr/08	2.1	9.7	16.4	26	54	88	0.0	0.0	2.3	8.9
30/Apr/08	4.4	12.0	21.6	17	44	69	0.0	0.0	2.2	6.3
Average	**10.2**	**16.8**	**23.6**	**29**	**52**	**75**		**1.0**	**4.0**	**11.5**
Maximum	**12.8**	**20.6**	**28.6**	**73**	**85**	**94**	**5.8**	**4.5**	**7.1**	**20.1**
Minimum	**2.1**	**9.7**	**16.4**	**13**	**31**	**50**	**0.0**	**0.0**	**1.3**	**6.3**
Total							**12.2**			

Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/May/08	7.9	16.0	24.2	25	44	64	0.0	0.0	2.5	10.7
02/May/08	11.1	17.7	24.2	22	40	64	0.0	0.0	1.8	9.4
03/May/08	6.6	13.8	21.6	20	46	75.0	0.0	0.0	2.8	10.3
04/May/08	4.4	12.4	21.6	24.0	48.0	75	0.0	0.0	0.8	4.9
05/May/08	5.5	13.0	22.9	19.0	42.0	69.0	0.0	0.0	2.1	6.7
06/May/08	3.4	13.1	23.3	19.0	42.0	69.0	0.0	0.0	1.5	5.4
07/May/08	6.6	15.9	23.9	21.0	44.0	68.0	0.0	0.0	2.7	9.4
08/May/08	5.1	14.0	22.5	22.0	49.0	81.0	0.0	0.0	2.5	8.1
09/May/08	7.8	14.6	23.6	23.0	43.0	65.0	0.0	0.0	2.1	6.3
10/May/08	9.2	15.9	25.5	22.0	43.0	63.0	0.0	0.0	2.0	6.3
11/May/08	9.4	16.5	25.7	24.0	49.0	71.0	0.0	0.0	2.5	6.7
12/May/08	11.7	17.0	24.7	27.0	56.0	79.0	0.0	0.4	3.5	8.5
13/May/08	9.6	16.1	24.9	31.0	57.0	80.0	0.0	0.0	2.7	15.2
14/May/08	7.7	14.9	23.6	31.0	59.0	80.0	0.0	0.0	2.9	13.0
15/May/08	9.2	15.5	23.3	41.0	65.0	88.0	1.8	0.0	2.2	12.1
16/May/08	12.6	16.8	22.9	43.0	70.0	92.0	1.4	0.0	4.1	12.1
17/May/08	5.5	15.3	22.5	23.0	54.0	89.0	1.4	1.3	6.5	18.3
18/May/08	4.0	9.1	14.5	45.0	72.0	89.0	0.2	0.4	4.0	11.6
19/May/08	5.1	12.1	19.5	34.0	64.0	93.0	0.2	0.0	2.9	9.4
20/May/08	4.0	11.5	19.1	36.0	59.0	85.0	0.0	0.0	1.7	7.6
21/May/08	5.9	12.9	22.0	26.0	60.0	88.0	0.0	0.9	3.3	8.1
22/May/08	8.5	14.2	21.3	34	63	85.0	0.0	2.7	5.4	10.3
23/May/08	7.8	13.2	21.4	34	61	82	0.0	0.0	3.4	7.6
24/May/08	7.9	13.5	21.4	37	62	81	0.0	0.0	2.7	7.6
25/May/08	7.5	13.6	22.8	29	59	81	0.0	0.0	2.0	9.8
26/May/08	6.7	14.3	22.9	27	58	86	0.0	0.0	2.3	7.6
27/May/08	10.4	16.1	23.3	27	56	81	0.0	0.0	2.2	7.6
28/May/08	9.3	14.0	19.1	47	70	87	0.4	0.0	1.5	7.1
29/May/08	7.5	14.2	21.8	31	64	92	0.2	0.9	3.4	11.2
30/May/08	8.7	14.5	22.0	37	65	90	0.0	2.2	4.8	11.2
31/May/08	8.6	15.0	22.6	31	60	86	0.0	0.9	4.1	8.9
Average	**7.6**	**14.4**	**22.4**	**29**	**56**	**80**		**0.3**	**2.9**	**9.3**
Maximum	**12.6**	**17.7**	**25.7**	**47**	**72**	**93**	**1.8**	**2.7**	**6.5**	**18.3**
Minimum	**3.4**	**9.1**	**14.5**	**19**	**40**	**63**	**0.0**	**0.0**	**0.8**	**4.9**
Total							**5.6**			

Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Jun/08	9.0	15.4	22.5	27	57	86	0.0	0.0	4.5	13.4
02/Jun/08	10.1	14.2	20.9	38	73	91	19.4	0.4	4.6	10.3
03/Jun/08	12.6	14.9	18.2	76	84	92.0	5.6	4.0	6.3	12.1
04/Jun/08	12.8	15.2	18.2	72.0	84.0	92	0.0	0.4	3.0	8.1
05/Jun/08	10.7	14.3	19.2	58.0	79.0	93.0	0.2	0.0	1.9	6.7
06/Jun/08	9.2	13.5	19.6	56.0	78.0	90.0	0.2	1.3	2.7	7.6
07/Jun/08	9.1	13.5	19.5	48.0	75.0	92.0	0.2	1.8	4.1	8.9
08/Jun/08	8.2	14.1	21.1	41.0	66.0	86.0	0.0	1.8	4.9	9.4
09/Jun/08	11.2	13.8	18.2	44.0	71.0	83.0	0.0	0.0	2.3	6.7
10/Jun/08	10.1	14.8	22.1	54.0	71.0	86.0	0.0	0.0	1.9	8.9
11/Jun/08	9.6	14.7	21.6	57.0	76.0	89.0	0.0	0.0	2.1	9.8
12/Jun/08	11.8	15.3	19.6	62.0	81.0	93.0	5.2	0.0	1.6	7.6
13/Jun/08	8.0	14.0	18.1	43.0	72.0	94.0	2.4	0.9	4.4	13.4
14/Jun/08	4.8	9.2	15.1	36.0	61.0	81.0	0.0	0.0	3.9	11.2
15/Jun/08	3.5	10.1	17.3	50.0	69.0	85.0	0.0	0.9	3.9	11.2
16/Jun/08	7.3	13.2	19.4	50.0	72.0	90.0	0.0	0.0	4.3	11.6
17/Jun/08	8.5	13.9	21.2	48.0	73.0	94.0	0.0	0.9	3.7	8.1
18/Jun/08	10.6	15.1	21.6	46.0	71.0	88.0	0.0	0.0	2.6	7.1
19/Jun/08	8.9	12.6	14.9	77.0	87.0	94.0	16.0	0.0	2.3	6.3
20/Jun/08	7.6	10.9	15.2	69.0	88.0	95.0	0.4	0.0	1.8	8.9
21/Jun/08	8.7	11.3	16.2	50.0	76.0	92.0	0.0	0.9	2.7	8.5
22/Jun/08	5.3	10.9	15.6	49.0	69	88.0	0.0	0.0	3.0	8.9
23/Jun/08	2.7	8.5	16.3	42	73	92	0.0	0.0	2.2	9.8
24/Jun/08	2.0	8.9	18.2	40	71	91	0.0	0.0	1.9	8.5
25/Jun/08	3.6	10.1	19.9	34	69	93	0.2	0.0	1.3	6.3
26/Jun/08	1.8	9.8	19.2	30	63	88	0.0	0.0	1.7	8.5
27/Jun/08	3.2	9.2	17.1	32	66	88	0.0	0.0	1.7	6.7
28/Jun/08	2.8	8.6	18.2	28	65	87	0.0	0.0	2.2	8.1
29/Jun/08	2.2	9.4	20.2	25	62	84	0.0	0.0	1.9	7.6
30/Jun/08	3.7	12.2	21.3	32	59	82	0.0	0.0	4.0	13.4
Average	**7.3**	**12.4**	**18.9**	**47**	**72**	**89**		**0.4**	**3.0**	**9.1**
Maximum	**12.8**	**15.4**	**22.5**	**77**	**88**	**95**	**19.4**	**4.0**	**6.3**	**13.4**
Minimum	**1.8**	**8.5**	**14.9**	**25**	**57**	**81**	**0.0**	**0.0**	**1.3**	**6.3**
Total							**49.8**			

Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Jul/08	4.9	11.8	17.8	28	54	81	0.0	0.4	3.2	9.4
02/Jul/08	2.9	10.2	17.4	45	63	80	0.0	0.0	2.7	9.8
03/Jul/08	1.8	9.2	17.3	41	67	91.0	0.0	0.0	1.1	6.3
04/Jul/08	2.3	9.9	18.2	36.0	65.0	88	0.0	0.4	4.4	9.4
05/Jul/08	5.9	11.7	18.9	37.0	66.0	92.0	0.0	0.0	3.3	8.1
06/Jul/08	7.5	12.2	19.5	41.0	68.0	85.0	0.2	0.0	2.2	6.3
07/Jul/08	9.8	13.5	18.7	57.0	77.0	91.0	2.6	0.0	3.3	13.4
08/Jul/08	2.8	10.3	14.8	39.0	75.0	92.0	0.2	0.0	3.3	11.6
09/Jul/08	1.1	5.4	11.1	60.0	79.0	91.0	1.6	0.0	3.4	13.0
10/Jul/08	1.6	7.5	13.0	49.0	70.0	88.0	0.0	0.4	3.5	11.2
11/Jul/08	0.9	8.8	15.0	32.0	60.0	88.0	0.0	0.9	2.2	7.1
12/Jul/08	0.5	8.2	17.6	21.0	57.0	87.0	0.0	0.0	2.3	8.1
13/Jul/08	4.9	12.9	21.3	43.0	59.0	82.0	0.0	0.0	2.7	12.5
14/Jul/08	9.2	15.9	19.9	73.0	81.0	92.0	2.6	0.0	4.5	13.0
15/Jul/08	6.3	12.8	20.2	22.0	62.0	92.0	0.2	0.0	2.2	8.9
16/Jul/08	2.2	8.2	17.1	35.0	70.0	88.0	0.0	0.0	1.2	5.8
17/Jul/08	1.4	9.3	18.2	30.0	62.0	87.0	0.0	0.0	2.1	9.8
18/Jul/08	2.7	12.2	18.6	23.0	44.0	71.0	0.0	0.0	4.5	13.0
19/Jul/08	0.1	8.4	18.1	27.0	56.0	80.0	0.0	0.0	1.3	7.1
20/Jul/08	4.6	13.5	22.7	24.0	56.0	90.0	15.0	0.0	5.0	15.6
21/Jul/08	5.4	11.1	14.9	55.0	72.0	92.0	0.0	1.3	4.5	10.7
22/Jul/08	2.7	8.1	13.6	37.0	66	90.0	0.0	0.0	3.9	10.7
23/Jul/08	4.9	10.1	15.6	44	60	72	0.0	3.6	5.5	10.3
24/Jul/08	8.4	10.4	13.0	68	79	91	1.2	2.2	5.0	10.7
25/Jul/08	6.1	10.3	15.8	49	72	88	0.2	1.3	3.9	10.3
26/Jul/08	2.9	9.1	16.1	33	65	91	0.0	0.0	2.4	9.8
27/Jul/08	0.8	7.7	14.3	46	71	88	1.0	0.0	2.6	14.3
28/Jul/08	3.1	8.0	11.9	43	67	88	0.4	0.4	3.7	8.9
29/Jul/08	3.8	8.4	14.9	39	65	84	0.2	0.0	3.3	12.5
30/Jul/08	1.0	7.5	16.3	25	63	90	0.0	0.0	1.5	7.1
31/Jul/08	-0.7	9.7	18.2	27	53	83	0.0	0.0	2.6	9.4
Average	**3.6**	**10.1**	**16.8**	**40**	**65**	**87**		**0.4**	**3.1**	**10.1**
Maximum	**9.8**	**15.9**	**22.7**	**73**	**81**	**92**	**15.0**	**3.6**	**5.5**	**15.6**
Minimum	**-0.7**	**5.4**	**11.1**	**21**	**44**	**71**	**0.0**	**0.0**	**1.1**	**5.8**
Total							**25.4**			

Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Aug/08	6.4	4.1	17.6	30	50	92	5.2	1.3	6.1	17.0
02/Aug/08	4.7	8.7	14.1	44	75	96	0.2	0.4	2.7	7.6
03/Aug/08	-0.1	7.0	14.9	42	71	91.0	0.2	0.0	1.1	7.1
04/Aug/08	0.2	8.2	17.1	32.0	64.0	90	0.0	0.0	1.7	9.4
05/Aug/08	2.9	7.8	15.4	48.0	74.0	91.0	1.4	0.0	3.1	8.9
06/Aug/08	0.2	8.1	16.1	41.0	73.0	94.0	0.2	0.0	2.9	9.8
07/Aug/08	2.3	8.4	15.8	28.0	62.0	89.0	0.0	0.0	4.3	14.8
08/Aug/08	1.5	7.7	14.9	40.0	62.0	85.0	0.0	0.0	2.3	6.3
09/Aug/08	-1.2	6.9	15.6	30.0	62.0	91.0	0.0	0.0	1.4	5.4
10/Aug/08	0.1	8.2	15.4	27.0	51.0	81.0	0.0	0.9	4.3	13.4
11/Aug/08	0.3	6.3	12.4	30.0	54.0	79.0	0.0	0.0	3.6	10.7
12/Aug/08	-2.3	6.2	15.1	26.0	61.0	89.0	0.0	0.0	1.7	8.5
13/Aug/08	-2.3	7.6	16.1	28.0	57.0	87.0	0.0	0.0	1.9	8.1
14/Aug/08	-1.7	8.0	16.4	22.0	51.0	85.0	0.0	0.0	2.5	8.9
15/Aug/08	-0.1	7.1	16.1	34.0	62.0	84.0	0.0	0.0	2.3	11.6
16/Aug/08	0.7	8.6	12.4	47.0	65.0	86.0	0.0	0.0	3.0	8.9
17/Aug/08	4.2	10.1	16.3	29.0	58.0	90.0	0.0	0.0	2.8	8.1
18/Aug/08	-0.2	8.0	15.4	27.0	53.0	82.0	0.0	0.0	2.4	9.4
19/Aug/08	-0.6	7.8	16.4	25.0	53.0	83.0	0.0	0.0	1.9	8.1
20/Aug/08	-1.9	8.7	19.4	18.0	47.0	80.0	0.0	0.0	1.8	9.4
21/Aug/08	1.6	12.6	21.1	31.0	48.0	63.0	0.0	0.0	4.8	15.2
22/Aug/08	4.4	11.4	16.2	41.0	67	89.0	10.0	0.0	4.1	14.8
23/Aug/08	2.2	9.2	15.8	30	60	90	0.0	0.9	3.7	10.3
24/Aug/08	2.2	9.1	16.4	28	57	82	0.0	0.0	2.8	8.5
25/Aug/08	3.8	10.8	19.6	28	56	77	0.0	0.0	2.4	7.6
26/Aug/08	4.5	13.3	23.3	29	59	81	0.0	0.0	2,4	10.3
27/Aug/08	8.2	14.9	23.1	21	50	75	0.0	0.0	2.5	8.1
28/Aug/08	7.1	13.6	22.9	25	60	84	0.0	0.9	4.9	10.7
29/Aug/08	7.4	14.0	22.1	40	64	82	0.0	0.0	3.5	8.1
30/Aug/08	10.1	17.4	24.7	47	64	87	5.6	0.0	3.9	12.1
31/Aug/08	13.6	15.8	19.2	65	87	92	32.4	0.0	5.5	15.6
Average	**2.5**	**9.5**	**17.3**	**33**	**61**	**85**		**0.1**	**3.1**	**10.1**
Maximum	**13.6**	**17.4**	**24.7**	**65**	**87**	**96**	**32.4**	**1.3**	**6.1**	**17.0**
Minimum	**-2.3**	**4.1**	**12.4**	**18**	**47**	**63**	**0.0**	**0.0**	**1.1**	**5.4**
Total							**55.2**			

Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Sep/08	9.7	14.7	20.4	44	75	93	0.2	0.0	1.5	5.8
02/Sep/08	7.0	13.4	21.0	27	63	85	0.0	0.0	2.0	6.3
03/Sep/08	7.8	13.6	20.3	48	69	80.0	1.6	1.8	5.8	13.0
04/Sep/08	10.4	12.7	16.9	52.0	74.0	89	6.2	1.8	6.2	12.1
05/Sep/08	10.8	12.3	14.9	79.0	86.0	91.0	20.2	4.0	7.1	13.9
06/Sep/08	11.1	13.2	16.1	63.0	75.0	88.0	0.0	0.4	3.8	9.8
07/Sep/08	5.1	13.4	18.8	45.0	66.0	91.0	0.0	0.0	1.9	6.7
08/Sep/08	4.8	13.1	19.9	30.0	57.0	89.0	0.0	0.0	2.6	12.5
09/Sep/08	3.8	10.9	18.7	29.0	64.0	88.0	0.0	0.0	2.1	7.6
10/Sep/08	2.1	10.8	19.6	27.0	58.0	89.0	0.0	0.0	1.6	8.9
11/Sep/08	1.5	10.5	18.6	27.0	60.0	87.0	0.0	0.0	1.0	7.1
12/Sep/08	4.1	13.5	23.6	33.0	61.0	85.0	0.0	0.0	2.1	10.3
13/Sep/08	9.4	19.0	26.8	41.0	58.0	81.0	0.0	0.0	3.8	12.5
14/Sep/08	15.1	17.7	22.9	39.0	69.0	91.0	17.4	3.6	7.7	17.9
15/Sep/08	15.8	19.4	23.3	51.0	69.0	83.0	0.2	4.5	6.5	12.1
16/Sep/08	7.6	14.1	19.3	28.0	49.0	72.0	0.0	0.4	4.0	13.4
17/Sep/08	4.8	13.2	21.9	35.0	60.0	80.0	0.0	0.0	2.5	7.1
18/Sep/08	8.3	14.9	22.8	42.0	69.0	87.0	0.0	0.0	2.9	9.4
19/Sep/08	10.1	17.6	25.5	46.0	71.0	88.0	0.0	0.0	2.2	8.9
20/Sep/08	12.3	21.6	29.9	28.0	54.0	87.0	0.0	0.0	4.1	12.5
21/Sep/08	11.3	19.3	28.3	32.0	60.0	84.0	0.0	0.0	1.8	7.6
22/Sep/08	16.1	20.9	29.1	37.0	67	92.0	40.0	1.3	5.7	15.6
23/Sep/08	9.3	16.3	20.4	62	77	89	3.0	0.0	3.7	13.0
24/Sep/08	8.0	14.2	20.4	47	67	84	0.0	2.7	5.6	11.6
25/Sep/08	7.8	14.5	21.1	39	64	84	0.0	0.0	3.9	8.9
26/Sep/08	8.9	15.0	22.7	41	67	88	0.0	0.0	1.5	5.4
27/Sep/08	8.4	16.6	25.9	25	64	89	0.2	0.0	1.3	5.4
28/Sep/08	9.3	20.4	29.2	24	50	88	0.0	0.0	3.9	12.1
29/Sep/08	9.5	19.0	26.0	19	41	77	0.0	0.0	3.8	11.2
30/Sep/08	9.0	15.9	24.8	21	55	85	0.0	0.0	1.8	6.7
Average	**8.6**	**15.4**	**22.3**	**39**	**64**	**86**		**0.7**	**3.5**	**10.2**
Maximum	**16.1**	**21.6**	**29.9**	**79**	**86**	**93**	**40.0**	**4.5**	**7.7**	**17.9**
Minimum	**1.5**	**10.5**	**14.9**	**19**	**41**	**72**	**0.0**	**0.0**	**1.0**	**5.4**
Total							**89.0**			

Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Oct/08	7.7	17.4	26.4	30	57	84	0.0	0.0	3.0	11.6
02/Oct/08	14.9	23.1	28.6	35	49	64	0.0	1.8	5.7	14.6
03/Oct/08	18.2	24.3	30.1	29	44	66.0	0.0	1.3	5.3	12.5
04/Oct/08	13.6	21.7	30.9	30.0	63.0	89	8.8	0.0	4.4	14.8
05/Oct/08	18.2	23.1	28.3	46.0	66.0	87.0	0.6	0.0	4.2	13.0
06/Oct/08	11.8	19.3	23.9	35.0	75.0	92.0	31.4	0.0	4.5	14.3
07/Oct/08	5.7	12.9	19.2	40.0	59.0	84.0	0.0	0.0	2.5	9.8
08/Oct/08	5.7	13.9	21.2	35.0	60.0	91.0	0.0	0.0	1.9	9.4
09/Oct/08	7.8	15.9	24.2	31.0	59.0	84.0	0.0	0.0	2.3	6.7
10/Oct/08	12.7	17.3	22.9	36.0	65.0	86.0	0.8	0.0	2.6	7.1
11/Oct/08	10.3	16.9	23.1	45.0	71.0	91.0	0.0	0.0	1.7	8.1
12/Oct/08	13.3	18.4	25.7	37.0	68.0	88.0	0.0	0.0	1.5	9.8
13/Oct/08	13.7	20.3	27.3	34.0	63.0	84.0	0.0	0.0	3.1	10.3
14/Oct/08	13.6	19.2	26.4	47.0	76.0	92.0	6.6	0.0	4.1	13.0
15/Oct/08	13.5	18.8	25.2	39.0	72.0	92.0	0.2	0.4	4.0	10.7
16/Oct/08	11.9	17.8	24.4	42.0	65.0	86.0	0.0	1.3	5.1	12.1
17/Oct/08	10.9	17.8	25.1	30.0	57.0	79.0	0.0	0.0	2.6	10.7
18/Oct/08	10.4	18.9	27.8	18.0	52.0	81.0	0.0	0.0	1.8	8.1
19/Oct/08	11.4	20.1	29.1	24.0	52.0	78.0	0.0	0.0	2.1	9.4
20/Oct/08	11.4	22.5	31.7	18.0	47.0	85.0	0.0	0.0	2.1	12.1
21/Oct/08	14.6	21.9	29.6	10.0	37.0	77.0	0.0	0.0	3.7	11.2
22/Oct/08	6.8	13.8	22.3	19.0	57	83.0	0.0	1.3	5.4	21.0
23/Oct/08	4.6	12.6	20.3	24	50	78	0.0	1.3	4.3	12.5
24/Oct/08	7.1	15.9	23.7	21	48	81	0.0	0.4	2.9	9.4
25/Oct/08	5.9	18.0	27.3	14	39	79	0.0	0.0	1.7	9.8
26/Oct/08	9.2	20.2	29.6	14	40	67	0.0	0.0	1.5	7.6
27/Oct/08	12.3	22.6	31.4	21	45	71	0.0	0.0	4.5	14.3
28/Oct/08	19.4	26.0	33.7	20	35	57	0.0	0.0	4.8	14.3
29/Oct/08	17.4	26.1	34.0	20	40	68	0.0	0.0	3.7	10.7
30/Oct/08	17.6	24.9	33.2	22	47	76	0.0	0.0	3.9	11.6
31/Oct/08	22.9	27.4	36.7	15	39	72	0.6	0.0	6.6	16.1
Average	**12.1**	**19.6**	**27.2**	**28**	**55**	**80**		**0.3**	**3.5**	**11.5**
Maximum	**22.9**	**27.4**	**36.7**	**47**	**76**	**92**	**31.4**	**1.8**	**6.6**	**21.0**
Minimum	**4.6**	**12.6**	**19.2**	**10**	**35**	**57**	**0.0**	**0.0**	**1.5**	**6.7**
Total							**49.0**			

Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Nov/08	19.9	22.7	25.5	38	51	68	0.0	1.8	3.9	11.2
02/Nov/08	18.2	23.4	29.9	36	56	87	1.8	0.0	3.7	10.3
03/Nov/08	18.5	21.0	26.1	57	81	93.0	33.8	0.0	3.9	10.7
04/Nov/08	13.0	20.7	27.3	23.0	53.0	87	0.0	0.0	2.6	8.5
05/Nov/08	12.9	19.1	26.0	42.0	62.0	83.0	0.4	0.0	3.5	10.3
06/Nov/08	10.6	21.0	31.0	19.0	53.0	90.0	0.2	0.0	1.6	8.5
07/Nov/08	14.0	25.2	34.1	16.0	41.0	81.0	0.0	0.0	2.3	10.7
08/Nov/08	14.6	19.9	26.8	32.0	72.0	90.0	5.8	0.0	3.8	10.3
09/Nov/08	11.9	19.2	27.1	25.0	54.0	90.0	0.0	0.0	3.1	11.6
10/Nov/08	13.7	21.6	29.7	18.0	47.0	81.0	0.0	0.0	4.7	12.5
11/Nov/08	11.6	21.4	30.1	27.0	47.0	75.0	0.0	1.8	4.6	10.7
12/Nov/08	15.3	23.2	30.7	19.0	44.0	77.0	0.0	0.0	3.2	11.2
13/Nov/08	17.0	24.4	32.1	20.0	44.0	70.0	0.0	0.0	1.9	7.1
14/Nov/08	18.9	26.6	33.7	22.0	41.0	68.0	0.0	0.0	3.1	13.0
15/Nov/08	22.8	26.9	31.0	33.0	45.0	61.0	0.0	0.0	4.2	13.0
16/Nov/08	20.2	25.3	32.9	15.0	38.0	63.0	0.0	0.0	3.9	12.5
17/Nov/08	17.5	19.1	21.7	56.0	73.0	89.0	1.2	0.4	4.0	10.3
18/Nov/08	15.9	17.1	17.9	85.0	89.0	92.0	32.0	0.0	2.2	6.7
19/Nov/08	16.7	21.1	26.4	63.0	81.0	92.0	3.4	0.0	2.9	9.4
20/Nov/08	17.4	20.6	26.6	55.0	78.0	89.0	12.8	0.4	4.2	13.4
21/Nov/08	15.2	21.9	28.1	28.0	60.0	90.0	1.0	0.4	3.3	13.0
22/Nov/08	9.4	17.6	22.1	24.0	52	87.0	2.0	0.0	5.8	16.5
23/Nov/08	7.6	14.2	20.3	28	48	78	0.0	1.3	5.7	17.0
24/Nov/08	10.7	19.9	27.3	24	43	73	0.0	0.4	3.5	10.7
25/Nov/08	12.1	21.8	30.4	12	44	78	0.0	0.0	3.0	11.2
26/Nov/08	16.7	22.1	28.4	40	61	88	4.8	1.3	4.4	10.7
27/Nov/08	16.3	22.2	29.8	46	73	92	6.2	0.4	3.8	12.5
28/Nov/08	19.1	25.3	32.8	42	68	90	23.8	0.0	6.1	20.6
29/Nov/08	15.3	22.7	27.2	35	64	92	0.4	0.0	5.4	13.9
30/Nov/08	12.6	19.3	26.1	26	51	84	0.0	0.9	3.2	11.2
Average	**15.2**	**21.6**	**28.0**	**34**	**57**	**83**		**0.3**	**3.7**	**11.6**
Maximum	**22.8**	**26.9**	**34.1**	**85**	**89**	**93**	**33.8**	**1.8**	**6.1**	**20.6**
Minimum	**7.6**	**14.2**	**17.9**	**12**	**38**	**61**	**0.0**	**0.0**	**1.6**	**6.7**
Total							**129.6**			

Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Dec/08	10.8	21.7	30.9	18	45	86	0.0	0.0	2.6	9.4
02/Dec/08	17.9	26.3	34.7	14	29	56	0.0	0.0	4.5	13.9
03/Dec/08	18.4	26.8	34.4	13	29	53.0	0.0	0.0	4.0	13.9
04/Dec/08	16.4	25.4	33.0	18.0	37.0	61	0.0	0.0	3.5	9.4
05/Dec/08	19.6	25.9	33.1	27.0	56.0	80.0	0.4	0.4	4.5	11.2
06/Dec/08	20.1	27.5	32.6	27.0	49.0	71.0	1.0	0.9	5.1	11.6
07/Dec/08	18.1	22.0	28.0	41.0	65.0	90.0	2.6	0.0	1.3	6.7
08/Dec/08	16.1	21.6	29.8	34.0	66.0	87.0	3.2	0.0	2.4	18.3
09/Dec/08	14.8	24.2	31.9	24.0	54.0	88.0	0.0	0.0	3.4	11.2
10/Dec/08	20.2	28.1	36.7	18.0	46.0	70.0	0.0	2.7	6.8	20.6
11/Dec/08	18.1	25.9	35.5	21.0	53.0	77.0	0.0	0.9	5.0	14.8
12/Dec/08	19.4	22.0	28.7	54.0	79.0	92.0	40.4	0.4	3.8	13.4
13/Dec/08	20.6	23.8	28.9	35.0	71.0	93.0	50.4	2.7	6.8	17.0
14/Dec/08	14.2	19.5	24.4	36.0	55.0	79.0	0.0	1.8	4.3	13.0
15/Dec/08	10.9	18.8	25.9	26.0	53.0	88.0	0.0	0.0	3.0	10.3
16/Dec/08	9.9	21.0	29.5	19.0	46.0	88.0	0.0	0.0	1.7	8.5
17/Dec/08	12.6	23.4	33.0	14.0	44.0	79.0	0.0	0.0	2.2	13.0
18/Dec/08	16.7	26.1	34.9	14.0	43.0	72.0	0.0	0.0	4.7	15.6
19/Dec/08	15.5	24.2	31.0	16.0	36.0	72.0	0.0	0.0	4.1	13.4
20/Dec/08	14.2	21.3	28.7	26.0	49.0	79.0	0.0	0.9	6.1	14.8
21/Dec/08	15.3	22.2	28.9	29	47.0	64.0	0.0	0.9	3.9	9.8
22/Dec/08	17.0	23.5	30.4	25	46	65.0	0.0	0.0	2.3	8.5
23/Dec/08	19.9	25.0	33.4	27	52	87	4.4	0.0	4.8	13.9
24/Dec/08	19.9	25.5	32.9	33	64	89	0.0	0.0	2.7	13.4
25/Dec/08	18.7	26.3	34.4	17	51	84	0.0	0.0	3.2	8.5
26/Dec/08	19.8	25.3	33.5	29	57	77	0.8	0.0	3.0	13.4
27/Dec/08	18.6	21.5	23.8	67	82	92	74.0	0.0	2.8	11.2
28/Dec/08	18.2	24.0	30.4	47	74	92	8.4	0.0	2.2	8.9
29/Dec/08	19.7	26.1	33.2	40	64	88	3.8	0.0	3.9	13.0
30/Dec/08	17.8	24.8	32.2	14	52	88	0.0	0.0	3.9	11.6
31/Dec/08	13.7	24.0	32.4	20	45	82	0.0	0.0	2.0	10.3
Average	**16.9**	**24.0**	**31.3**	**27**	**53**	**80**		**0.4**	**3.7**	**12.3**
Maximum	**20.6**	**28.1**	**36.7**	**67**	**82**	**93**	**74.0**	**2.7**	**6.8**	**20.6**
Minimum	**9.9**	**18.8**	**23.8**	**13**	**29**	**53**	**0.0**	**0.0**	**1.3**	**6.7**
Total							**189.4**			

