WHITEHAVEN COAL

Narrabri Coal Operations Pty Ltd

ABN: 15 129 850 139

Annual Environmental Management Report

for the

Narrabri Coal Mine (ML 1609)

1 May 2010 – 30 April 2011

Narrabri Coal Operations PtyLtd

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MOP Commencement Date 08.02.2008 – MOP Completion 31.12.2011

AEMR Commencement Date 01.04.2010 – AEMR Completion Date 31.03.2011

Narrabri Coal Operations Pty Ltd

Head Office	Site	Gunnedah Office
Level 9	Narrabri Coal Site Office	Whitehaven CHPP
1 York Street	Kurrajong Creek Road	Kamilaroi Highway
SYDNEY NSW 2000	BAAN BAA NSW 2390	GUNNEDAH NSW 2380
Phone: (02) 8507 9700	Phone: (02) 6794 4755	Phone: (02) 6742 4337
Fax: (02) 8507 9701	Fax: (02) 6794 4753	Fax: (02) 6742 3607

Reporting Officer: Danny Young

Title: Environmental Manager

Signature: _____

Date: _____

Distribution:

- Department of Planning and Infrastructure
- Department of Trade and Investment, Regional Infrastructure and Services – Mineral Resources
- Department of Trade and Investment, Regional Infrastructure and Services – Agriculture
- Office of Environment and Heritage
- NSW Office of Water
- Narrabri Shire Council
- Narrabri Coal Mine Community Consultative Committee

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1 INTRODUCTION AND OBJECTIVES

1.1 Scope

1.1.1 Introduction and Period of Reporting

This Annual Environmental Management Report (AEMR) is the third for the Narrabri Underground Coal Mine, and has been prepared in accordance with Condition 4 of Mining Lease (ML 1609) (Mining Act 1992). The mine is currently operating with two consents as the Stage 2 consent (PA 08_0144) was issued in July 2010 and the Stage 1 consent (PA 05_0102 MOD 1) will not be surrendered until July 2011. Both consents require annual reports under Condition 4(5) of PA 05_0102 MOD 1 and Condition 6(6) of PA 08_0144. Where possible the requirements of both have been considered throughout this report.

The AEMR generally follows the format identified in the Industry and Investment - Mineral Resources (I&I NSW) document entitled "Guidelines to the Mining, Rehabilitation and Environmental Management Process" Version 3, dated January 2006.

Though primarily covering the period from 1 April 2010 to 31 March 2011 (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 1 April 2011 to 31 March 2012, 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 (Figure 1).

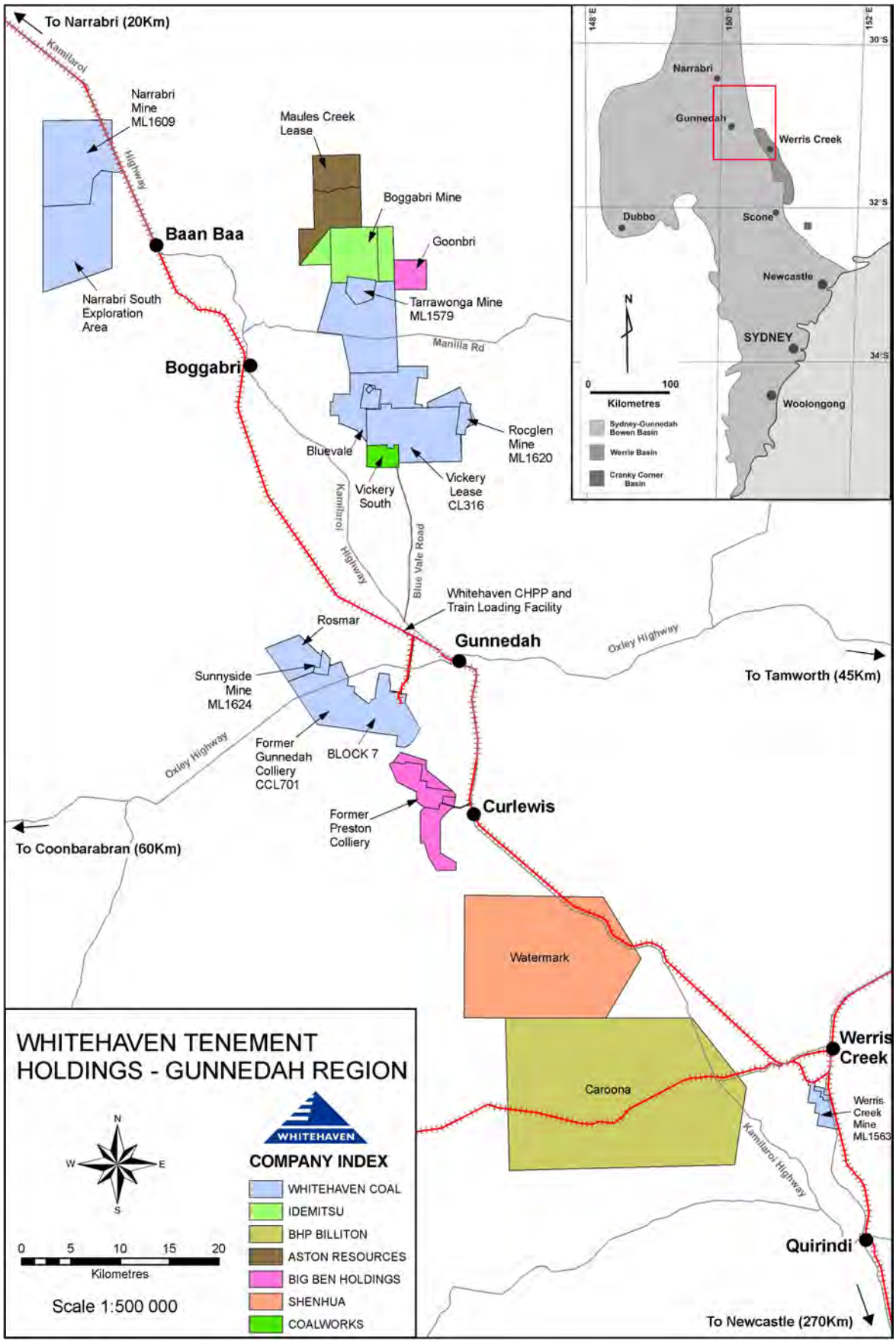


Figure 1 - Project Locality

1.1.2 The Company

The operating company for the Narrabri Coal Mine is Narrabri Coal Operations Pty Ltd (NCOPL). NCOPL is a joint venture between Narrabri Coal Pty Ltd (70%), Upper Horn Investments (Australia) Pty Ltd (7.5%), Electronic Power Development Co. Ltd (7.5%), EDF Trading (7.5%) and Daewoo International Corporation & Korea Resources Corporation (7.5%). Narrabri Coal Pty Ltd (NCPL) is a 100% subsidiary company of Whitehaven Coal Limited (WCL), a publicly listed Company with several mining interests in the Gunnedah-Narrabri region of NSW.

WCL owns and operates a number of open cut coal projects in the Gunnedah basin. The Whitehaven operations comprise the Whitehaven Rail Siding and CHPP approximately 6 km west of Gunnedah, the Rocglen Open Cut Coal Mine, the Canyon (formerly Whitehaven) Open Cut Coal Mine (mining ceased mid 2009), 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).

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 prepared and submitted to the Department of Planning in March 2007. Project Approval 05_0102 was subsequently granted for the Project on 13 November 2007. On approval, Mining Lease 1609 was granted on 18 January 2008 and Environment Protection Licence 12789 was granted on 20 February 2008.

The Project Approval provided for the extraction of no more than 2.5 million tonnes of ROM coal per year and required all coal to be transported from the site via rail.

Since commencing Stage 1, continued geological exploration and a range of related technical studies were completed to evaluate the feasibility of converting the Stage 1 continuous mining operation to a longwall mining operation. An application for Project Approval, accompanied by an EA for the Narrabri Coal Mine Stage 2 Longwall Project (“Stage 2 EA”) was issued for public exhibition in November 2009.

In recognition of the expected approval timeframes and the long lead times for selected Stage 2 construction activities, Narrabri Coal Operations Pty Ltd (NCOPL, the current operating company) sought approval to undertake some Stage 2 works via a modification to the Stage 1 Project Approval under Section 75W of the Environmental Planning and Assessment Act 1979 (EP&A Act) while the Stage 2 EA was being assessed.

PA 05_0102 MOD 1 was granted on the 26 March 2010 for activities including the construction and use of the West Mains Ventilation Shaft and gas pre-drainage infrastructure and the construction but not use of a Coal Handling and Preparation Plant (CHPP). Stage 2 operations were subsequently approved by the Minister for Planning on the 26 July 2010, via PA 08_0144, which provides for the extraction of up to 8Mtpa of coal.

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 approximately 70ha. 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 do not require a Coal Handling and Preparation Plant (CHPP) but require general crushing and screening facilities for processing prior to despatch. Coal produced from the Stage 2 longwall operation will require processing through a CHPP which is currently being constructed. Coal produced at the mine is sold to 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 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 944 751.
- Dean Lawrence – Commercial Manager, Narrabri Coal Operations Pty Ltd. Contact: (02) 6794 4755.

- Mr Matthew Klein – Mine Manager, retains statutory and mine management responsibility for all operational activities and safety performance at the mine.
- Mr Shane Pegg – Technical Services Manager, retains responsibility for technical aspects of the operation. Contact 02 67944157, 0427 401 252.
- Mr Danny Young - Group Environmental Manager, responsible for the environmental and rehabilitation activities on site. Contact: 02 6742 4337, 0427 497 710.

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

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:

- ALS Acirl Pty Ltd;
- EcoLogical Australia Pty Ltd;
- Novecom Pty Limited;
- CH2M Hill;
- Ernst & Young;
- Aquaterra;
- WRM Water and Environment;
- Spectrum Acoustics;
- URS Australia 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 Health, Safety and Environmental policy which states:

Whitehaven intends to conduct business in a way that maintains a safe and healthy workplace for its employees, contractors, visitors and the surrounding community and will protect the environment in all stages of exploration, mining, processing and train loading.

Whitehaven aims to:

- *Achieve zero injuries and occupational illnesses.*
- *Achieve zero equipment damage.*
- *Achieve zero environmental incidents.*

Whitehaven will strive to achieve these goals by:

- *Ensuring health, safety and environment is considered in all planning and work activities.*
- *Involve employees through regular communication, consultation and training.*
- *Identifying and controlling all potential hazards in the workplace through hazard identification and risk analysis.*
- *Ensuring all incidents are reported, controlled and learning's applied and shared.*
- *Providing effective injury management and rehabilitation for all employees.*
- *Seeking continuous improvement in performance by taking into account employee & community concerns and advances in health, safety and environment.*
- *Complying with legislative and other requirements and providing necessary training and resources.*

Whitehaven will ensure the availability of human, financial and physical resources to maintain and implement the Health and Safety Management System.

Responsibilities of people employed at Whitehaven Coal:

All persons employed by Whitehaven have a personal responsibility to comply with this policy and associated Health, Safety & Environment systems. No work is to be undertaken without a clear understanding of a safe method that minimizes the risk of injury, equipment damage and environmental harm.

Whitehaven employees shall:

- *Work in a healthy, safe and environmentally responsible manner.*
- *Encourage others to work in a healthy, safe and environmentally responsible manner.*
- *Promptly report incidents, unsafe practices or conditions and environmental concerns as they become apparent.*
- *Co-operate with Management in the support of promotion of health and safety responsible environmental management in the work place.*

This policy applies to all mines operated by Whitehaven Coal Limited and its subsidiaries.

1.2 Approval Status

1.2.1 Leases, Licences and Approvals

Table 1 identifies the leases, licences and approvals in place for the Narrabri 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 MOD 1, Environment Protection Licence 12789, and ML 1609, are presented in Appendix 3, Tables A3-1, A3-2 and A3-3 respectively. As many of the conditions of consent in the Stage 2 approval are not yet applicable a compliance review for PA 08_0144 has not been provided. It will, however, be provided in the future.

Table 1 - Tenements, Licences and Approvals

Issuing / Responsible Authority	Type of Lease, Licence, Approval	Date of Issue	Expiry	Comments
Industry & Investment NSW (I&I NSW)[*1]	Exploration Licence EL 6243	21 May 2004	20 May 2014	Approval for exploration
Minister for Planning	Project Approval (PA 05_0102)	13 November 2007	18 January 2029	Project Approval for Stage 1 To be surrendered by 26 July 2011 (within 12 months of Stage 2 approval)
Industry & Investment NSW (I&I NSW)[*1]	Mining Lease (ML 1609)	18 January 2008	18 January 2029	Approval for mining
Department of Environment, Climate Change and Water (DECCW)[*3]	Environment Protection Licence 12789	20 February 2008	Nil Anniversary date: 20 February Next review: 20 Feb 2013	For mining operation to 2.5Mtpa (to be updated for Stage 2 operations)
Narrabri Shire Council (NSC)	Construction Certificate DP 816020 Inspection Report/Permit to Occupy No 2413	17 October 2008 6 August 2009	N/A	Stage 1 Mine Surface Facilities
NSW Office of Water[*2]	90CA811347 / WAL15922 90WA812891 / WAL20131 90WA812891 / WAL12833 90CA802130 / WAL6762 90CA802130 / WAL2671 90CA802130 / WAL2728 90CA802130 / WAL2952 90BL254679 90BL254481 - 90BL254487 90BL254660 - 90BL254663 90BL254658 90BL254659 90BL254701 90BL254958 - 90BL254967 90BL255167 - 90BL255173 90BL255216 - 90BL255218 90BL255769 – 90BL255772	Various	Various	GAB – Water supply (248ML) GW - Water supply (150ML) GW – Water supply (67ML) River – High Security (20ML) River (48ML) River (10ML) River (600ML) Aquifer Interference (818ML) Groundwater Monitoring Purposes

Issuing / Responsible Authority	Type of Lease, Licence, Approval	Date of Issue	Expiry	Comments
Minister for Planning	Project Approval (PA 05_0102 MOD 1)	26 March 2010	18 January 2029	Notice of modification under Section 75W of the EP&A Act 1979
Minister for Planning	Project Approval (PA 08_0144)	26 July 2010	26 July 2031	Project Approval for Stage 2
WorkCover Authority of NSW	Notification for explosives use and storage	5 August 2010	20 July 2015	Licence to store – 07-100215-001 Licence to handle – various
Narrabri Shire Council (NSC)	Construction Certificate DP 816020	23 September 2010	N/A	Stage 2 Mine Surface Facilities
*1 – Previously, Department of Primary Industry – Mineral Resources (DPI – MR) *2 – Previously, Department of Water and Energy (DWE) *3 – Previously, Department of Environment and Climate Change (DECC)				

1.2.2 Amendments to Leases, Licences and Approvals

The Stage 2 Project Approval was granted by the Minister for Planning on the 26 July 2010. Other changes approvals issued during the reporting period comprised licencing for dangerous goods and explosives as well as a construction certificate for Stage 2 construction works.

1.3 Actions Requested at Previous AEMR Review

A review of the 2009-2010 AEMR and site inspection was conducted onsite on the 12 July 2010 with representatives from DECCW, NSC and Industry and Investment NSW – Agriculture also attending. In their AEMR acceptance letter, I&I NSW stated that the report was very informative, well presented and acceptable for the reporting period. General compliance with the statutory approval instruments administered by I&I NSW was also noted in relation to the site inspection. The issues identified during the inspection are listed in Table 2, with actions undertaken to address the issues provided below.

Table 2 - Actions Required from Previous AEMR

No	Issue/Observation	Action	Due
1	Some erosion and sparse vegetation cover on amenity bunds	Undertake work to encourage stability of soil surface and perennial vegetative growth on the amenity bunds	Next AEMR
2	Non-vegetated water drains	Water drains to be vegetated to assist stability	Next AEMR

Item 1 refers to small patches within the otherwise well vegetated amenity bund. During the inspection Narrabri Coal personnel explained that there had been initial difficulties establishing good cover in particular sections of the bund due to poor soil quality. Significant efforts were made over a period of time to re-rip and seed these

areas and good cover was being established at the time of the meeting. Favourable conditions since the meeting have ensured that cover continues to improve as shown in Plate 1.

Item 2 refers to the drains along the permanent access road to the ventilation pad, which had only been completed in the weeks prior to the inspection. As noted in the I&I acceptance letter, Narrabri Coal personnel explained during the inspection that the soil had spread and seeded immediately prior to the inspection and therefore sufficient time had not passed for the seed to germinate. Since the inspection, the drains along the road have developed good vegetative cover, as shown in Plate 2.

The Department of Planning (DoP) did not attend the site inspection and AEMR review meeting. They did, however, provide advice that they had reviewed the report and had not identified any issues.

Plate 1 - Well Vegetated Amenity Bund

Plate 2 - Vegetated Shoulders of Vent Pad Access Road

2 SUMMARY OF OPERATIONS

2.1 Exploration, Resources / Reserves and Mine Life

2.1.1 Exploration

During the reporting period approximately 80 drill holes of varying type were established across the Narrabri site. Over 300 exploratory drill holes totalling approximately 50,000m of drilling have been completed to date. The drilling has included cored, partly cored and open hole drilling.

Exploration during the reporting period focused on a number of important disciplines over the initial 5 longwall panels, namely mine planning, gas modelling, coal quality, structure definition, spontaneous combustion and geotechnical assessments. Overall the exploration activities comprised:

- 18 open holes; and
- 62 partly cored HQ holes.

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 ML 1609. 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 170 million tonnes recoverable by continuous miner methods.

2.1.3 Estimated Mine Life

The Stage 2 EA estimates a mine life of approximately 30 years based on 170Mt of coal recoverable from 26 longwall panels and associated development roadways, at an annual production rate of up to 8.0Mt.

2.2 Land Preparation

Land preparation activities undertaken during the reporting period were conducted in accordance with commitments identified in Section 3 of the MOP and included:

- Minor clearing of grassy areas within the surface infrastructure area for the longwall pad, Reject Emplacement Area and exploration/gas drainage activities; and
- Limited clearing of woodland areas in consultation with a qualified ecologist and as per the Stage 2 Environmental Assessment.

Table 3, the "Production and Waste Summary", shows that at the end of the reporting period a total of 434,000 m^3 subsoil and topsoil had been stripped from the Pit Top Area, with 148,000m^3 respread across re-profiled areas. A further 286,000 m^3 of topsoil and subsoil remains stockpiled on site for future rehabilitation purposes.

Table 3 - 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)	352,000	434,000	437,000
Soil Used/spread (m^3)	116,000	148,000	149,000
Waste Rock (m^3)	648,000	657,000	657,000
ROM Coal (t)	0	142,000	1,365,000
Processing Waste (t)	0	0	0
Product (t)	0	139,000	1,305,000

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

2.3 Construction

Construction activities during the reporting period included:

- Gas drainage infrastructure;
- CHPP (Plate 3);
- Construction of the longwall pad (Plate 3);
- West Mains ventilation shaft (Plate 4);
- Extension of the administration building (Plate 5);

- Extension of the workshop and stores building;
- Construction of the permanent wash bay and hydrocarbon storage area (Plate 6);
- Pond B1 and water treatment plant (Plate 7 and Plate 8);
- Reject Emplacement Area;
- Powerline installation; and
- Water pipeline installation from the Namoi River to site and pumping station construction.

Plate 3 - CHPP and Longwall Pad

Plate 4 - Ventilation Shaft Construction

Plate 5 - Extension of Administration Building

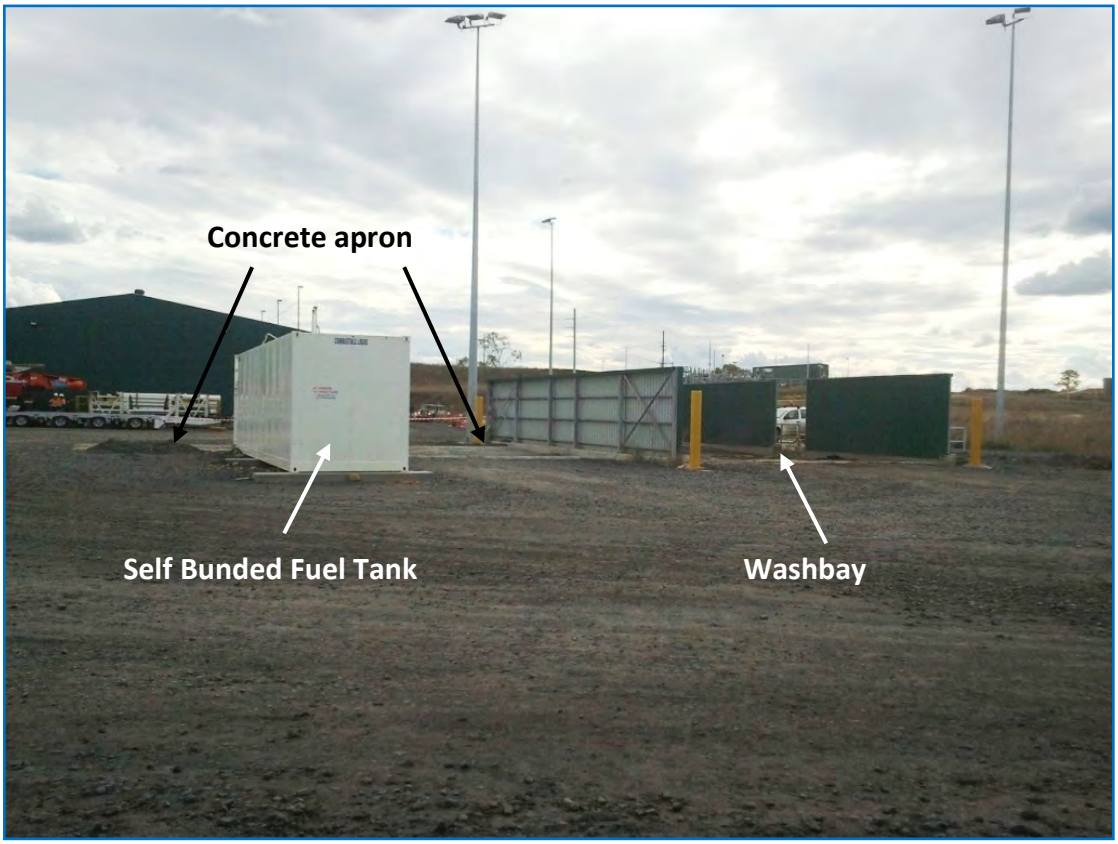


Plate 6 - Washbay and Refuelling Facilities

Plate 7 - Pond B1 Construction

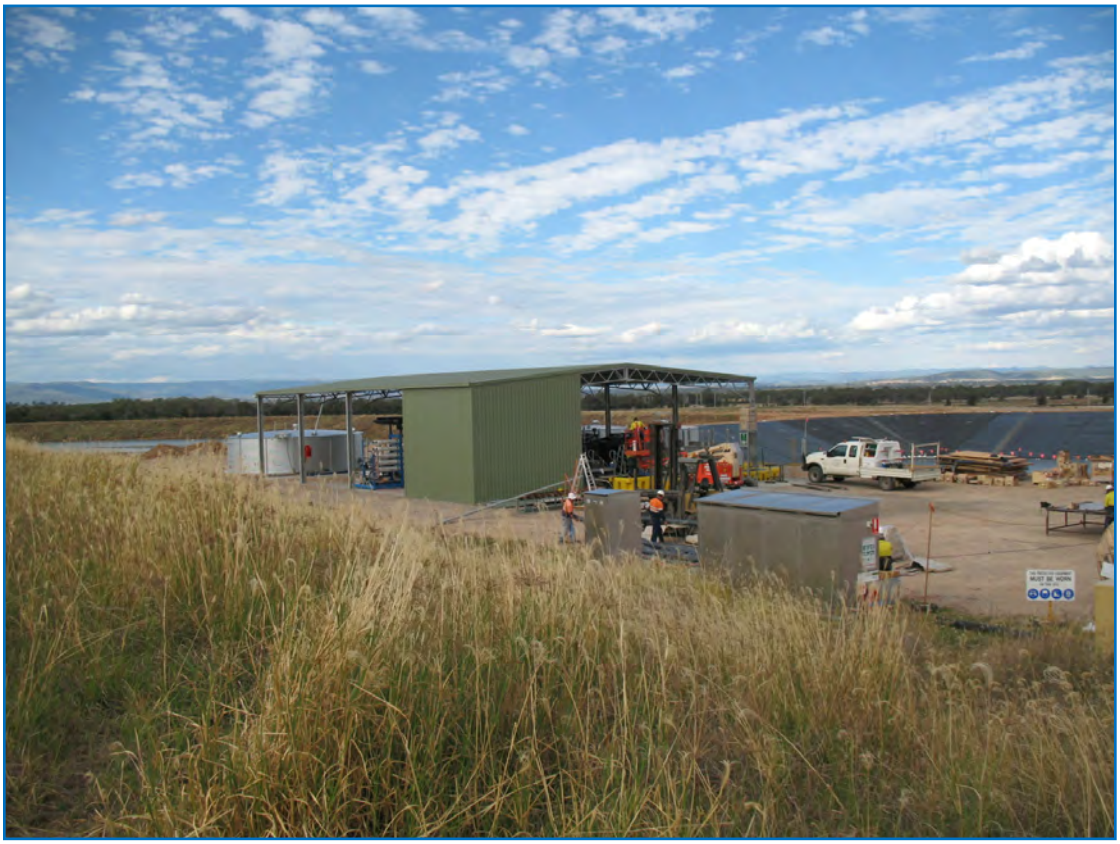


Plate 8 - Water Treatment Plant Construction

2.4 Mining

2.4.1 Mining Method

During the period the development of the drift roadways was completed allowing access to the coal seam and the commencement of coal mining activities. As per the previous period the drift roadways were predominantly excavated using a Roadheader. Drill and blast methods were used due to the inability of the Roadheader to excavate the conglomerate material intersected immediately prior to intersecting the coal seam.

With access to the coal seam completed the development of the Mains roadways has commenced using continuous miners supported by shuttle cars and feeder breakers. Coal mining commenced in June 2010.

As part of the development of the Mains the drift conveyor belt has been extended to the coal seam and is now being used to deliver the coal to the surface ROM pad. The continuous miners have also excavated a number of ventilation and belt chambers in the coal seam to allow the establishment of the permanent mine services.

The development of the first Longwall panel roadways will commence in April 2011.

This period has seen the start of the underground inseam drilling program with the mobilisation of a specialist contractor. There are currently two drill rigs operating. The gas from the drill holes is reticulated to the surface via the surface vacuum plant.

Drill and blast methods have been used in the coal seam in a very limited capacity. This has primarily been in areas were the in situ gas content has prevented the use of a continuous miner.

2.4.2 Mining Constraints

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. 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. Predictions for Stage 2 operations, as identified in the Environmental Assessment, suggest additional groundwater intersection as a consequence of longwall operations. No confirmation of these predictions can be made until the longwall commences. The groundwater model will be calibrated against actual inflows in accordance with the requirements of the consent conditions.

2.4.3 Mining Equipment

Table 4 presents a list of mining equipment in use at the mine at the end of the reporting period, together with its principal function(s) and frequency of use.

Table 4 - Mining Equipment

ITEM	NUMBER IN OPERATION	FUNCTION
Personnel Transport Units	7	Transport of personnel underground
Underground Loader	7	Transport of equipment and materials underground
Continuous Miner	3	Coal roadway development
Shuttle Car	4	Coal roadway development
Feeder Breaker	2	Sizing and loading coal onto a conveyor belt
Bolting Equipment	3	Supporting the roof and sides of underground roadways
Face Drilling Jumbo	1	Drilling of shot holes for blasting
D8	1	Overburden pushing
Water Cart	3	Dust Suppression
CAT 14H Grader	2	Road maintenance

2.4.4 Hours of Operations

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

- Surface Infrastructure and Pit Top Area construction – 7am to 10pm (7 days)
- Mining operations – 24 hours (7 days)
- Raw materials/supply delivery – 7am to 10pm (7 days)

2.5 Processing

2.5.1 Outline

The only processing of coal conducted to date has been crushing to size prior to loading onto trains. Washing of coal will commence during the next reporting period.

2.5.2 Changes or Additions to the Process or Facilities

Coal crushing and despatch activities have been in accordance with the commitments provided in the Mining Operations Plan and in accordance with the conditions of consent. Construction of the CHPP is well advanced with washing operations to commence during the next reporting period. Coal reject will be produced as a result of the washing process and a portion of the Reject Emplacement Area has been constructed in preparation for the commencement of washery operations.

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 EA and MOP 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, as identified in the Waste Management Plan, remain unchanged from those previously identified and will be continued for the ensuing reporting period. PA 08_0144 requires the Waste Management Plan to be updated by the end of June 2011.

2.6.2 Domestic Type Wastes

All 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 offsite by Namoi Waste Corp on a regular basis. Approximately 300 tonnes of general waste was transferred offsite during the reporting period which is a significant increase from previous waste volumes. This is a result of a ramp up of construction activities including the CHPP, vent shaft and gas drainage infrastructure as well as substantial increases in underground development works.

2.6.3 Oil Containment and Disposal

Since commencement of the mine, waste hydrocarbons have been collected in drums and 1000L pods and stored at the temporary waste oil depot for collection.

Recently the permanent waste hydrocarbon storage area, incorporating a self bunded 4,000L waste oil tank was commissioned in an area adjacent to the washbay and workshop. This positioning allows the area to drain to the same oil-water separator that processes potentially hydrocarbon contaminated water from the

workshop and washbay. In the last 12 months approximately 11,000 litres of waste oil was collected by the waste contractor, Northern Lubequip, for recycling.

2.6.4 Recycling

Approximately 26 tonnes of scrap metal have been collected for offsite recycling during the reporting period, which is very similar to the amount collected during the last reporting period.

Narrabri Coal also collects waste paper and cardboard for recycling.

2.6.5 Sewage Treatment and Disposal

Effluent from the sewage and ablutions facilities at the mine is managed through a Sewage Treatment Plant (STP) with a Continuous Extended Aeration Process. The plant is made up of a series of industrial plastic tanks. Each tank provides a separate function in order to treat the sewage for the required quality and quantity. The system has a maximum capacity of 30,000L per day.

2.6.6 Mine Equipment Tyres

Any tyres requiring disposal during the reporting period were transported offsite for disposal at licensed facilities.

2.6.7 Overburden and Interburden

Material obtained during drift development has been stockpiled in the north-western corner of the Pit Top Area for use as road base onsite and for fill in the western section of the amenity bund.

2.7 Stockpile Capacity

The Stage 1 ROM Coal stockpile area was completed during the last reporting period enabling storage of up to 150,000t of coal at a maximum height of 12m. The product coal stockpile was also completed with a capacity of 250,000t. Both were developed as per the specifications in the Mining Operations Plan (MOP). Stockpile capacity for Stage 2 operations will increase during the CHPP construction, as identified in the MOP.

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. Three discharge points (Storage Dams SD-2, SD-4, SD-5) (Plan 4) have been nominated in Environment Protection Licence (EPL) 12789, together with upstream and downstream monitoring locations within the adjacent creek systems.

The management of water at the mine is undertaken as per the Site Water Management Plan (SWMP), which will be updated by the end of June 2011 for Stage 2 operations, with the following objectives:

- The quantity of water exhibiting elevated suspended solids loadings is minimised;
- Erosion is minimised;
- Sediment-laden water is contained for a sufficient period that discharges, if occurring, satisfy the discharge criteria identified in EPL 12789;
- Surface water is harvested onsite to the extent permissible, thereby minimising water extraction from bores or other sources;
- Groundwaters are not contaminated;
- Downstream water users are not adversely affected by the Mine's operations, either in terms of quantity or quality; and
- 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.

Five clean water storages are in place within the DA Area (SD1 – SD5), with a combined storage capacity of approximately 112ML. 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. These storage, of which three are licenced discharge points (SD2, SD4 and SD5), are not expected to receive high sediment laden water due to the successful cover establishment over areas of the Pit Top Area that do not require ongoing disturbance.

"**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.

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. It was identified during the surface water assessment for Stage 2 operations that there was potentially insufficient capacity in SB1 which could result in discharge of dirty water. As a result of this assessment, SB2 was constructed downstream of SB1 during the reporting period to capture any overflow from SB1.

All storage dams will be monitored on a regular basis in order to reduce the potential for discharge. Water level markers will be established 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. The previous AEMR stated that installation of gauge boards would be a priority during this reporting period. Ongoing wet weather, and subsequent full storages, has limited the ability to install these. Installation of the boards will occur on a progressive basis when storage levels are sufficiently low.

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, which was previously located adjacent to the temporary workshop, was relocated to an area adjacent to the permanent workshop and washbay facility. An additional concrete bund has been 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 are maintained within the workshop area. The likelihood of localised spills of fuel or oil external to self bunded tanks or 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.

A 30,000 L self bunded tank has also been temporarily located at the vent pad for use by Australian Shaft Drilling. Spill kits are available at the site for use in the unlikely event of a spill from the self bunded tank and any contamination would be contained within the vent pad area, thereby limiting potential environmental impacts.

2.8.3 Discharges

No discharges from site occurred during the reporting period.

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 Council supplies.

During the reporting period, a total of approximately 43 ML was used for mine site dust suppression purposes. Water used for underground purposes is recycled through reticulation from surface water storages, into underground workings and back to the surface therefore resulting in relatively minor water use.

During the reporting period:

- Potable water, from Council supplies, was stored in tanks onsite for drinking water and ablution purposes; and

- Approximately 60 ML of surface water was also collected in onsite storages during surface water flow events and utilised as required across the site for dust suppression purposes.

The above water use is indicative of dust suppression requirements during the construction and early production phases of the mine and not representative of water use requirements upon increase in production especially that associated with longwall mining operations. Consistent wet weather during the first half of the reporting period reduced the need for dust suppression for surface activities.

Water use is expected to increase significantly during the next reporting period with the introduction of the longwall and CHPP.

2.8.5 Stored Water

Table 5 presents an estimate of the volume of stored water at the beginning and end of the reporting period.

Table 5 - Stored Water

	Volumes Held (m^3)		Storage Capacity at the end of the Reporting Period (m^3)
	Start of Reporting Period	At end of Reporting Period	
Clean Water (in Storage Dams)*	5,000	45,000	112,000
Dirty Water (in Sediment Basins)	2,500	4,500	29,400
Controlled Discharge Water (salinity trading schemes)	N/A	N/A	N/A
Evaporation Ponds	123,500	225,000	708,000
N/A = Not applicable for the Narrabri Coal Mine			
* = Additional 46ML storage in containment bund of rail loop			

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; and
- Where the box cut and drift workings expose water stored within fractures in the rock mass.

The water collected was pumped to onsite storages and used generally 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 DECCW 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

Two explosives magazines (within the same compound) are currently located on the mine site to separately store explosives and detonators used for the minor underground shot firing.

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.

3 ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

The following sub-sections document the implementation and effectiveness of the various control strategies adopted at the mine, together with monitoring data for the reporting period. Existing monitoring locations are shown in Figure 2. A risk identification matrix and the relevant Environmental Management procedures are identified in the Mine's MOP.

Figure 2 - Environmental Monitoring Sites

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

774000 775000 776000 777000 778000 779000 780000 781000

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

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

WHITEHAVEN

3.1 Air Pollution

3.1.1 Criteria

The air quality criteria applicable to the mine are specified in Schedule 3, Tables 4, 5 and 6 of PA 05_0102 MOD 1 and Schedule 4, Tables 4, 5 and 6 of PA 08_0144 and summarised 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 mine is required for deposited dust and PM_{10} particulates. Monitoring of deposited dust is undertaken on a monthly basis whilst PM_{10} 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 is 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; and
- Equipment exhaust positioning to avoid exhausts impinging on the ground and causing dust lift-off.

3.1.3 Dust Monitoring

The Air Quality Monitoring Program (AQMP), as required by Condition 3(24) of PA 05_0102 MOD 1 summarises the air quality monitoring requirements. The AQMP will be updated by the end of June 2011 to incorporate Stage 2 operations, as required by PA 08_0144.

Table 6 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.

It should be noted that September 2009 results have been excluded from annual average calculations for all monitors. A severe dust storm occurring on the 23rd September 2009 resulted in a significant distortion of the September dust results. The August 2009 result for ND1 (Turrabaa) has been excluded from the annual average calculation as the deposited dust level has obviously been significantly distorted by contamination issues. The March 2011 result for ND5 (Claremont) has been excluded on the basis of its anomalous nature compared to other monitors during that month and results for ND5 during previous months. Whilst an elevated result could be expected at this monitor due to the activity occurring in the area, it is believed that other forms of contamination would have been present to provide a result greater than those recorded during the 2009 dust storms.

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 6 - Deposited Dust Monitoring Data

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	1.1	0.3	0.7	0.2
ND-2	Claremont	2.4	1.4	1.9	1.0
ND-3	Bow Hills	2.2	1.6	1.1	0.6
ND-4	Matoppo	15.4	11.4	12.3	9.5
ND-5	Claremont	5.0	4.7	4.2	4.3
ND-6	Willarah	2.4	2.1	1.5	1.1
ND-7	Claremont	3.2	2.8	2.6	2.4
ND-8	Claremont	1.2	0.7	0.8	0.4

A review of Table 6 and Appendix 4 shows that:

- The mean annual total insoluble solids (deposited dust) criterion was satisfied during the reporting period at all monitoring locations excluding ND4 and ND5. Furthermore, the annual average at a number of locations dropped from the previous reporting period.
- ND4 at Matoppo has returned elevated dust levels since January 2010. Discussions with the residents in mid 2010 confirmed that the elevated results were not mine-related and that the mine has not caused any dust issues for the residents. The residents advised that since January 2010 they had been burning materials (eg. newspapers) in a drum in close proximity to the dust gauge. The compliant result in February 2010 correlated with when the residents were away on holidays. The burn drum was moved to the other side of the house however dust levels remained elevated at the monitor over August, September and October 2010. In consultation with the resident, the mine has recently installed a second monitor away from the residence and closer to the pit top area and it is expected that the new monitor location will provide more accurate results without interfering with the resident's activities.
- The elevated results at ND5 are not unexpected as the monitor is adjacent to an unsealed road that is frequently used as well as the northern section of the amenity bund and the Reject Emplacement Area which have both been subject to significant earthworks during the reporting period.
- With the exception of ND4, which has been subject to contamination, the monitoring locations away from dust generating activities on the mine indicate that dust deposition is concentrated on the mine site rather than spreading to adjacent properties.

- Long term trends show that deposited dust levels have remained relatively consistent since monitoring commenced. Exceptions to this are ND-4, which has known contamination issues, and ND-5 and ND-7, which are on the project-related "Claremont" property in close proximity to site earthworks.

Narrabri Coal Operations Pty Ltd also has High Volume Air Samplers (PM_{10}) 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.

Results during the reporting period indicate compliance with the 24 hour criteria and annual average (Figure 3 and Figure 4). The annual average at both HVAS locations remained well below the annual average criteria (30 µg/m^3) throughout the reporting period. At the end of the reporting period the annual average was 8.95 µg/m^3 at "Claremont" and 5.95 µg/m^3 at "Turrabaa". Both annual averages are approximately 10 µg/m^3 less than the previous reporting period.

The full data set for PM_{10} monitoring is contained within Appendix 4.