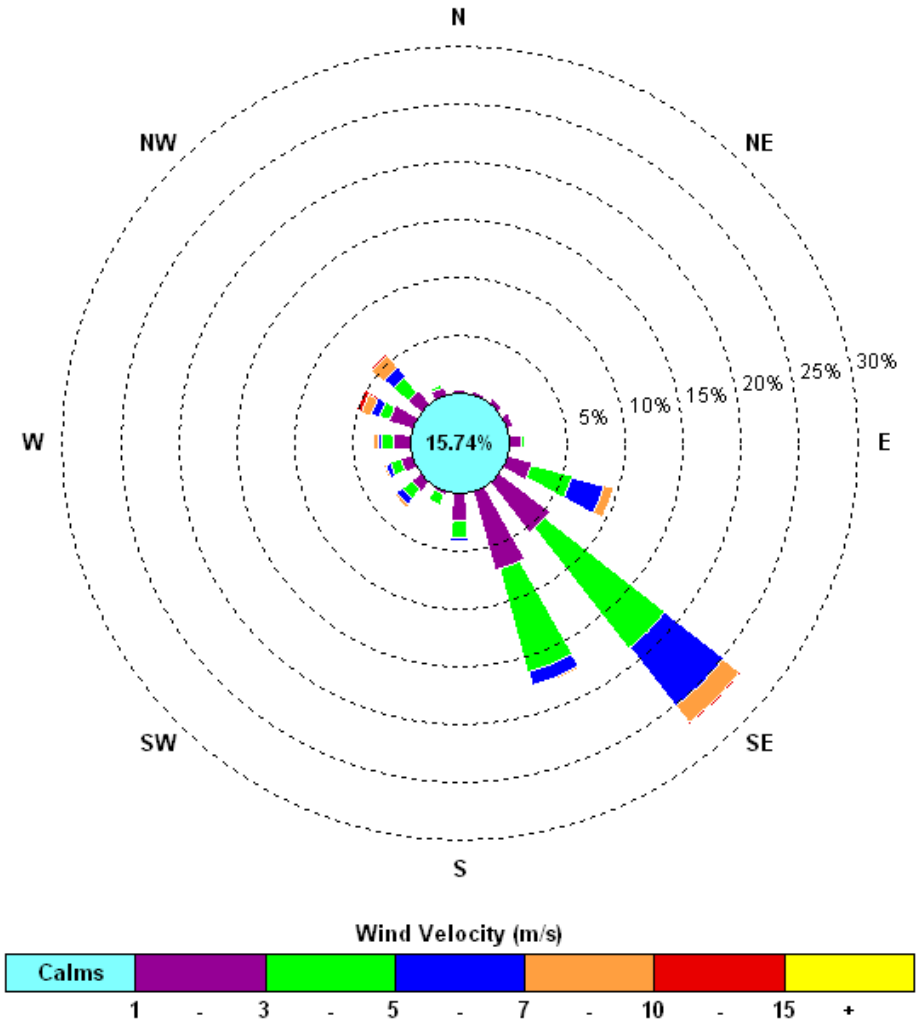
Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Jan/09	15.4	26.5	35.5	15	38	76	0.0	0.0	2.9	11.6
02/Jan/09	21.0	26.5	32.3	29	45	62	0.0	0.0	2.5	9.4
03/Jan/09	17.7	25.3	32.6	27	51	77.0	0.0	0.4	4.0	10.7
04/Jan/09	18.8	25.9	33.4	24.0	49.0	72	0.0	0.0	2.1	9.8
05/Jan/09	20.5	26.9	34.6	23.0	45.0	65.0	0.0	0.0	3.3	9.8
06/Jan/09	21.3	28.5	36.7	21.0	44.0	66.0	0.0	0.0	2.9	9.8
07/Jan/09	24.1	27.6	31.4	31.0	46.0	65.0	0.2	0.0	4.1	11.6
08/Jan/09	20.4	26.3	34.8	27.0	57.0	79.0	5.4	0.0	3.1	13.9
09/Jan/09	17.3	23.4	30.9	32.0	58.0	83.0	0.2	4.5	7.2	13.4
10/Jan/09	14.9	21.1	28.0	31.0	58.0	86.0	2.2	0.4	4.2	11.2
11/Jan/09	17.3	24.5	32.3	30.0	57.0	85.0	0.0	0.0	2.1	8.5
12/Jan/09	19.4	27.3	34.9	22.0	47.0	78.0	0.0	0.0	2.4	8.1
13/Jan/09	20.2	28.0	35.1	19.0	39.0	65.0	0.0	0.4	3.0	10.7
14/Jan/09	20.9	27.7	35.9	17.0	40.0	62.0	0.0	0.0	2.4	10.7
15/Jan/09	23.1	28.5	34.9	25.0	36.0	49.0	0.0	1.8	5.5	13.9
16/Jan/09	23.8	31.1	38.4	9.0	22.0	38.0	0.0	1.8	5.5	13.0
17/Jan/09	17.6	24.6	32.6	16.0	45.0	76.0	0.0	3.6	6.8	15.6
18/Jan/09	15.3	24.0	32.4	24.0	43.0	68.0	0.0	0.4	3.2	9.4
19/Jan/09	18.9	26.2	32.6	30.0	46.0	68.0	0.0	0.4	2.6	9.4
20/Jan/09	23.1	28.1	33.8	26.0	40.0	61.0	0.0	1.8	4.8	12.1
21/Jan/09	21.4	25.5	29.8	40	59.0	86.0	1.6	0.0	3.4	10.7
22/Jan/09	21.1	22.7	25.1	75	85	90.0	6.8	0.4	4.0	10.7
23/Jan/09	21.8	26.1	32.2	48	72	88	0.0	0.0	3.0	8.5
24/Jan/09	22.6	29.5	36.7	32	60	87	19.2	1.3	4.5	17.9
25/Jan/09	21.4	27.3	36.7	33	64	86	0.0	0.9	4.6	13.0
26/Jan/09	20.7	28.1	36.4	22	53	81	0.0	0.4	4.1	12.1
27/Jan/09	21.1	28.4	34.8	26	49	81	0.0	0.9	3.5	10.7
28/Jan/09	21.2	28.4	35.6	17	44	73	0.0	0.0	2.4	14.8
29/Jan/09	20.3	28.3	36.4	14	40	69	0.0	0.0	2.1	8.5
30/Jan/09	21.3	28.6	36.0	14	41	66	0.0	0.4	2.6	8.9
31/Jan/09	20.6	28.8	36.3	18	41	69	0.0	0.0	2.5	11.2
Average	**20.1**	**26.8**	**33.8**	**26**	**49**	**73**		**0.7**	**3.6**	**11.3**
Maximum	**24.1**	**31.1**	**38.4**	**75**	**85**	**90**	**19.2**	**4.5**	**7.2**	**17.9**
Minimum	**14.9**	**21.1**	**25.1**	**9**	**22**	**38**	**0.0**	**0.0**	**2.1**	**8.1**
Total							**35.6**			

Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Mar/09										
02/Mar/09										
03/Mar/09										
04/Mar/09										
05/Mar/09	18.2	19.7	23.6	29.0	35.0	39.0	0.0	0.0	0.8	7.1
06/Mar/09	9.6	19.4	27.3	25.0	44.0	77.0	0.0	0.0	1.8	7.1
07/Mar/09	9.6	21.0	31.0	16.0	41.0	76.0	0.0	0.0	1.1	7.1
08/Mar/09	14.2	24.0	32.2	17.0	38.0	59.0	0.0	0.0	3.7	11.2
09/Mar/09	17.6	24.5	32.1	24.0	49.0	73.0	0.0	3.6	5.6	12.1
10/Mar/09	17.9	24.0	31.6	27.0	50.0	70.0	0.0	3.1	5.9	12.1
11/Mar/09	16.3	23.6	30.8	25.0	48.0	69.0	0.0	3.6	5.7	11.2
12/Mar/09	17.4	24.0	29.4	29.0	47.0	71.0	0.0	0.4	2.6	8.1
13/Mar/09	18.1	23.8	30.3	33.0	55.0	81.0	0.0	0.0	2.9	10.7
14/Mar/09	18.3	23.8	30.9	33.0	60.0	84.0	0.0	1.3	3.9	12.5
15/Mar/09	17.8	25.0	33.8	20.0	56.0	86.0	0.0	0.4	4.5	12.1
16/Mar/09	13.9	21.2	29.5	9.0	32.0	53.0	0.0	1.3	3.3	9.8
17/Mar/09	9.5	19.6	28.6	20.0	42.0	74.0	0.0	0.0	2.1	8.1
18/Mar/09	14.7	22.5	31.6	20.0	43.0	71.0	0.0	0.0	2.4	7.1
19/Mar/09	17.2	24.2	32.4	26.0	48.0	71.0	0.0	0.0	1.8	8.9
20/Mar/09	18.8	24.3	31.8	24.0	46.0	66.0	0.0	0.0	2.8	11.2
21/Mar/09	16.8	23.9	31.0	20	44.0	75.0	0.0	2.2	3.8	9.8
22/Mar/09	16.6	23.3	30.8	18	43	73.0	0.0	0.0	2.4	8.5
23/Mar/09	14.2	23.4	32.9	19	42	69	0.0	0.0	1.6	9.8
24/Mar/09	15.2	24.3	33.5	19	40	69	0.0	0.0	1.6	7.1
25/Mar/09	17.3	24.2	32.9	21	43	61	0.0	0.0	3.3	11.6
26/Mar/09	18.4	25.3	33.6	22	40	58	0.0	0.0	2.9	10.3
27/Mar/09	19.7	25.0	31.4	27	42	58	0.0	0.9	4.9	13.0
28/Mar/09	14.2	21.7	29.5	22	48	81	0.0	1.8	4.1	8.9
29/Mar/09	14.4	22.3	30.1	14	41	73	0.0	1.3	3.8	11.2
30/Mar/09	15.2	22.2	29.6	28	53	84	0.2	1.8	7.0	16.1
31/Mar/09	17.2	19.2	23.7	58	74	89	3.2	2.7	7.4	17.9
Average	**15.9**	**22.9**	**30.6**	**24**	**46**	**71**		**0.9**	**3.5**	**10.4**
Maximum	**19.7**	**25.3**	**33.8**	**58**	**74**	**89**	**3.2**	**3.6**	**7.4**	**17.9**
Minimum	**9.5**	**19.2**	**23.6**	**9**	**32**	**39**	**0.0**	**0.0**	**0.8**	**7.1**
Total							**3.4**			

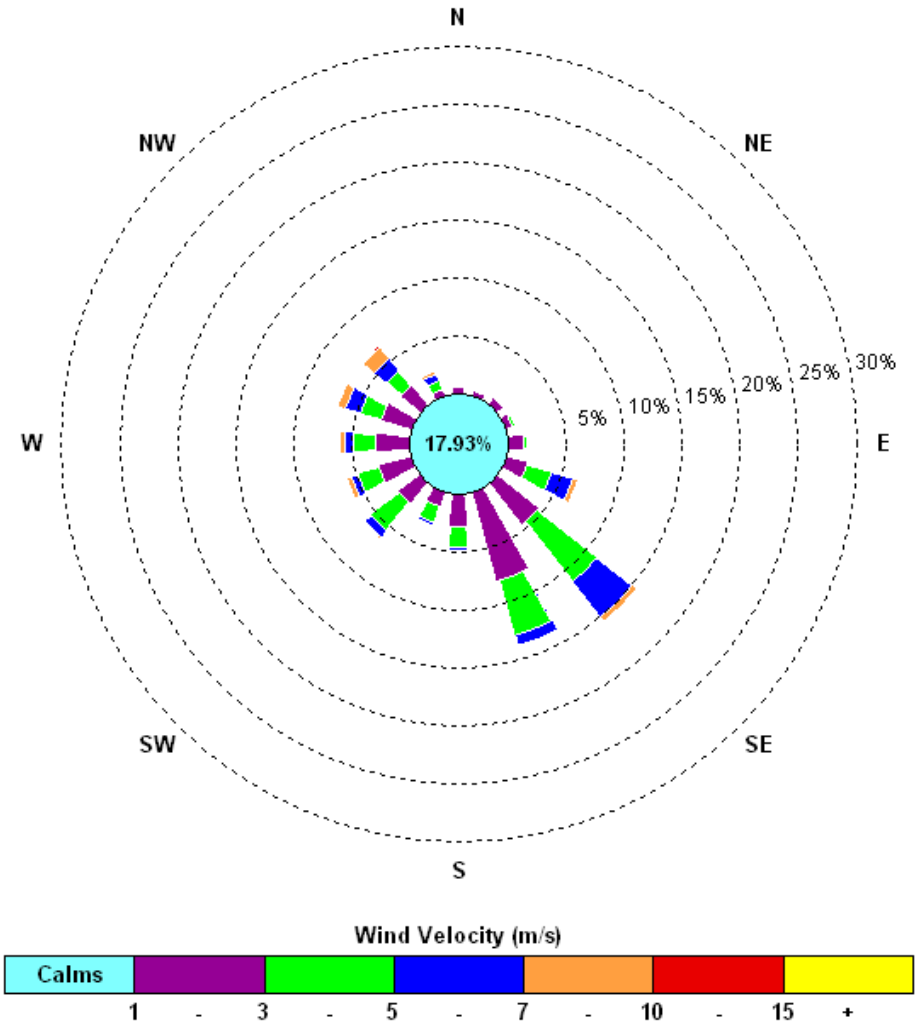
Narrabri Seasonal Windroses

Data used to compile the seasonal and annual windroses was collected from the Narrabri Coal Mine Meteorological Station.