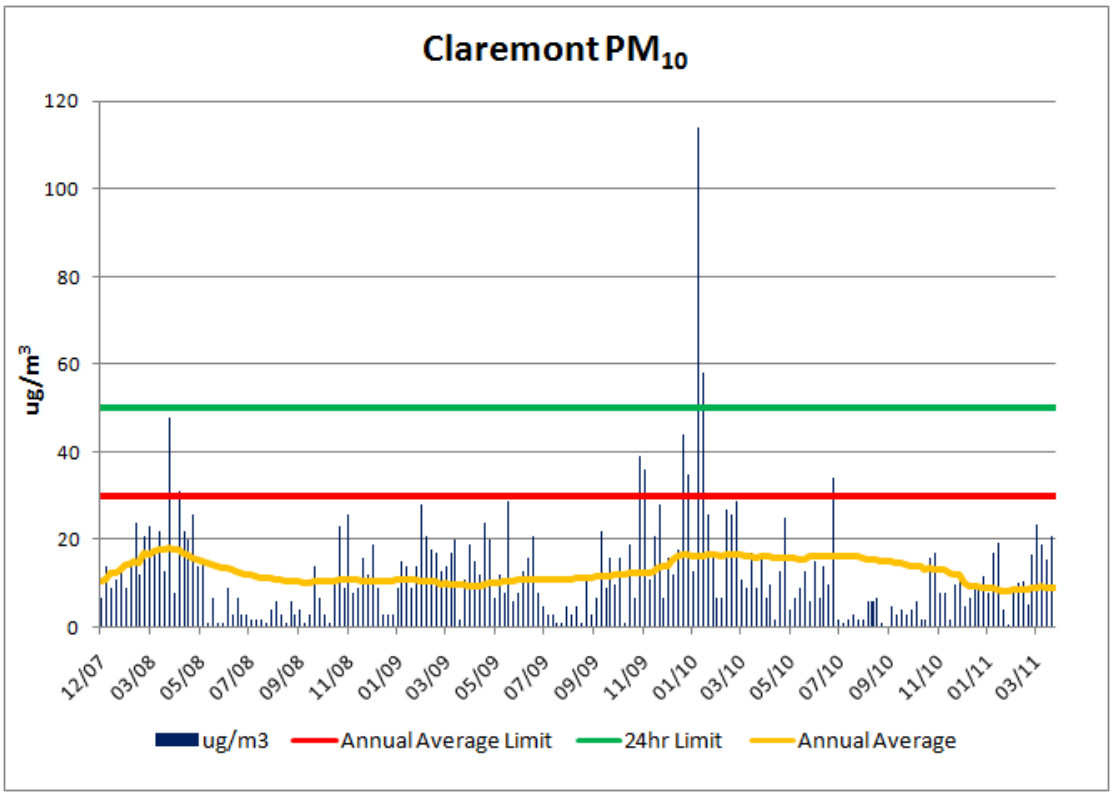


Figure 3 - HVAS PM_{10} data – Claremont (April 2010 - March 2011)

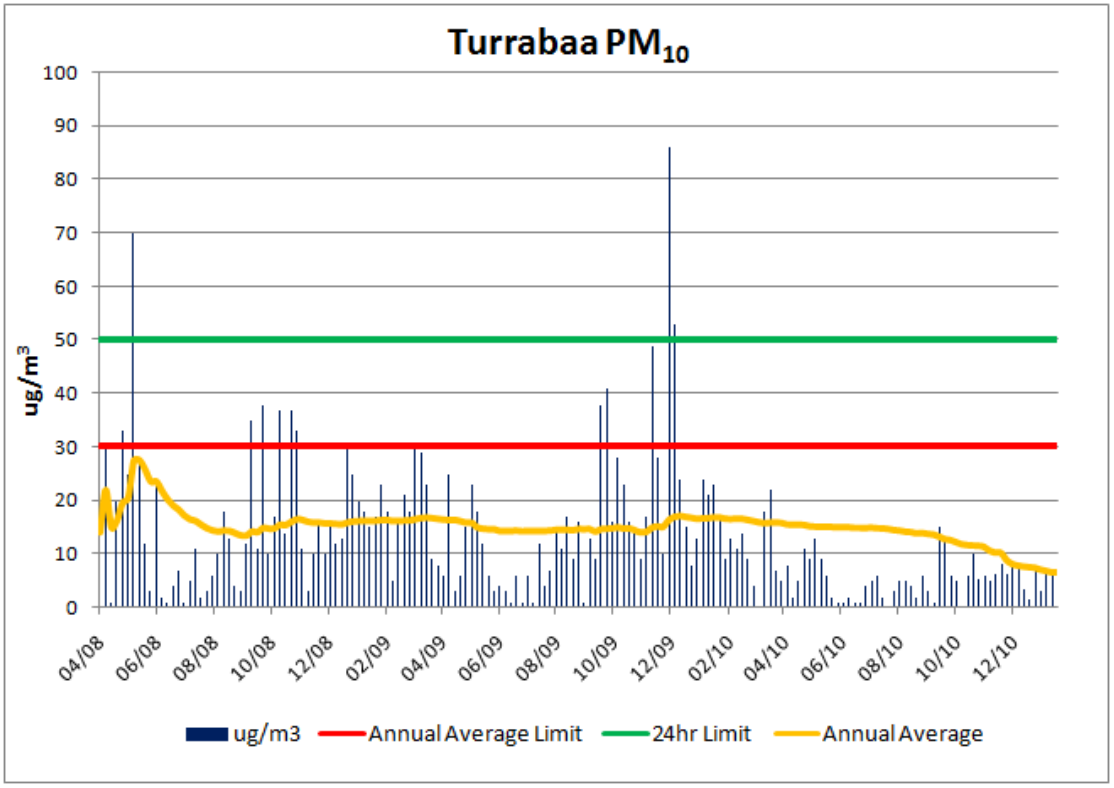


Figure 4 - HVAS PM_{10} Data – Turrabaa (April 2010 - March 2011)

3.2 Erosion and Sedimentation

3.2.1 Management

Methods for the management of erosion and sediment control at the mine are presented in the MOP and the Site Water Management Plan (SWMP) prepared in accordance with PA 05_0102. As required by PA 08_0144 the SWMP will be reviewed by the end of June 2011 to incorporate Stage 2 operations.

Control of erosion and sediment generation is achieved on the 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:

- Minimising 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 minimise 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 NCO, 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 well established cover on the Pit Top Area (including along drainage lines, on the banks of water management structures and on soil stockpiles) has resulted in only isolated, minor occurrences of erosion.

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 SWMP.

No wet weather discharges occurred during the reporting period, and only one discharge has occurred since the commencement of the mine, despite the consistent wet weather experienced during 2010.

In the event that Kurrajong Creek and/or Pine Creek are flowing, and the mine site is not discharging, NCO analyses the water quality in the creek flows to provide baseline data. Appendix 5 includes all wet weather water monitoring conducted over the life of the mine. Results indicate that water in the ephemeral creeks is neutral to alkaline with TSS levels generally below 400mg/L, but with spikes up to around 1000mg/L. It is noteworthy that of the 90 baseline samples taken since commencement (the total from all samples from all monitoring locations), only 8 samples (or 8.9%) have had a TSS level below the EPL discharge threshold of 50mg/L, thereby indicating that natural creek flows are sediment laden. The elevated oil and grease levels recorded at KCUS, PC1 and PC on the 16 November 2010 are believed to be a result of sample contamination, rather than hydrocarbon contamination within the actual creek flows. Given the distance between sample locations (ie. different catchments) it would be very unlikely that contamination would occur for the first time at all three sites at the same time. Whitehaven received elevated oil and grease results for its other operations around this time, which further supports the sample contamination issue. The issue was referred to ALS Acirl and significant effort was made by the laboratory (blank samples etc) to ascertain the source of contamination. No feasible cause was identified with the laboratory method or sample jars, so it is likely that the sampler (the same for each site) may have caused contamination during sampling. No further oil and grease exceedances have occurred.

Surface water monitoring of site storages continued during the reporting period with water quality results provided in Appendix 5.

The results from samples taken from storage dams (ie. dams that collect rainfall runoff, not contaminated water) indicate water quality similar to, or better than, baseline creek flow water quality. The TSS levels in discharge dams was often slightly higher than the EPL discharge threshold, however the dams were managed carefully to prevent discharge. Whitehaven had the ability to flocculate the dams if discharge was imminent.

As expected, SB1 and A1, which receive water from underground, the box cut and the surface facilities area, have elevated EC levels. Pond A2 is currently holding good quality surface water pumped from discharge dams, as indicated by the results. Pond A3 is exclusively storing water extracted during the gas drainage process, which is evidenced by the elevated EC result in February 2011.

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 summarised in Section 2.8.6. Ongoing monitoring to assess trends in groundwater chemistry will enable assessment of potential contaminants to groundwater.

3.4.2 Performance

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, as defined in the SWMP, are identified in Table 7.

Appendix 6 presents the results of the groundwater monitoring undertaken since commencement of the mine. Monitoring sites are shown on Figure 2.

Table 7 - Groundwater Monitoring Schedule

Location	Parameters	Frequency
All Standpipes P1,P2, P3, P4, P5, P6,P7,P8, P9, P10, P11,P12, P13, P14, P15, P16,P17,P18, P19, P20, P28, P29, P30, P31, P32, P33, P34, WB1, WB2, WB3a, WB3b, WB4, WB5a, WB5b, WB6a, WB6b, WB7 and WB8	Water level EC pH TDS Metals Anions and Cations	Quarterly (water level, pH and EC) Annually (full water quality)
Vibrating Wire Piezometers P21,P22, P25 ,P26 and P27	Water Level	Daily (Data Logger)
Multi Level Vibrating Wire Piezometers P35 and P36	Water Level	Daily (Data Logger)
Mine water pumped into and out of the mine.	EC pH TDS Metals Anion and Cations Discharge Rate	Daily (flow rate) Monthly (EC pH,) Quarterly (Full water quality)

A review of the groundwater monitoring results presented in Appendix 6 shows that standing water levels (SWL) have remained relatively consistent in the monitored bores throughout the reporting period with the exception of P18 and P20. Some bores have also shown recharge which is likely associated with the ongoing wet weather throughout 2010 and the reduced need for landholders to access groundwater. P18 and P20 are in close proximity to each other, as well as the gas extraction activities, and are installed in the Hoskissons Coal Seam and Arkarula Formation (below the coal seam) respectively. Their dropping standing water levels are not unexpected given the gas (and water) drainage occurring in the immediate area. P18 and P20 are located on mine owned property and not subject to groundwater contingency planning requirements.P20 was grouted in mid-2010, as it was due to be intersected by gas drainage drilling, and is therefore no longer monitored.

A review of the data presented in Appendix 6 indicates that groundwater quality has remained relatively consistent throughout the reporting period. With the exception of sulphate levels at some monitoring locations, all groundwater monitored during the last 12 months meets the ANZECC guidelines for stock drinking water. Those monitoring locations with elevated sulphate levels have recorded such levels since before mining operations commenced so the results are not considered to be mining related. In general, the water quality of the monitored bores can be described as moderately saline, with EC levels ranging from 100 µs/cm to >25000 µs/cm.

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.

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 contaminated material. This situation has remained unchanged throughout surface construction activities. Consequently there is no reason to expect that contaminated lands would be present within the site.

3.6 Threatened Flora

During specialist studies undertaken by Ecotone Ecological Consultants Pty Ltd in 2009 as part of the Stage 2 EA, a total of seven vegetation communities were identified within the mine site and along the route of the water pipeline to the Namoi River, six of which are native vegetation communities.

No threatened or rare flora species were detected within the mine site. However, one species, *Bertya opponens*, was assessed as having a high likelihood of occurring. Its occurrence on site and adjacent to site was confirmed during additional flora survey work conducted to develop an appropriate biodiversity offset strategy. A second species, *Cadellia pentastylis*, was assessed as having a moderate likelihood of occurring and a third species, *Lepidium aschersonii*, a low to moderate likelihood of occurring.

All activities onsite 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, as approved by the Environmental Officer through the Narrabri Coal 'Permit to Disturb' process. As the Pit Top Area comprises predominantly open pasture and previously cultivated areas, only isolated timber removal occurred during the period. This clearing was only undertaken following pre-disturbance inspections by a qualified ecologist. Any large trees, particularly hollow bearing trees, were avoided where possible. If avoidance was not possible, the trees were inspected for habitation by fauna, felled as instructed by the ecologist and inspected for fauna following felling.

No specific flora monitoring within or external to the project site has been undertaken to date. Flora monitoring will be undertaken as per the Landscape Management Plan (LMP) which is required to be updated to incorporate Stage 2 works by the end of June 2011. Any flora management conducted on site will be reported in future AEMRs.

During the reporting period, additional survey effort was undertaken on the mine site as well as several properties external to mining operations in order to identify an appropriate biodiversity offset for the Narrabri project. A Biodiversity Offset Stratey was subsequently submitted to the Department of Planning, DECCW and DoSEWPC in accordance with the requirements of the Project Approval. The DoSEWPC subsequently provided endorsement to the strategy in accordance with their requirements under the Environment Protection and Biodiversity Conservation Act. Both the DoP and DECCW have provided some preliminary responses to the proposed strategy, however negotiations as to the final outcome were continuing at the time of preparation of this report.

3.7 Threatened Fauna

During specialist studies undertaken by Ecotone Ecological Consultants Pty Ltd in 2009 as part of the Stage 2 EA, sixteen threatened fauna species were recorded with potentially suitable habitat present for a further 20 threatened or migratory species that were not identified during field surveys.

Based on the proposed mine design, the Narrabri Coal estimates that up to approximately 210ha of native vegetation could be disturbed, which will be offset by an identified Biodiversity Offset Area, with management measures specified in a Biodiversity Offset Management Plan still to be developed. As discussed above, the completion of the management plan is pending final endorsement as to the Biodiversity Offset Strategy by the DoP and DECCW.

Other operational safeguards to minimise impacts to fauna include undertaking pre-clearing surveys (as detailed in Section 3.6), relocating and re-erecting (where practicable) felled hollow bearing trees and control of feral animals.

No specific fauna monitoring within or external to the project site has been undertaken to date, with the exception of pre-clearance surveys. The Landscape Management Plan, which will be updated by the end of June 2011, identifies specific actions to occur over the life of the mine pertaining to fauna management. Any fauna management conducted on site, either in relation to native fauna or feral animals, will be reported in future AEMRs.

3.8 Weeds

3.8.1 Management

Weed management within the Project Area involves regular inspections by a Narrabri Coal employee who has Chemcert accreditation for weed control via chemical applications. The Landscape Management Plan, approved by the Director-General in March 2010, specifies weed management measurements and will be updated by the end of June 2011 (as per PA 08_0144).

3.8.2 Performance

During the reporting period, weed control measures continued to focus on the continued control of the noxious weed “Mother of Millions”, which was located within the Kurrajong Creek waterway. Whilst this area has not been subject to any

surface disturbance activity during the previous or current reporting period, it is clear that under previous land ownerships, little had been done to control this weed.

Other weed control comprised spot spraying and chipping across the Pit Top Area of Noogoora Burr, Prickly Pear, Bathurst Burr, Johnson Grass, Coolatai Grass and African Boxthorn, as required.

In addition, Cochineal Beetles have been harvested from infested Prickly Pear plants and re-distributed to non-infested plants. This management measure has proved successful in assisting with the control of Prickly Pear across the site.

3.9 Blasting

As there has not been any surface or near-surface blasting at the site during the reporting period, no blast monitoring has been required or conducted.

3.10 Operational Noise

3.10.1 Criteria

3.10.1.1 EPA Criteria

The EPA-nominated noise emission criteria, identified in EPL 12789 as applicable to the mine, are as follows.

> *L6.1 Noise from the premises must not exceed:*
>
> *35dB(A)LAeq(15 minute) during the day (7am to 6pm), evening (6pm to 10pm) and night (10pm to 7am) for construction activities.*
>
> *where LAeq 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 LAeq 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 PA 05_0102 MOD 1 (Schedule 3, Condition 12) and PA 08_0144 (Schedule 4, Condition 1) is as follows:

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.

Table 1: Impact Assessment Criteria dB(A)

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

3.10.2 Control Procedures

Under some meteorological conditions, it is acknowledged that some activities may generate noise levels above the noise impact assessment criteria. In order to minimise this potential for exceedance, the following controls will be adopted:

- Prior to being brought onto site, or upon commissioning, all additional plant and equipment will be required to exhibit sound power levels consistent with those levels specified in the Noise Management Plan (NMP).
- High frequency reversing alarms will not be permitted on any equipment brought onto site. Rather, all reversing alarms should be of the broadband frequency type;
- Restrict scraper operations under temperature inversion conditions until noise compliance is identified;

- Ensure specific noise attenuation is provided to surface drills when operating over LW1 to LW3 and LW24 to LW26 to achieve a sound power level of 109dB(A).
- The approved hours of operation (of PA 05_0102 MOD 1) will be adhered to;
- Site personnel will be required to pay due attention to site weather conditions and modify or stand down from operational activities if directed by mine management; and
- Monitoring of emitted noise levels will be undertaken during mining operations to verify compliance with noise criteria and to assess the need, if any, for additional noise attenuation measures.

Transport and other noise controls, as specified in the NMP, comprise:

- Regular maintenance of the sealed site access road;
- Strict adherence to the approved hours of operation for transport activities will be enforced by mine management;
- All project employees and contractors will be instructed to enter and exit the mine site in a courteous manner and without undue traffic noise; and
- All access roads will be signposted and speed limited to minimise transport noise.
- Equipment with lower sound power levels will be used in preference to more noisy equipment;
- All equipment used on site will be regularly serviced to ensure the sound power levels remain at or below the levels used in the modelling to assess generated noise levels and compliance with the criteria;
- The on-site road network will be well maintained to limit body noise from empty trucks travelling on internal roads.

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 two adjoining landholder.

Condition 4(5) of PA 08_0144 requires Narrabri Coal to investigate ways to reduce the noise generated by the mine, including off-site road and rail noise and maximum noise levels which may result in sleep disturbance. The condition also requires Narrabri Coal to report on these investigations and the implementation and effectiveness of these measures in AEMRs. Given the measured noise compliance

during the reporting period, as detailed in Section 3.10.3, no additional investigations have been conducted.

3.10.3 Operational Noise Monitoring

3.10.3.1 Introduction

The Noise Management Plan details the requirements for attended and real-time noise monitoring. Attended noise monitoring sites are identified on Figure 2.

The following sub-sections present a summary of the outcomes of each monitoring event conducted by Spectrum Acoustics. Noise monitoring at the Kurrajong residence during the reporting period was not possible due to access being denied by the landholder. Narrabri Coal recently purchased the property, however the landowner retained occupation over the next 12 months, and in the interests of minimising any issues with that party, access to the "Kurrajong" residence was avoided during their occupation. The residence is now occupied by mine site personnel, and future monitoring will be conducted at the residence rather than the property boundary.

Copies of all monitoring reports are presented in Appendix 7.

3.10.3.2 Attended Noise Monitoring

<u>June 2010</u>

Attended noise monitoring was conducted on 23 June 2010 at "Bow Hills" (N1), "Westhaven" (N2), "Naroo" (N3), "Greylands" (N4) and "Kurrajong" (N5, property boundary). Spectrum Acoustics reported that noise emissions from the mine site did not exceed the criterion of 35 dB(A),$_{Leq(15min)}$ at any receiver.

In addition to the operational noise, the noise from mine must not exceed 45 dB(A) $_{L1\ (1\ min)}$ between the hours of 10 pm and 7 am. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the mine. During the night time measurement circuit the L1 (1 min) noise from the mine did not exceed 45 dB(A) at any monitoring location.

<u>September 2010</u>

On the 28 September 2010, Spectrum Acoustics conducted attended noise monitoring at the "Bow Hills" (N1), "Westhaven" (N2), "Naroo" (N3), "Greylands" (N4) and "Kurrajong" (N5, property boundary) properties. The results indicated that noise emissions from the site did not exceed the criterion of 35 dB(A),$_{Leq(15min)}$ at any

receivers. During the day time survey construction activity in the vicinity of the Westhaven monitoring location meant that safe access to the site was not possible. The day time monitoring was, therefore, not carried out. Westhaven is a project related residence.

During the night time measurement circuit the $L1_{(1\ min)}$ noise from mine did not exceed 45 dB(A) at any monitoring location.

December 2010

Attended noise monitoring was conducted on the 13 December 2010 at "Bow Hills" (N1), "Westhaven" (N2), "Naroo" (N3), "Greylands" (N4) and "Kurrajong" (N5, property boundary).

Noise emissions from the mine exceeded the criterion of 35 dB(A),$_{Leq(15min)}$ at the Westhaven monitoring location during the day (38 dBA) and evening (38 dBA) surveys. During the day, road construction activity near the monitoring point dominated the noise measurement. In the evening the noise was related to drilling activities at the site of the vent fan construction. Westhaven is a project related residence.

During the night time measurement circuit the $L1_{(1\ min)}$ noise from mine did not exceed 45 dB(A) at any monitoring location.

March 2011

Attended noise monitoring was conducted on the 26 March 2011 at "Bow Hills" (N1), "Westhaven" (N2), "Naroo" (N3), "Greylands" (N4) and "Kurrajong" (N5, property boundary). Spectrum Acoustics noted that noise emissions from the site did not exceed the 35 dB(A),$_{Leq(15min)}$ criteria at any receivers. Monitoring was also undertaken on the basis of assessing incidence of inversion and related noise propagation impacts. The monitoring during this period did not indicate any presence of a significant inversion, nor any consequential impact on noise propagation. It is expected that significant inversions will be identified during monitoring over the winter period.