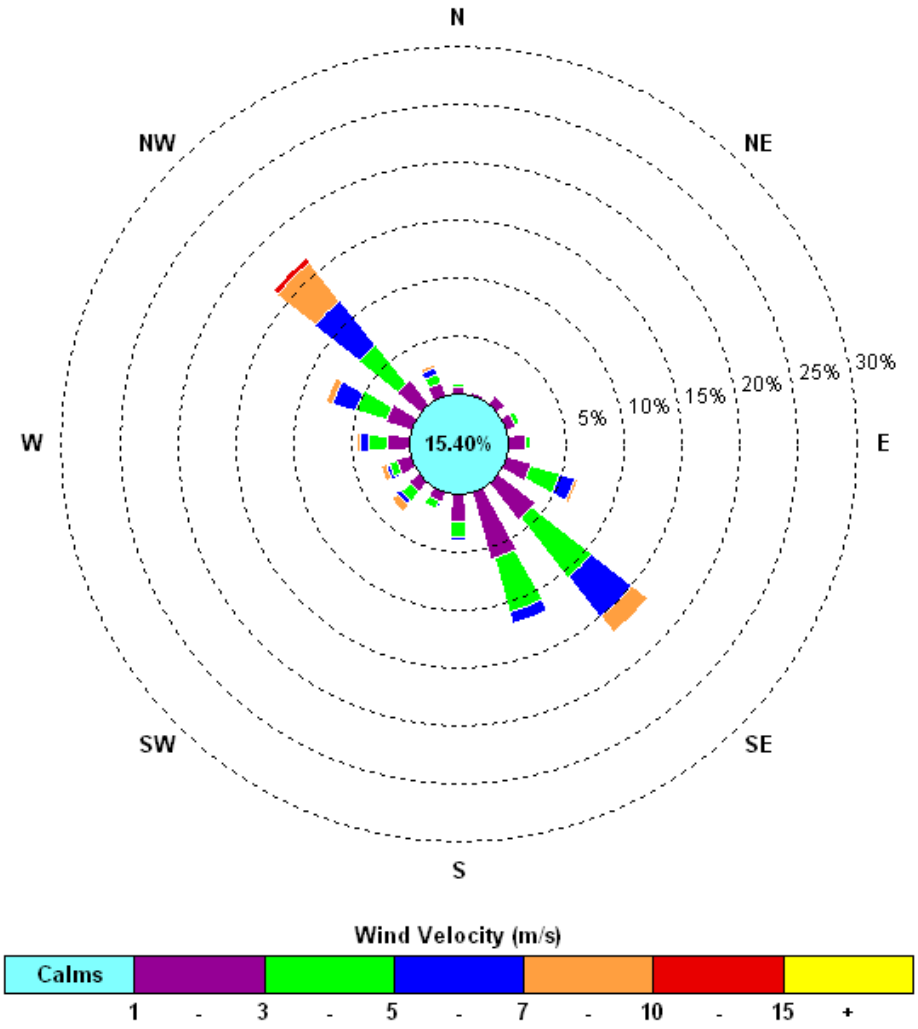
Autumn 2008 (April 2008 – May 2008)



Winter 2008 (June 2008 – August 2008)

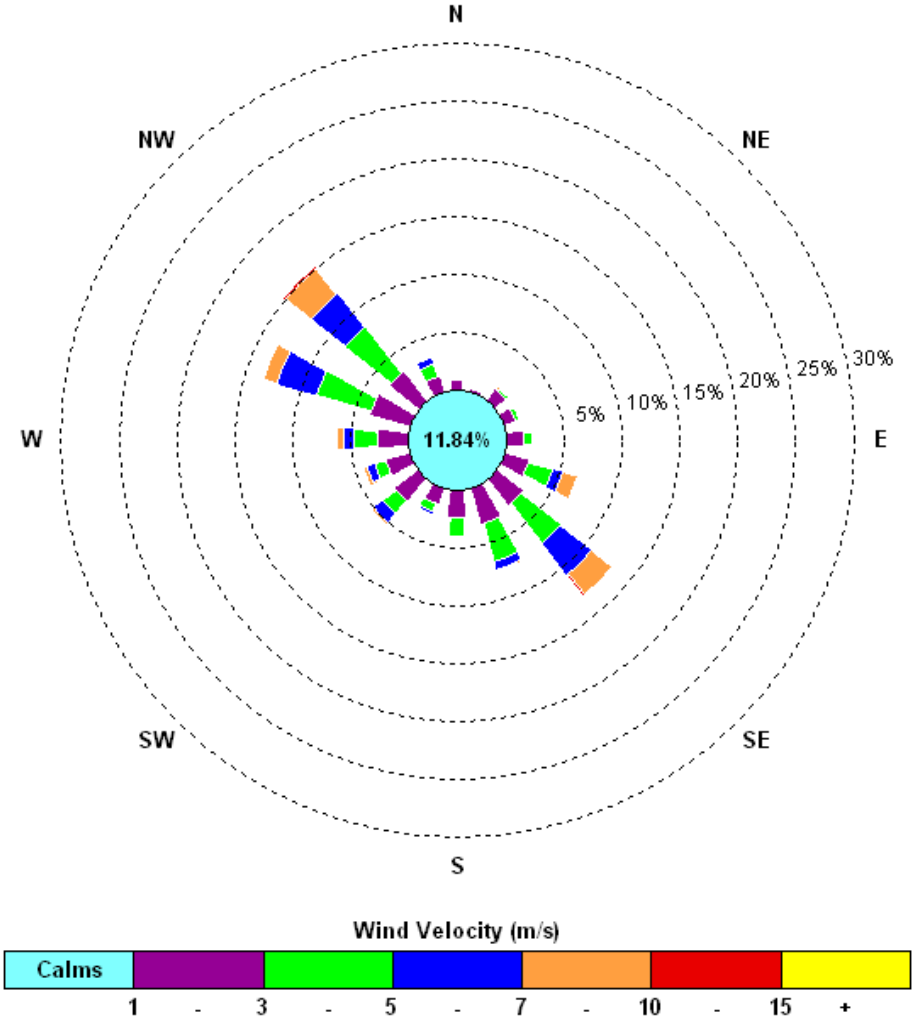


Spring 2008 (September 2008 – November 2008)