During the night time measurement circuit the $L1_{(1\ min)}$ noise from the site did not exceed 45 dB(A) at any monitoring location.

3.10.3.3 Unattended Noise Monitoring

Unattended noise monitoring was conducted in June 2010, with the report provided in Appendix 7. Spectrum Acoustics measured noise levels in 15 minute statistical intervals over three day periods using environmental noise loggers. Noise loggers

were installed at the entrance gate to "Matoppo" (north of the site) and "Naroo" (south of the site). Since noise loggers record the total acoustic environment, it is not possible to identify or assign noise levels to the various contributing sources. On this basis, Spectrum Acoustics do not interpret the logger results.

The Stage 2 consent and approved Stage 1 modification Noise Management Plan (approved 3 August 2010 and to be updated by the end of June 2011 for Stage 2 operations) do not include the requirement for unattended monitoring. As a result unattended noise monitoring will not continue.

3.10.3.4 Real-Time Noise Monitoring

Narrabri Coal was required to submit a revised Noise Management Plan (NMP) to the Director-General for approval by the 31 May 2010 as part of the Section 75W modification. The NMP includes a Noise Monitoring Program that incorporates real-time noise and temperature inversion monitoring as well as reactive noise control measures to manage noise impacts for sensitive receptors.

Following a complaint from the residents of the "Merrilong" property to the south of the mine in September 2010 (see Section 4.1 for more details), the real-time noise monitor was established at the property. The monitor has remained at the property for a number of months, with daily reports analysed by Narrabri Coal personnel. The monitor graphs as well as audio files indicate that low frequency noise generated by the mine is well within the compliance limit of 35 dB(A),$_{Leq(15min)}$. In the coming months, Narrabri Coal will have a meeting with the residents to discuss the outcomes of the monitoring.

As the real-time monitoring unit is mobile, the mine has the ability to relocate the monitor to areas where elevated noise levels are expected or where noise related complaints are received.

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. The constructed amenity bund on the southern and western boundary of the 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 site to further enhance visual screening from adjacent areas.

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 and the presence of the amenity bund for the adjacent "Naroo" residence.

The initial ventilation shaft area has been selected in an area already shielded from residences to the south and southeast by topography and existing vegetation. The construction of the perimeter bund around the shaft itself will further reduce visual access to this area. Each additional ventilation shaft will also be surrounded by a bund wall, which will be grassed to reduce visual contrast.

Gas drainage activities are temporary in nature, and similar visually to the exploration drilling activities which have been ongoing over the mine site for a number of years. Beyond a distance of a few hundred metres, the activities will be virtually imperceptible with dust suppression activities undertaken to reduce dust generation, likely to be the most noticeable aspect of these operations. Once completed, the gas drainage and drilling sites will be rehabilitated to establish the pre-existing vegetation.

The site is maintained in a clean and tidy condition at all times, with areas of disturbance reshaped and rehabilitated as soon as practicable.

3.11.2 Performance

The surface construction phase of the development will be the most visual aspect of the entire development. Given the level of construction activity that has occurred since commencement, the site has responded well to reshaping and revegetation programs which have reduced the overall visual impact of the Project. With the exception of those areas that require ongoing disturbance (ie. site roads), the area in and around the surface infrastructure has excellent groundcover. The visual amenity will further improve as tree establishment progresses.

Over the reporting period, discussions were held with the owner of the "Oakleigh" property located to the south east of the pit top area. Concerns were raised by the landholder as to the visibility of the ROM pad and site lighting from his residence. As a consequence, it was agreed to undertake some tree screen plantings in an appropriate location to provide a screen from the Narrabri pit top area. Rip-lines have been established for tree planting, which is expected to occur over the winter period.

3.12 Aboriginal Heritage Management

3.12.1 Sites Management and Performance

Two assessments of Aboriginal cultural heritage at the mine site have been undertaken. The first assessment was undertaken in March 2007 for the Stage 1 project and encompassed the Pit Top Area of the mine site. The second assessment was undertaken in November 2009 for the Stage 2 project and consisted of a detailed survey of the surface area associated with Longwall Panels 1 to 7, the Brine Storage Pond Area and the Namoi River Water Pipeline. As part of the Stage 2 work, a reconnaissance survey was also undertaken of Longwall Panels 8 to 26 to substantiate the representativeness of the results of surveys for Longwall Panels 1 to 7, and to provide a larger basis on which to assess the cumulative impacts associated with site salvage.

In addition to the two assessments outlined above, a further survey of Longwall Panels 1 to 5 was undertaken to define the spatial parameters of the 51 sites identified in the November 2009 assessment.

All assessments and surveys were undertaken in consultation with representatives of the local Aboriginal community.

Aboriginal heritage management during the reporting period comprised progressive fencing of identified sites and the salvage of artefacts identified in the ventilation pad area. Sites are fenced progressively when disturbance activities are planned for the area. Identification of the fencing priority is enabled via the permit to disturb process where the Environmental Officer is required to sign off on any disturbance prior to it occurring.

During pre-strip and soil stripping activities in the ventilation pad area, Aboriginal site monitors located potential artefacts consisting of an axe head and hammer stone. Work ceased immediately in the area and the artefacts were cordoned off. Narrabri Coal provided notification of the find to DECCW and the artefacts were salvaged following completion of an *Application for a Care Agreement for Aboriginal Objects*. The artefacts are currently being stored at the keeping place at the DECCW office in Narrabri.

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.

PA 08_0144 requires Narrabri Coal to update the Aboriginal Cultural Heritage Management Plan by the end of the end of June 2011. A draft of the plan has been developed and representative Aboriginal groups will be invited to review the plan and provide comment prior to submission to the Director-General.

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 at the mine is from the Hoskissons Coal Seam which has been identified as having a high intrinsic spontaneous combustion propensity. As a consequence, a Spontaneous Combustion Management Plan (SCMP) 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. A more comprehensive SCMP and associated procedures are currently being developed.

3.14.2 Performance

There have been no reportable spontaneous combustion incidents over last 12 months.

3.15 Bushfire Management

3.15.1 Management

NCO is equipped to attend to emergency fire situations with appropriate machinery and personnel. Any 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 reporting period.

3.16 Mine Subsidence

Under Stage 1 operations it has been predicted that mine subsidence will not exceed 20mm.

The subsidence assessment undertaken by Ditton Geotechnical Services Pty Ltd (DGS) in 2009 (provided as Part 1 of *Specialist Consultant Studies Compendium* for the Stage 2 EA) predicted a maximum subsidence of 2.44m where mining is 380m below the ground surface.

The ground surface will tend to subside more towards the centre of the panel (ie. away from the chain pillars between the longwall panels). As a consequence of this differential subsidence, DGS (2009) has predicted the following possible impacts:

- Surface cracking of between 20mm (in the west) and 190mm (in the east);
- Altered surface gradients of up to 6% (3°) along creeks;
- Potential ponding depths of 0.5m to 1.5m within the watercourses in the flatter areas of the site;
- Possible interaction between discontinuous sub-surface fracturing and surface cracks (where cover depths are <215m) leading to possible flow re-routing;
- Possible impacts on subsurface aquifers within 110m to 180m above the proposed panels as a result of direct hydraulic connections to the workings.

Based on the above summary of potential subsidence, the impacts are likely to be largely limited to the mining area, the majority of which is owned by NCOPL. The potential impacts include:

- Impacts on groundwater;
- Surface cracking;
- Drainage line ponding;
- Erosion and slope stability;
- Impacts on Aboriginal sites/artefacts; and
- Impacts on local residences.

Management measures for subsidence related impacts will be described in the Extraction Plan. The development of the Extraction Plan has been delayed pending the approval of a modified condition in the Project Approval. This was on the basis of enabling the removal of the requirement for a separate Subsidence Management Plan under the existing Mining Lease conditions. This matter has recently been resolved enabling works on the Extraction Plan to commence.

3.16.1 Performance

As active mining has only recently commenced there has been no mine subsidence, to date.

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. Diesel generators were substituted by mains power for the entire site in late 2009.

During the reporting period, a total of 1,673,371 litres of diesel was used at the site. 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 shown in Table 8.

Electricity consumption totalled approximately 8,828,000 kWh, which is an approximate 250% increase from the previous year. This is a direct result of the increase in production and construction occurring. Table 8 shows the estimated CO_2-e emissions which are based on the NGERS NSW and ACT emission factor for consumption of electricity purchased from a grid.

Table 8 - Greenhouse Gas Emissions

	Usage	Emission Factor	Equivalent Tonnes
Diesel (kL)	1,670	2.7 t CO_2 –e/KL	4,509
Electricity (kWh)	8,828,000	0.89 kg CO_2-e/kWh	7,860

Diesel consumption has reduced by approximately 300,000 litres since the previous reporting period and 600,000 litres over the last 2 years, which is linked to the reduction in surface construction activities and the change to mains power.

The Narrabri operation forms part of the wider Whitehaven group which has reported for the last two years via the National Greenhouse and Energy Reporting Scheme (NGERS). The 2009/2010 NGERS report for the company triggered reporting requirements under the Commonwealth Government's Energy Efficiency Opportunities Program. The first assessment report (for the Tarrawonga, Rocglen and Werris Creek operations) under this program is due by the 31 October 2011. It is expected that Narrabri will be included in the second assessment cycle in 2014.

In the meantime, the site continues to operate with an Energy Savings Action Plan (ESAP), with the initial plan required by PA 05_0102 and an update required by PA 08_0144 by the end of June 2011. The *Guidelines for Energy Savings Action Plans (DEUS, 2005)* require an Annual Progress Report of Outcomes to be submitted following implementation of an ESAP. After experiencing difficulty interpreting how the progress report should be completed, Narrabri Coal contacted an ESAP

representative at the Department of Environment, Climate Change and Water (DECCW) who advised that ESAP reporting has progressed substantially since the initial *Guidelines* were developed and reporting is now completed via an online system of which Narrabri Coal cannot access because it is only available to those companies that DECCW require to report. As Narrabri Coal did not trigger DECCW's requirements the company was not permitted access to the online reporting system and DECCW advised that they did not wish to receive annual progress reports from Whitehaven sites. When asked how to complete the original progress report in the 2005 *Guidelines*, DECCW were unable to provide sufficient information to allow for a meaningful progress report to be completed. DECCW also advised that the ESAP process was not designed for new sites, thereby further complicating the reporting process.

On this basis, Narrabri Coal requested consideration from DoP to exclude the requirement of the Guidelines to complete annual progress reports. DoP subsequently advised that they did not expect the company to provide annual progress reports to DECCW, however they expect greenhouse gas monitoring and management measures to be reported in AEMRs. Subsequent to this, the PA 08_0144 was issued with a requirement to update the ESAP by the end of June 2011. Work has commenced on updating this plan.

PA 08_0144 also requires the mine to submit a Greenhouse Gas Minimisation Plan prior to carrying out longwall operations, which will be finalised during the next reporting period.

3.18 Gas Drainage / Ventilation

The final drift was completed in October 2010, connecting all three drifts from the surface to the seam. Currently there are two intake drifts which are used for vehicle/personnel transport and the third drift, the conveyor drift, is a return airway connected to the two temporary fans located in the box cut. It is expected that the temporary fans will remain commissioned until the shaft is completed and 3 main fans are commissioned.

Blind boring the 5.5m vertical shaft has commenced and the shaft has been sunk to a depth of 132m. Construction of the 3 main fans has commenced and it is expected that the fans will be installed and shaft completed by October 2011. Commissioning of the shaft and fans will commence when the underground roadways reach the bottom of the shaft which is expected to be in November 2011.

Surface to Inseam (SIS) works continued during the reporting period. There are currently 28 active Vertical Production Wells (VPW's) and approximately 12 more that are at various stages of completion. Towards the end of the reporting period, Narrabri Coal began decommissioning redundant VPW's, incorporating grouting of holes and rehabilitation of the immediate areas. Gas drainage drilling and construction works included the use of a SIS lateral rig drilling out to 1500 meters, standard drill rigs working under miscellaneous contract, and poly welding of pipe for the interconnection of the wells with the gas plant. Rehabilitation of areas disturbed by drilling activities has continued during the period with improved weather conditions allowing these works to be conducted in a more efficient manner.

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 unauthorised 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.

3.20 Feral Animal Control

Feral animals are not a significant land management issue on WCL'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. Rehabilitation works such as reshaping and seeding of previously disturbed areas has 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 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. The station has experienced ongoing issues since January 2011 and, as a result, meaningful data is not available. Bureau of Meteorology (BOM) data has therefore being substituted for the January – March 2011 period. Narrabri Coal is investigating replacement of the station during the next reporting period to improve reliability.

3.22.2 Rainfall

Rainfall data for the reporting period is presented in Table 9. Narrabri Coal Mine maintains a standard post mounted rain gauge, adjacent to the mine site access road, in addition to the meteorological station. Data from the rain gauge has been used during periods were the meteorological station did not record rainfall due to power failure and is highlighted in Appendix 8.

Table 9 - Rainfall Data

Month	Monthly Rainfall Reporting Period	Rainfall Long Term Average*[1]	Raindays (>1mm) Reporting Period	Raindays Long Term Average*[1]
April 2010	32.4	39.1	3	2.3
May 2010	50.0	48.0	6	2.6
June 2010	27.0	48.5	4	3.3
July 2010	75.2	47.1	5	3.2
August 2010	91.7	41.3	8	3.0
September 2010	58.0	41.7	8	3.0
October 2010	126.6	53.0	5	3.5
November 2010	167.8	60.8	9	3.9
December 2010	97.0	77.8	9	4.1
January 2011	31.2	82.3	5	3.6
February 2011	39.6	62.3	7	3.1
March 2011	43.0	56.9	8	2.8
TOTAL	**839.5**	**658.8**	**77**	**38.4**
*[1] Narrabri West Post Office averages from 1891-2011				

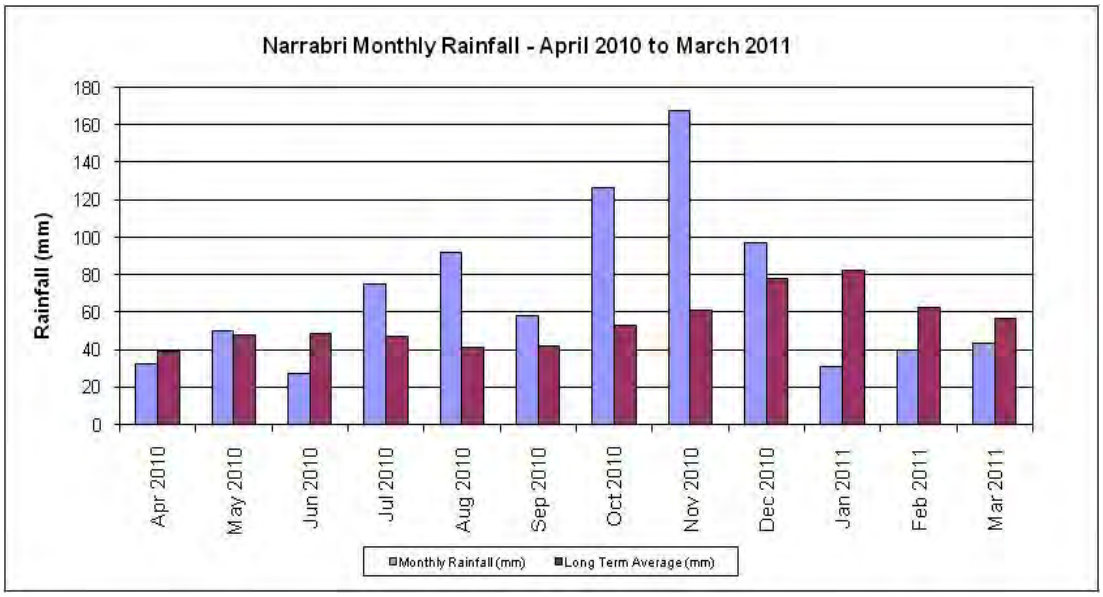


Figure 5 - Monthly Rainfall Data

A review of Table 9 and Figure 5 shows that the total rainfall at the mine site during the reporting period was 839.4mm, which is 234.7mm above the long term average for Narrabri West Post Office and 155.9mm more than the site total during the previous reporting period.

Below average rainfall was only experienced in April and June 2010 in an otherwise wet year. January – March 2011 has been much drier with below average rainfall recorded each month.

Total raindays during the reporting period was well above average, with a number of significant rainfall events occurring (eg. 10/08/10 – 51.2mm, 15/10/10 – 66.8mm, 30/11/10 – 90.2mm and 10/12/10 – 50.0mm).

3.22.3 Temperature

Average maximum and minimum temperatures for the reporting period are presented in Table 10 together with long-term monthly averages for Narrabri West Post Office (Bureau of Meteorology Station 053030).

Table 10 - Average Temperatures

Month	Average Daily Temperature			
	Reporting Period (°C)		Station 053030 (°C)	
	Min	Max	Min	Max
April 2010	12.8	25.7	11.9	27.3
May 2010	8.2	21.2	8.3	22.5
June 2010	5.3	16.9	5.2	18.7
July 2010	6.7	17.3	3.7	18.0
August 2010	4.7	16.4	4.6	19.8
September 2010	9.0	21.3	7.6	23.4
October 2010	11.4	23.0	11.7	27.1
November 2010	16.0	27.6	14.8	30.1
December 2010	17.4	28.0	17.7	33.0
January 2011	19.9	33.3	19.3	33.8
February 2011	20.5	33.5	19.1	33.2
March 2011	17.4	29.2	16.4	31.2

Table 10 shows that average minimum temperatures at the mine site were higher to, or similar to, the long term average minimum temperatures from the Narrabri West Post Office Station while average maximum temperatures at the mine site were lower than, or similar to, the long term averages. These results are indicative of the mild conditions associated with consistent wet weather.

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.

Monthly wind roses, where available, are included in Appendix 8. The wind roses show that the predominant wind directions during the reporting period were from

the south-east and north-west, as expected. Recorded wind speeds were often over 5m/sec.

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.

No noise exceedances have been measured since June 2008. On the basis of noise criteria compliance on the reduction in surface construction activities, inversion conditions have not been closely monitored during the reporting period.

The updated Noise Management Plan, which was required by PA 01_0102 MOD 1 and approved by the Director-General in August 2010, provides detail more specific to inversion monitoring requirements which will be implemented in the cooler months of 2011, when inversions are more prevalent. Inversion monitoring conducted during March 2011 did not identify any significant inversion present, or impact on noise propagation. The association between inversions and noise impacts will also be assessed through the use of the real-time noise monitor, as discussed in Section 3.10.3.4.

4 COMMUNITY RELATIONS

4.1 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, two complaints were made directly to either the General Manager or Environmental Manager. No complaints were received via the designated complaints line. The nature of the complaint, details and response are presented in Table 11.

Table 11 - Complaints Summary 2010/2011 AEMR Reporting Period

Method	Date/Time of Complaint	Nature of Complaint	Investigation	Action Taken / Follow-up
Phone call to General Manager	9/09/2010 3:30pm	Noise from the mine site.	Complainant was contacted by the Environmental Manager and they indicated that they had noticed a steady increase in noise levels and could clearly hear heavy machinery operating over the last couple of days. The complainant was satisfied with the Environmental Manager's proposal to undertake noise monitoring at the property.	Real time noise monitoring currently being conducted at the property.
Phone call to Environment Manager	9/3/2011 4:25pm	Dual cab pulled onto the highway from Greylands Rd causing the school bus and another vehicle to brake suddenly to avoid collision.	The incident was reported to the General Manager, Technical Services and the Group Geologist with a request to toolbox the issue, and the safety responsibilities and road rules, with employees and contractors. As there has been no confirmation of a vehicle number or reference, direct action against the offending driver was not possible.	No further action required.

The number of complaints during the reporting period has reduced significantly compared to previous reporting periods. Last year 7 complaints were received, while 9 complaints were received in the previous year. This is a direct result of the purchase of the "Kurrajong" property as the resident was the primary source of complaints.

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

At the end of the reporting period, the mine had approximately 100 employees and approximately 400 long term contractors (not all onsite at the one time).

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.

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 over $800,000 to the local community through the provision of funds to various groups, including $40,000 to the Gunnedah Shire Council and $770,000 to the Narrabri Shire Council for a community enhancement project.

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 organisations 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. During the reporting period meetings were held on 1 June 2010, 7 September 2010 and 14 December 2010.

Narrabri Coal Operations representatives continue to maintain contact with 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.

5 REHABILITATION

5.1 Buildings

No buildings have been removed 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:

Areas affected by mining – short term

- Stabilise all earthworks, drainage lines and disturbed areas that are required for mine related activities to minimise erosion and sedimentation.
- Reduce the visibility of mining activities from adjacent properties and the local road network.

Areas affected by mining – long term

- Decommissioning and removal of all project-related infrastructure not required for the future use of the site;
- The creation of a low maintenance, geotechnically stable, safe and vegetated landform which blends with the surrounding natural landscape;
- 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;
- Remediating any land contaminated by accumulated salts or hydrocarbon spills;
- 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

Table 12 presents a Rehabilitation Summary while Table 13 presents a listing of maintenance activities undertaken during the reporting period. As the majority of cover crop establishment occurred during the previous reporting period,

rehabilitation during this reporting period was limited to minor cover crop maintenance and tubestock planting.

Approximately 700 tubestock were planting during the reporting period in strategic locations across the Pit Top Area to aid in visual amenity of the surface facilities area. These areas included a corridor along the permanent access road to the vent pad and the northern side of the Reject Emplacement Area. Tubestock species included Bimble Box, White Box, Salt Bush, Kurrajong and Pilliga Box. Over 1800 tubestock have been planted since the commencement of construction with an estimated success rate of approximately 90% (Plate 9 and Plate 10).

Plate 9 - Tubestock Plantings on Amenity Bund

Plate 10 - Tubestock Plantings Around Box Cut

Table 12 - Rehabilitation Summary

	Area Affected (hectares)			
	This Report Period (as of 31.03.11)	**Last Report Period (up to 31.03.10)**	**Next Report Period (estimated)**	
A: MINE LEASE AREA				
A1 Mine Lease(s) Area	5298ha (454.2ha surface area)			
B: DISTURBED AREAS				
B1 Infrastructure area (other disturbed areas to be rehabilitated at closure including facilities, roads)	41.2	25.15	42	
B2: Active Mining Area (excluding items B3 - B5 below)	4.7	4.7	4.7	
B3 Waste emplacements, (active/unshaped/in or out-of-pit)	5	5	0	
B4 Tailings emplacements, (active/unshaped/uncapped)	N/A	N/A	N/A	
B5 Shaped waste emplacement (awaits final vegetation)	15.5	15.53	21	
ALL DISTURBED AREAS	66.4	50.38	67.7	F1
C REHABILITATION PROGRESS*				
C1 Total Rehabilitated area (except for maintenance)	42.4	38	47.4	F2
D: REHABILITATION ON SLOPES				
D1 10 to 18 degrees	18.9	14.5	18.9	
D2 Greater than 18 degrees	18.4	18.4	18.4	
D3 Less than 10 degrees	5.1	5.1	10.1	
E: SURFACE OF REHABILITATED LAND				
E1 Pasture and grasses	40.9	31.4	45.9	
E2 Native forest/ecosystems	1.5	1.5	1.5	
E3 Plantations and crops	0	0	0	
E4 Other (include non vegetative outcomes)				

* Note – rehabilitation estimates are based on the current acceptable level of rehabilitation for an operating mine (ie. cover crop establishment on amenity bund). Final rehabilitation (ie. infill of box cut, removal of amenity bund etc) will be calculated closer to mine closure.

Table 13 - 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)	1	Nil	Retreatment of areas that may be required based on seasonal conditions.
Adversely Affected by Weeds (detail - type and treatment)	5	5	Ongoing control of Mother of Millions along Kurrajong Creek Road plus spot spraying of other weeds. See Section 3.8.
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 MOP, Landscape Management Plan and other relevant management plans prepared in satisfaction of Narrabri Coal's Project Approval.

The required update to the Landscape Management Plan as a consequence of the Stage 2 Approval will also provide impetus to rehabilitation monitoring and performance, particularly as longwall operations commence, and subsidence management becomes a requirement across the early longwall panels.

6 CONTINUOUS IMPROVEMENT AND TARGET INITIATIVES

6.1 Objectives

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

Activities at site to date have been on the basis of minimising the extent of disturbance to the minimum extent possible, and rehabilitating those areas as soon as practicable.

6.2 Achievements to Date

Achievements at the mine in its third year 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 ongoing 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;
- Planting of approximately 700 native tubestock (1800 since commencement) with excellent survival rates (~90%). Tubestock have been strategically planted to allow for future screening of the site from nearby roads and properties.
- Establishment of a Biodiversity Offset Strategy which has been accepted as meeting the DoSEWPC requirements under the EPBC Act;
- Effective rehabilitation of areas of disturbance;
- No wet weather discharge events through active management of surface water storages and appropriate water harvesting actions.

6.3 Targets and Goals

Targets and goals for the 2011/2012 reporting period include:

- Maintenance of established groundcover across areas of disturbance on the pit top area and additional tubestock planting to further enhance visual amenity;
- Implementation of the recently approved Landscape Management Plan across the site to define monitoring requirements and ongoing rehabilitation activities;
- Continued improvement in noise management and amenity, including active implementation of inversion monitoring and real time noise assessment;
- Continued community liaison, support and involvement / education in the Mine's activities, including a proposed site open day at the end of 2011;
- Compliance with all relevant conditions of all leases, licences and consents; and
- Review of all environmental management plans to ensure the management measures and monitoring requirements are up-to-date and in accordance with the Stage 2 Project Approval conditions;
- Establishment of a Biodiversity Offset Strategy and Management Plan that meets the requirements of both the DoP and DECCW.

NARRABRI COAL OPERATIONS PTY LTD

WHITEHAVEN

REDUCTION RATIO 1:5000 @ A0

LEGEND

- Soil Stripping Area (to 31/3/10)
- Soil Stripping Area (2010/2011 AEMR)
- Proposed Soil Stripping Area (2011/2012 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
- P Power Line

AEMR PLAN 3
LAND PREPARATION
NARRABRI NORTH MINE

File Ref:	NCAEMR100331
Surveyor:	Todd Shumack
Compiled & Drafted by:	Tim Suter
Date:	31/3/2011

Scale Bar metres

NARRABRI COAL OPERATIONS PTY LTD

WHITEHAVEN

REDUCTION RATIO 1:5000 @ 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)
- Topsoil Stockpile
- Subsoil Stockpile
- 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

AEMR PLAN 4
MINING & REHABILITATION
NARRABRI NORTH MINE

File Ref:	NCAEMR110331
Surveyor:	Todd Shumack
Compiled & Drafted by:	Tim Suter
Date:	31/3/2011

BOX CUT & COAL HANDLING AREA

Scale Bar metres

Scale Bar metres

Appendix 1

PA 05_0102 & PA 08_0144

Notice of Modification

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

I modify the Project Approval referred to in Schedule 1, subject to the conditions in Schedule 2.

David Kitto
Director
Mining and Industry Projects
(as Delegate for the Minister for Planning)

Sydney 26 MARCH 2010

SCHEDULE 1

The Project Approval (05_0102) for the Narrabri Coal Project, granted by the Minister for Planning on 13 November 2007.

SCHEDULE 2

1. Delete the definitions for "DECC", "DPI", "DWE" and "Land" in "DEFINITIONS" and insert in alphabetical order the following:

DECCW	Department of Environment, Climate Change and Water
Feasible	Feasible relates to engineering considerations and what is practical to build
I&I NSW	Industry and Investment NSW
Land	In general, the definition of land is consistent with the definition in the EP&A Act. However, in relation to the noise and air quality conditions in Schedules 3 and 3A it means 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
NOW	DECCW's NSW Office of Water
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements

2. Delete all references to "DECC" and replace with "DECCW".

3. Delete all references to "DPI", and replace with "I&I NSW".

4. Delete all references to "DWE" and replace with "NOW".

5. In condition 2 of schedule 2, delete all words after "statement of commitments (see Appendix 3);" and replace with the following:

   (c) modification application 05_0102_MOD 1, supporting Environmental Assessment titled *"Narrabri Coal Mine – Section 75W Modification"*, dated October 2009 and Proponent's Response to Submissions dated 10 February 2010; and
   (d) conditions of this approval.

6. Following condition 8 of schedule 2 insert:

   8A. The Proponent shall prepare revisions of any strategies, plans or programs required under this approval if directed to do so by the Director-General. Such revisions shall be prepared to the satisfaction of, and within a timeframe approved by, the Director-General.

7. Delete the text of the second dot point in the "Notes" below Table 1 and replace with:

- *The noise limit applies to applicable receivers under all meteorological conditions except for any one of the following:*
  - *wind speed greater than 3 metres/second at 10 metres above ground level; or*
  - *temperature inversions of 1.5 - 4°C/100 metres and a source-to-receiver wind speed greater than 2 metres/second at 10 metres above ground level; or*
  - *temperature inversions of greater than 4°C/100 metres.*
- *The meteorological data to be used for determining meteorological conditions is the data recorded by the meteorological weather station to be determined in consultation with the DECCW.*

8. Following condition 12 of schedule 3 insert:

Noise Acquisition Criteria

12A. If the noise generated by the project exceeds the criteria in Table 1A at any residence on privately-owned land, or on more than 25% of any privately-owned land, then the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 5-7 of schedule 3A.

Table 1A: Noise acquisition criteria dB(A)

Location	Day	Evening	Night
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$
All privately owned residences	40	40	40

Note: Noise generated by the project is to be measured in accordance with the notes presented below Table 1. For this condition to apply, the exceedances of the criteria must be systemic.

Additional Noise Mitigation Measures

12B. If the noise generated by the project is equal to or exceeds the criteria in Table 1B at any residence on privately-owned land, then the Proponent shall, upon receiving a written request from the landowner, implement reasonable and feasible noise mitigation measures (such as double-glazing, insulation, and/or air conditioning) at the residence in consultation with the landowner. If within 3 months of receiving this request from the landowner, the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.

Table 1B: Additional noise mitigation criteria

Location	Day	Evening	Night
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$
All privately owned residences	38	38	38

Note: Noise generated by the project is to be measured in accordance with the notes presented below Table 1. For this condition to apply, the exceedances of the criteria must be systemic.

9. Following condition 13 of schedule 3 insert:

Noise Management

13A. The Proponent shall prepare and implement a Noise Management Plan for the mine's activities to the satisfaction of the Director-General. This Plan shall:

(a) be prepared in consultation with DECCW by a suitably qualified expert whose appointment has been approved by the Director-General;

(b) be submitted to the Director-General for approval by 31 May 2010;

(c) include a Noise Monitoring Program incorporating real-time noise and temperature inversion monitoring; and

(d) include reactive noise control measures to manage noise impacts for sensitive receivers. Prior to 14 May 2010

10. Following condition 32 of schedule 3 insert:

32A. Prior to the commencement of any surface disturbance activities associated with modification application 05_0102_MOD 1, the Proponent shall protect, whether by fencing or appropriate signage, all known Aboriginal sites within 50 metres of these activities.

11. Following condition 41 of schedule 3 insert a new Schedule 3A, as follows:

SCHEDULE 3A
ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. If the results of the monitoring required in schedule 3 identify that impacts generated by the project are greater than the relevant impact assessment criteria, except where a negotiated agreement has been entered into in relation to that impact, then the Proponent shall, within 2 weeks of obtaining the monitoring results, notify the Director-General, the affected landowners and tenants (including tenants of mine-owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show that the project is complying with the criteria in schedule 3.

2. If the results of monitoring required in schedule 3 identify that impacts generated by the project are greater than the relevant air quality impact assessment criteria in schedule 3, then the Proponent shall send the relevant landowners and tenants (including tenants of mine-owned properties) a copy of the NSW Health fact sheet entitled "Mine Dust and You" (and associated updates) in conjunction with the notification required in condition 1.

INDEPENDENT REVIEW

3. If a landowner considers the project to be exceeding the impact assessment criteria in schedule 3, then he/she may ask the Director-General in writing for an independent review of the impacts of the project on his/her land.

If the Director-General is satisfied that an independent review is warranted, the Proponent shall within 2 months of the Director-General's decision:

(a) consult with the landowner to determine his/her concerns;

(b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to conduct monitoring on the land, to:
- determine whether the project is complying with the relevant impact assessment criteria in schedule 3; and
- identify the source(s) and scale of any impact on the land, and the project's contribution to this impact; and

(c) give the Director-General and landowner a copy of the independent review.

4. If the independent review determines that the project is complying with the relevant impact assessment criteria in schedule 3, then the Proponent may discontinue the independent review with the approval of the Director-General.

If the independent review determines that the project is not complying with the relevant impact assessment criteria in schedule 3, and that the project is primarily responsible for this non-compliance, then the Proponent shall:

(a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the project complies with the relevant criteria and conduct further monitoring to determine whether these measures ensure compliance; or

(b) secure a written agreement with the landowner to allow exceedances of the relevant criteria,

to the satisfaction of the Director-General.

If further monitoring under paragraph (a) determines that the project is complying with the relevant criteria, then the Proponent may discontinue the independent review with the approval of the Director-General.

If the independent review determines that the project is not complying with the relevant land acquisition criteria in schedule 3, then the Proponent shall offer to acquire all or part of the landowner's land in accordance with the procedures in conditions 5-7 below, to the satisfaction of the Director-General.

LAND ACQUISITION

5. Within 3 months of receiving a written request from a landowner with acquisition rights, the Proponent shall make a binding written offer to the landowner based on:
   (a) the current market value of the landowner's interest in the property at the date of this written request, as if the property was unaffected by the project the subject of the project application, having regard to the:
      - existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and
      - presence of improvements on the property and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of 'reasonable and feasible measures' in condition 12B of schedule 3 or condition 4(a) of this schedule;
   (b) the reasonable costs associated with:
      - relocating within the Narrabri or Gunnedah local government areas, or to any other local government area determined by the Director-General;
      - obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is to be acquired; and
   (c) reasonable compensation for any disturbance caused by the land acquisition process.

   However, if following this period, the Proponent and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Director-General for resolution.

   Upon receiving such a request, the Director-General shall request the President of the NSW Division of the Australian Property Institute (the API) to appoint a qualified independent valuer to:
   (a) consider submissions from both parties;
   (b) determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in paragraphs (a)-(c) above;
   (c) prepare a detailed report setting out the reasons for any determination; and
   (d) provide a copy of the report to both parties and the Director-General.

   Within 14 days of receiving the independent valuer's report, the Proponent shall make a binding written offer to the landowner to purchase the land at a price not less than the independent valuer's determination.

   However, if either party disputes the independent valuer's determination, then within 14 days of receiving the independent valuer's report, they may refer the matter to the Director-General for review. Any request for a review must be accompanied by a detailed report setting out the reasons why the party disputes the independent valuer's determination. Following consultation with the independent valuer and both parties, the Director-General shall determine a fair and reasonable acquisition price for the land, having regard to the matters referred to in paragraphs (a)-(c) above and the independent valuer's report. Within 14 days of this determination, the Proponent shall make a binding written offer to the landowner to purchase the land at a price not less than the Director-General's determination.

   If the landowner refuses to accept the Proponent's binding written offer under this condition within 6 months of the offer being made, then the Proponent's obligations to acquire the land shall cease, unless the Director-General determines otherwise.

6. The Proponent shall pay all reasonable costs associated with the land acquisition process described in condition 5 above.

7. If the Proponent and landowner agree that only part of the land shall be acquired, then the Proponent shall also pay all reasonable costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of the plan at the Office of the Registrar-General.

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 8th 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 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	30 µg/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 µg/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