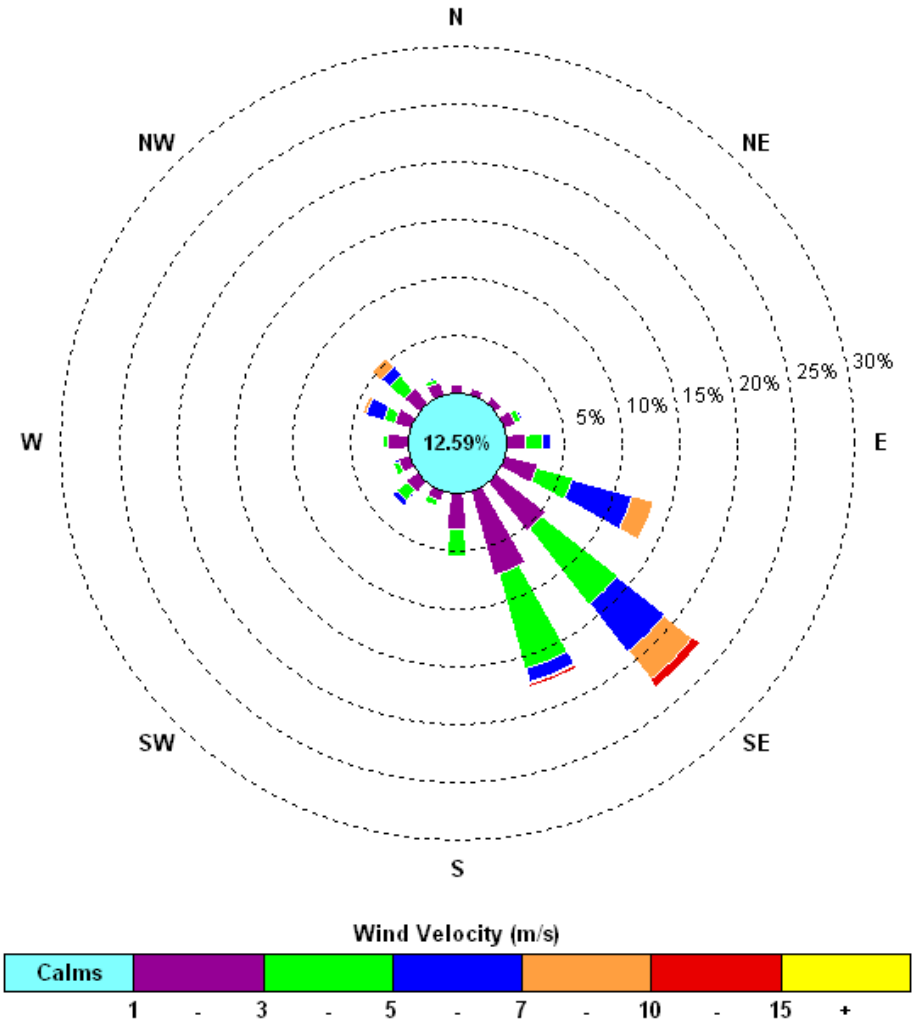


Summer 2008/2009 (December 2008 – February 2009)

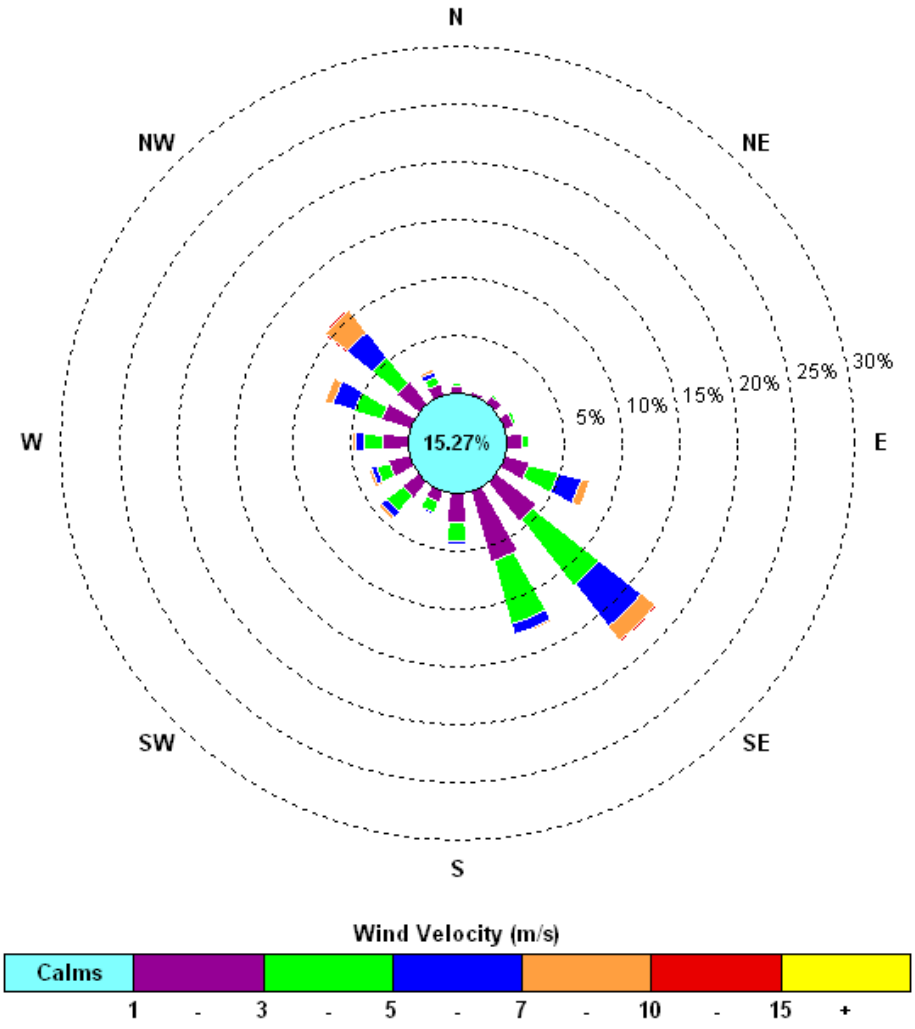
(No data for February 2009 due to a fault with the weather station)



Autumn 2009 (March 2009)



Annual Windrose (April 2008 – March 2009)



Appendix 9

QUARTERLY SURFACE WATER MONITORING

Water Sampling Kurrajong and Pine Creek - Wet Weather Events

Sample No.	Date	Sample Location	Time	pH	Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Grease & Oil (mg/L)	Comments
31489.01	23 September 2008	KC2US	950	6.5	65	35	<2	
31489.02	23 September 2008	KC1US	1015	8.0	65	320	<2	
31489.03	23 September 2008	KCUS	1030	7.7	315	168	<2	
31489.04	23 September 2008	KCDS	1040	7.2	230	150	<2	
31489.05	23 September 2008	PC	1100	7.2	90	294	<2	
31489.06	23 September 2008	PC1	1113	7.0	90	62	<2	
31489.07	23 September 2008	KC1DS	1130	7.1	220	1280	<2	
31489.08	23 September 2008	KC2DS	1135	7.2	165	444	<2	
32276.01	15 December 2008	KCDS	1605	7.1	355	21	<2	
32276.02	15 December 2008	KC2DS	1614	6.9	95	8	<2	
32276.03	15 December 2008	KCUS	1623	7.5	55	6	<2	
32276.04	15 December 2008	PC	1645	7.2	125	12	<2	
32276.05	15 December 2008	PC1	1700	6.9	255	23	<2	
32276.06	15 December 2008	KC1DS	1713	8.2	315	42	<2	
32276.07	15 December 2008	KC2DS	1725	7.4	185	289	<2	
32373.01	29 December 2008	KC1US	1535	6.9	95	48	<2	
32373.02	29 December 2008	KC2US	1519	6.8	90	17	<2	
32373.03	29 December 2008	KCDS	1512	7.1	450	26	<2	
32815.01	17 February 2009	KCUS	1611	7.2	280	123	<2	
32815.02	17 February 2009	KC2US	1620	6.7	70	14	<2	
32815.03	17 February 2009	KCDS	1626	6.9	180	132	<2	
32815.04	17 February 2009	PC	1650	7.1	60	57	<2	
32815.05	17 February 2009	PC1	1708	7.1	180	38	<2	
32815.06	17 February 2009	KC1DS	1720	7.1	145	142	<2	
32815.07	17 February 2009	KC2DS	1750	7.1	105	1130	<2	