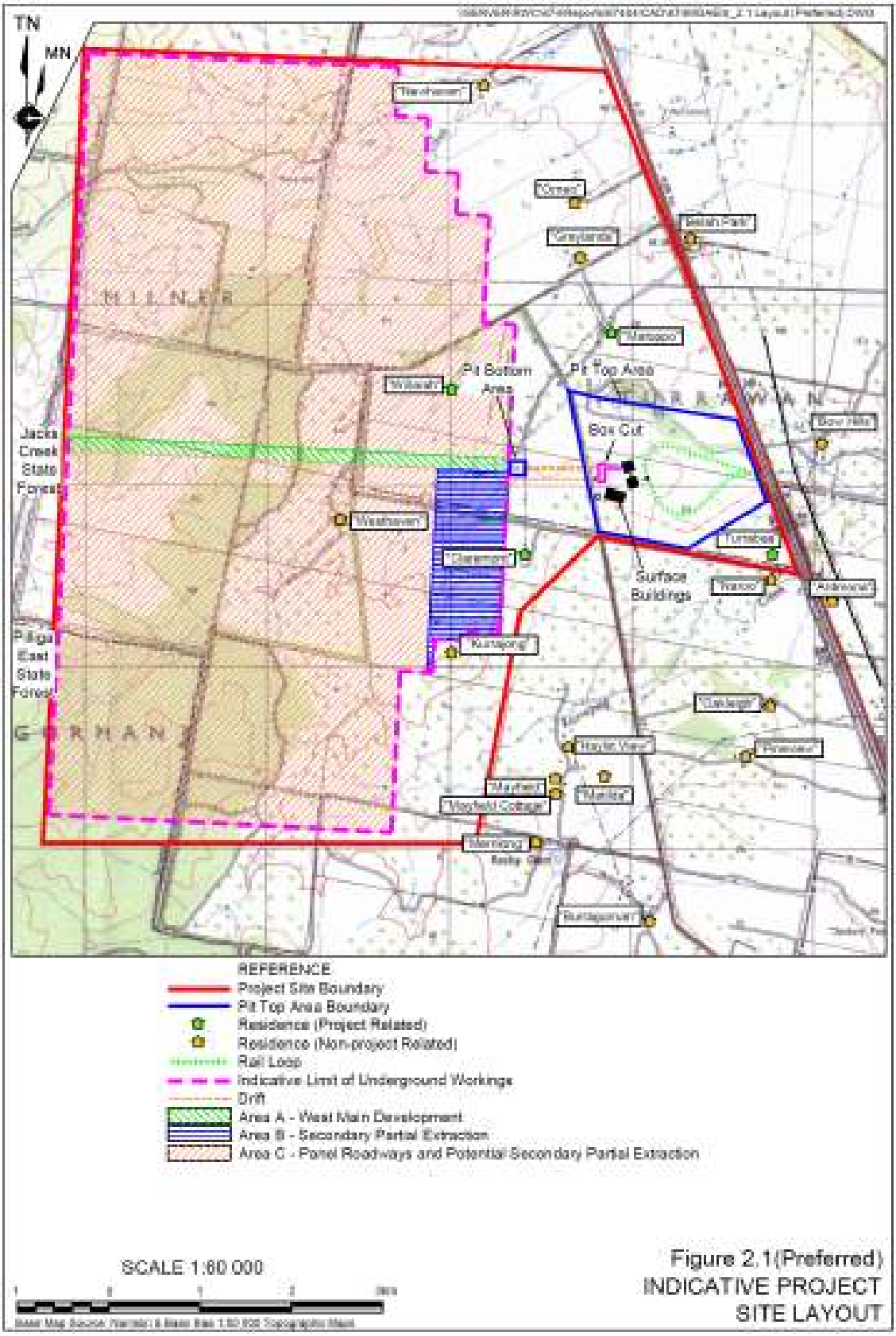


Figure 1: *Project Layout*

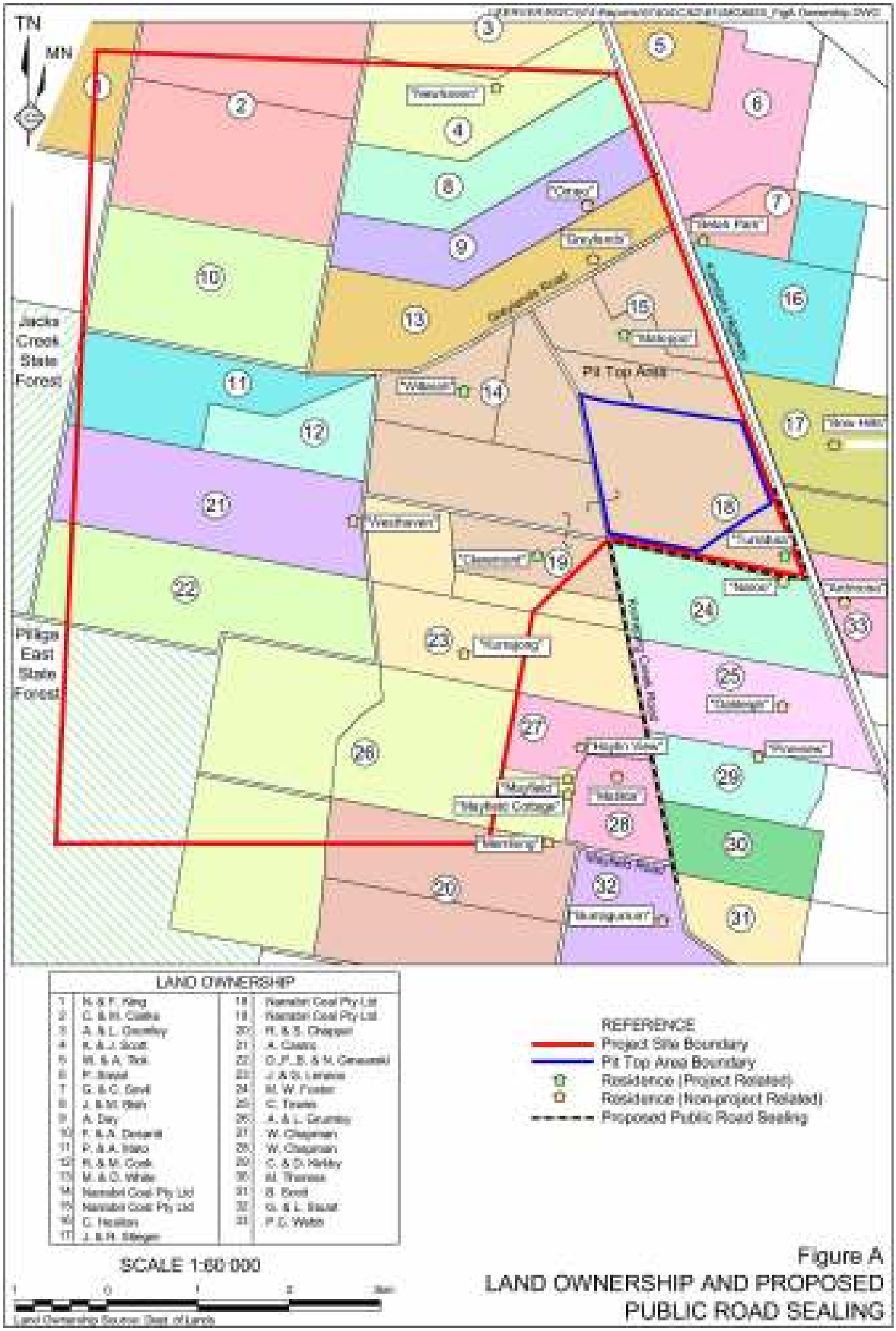


Figure 2: *Section of Kurrajong Creek Road proposed to be sealed*

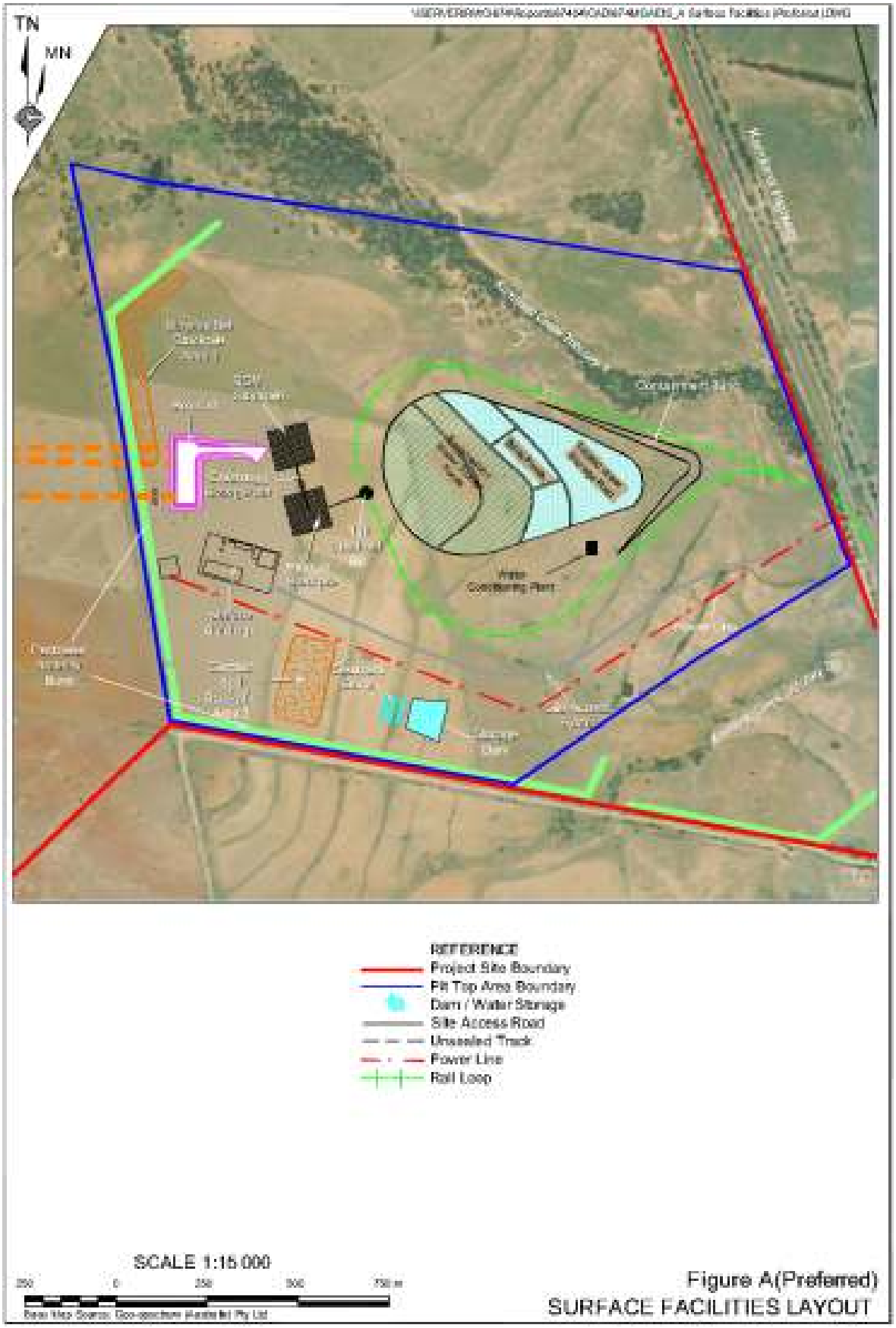


Figure 3: *Surface Facilities Layout*

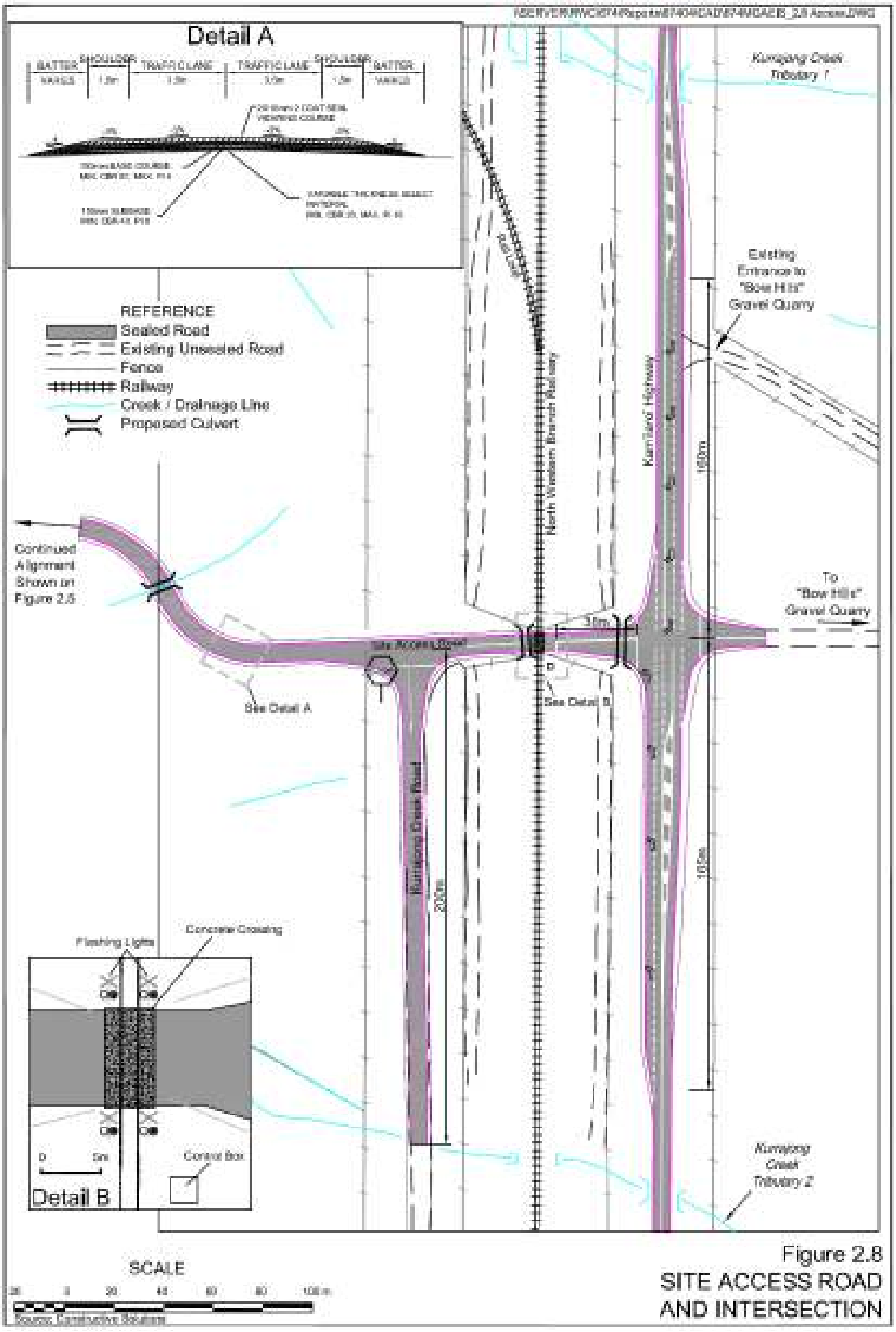


Figure 4: *Proposed Kamilaroi Highway Intersection*

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.

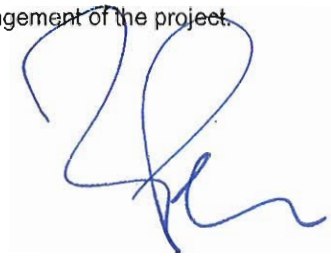
Project Approval

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 7.

These conditions are required to:

- prevent, minimise and/or offset 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.



Richard Pearson
Deputy Director-General, DASP
as delegate for the Minister for Planning

Sydney 26th July 2010

SCHEDULE 1

Application No:	08_0144
Proponent:	Narrabri Coal Operations Pty Limited
Approval Authority:	Minister for Planning
Land:	See Appendix 1
Project:	Narrabri Coal Project – Stage 2

TABLE OF CONTENTS

DEFINITIONS

Approved mine plan	The mine plan depicted in Figures 1 and 3 of Appendix 2
BCA	Building Code of Australia
Brine	Very salty water
Built features	Includes any building or work erected or constructed on land, and includes dwellings and infrastructure such as any formed road, any pipeline, water, sewer, telephone, gas or other service main and communication towers
CCC	Community Consultative Committee
CMA	Catchment Management Authority
Conditions of this approval	Conditions contained in schedules 2 to 7 inclusive
Construction	The demolition of buildings or works, carrying out of works and erection of buildings covered by this approval
CPI	Consumer Price Index, as published by the Australian Bureau of Statistics
Day	The period from 7 am to 6 pm on Monday to Saturday, and 8 am to 6 pm on Sundays and Public Holidays
DECCW	Department of Environment, Climate Change and Water
Department	Department of Planning
Director-General	Director-General of the Department, or delegate
Dispute resolution process	The independent dispute resolution process as described in Appendix 5
EA	Environmental Assessment prepared for Narrabri Coal Pty Limited entitled *Stage 2 Narrabri Coal Project Environmental Assessment* and *Specialist Consultant Studies Compendium*, Volumes 1&2 (October 2009), including the *Response to Public and Government Agency Submissions* (May 2010)
Environmental consequences	The environmental consequences of subsidence impacts, including: damage to built features; loss of surface flows to the subsurface; loss of standing pools; adverse water quality impacts; development of iron bacterial mats; cliff falls; rock falls; damage to Aboriginal heritage sites; impacts to aquatic ecology; ponding
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 POEO Act
Evening	The period from 6 pm to 10 pm
Feasible	Feasible relates to engineering considerations and what is practical to build
First workings	Development of the main headings and gate roads to establish access to the coal in the mining area
GSC	Gunnedah Shire Council
I&I NSW	Industry and Investment NSW
Incident	A set of circumstances that causes or threatens to cause material harm to the environment, and/or breaches or exceeds the limits of performance measures/criteria in this approval
km	Kilometre
Land	In general, the definition of land is consistent with the definition in the EP&A Act. However, in relation to the noise and air quality conditions in Schedule 4 it means 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	Harm to the environment is material if it involves actual or potential harm to the health or safety of human beings or ecosystems that is not trivial
Mining area	The area outlined by a dashed purple line on the figures in Appendix 2
Mining operations	The extraction, processing and transportation of coal on the site, including the formation of mine access drifts and associated surface infrastructure such as gas and water drainage facilities
Minister	Minister for Planning, or delegate
Mitigation	Activities associated with reducing the impacts of the project
Mtpa	Million tonnes per annum
Negligible	Small and unimportant, such as not worth considering
Night	The period from 10 pm to 7 am on Monday to Saturday, and 10 pm to 8 am on Sundays and Public Holidays
NOW	DECCW's NSW Office of Water
NSC	Narrabri Shire Council
POEO Act	*Protection of the Environment Operations Act 1997*
Privately-owned land	Land that is not owned by a public agency, or a mining company (or its subsidiary)

Project	The Stage 2 Narrabri Coal Project described in the EA
Proponent	Narrabri Coal Operations Pty Limited or any other person or persons who rely on this approval to carry out the project that is subject to this approval
Raffinate	Good quality water produced by a water conditioning plant, lower in salinity than the water fed to the plant. The "waste" produced by the plant is brine.
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Reasonable costs	The costs agreed between the Department and the Proponent for obtaining independent experts to review the adequacy of any aspects of the extraction plan, or where such costs cannot be agreed, the costs determined by the Dispute Resolution Process
Rehabilitation	The treatment or management of land disturbed by the project for the purpose of establishing a safe, stable and non-polluting environment
Remediation	Activities associated with partially or fully repairing or rehabilitating the impacts of the project or controlling the environmental consequences of this impact
ROM	Run-of-mine
RTA	Roads and Traffic Authority
Second workings	Extraction of coal from longwall panels, mini-wall panels or pillar extraction
Site	All the land to which the project application applies, comprising the mining area and surface facilities area, as listed in Appendix 1 and shown in Appendix 2
Stage 1 Approval	The project approval granted by the Minister Planning for the Narrabri Coal Project, dated 14 November 2007
Stage 2 Approval	This project approval, for Stage 2 of the Narrabri Coal Project which includes the introduction of longwall mining operations and increasing ROM coal production to 8.0 Mtpa
Statement of Commitments	The Proponent's revised commitments in Appendix 3, dated May 2010
Steep slopes	An area of land having a natural gradient of between 33° and 66°
Subsidence	The totality of subsidence effects, subsidence impacts and environmental consequences of subsidence impacts
Subsidence effects	Deformation of the ground mass due to mining, including all mining-induced ground movements, including both vertical and horizontal displacement, tilt, strain and curvature
Subsidence impacts	Physical changes to the ground and its surface caused by subsidence effects, including tensile and shear cracking of the rock mass, localised buckling of strata caused by valley closure and upsidence and surface depressions or troughs

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 Figures 1 to 3 of Appendix 2.

3. If there is any inconsistency between the above documents, the most recent 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. The Proponent may undertake mining operations on the site for 21 years from the date of this approval.

   Note: Under this Approval, the Proponent is required to rehabilitate the site and to perform additional undertakings to the satisfaction of the Director-General. 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 8.0 million tonnes of ROM coal from the site per calendar year.

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

8. The Proponent shall not transport any coal reject from the site.

PLANNING AGREEMENTS

9. Within 6 months of this approval, the Proponent shall enter into 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 offers accepted at NSC's meeting of 16 February 2010, and GSC's meeting of 16 February 2010, which includes the matters set out in Appendix 4.

   If there is any dispute between the Proponent and either NSC or GSC during the formal drafting of the planning agreements, then any of the parties involved may refer the matter to the Director-General for resolution.

SURRENDER OF STAGE 1 APPROVAL

10. Within 12 months of the date of this approval, the Proponent shall surrender its previous project approval for the Narrabri Coal Mine to the satisfaction of the Director-General, in accordance with section 75YA of the EP&A Act. Prior to the surrender of the Stage 1 approval, if there is any inconsistency between the Stage 1 and Stage 2 approvals, the conditions of the Stage 2 approval shall prevail to the extent of any inconsistency.

MANAGEMENT PLANS / MONITORING PROGRAMS

11. 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.

Note: The conditions of this approval require certain strategies, plans, and programs to be prepared for the project. They also require these documents to be reviewed and audited on a regular basis to ensure they remain effective. However, in some instances, it will not be necessary or practicable to prepare these documents for the whole project at any one time, particularly as these documents are intended to be dynamic and improved over time. Consequently, the documents may be prepared and implemented on a progressive basis, subject to the conditions of this approval. In doing this however, the Proponent will need to demonstrate that it has suitable documents in place to manage the existing operations of the project.

12. Stage 1 strategies, plans or programs continue to have effect until replaced by an equivalent approved strategy, plan or program prepared and approved under this approval.

STRUCTURAL ADEQUACY

13. 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

14. 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

15. 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.

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS – MINING AREA

Note: These conditions should be read in conjunction with section 5 of the revised Statement of Commitments.

SUBSIDENCE IMPACT PERFORMANCE MEASURES

1. The Proponent shall ensure that mine subsidence does not cause any exceedances of the performance measures in Table 1.

Table 1: Subsidence Impact Performance Measures

Water Resources	
Great Artesian Basin	The Proponent shall ensure that, within 5 years of the date of this approval, 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 (including the possibility of injection of raffinate) to the satisfaction of NOW.
Biodiversity	
Flora and Fauna	The Proponent shall ensure that clearing and disturbance of vegetation above the mining area is minimised, to the satisfaction of the Director-General.

Note: The Proponent may be required to define other performance measures and performance indicators in management plans required under this approval (see eg condition 3 below).

FIRST WORKINGS

2. The Proponent shall not carry out first workings in the project area that are not consistent with the approved mine plan without the written approval of the Director-General.

SECOND WORKINGS

Extraction Plans

3. The Proponent shall prepare and implement Extraction Plans for all second workings in the project area to the satisfaction of the Director-General. These plans must:
   (a) be prepared by a team of suitably qualified and experienced experts whose appointment has been endorsed by the Director-General and in consultation with DII;
   (b) be approved by the Director-General before the Proponent carries out second workings covered by the Plan;
   (c) include:
      - detailed plans for second workings;
      - detailed plans of any associated surface construction works;
      - revised predictions of subsidence effects, subsidence impacts and environmental consequences, incorporating any relevant information obtained since this approval;
      - a Subsidence Monitoring Program to calibrate and validate subsidence predictions; and analyse the relationship between subsidence effects and subsidence impacts and any ensuing environmental consequences;
      - a program to collect sufficient environmental baseline data for future Extraction Plans; and
      - a Public Safety Management Plan to ensure public safety in the project area.

Note: In accordance with condition 11 of schedule 2, the preparation and implementation of Extraction Plans for second workings may be staged, provided that no less than 3 longwall panels are included in each plan, unless otherwise agreed to in writing by the Director-General. In addition, these plans are only required to contain management plans that are relevant to the specific second workings that are being carried out.

Payment of Reasonable Costs

4. The Proponent shall pay all reasonable costs incurred by the Department to engage independent experts to review the adequacy of any aspect of the Extraction Plan.

SCHEDULE 4
SPECIFIC ENVIRONMENTAL CONDITIONS – SURFACE FACILITIES AREA AND GENERAL

NOISE

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

Impact Assessment Criteria

1. 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.

Table 1: Impact assessment criteria dB(A)

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

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 DECCW 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 noise limits apply to applicable receivers under all meteorological conditions except for any one of the following:*
  - *wind speeds greater than 3 metres/second at 10 metres above ground level; or*
  - *temperature inversions of 1.5 - 4°C/100 metres and a source-to-receiver wind speed greater than 2 metres/second at 10 metres above ground level; or*
  - *temperature inversions of greater than 4°C/100 metres.*
- *The meteorological data to be used for determining meteorological conditions are the data recorded by the meteorological weather station to be determined in consultation with the DECCW.*
- *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 DECCW 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 Acquisition Criteria

2. If the noise generated by the project exceeds the criteria in Table 2 at any residence on privately-owned land, or on more than 25% of any privately-owned land, then the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 5-7 of schedule 7.

Table 2: Noise acquisition criteria dB(A)

Location	Day	Evening	Night
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$
All privately-owned residences	40	40	40

Note: Noise generated by the project is to be measured in accordance with the notes presented below Table 1. For this condition to apply, the exceedances of the criteria must be systemic.

Additional Noise Mitigation Measures

3. If the noise generated by the project is equal to or exceeds the criteria in Table 3 at any residence on privately-owned land, then the Proponent shall, upon receiving a written request from the landowner, implement reasonable and feasible noise mitigation measures (such as double-glazing, insulation, and/or air conditioning) at the residence in consultation with the landowner. If within 3 months of receiving this request from the landowner, the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.

Table 3: Additional noise mitigation criteria

Location	Day. $L_{Aeq(15\ minute)}$	Evening $L_{Aeq(15\ minute)}$	Night $L_{Aeq(15\ minute)}$
All privately-owned residences	38	38	38

Note: Noise generated by the project is to be measured in accordance with the notes presented below Table 1. For this condition to apply, the exceedances of the criteria must be systemic.

Noise Management Plan

4. The Proponent shall revise the Noise Management Plan for the Stage 1 project to encompass all proposed mine activities and potential impacts associated with noise management (Stages 1 and 2) and subsequently implement this revised version of the Noise Management Plan to the satisfaction of the Director-General. This Plan shall:
   (a) be prepared in consultation with DECCW by a suitably qualified expert whose appointment has been approved by the Director-General;
   (b) be submitted to the Director-General for approval by 30 June 2011;
   (c) include a Noise Monitoring Program incorporating:
      - real-time noise and temperature inversion monitoring; and
      - attended noise monitoring

      to monitor the performance of the project;
   (d) include reactive noise control measures to manage noise impacts for sensitive receivers; and
   (e) include a protocol to establish whether the project is complying with the noise impact assessment criteria in Table 1.

Continuous Improvement

5. 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.

AIR QUALITY

Note: These conditions should be read in conjunction with section 11 of the revised Statement of Commitments.

Impact Assessment Criteria

6. The Proponent shall ensure that dust emissions generated by the project do 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.

Table 4: Long term impact assessment criteria for particulate matter

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 5: Short 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 6: Long term impact assessment criteria for deposited dust

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

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

Air Quality Monitoring

7. The Proponent shall revise the Air Quality Monitoring Program for the Stage 1 project to encompass all proposed mine activities and potential impacts associated with air quality (Stages 1 and 2) and subsequently implement this revised version of the Air Quality Monitoring Program to the satisfaction of the Director-General. This program must:
   (a) be submitted to the Director-General for approval prior to 30 June 2011;
   (b) be prepared in consultation with DECCW; and
   (c) use a combination of high volume samplers and dust deposition gauges to monitor the performance of the project.

METEOROLOGICAL MONITORING

8. 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.

WATER MANAGEMENT

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

Groundwater Model

9. Within 2 years of the commencement of longwall coal extraction, and every 5 years thereafter, the Proponent shall undertake a transient calibration of the groundwater model presented in the EA, in consultation with NOW, and to the satisfaction of the Director-General. This re-calibration of the groundwater model must include forward impact predictions of brine re-injection to the mine's goaf at the conclusion of mining operations.

Discharges

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

11. Any raffinate from the water conditioning plant discharged to the Namoi River must be discharged in accordance with the conditions of an EPL and meet the following criteria:
    (a) 50 percentile of all samples (volume based) are below 250 mg/l of Total Dissolved Solids;
    (b) 100 percentile of all samples (volume based) are below 350 mg/l of Total Dissolved Solids; and
    (c) pH values of all sampled water to be between 6.5 and 8.5.

12. Within 3 years of the date of this approval, or otherwise agreed by the Director-General, the Proponent must commission the water conditioning plant identified in the EA, to the satisfaction of the Director-General.

Water Management Plan

13. Prior to 30 June 2011, the Proponent shall revise the Water Management Plan for the Stage 1 project to encompass all proposed mine activities and potential impacts associated with water management (Stages 1 and 2) and subsequently implement this revised version of the Water Management Plan to the satisfaction of the Director-General. This revised plan must be produced in consultation with DECCW and NOW 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) Raffinate Discharge and Transfer Control and Monitoring Plan;
    (e) Groundwater Monitoring Program; and
    (f) 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 conditions 16(b) and 18(c)); and
        - responding to any unforeseen impacts of the project.

    Note: The Raffinate Discharge and Transfer Control and Monitoring Plan does not need to be produced and approved until 3 months prior to the planned discharge or transfer of raffinate from the site.

Site Water Balance

14. The Site Water Balance must:
    (a) include details of:
        - sources and security of water supply;
        - underground water make;
        - 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

15. 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

16. The Surface Water Monitoring Plan must include:
    (a) detailed baseline data on surface water flows and quality in creeks and other water bodies 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.

Raffinate Discharge and Transfer Control and Monitoring Plan

17. The Raffinate Discharge Control and Monitoring Plan must:
    (a) be approved by the Director-General prior to any raffinate discharge to the Namoi River;
    (b) include measures for the continuous monitoring and recording of volumes of water discharged to the Namoi River;
    (c) contain an ambient water quality monitoring program upstream and downstream of the discharge point; and
    (d) contain a water quality monitoring program for discharged waters.

Groundwater Monitoring Program

18. 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 any impacts of the project on the Namoi River Alluvium;
    (f) a program to monitor (by the use of shallow piezometers/lysimeters), detect, and quantify any leakage/leachate from the site's evaporation/storage ponds, brine storage area or coal reject emplacement area; and
    (g) procedures for reporting the results of this monitoring.

Evaporation/Storage Ponds

19. The Proponent shall ensure that the integrity of the low permeability layers lining the evaporation/storage ponds is maintained and achieves a permeability of less than $1x10^{-14}$ m/s whenever these ponds are in use for the storage of saline waters and less than $1x10^{-9}$ m/s when being used to store raffinate or captured surface waters.

Brine Storage Ponds

20. The Proponent shall ensure that the integrity of the low permeability layers lining the brine storage ponds is maintained and achieves a permeability of less than $1x10^{-14}$ m/s whenever these storage ponds are in use.

Review of Brine Management and Beneficial Use of Water and Brine

21. Within 2 years of commissioning the water conditioning plant, and every 5 years thereafter, unless otherwise directed by the Director-General, the Proponent shall engage suitably qualified experts approved by the Director-General to review brine management and beneficial use options for raffinate, brine and minewater produced by the project. The Proponent shall implement all reasonable and feasible recommendations of these reviews, to the satisfaction of the Director-General.

HERITAGE

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

Aboriginal Cultural Heritage Management Plan

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

23. The Proponent shall revise the Aboriginal Cultural Heritage Management Plan for the Stage 1 project to encompass all proposed mine activities and potential impacts associated with Aboriginal cultural heritage management for the site (Stages 1 and 2) and subsequently implement this revised version of the Aboriginal Cultural Heritage Management Plan to the satisfaction of the Director-General. This plan must:
    (a) be submitted the Director-General by 30 June 2011;
    (b) be prepared in consultation with the DECCW, the Narrabri Local Aboriginal Land Council and the Narrabri Goomeroi Aboriginal Corporation;
    (c) include a protocol for the ongoing consultation and involvement of Aboriginal communities in the conservation and management of Aboriginal heritage on site; and

(d) describe the measures that would be implemented to protect Aboriginal sites on the mine site, (in particular all known Aboriginal sites on lands overlying Longwalls 1-3 and sites 10b, 38, 39 and 106-112), or any new Aboriginal objects or skeletal remains that are identified during the project.

24. Prior to undertaking any activities involving surface disturbance or vegetation removal for the lands overlying Longwalls 8-26, the Proponent shall undertake a detailed Aboriginal cultural heritage survey in consultation with the local Aboriginal community and DECCW, and to the satisfaction of the Director-General. The Director-General may approve this survey being undertaken in several stages, as mining progresses.

TRANSPORT

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

Mine Access Road Intersection

25. The Proponent shall maintain the Mine Access Road Intersection with Kurrajong Creek Road and the Kamilaroi Highway in consultation with NSC and to the satisfaction of RTA.

Greylands and Scratch Roads

26. Prior to using Greylands and Scratch Roads to construct mine-related infrastructure, the Proponent shall enter into an agreement with NSC to:
    (a) construct watercourse crossings (either culverts or concrete causeways) on those sections of these roads that it uses in a manner that does not restrict fish passage, in consultation with I&I NSW (Fisheries) and to the satisfaction of NSC; and
    (b) fund the maintenance of those sections of these roads that it uses to an all-weather unsealed road standard.

Gunnedah Traffic Management Study

27. The Proponent shall contribute, on an equitable basis with other coal project rail users, to the costs of an independent Traffic Management Study analysing the impacts of increased rail traffic on road safety and congestion due to increased closure of rail level crossings within Gunnedah, prepared to the satisfaction of GSC.

    Note: This study should examine funding mechanisms to implement any recommendations to improve road safety and reduce traffic congestion associated with rail level crossings and be completed by 30 June 2011.

VISUAL

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

Visual Amenity

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

Lighting Emissions

29. 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*.

ENERGY EFFICIENCY AND GREENHOUSE GAS

Note: These conditions should be read in conjunction with section 11 of the revised Statement of Commitments.

Energy Savings Action Plan

30. The Proponent shall revise the Energy Savings Action Plan for the Stage 1 project to encompass all proposed mine activities and potential impacts associated with energy management for the site (Stages 1

and 2) and subsequently implement this revised version of the Energy Savings Action Plan to the satisfaction of the Director-General. This plan must:

(a) be prepared in consultation with DECCW;
(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 prior to 30 June 2011; and
(d) include a program to monitor the effectiveness of measures to reduce energy use on site.

Gas Drainage

31. 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.

32. Prior to carrying out longwall coal mining operations, the Proponent shall submit a Greenhouse Gas Minimisation Plan for the approval of the Director-General. This plan must:
    (a) be prepared in consultation with DECCW;
    (b) identify options for minimising greenhouse gas emissions from underground mining operations, with a particular focus on capturing and/or using these emissions;
    (c) investigate the feasibility of implementing each option;
    (d) propose the measures that would be implemented in the short to medium term on site; and
    (e) 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 3 of the revised Statement of Commitments.

Waste Minimisation

33. The Proponent shall revise the Waste Management Plan for the Stage 1 project to encompass all proposed mine activities and potential impacts associated with waste management for the site (Stages 1 and 2) and subsequently implement this revised version of the Waste Management Plan to the satisfaction of the Director-General. This plan must:
    (a) be submitted to the Director-General for approval prior to 30June 2011;
    (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 5
REHABILITATION AND OFFSETS

REHABILITATION

Note: These conditions should be read in conjunction with sections 4, 8 and 12 of the revised Statement of Commitments and condition 3(c) of schedule 3.

Rehabilitation Objectives

1. The Proponent shall rehabilitate the site to the satisfaction of the Director-General and DII in accordance with the rehabilitation objectives in Table 1.

Table 1: Rehabilitation Objectives

Domain	***Rehabilitation objective***
Surface Facilities Area	Set through condition 4 below
Other land affected by the project	Restore ecosystem function, including maintaining or establishing self-sustaining native ecosystems: • comprised of local native plant species; with • a landform consistent with the surrounding environment
Built features	Repair/restore to pre-mining condition or equivalent
Community	Minimise the adverse socio-economic effects associated with mine closure including the reduction in local and regional employment Ensure public safety

Note: The Proponent may be required to define other rehabilitation objectives in management plans or strategy required under this schedule.

Progressive Rehabilitation

2. To the extent that mining operations permit, the Proponent shall carry out rehabilitation progressively, that is, as soon as reasonably practicable following the disturbance.

Landscape Management Plan

3. The Proponent shall revise the Landscape Management Plan for the Stage 1 project to encompass all proposed mine activities and potential impacts associated with landscape management for the site (Stages 1 and 2) and subsequently implement this revised version of the Landscape Management Plan to the satisfaction of the Director-General and I&I NSW. This plan must:
   (a) be submitted to the Director-General for approval by 30 June 2011;
   (b) be prepared by suitably qualified expert/s whose appointment/s have been endorsed by the Director-General;
   (c) be prepared in consultation with NOW, DECCW and NSC; and
   (d) include a:
      - Rehabilitation Management Plan; and
      - Mine Closure Plan.

Rehabilitation Management Plan

4. 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 remediate predicted subsidence impacts under individual Extraction Plans;
   (e) a detailed description of the measures that would be implemented to minimise environmental impacts of mining operations and to rehabilitate the site, including measures to be implemented for:
      - managing 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 rehabilitation works and Aboriginal cultural heritage.

(f) detailed performance and completion criteria for the rehabilitation of the site;

(g) 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

(h) details of who is responsible for monitoring, reviewing and implementing the plan.

Note: In accordance with condition 11 of schedule 2, the preparation and implementation of Rehabilitation Management Plans is likely to be staged, with each plan covering a defined area (or domain) for rehabilitation. In addition, while mining operations are being carried out, some of the proposed remediation or rehabilitation measures may be included in the detailed management plans that form part of the Extraction Plan. If this is the case, however, then the Proponent will be required to ensure that there is good cross-referencing between the various management plans.

Mine Closure Plan

5. 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.

OFFSETS

Biodiversity Offset Strategy

6. The Proponent shall provide a suitable biodiversity offset strategy to compensate for the impacts of Stages 1 and 2 of the project. This offset strategy must:
   (a) be prepared in consultation with DECCW;
   (b) be submitted to the Director-General for approval by 31 December 2010, or as otherwise agreed by the Director-General;
   (c) provide a detailed assessment of offset proposal/s involving the property/ies (agreed to by DECCW) adjoining Mt Kaputar National Park to confirm the ability of either of these property/ies to meet "like for like or better" and "maintain or improve" conservation outcomes;
   (d) include and assess proposals to offset impacts to the Inland Grey Box EEC, *Bertya opponens,* and foraging habitat for the Superb Parrot;
   (e) include proposals on offsetting both direct and indirect impacts (ie edge effects) of the project; and
   (f) determine the best overall combination of lands to provide a suitable offset.

7. The Proponent shall make suitable arrangements to provide appropriate long-term security for the offset areas by 31 December 2011, or other date agreed by the Director-General, to the satisfaction of the Director-General.

SCHEDULE 6
ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING

Note: This schedule should be read in conjunction with sections 15, 16 and 17 of the revised Statement of Commitments.

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. The Proponent shall revise the Environmental Management Strategy for the Stage 1 project to encompass all proposed mine activities and potential impacts associated with environmental management for the site (Stages 1 and 2) and subsequently implement this revised version of the Environmental Management Strategy to the satisfaction of the Director-General. This strategy must:
   (a) be submitted to the Director-General for approval prior to 30 June 2011;
   (b) provide the strategic context for environmental management of the project;
   (c) identify the statutory requirements that apply to the project;
   (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project
   (e) 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; and
      - respond to emergencies; and
   (f) include a clear plan depicting all the monitoring currently being carried out in the project area.

Management Plan Requirements

2. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:
   (a) detailed baseline data;
   (b) a description of:
      - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
      - any relevant limits or performance measures/criteria;
      - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;
   (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
   (d) a program to monitor and report on the:
      - impacts and environmental performance of the project;
      - effectiveness of any management measures (see (c) above);
   (e) a contingency plan to manage any unpredicted impacts and their consequences;
   (f) a program to investigate and implement ways to improve the environmental performance of the project over time;
   (g) a protocol for managing and reporting any:
      - incidents;
      - complaints;
      - non-compliances with statutory requirements; and
      - exceedances of the impact assessment criteria and/or performance criteria; and
   (h) a protocol for periodic review of the plan.

Revision of Strategies, Plans and Programs

3. Within 3 months of the submission of an:
   (a) audit under condition 7 of schedule 6;
   (b) incident report under condition 4 of schedule 6; and
   (c) annual review under condition 5 of schedule 6,

   the Proponent shall review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Director-General.

Note: This is to ensure that the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project

REPORTING

Incident

4. The Proponent shall notify the Director-General and any other relevant agencies of any incident associated with the project as soon as practicable after the Proponent becomes aware of the incident. Within 7 days of the date of the incident, the Proponent shall provide the Director-General and any relevant agencies with a detailed report on the incident.

Regular

5. The Proponent shall provide regular reporting on the environmental performance of the project on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this approval, and to the satisfaction of the Director-General.

Annual Review

6. Within 12 months of this approval, and annually thereafter, the Proponent shall review the environmental performance of the project to the satisfaction of the Director-General. This review must:
   (a) describe the works that were carried out in the past year, and the works that are proposed to be carried out over the next year;
   (b) include a comprehensive review of the monitoring results and complaints records of the project over the past year, which includes a comparison of these results against the
      - the relevant statutory requirements, limits or performance measures/criteria;
      - the monitoring results of previous years; and
      - the relevant predictions in the EA and Extraction Plan;
   (c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
   (d) identify any trends in the monitoring data over the life of the project;
   (e) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and
   (f) describe what measure will be implemented over the next year to improve the environmental performance of the project.

INDEPENDENT ENVIRONMENTAL AUDIT

7. Prior to 13 September 2010, 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 (Stages 1 and 2). 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 subsidence, water and noise management (other than for the 2010 audit which is not required to include a subsidence expert in the audit team).

8. 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.

COMMUNITY CONSULTATIVE COMMITTEE

9. The Proponent shall maintain 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.

   Note: The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Proponent complies with this approval.

ACCESS TO INFORMATION

10. The Proponent shall make the following information publicly available on its website:
    (a) a copy of all current statutory approvals;
    (b) a copy of the current environmental management strategy and associated plans and programs;
    (c) a summary of the monitoring results of the project, which have been reported in accordance with the various plans and programs approved under the conditions of this approval;
    (d) a complaints register, which is to be updated on a monthly basis;
    (e) a copy of the minutes of CCC meetings;
    (f) a copy of any Annual Reviews (over the last 5 years);
    (g) a copy of any Independent Environmental Audit, and the Proponent's response to the recommendations in any audit; and
    (h) any other matter required by the Director-General.

SCHEDULE 7
ADDITIONAL PROCEDURES FOR AIR QUALITY AND NOISE MANAGEMENT

NOTIFICATION OF LANDOWNERS

1. If the results of the monitoring required in schedule 4 identify that impacts generated by the project are greater than the relevant impact assessment criteria, except where a negotiated agreement has been entered into in relation to that impact, then the Proponent shall, within 2 weeks of obtaining the monitoring results, notify the Director-General, the affected landowners and tenants (including tenants of mine-owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show that the project is complying with the criteria in schedule 4.

2. If the results of monitoring required in schedule 4 identify that impacts generated by the project are greater than the relevant air quality impact assessment criteria in schedule 4, then the Proponent shall send the relevant landowners and tenants (including tenants of mine-owned properties) a copy of the NSW Health fact sheet entitled "Mine Dust and You" (and associated updates) in conjunction with the notification required in condition 1.

INDEPENDENT REVIEW

3. If a landowner considers the project to be exceeding the impact assessment criteria in schedule 4, then he/she may ask the Director-General in writing for an independent review of the impacts of the project on his/her land.

   If the Director-General is satisfied that an independent review is warranted, the Proponent shall within 2 months of the Director-General's decision:
   (a) consult with the landowner to determine his/her concerns;
   (b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to conduct monitoring on the land, to:
      - determine whether the project is complying with the relevant impact assessment criteria in schedule 4; and
      - identify the source(s) and scale of any impact on the land, and the project's contribution to this impact; and
   (c) give the Director-General and landowner a copy of the independent review.

4. If the independent review determines that the project is complying with the relevant impact assessment criteria in schedule 4, then the Proponent may discontinue the independent review with the approval of the Director-General.

   If the independent review determines that the project is not complying with the relevant impact assessment criteria in schedule 4, and that the project is primarily responsible for this non-compliance, then the Proponent shall:
   (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the project complies with the relevant criteria and conduct further monitoring to determine whether these measures ensure compliance; or
   (b) secure a written agreement with the landowner to allow exceedances of the relevant criteria,
   to the satisfaction of the Director-General.

   If further monitoring under paragraph (a) determines that the project is complying with the relevant criteria, then the Proponent may discontinue the independent review with the approval of the Director-General.

   If the independent review determines that the project is not complying with the relevant land acquisition criteria in schedule 4, then the Proponent shall offer to acquire all or part of the landowner's land in accordance with the procedures in conditions 5-7 below, to the satisfaction of the Director-General.

LAND ACQUISITION

5. Within 3 months of receiving a written request from a landowner with acquisition rights, the Proponent shall make a binding written offer to the landowner based on:
   (a) the current market value of the landowner's interest in the property at the date of this written request, as if the property was unaffected by the project the subject of the project application, having regard to the:
      - existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and

- presence of improvements on the property and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of 'reasonable and feasible measures' under schedule 4 or condition 4(a) of this schedule;

(b) the reasonable costs associated with:
- relocating within the Narrabri or Gunnedah local government areas, or to any other local government area determined by the Director-General;
- obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is to be acquired; and

(c) reasonable compensation for any disturbance caused by the land acquisition process.

However, if following this period, the Proponent and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Director-General for resolution.

Upon receiving such a request, the Director-General shall request the President of the NSW Division of the Australian Property Institute (the API) to appoint a qualified independent valuer to:

(a) consider submissions from both parties;

(b) determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in paragraphs (a)-(c) above;

(c) prepare a detailed report setting out the reasons for any determination; and

(d) provide a copy of the report to both parties and the Director-General.

Within 14 days of receiving the independent valuer's report, the Proponent shall make a binding written offer to the landowner to purchase the land at a price not less than the independent valuer's determination.

However, if either party disputes the independent valuer's determination, then within 14 days of receiving the independent valuer's report, they may refer the matter to the Director-General for review. Any request for a review must be accompanied by a detailed report setting out the reasons why the party disputes the independent valuer's determination. Following consultation with the independent valuer and both parties, the Director-General shall determine a fair and reasonable acquisition price for the land, having regard to the matters referred to in paragraphs (a)-(c) above and the independent valuer's report. Within 14 days of this determination, the Proponent shall make a binding written offer to the landowner to purchase the land at a price not less than the Director-General's determination.

If the landowner refuses to accept the Proponent's binding written offer under this condition within 6 months of the offer being made, then the Proponent's obligations to acquire the land shall cease, unless the Director-General determines otherwise.

6. The Proponent shall pay all reasonable costs associated with the land acquisition process described in condition 5 above.

7. If the Proponent and landowner agree that only part of the land shall be acquired, then the Proponent shall also pay all reasonable costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of the plan at the Office of the Registrar-General.

APPENDIX 1
SCHEDULE OF PROJECT LAND

Area	*Land Title Reference*
Pit Top Area	*Lot 60 DP 757124, Part Lot 115 DP757124* *Lot 152 DP816020, Part Lots 151 & 152 DP816020* *Lots 381 & 382 DP1028753* *Various Crown and Council roads.*
Underground Mining Area	*Lot 7 DP 757104, Part Lots 3, 7, 8, 10, 25, 67 & 68 DP757104* *Part Lots 57, 58, 63 to 65 DP757114* *Lot 61 DP 757124, Part Lots 81 & 83 DP757124* *Lot 2 DP 811171, Part Lot 1 DP811171* *Lot 1 DP254253* *Lot 1 DP659899* *Part Lot 152 DP 816020* *Part Lot 3 DP1005608* *Part Lot 2 DP1124652* *Part Lot 842 DP1134385* *Part Jacks Creek State Forest (Part Lot 58 DP 757114)* *Part Pilliga East State Forest* *Various Crown and Council roads.*
Remainder of Mine Site	*Lot 1 DP1124652, Part Lot 2 DP1124652* *Lot 841 DP1134385, Part Lot 842 DP1134385* *Part Lots 3, 8,10, 25, 67 & 68 DP 757104* *Part Lots 57, 63 to 65 DP 757114* *Part Lots 81 & 83 DP 757124* *Part Lot 1 DP798487* *Part Lot 1 DP811171* *Part Lots 151 & 152 DP816020* *Part Lot 3 DP1005608* *Part Jacks Creek State Forest (Part Lot 58 DP 757114 & Part Lot 60 DP757114)* *Part Pilliga East State Forest (undefined)* *Various Crown and Council roads.*
Water Pipeline Route	*Lots 60 & 89 DP757124* *Lot 151 DP816020* *Lots 381 & 382 DP1028753* *Lot 1 DP1124652* *Various Crown and Council roads.*

APPENDIX 2
PROJECT MAPS

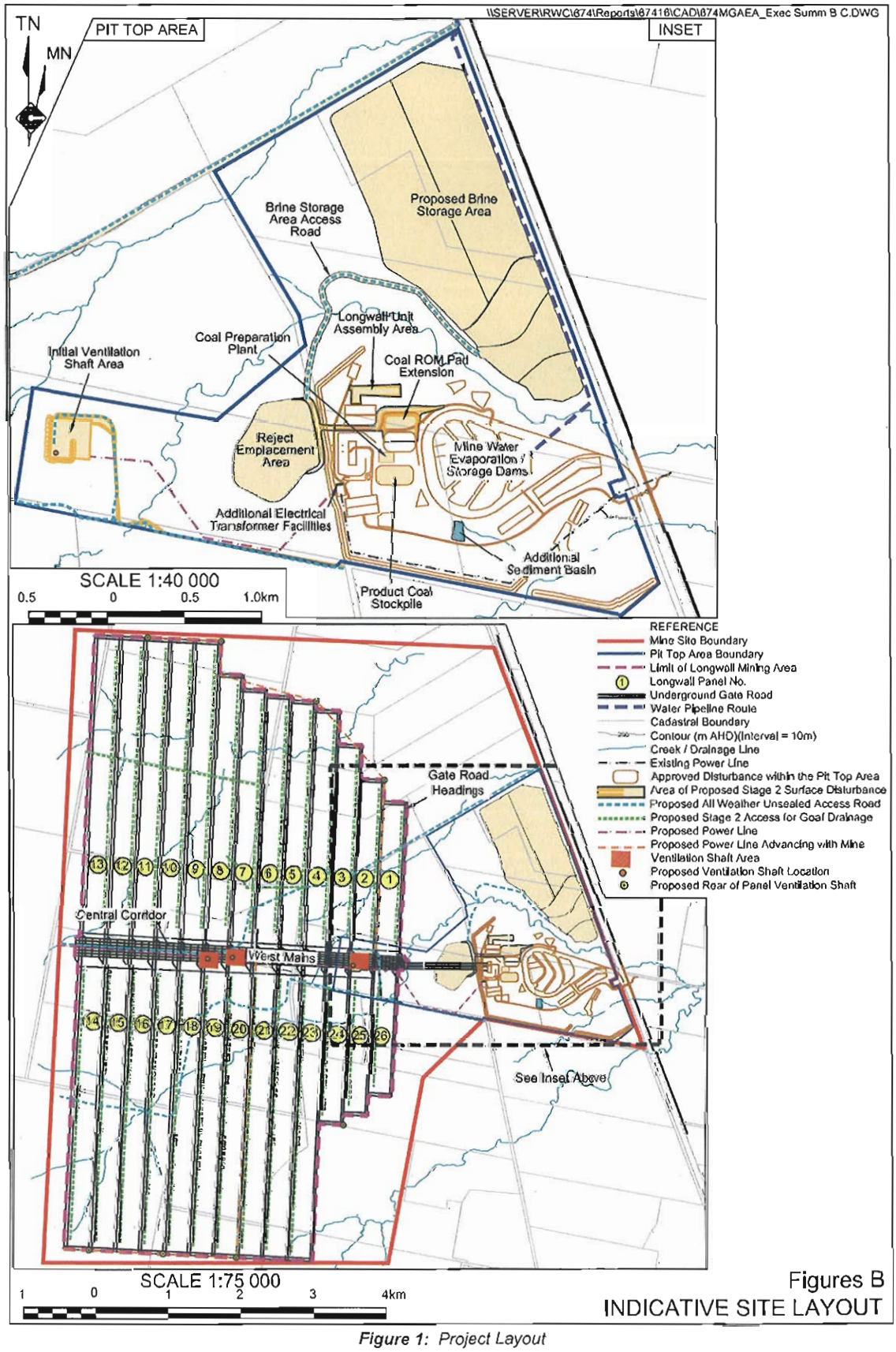


Figure 1: *Project Layout*

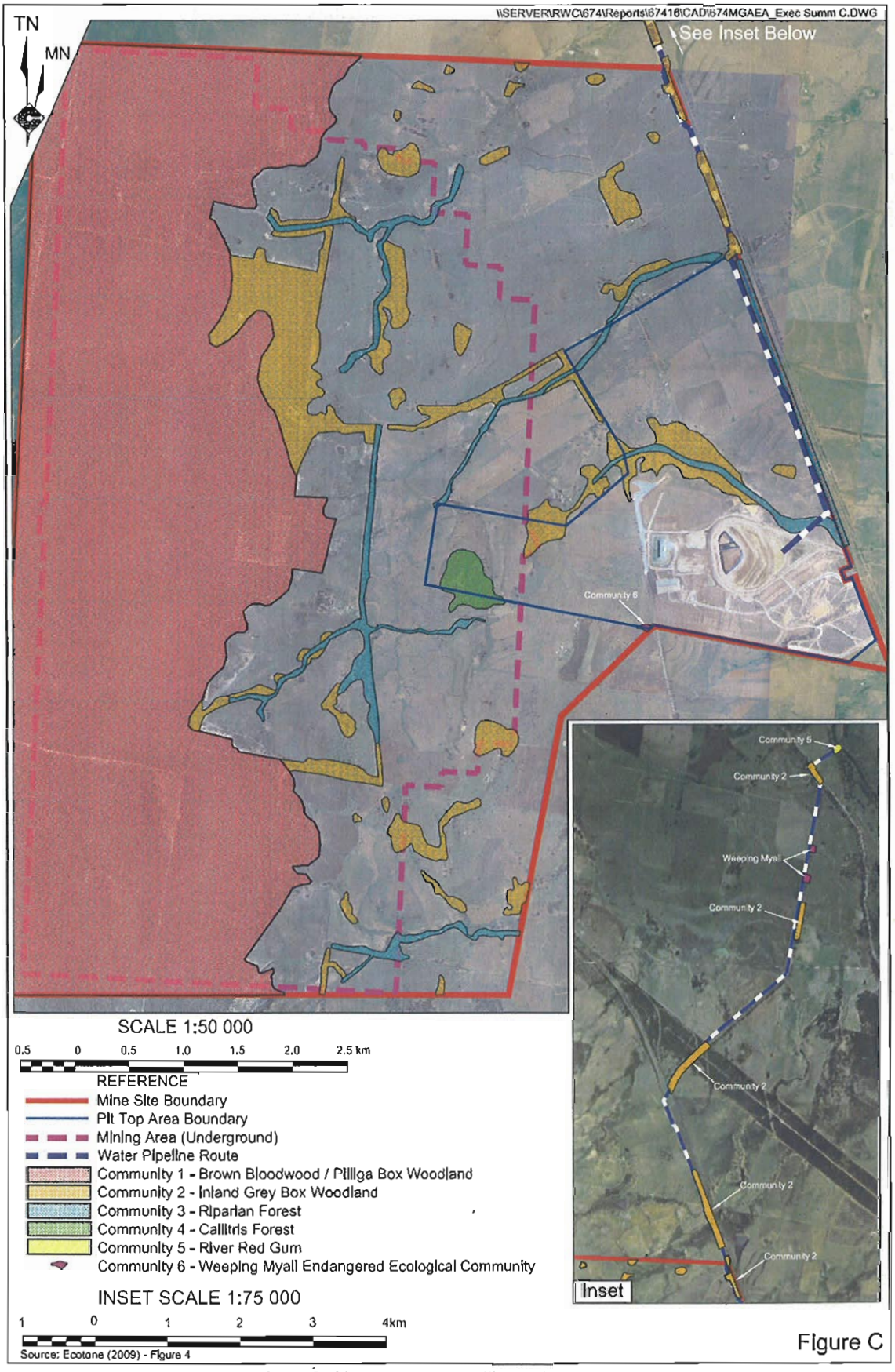


Figure 2: *Vegetation communities and pipeline route*

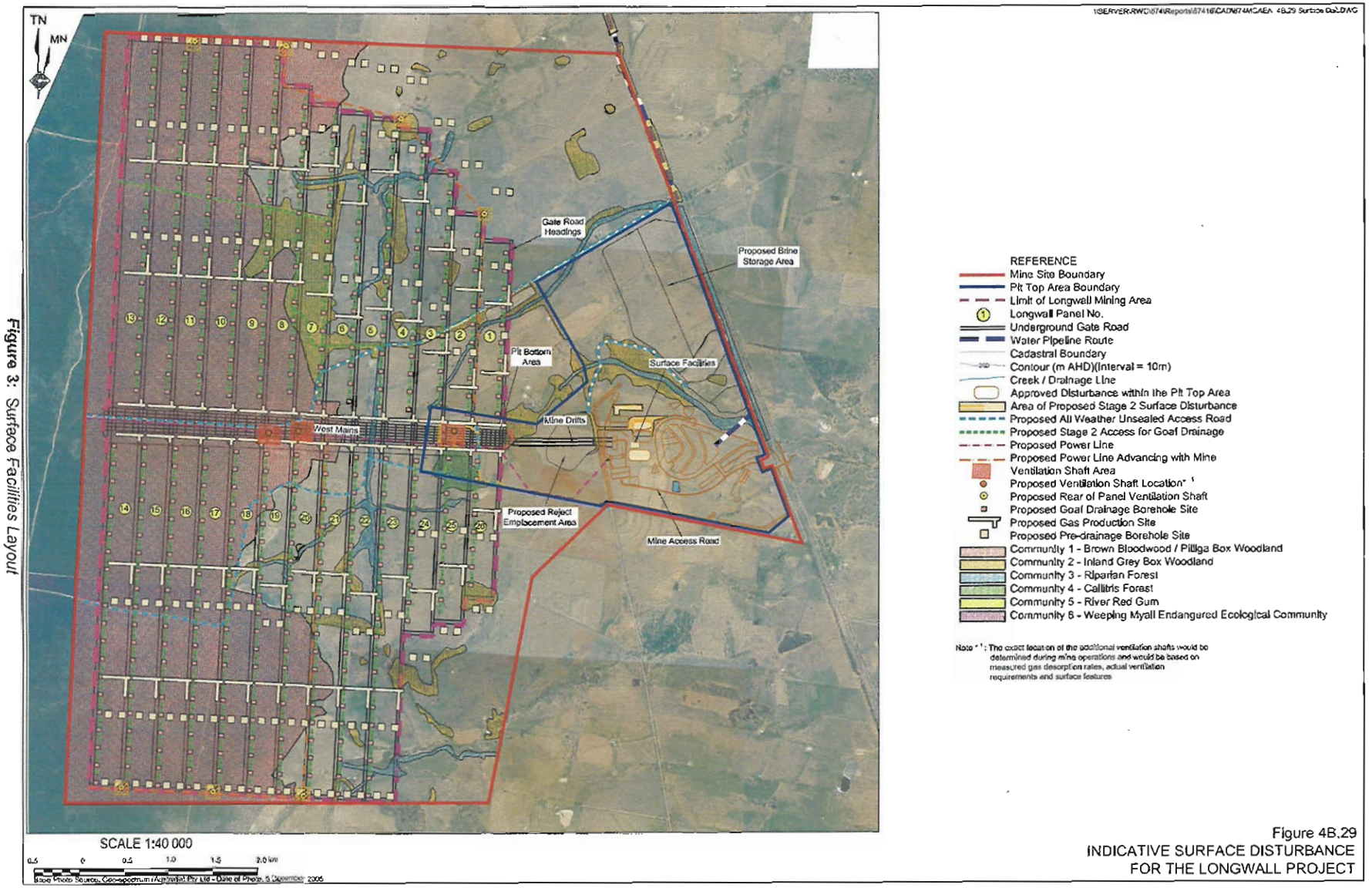


Figure 4B.29
INDICATIVE SURFACE DISTURBANCE
FOR THE LONGWALL PROJECT

Figure 3: *Surface Facilities Layout*

APPENDIX 3
PROPONENT'S STATEMENT OF COMMITMENTS

APPENDIX 3
STATEMENT OF COMMITMENTS

Desired Outcome	Action		Timing
	1. Area of Activities		
All approved activities are undertaken in the area(s) nominated on the approved plans and figures (unless moved slightly to avoid individual trees).	1.1	Survey and mark the boundaries of the areas of disturbance on the ground.	Prior to surface disturbance in nominated areas.
	1.2	(If not already surveyed), commission an ecologist and/or archaeologist (along with representatives of the Aboriginal community) to advise of any constraints posed by threatened flora or fauna, or archaeological sites.	Prior to surface disturbance in nominated areas.
	1.3	Relocate or redesign the area of disturbance (if mine safety is not compromised) to avoid sites of ecological or heritage significance.	Prior to surface disturbance in nominated areas.
	1.4	Align access to sites of surface disturbance following advice from ecologist and/or archaeologist.	Prior to surface disturbance in nominated areas.
	1.5	Advise relevant personnel on restrictions placed on activities by identification of sites of ecological or heritage significance and management requirements.	Prior to surface disturbance in nominated areas.
	2. Operating Hours		
Management of site activities in accordance with the approved operating hours.	2.1	Undertake vegetation clearing/soil removal within the hours of: 7:00am to 10:00pm / 7 days.	Continuous, as required.
	2.2	Undertake construction within the Pit Top Area within the hours of: 7:00am to 10:00pm / 7days.	Continuous.
	2.3	Undertake construction of the Reject Emplacement Area and Brine Storage Ponds within the hours of: 7:00am to 10:00pm / 7days.	Continuous
	2.4	Undertake ventilation shaft construction and gas drainage installation within the hours of: 24 hours / 7 days.	As required
	2.5	Undertake ventilation and gas drainage operations within the hours of: 24 hours / 7 days.	Continuous
	2.6	Undertake mining operations within the hours of: 24 hours / 7 days.	Continuous.
	2.7	Undertake coal crushing screening and processing operations within the hours of: 24 hours / 7 days.	Continuous.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action		Timing
	2. Operating Hours (Cont'd)		
Management of site activities in accordance with the approved operating hours. (cont'd)	2.8	Undertake CPP reject disposal within the hours of: 7:00am to 10:00pm / 7days. Contingent hours of operation will be 24 hours / 7 days to account for those periods of elevated reject production.	Continuous.
	2.9	Undertake rail loading and transportation within the hours of: 24 hours / 7 days.	Continuous.
	2.10	Undertake raw materials / supply delivery within the hours: 7:00am to 10:00pm / 7 days	Continuous.
	3. Waste Management		
Minimisation of the potential risk of environmental impact due to general waste creation, storage and/or disposal.	3.1	Dispose all paper and general waste in suitable waste receptacles.	Ongoing.
	3.2	Collect general waste bins as required to eliminate potential for environmental harm and place contents in large, lidded waste storage receptacles or dumpsters to await removal by licensed contractor.	Ongoing.
	3.3	Collect industrial waste fortnightly, or more frequently if required.	At least fortnightly.
	3.4	Install separate containers for the collection of recyclable items and despatch off site at appropriate intervals.	Ongoing.
	3.5	Employ a licensed waste collection contractor for all general waste / garbage at least on a weekly basis.	Ongoing.
	3.6	Collect waste oils and grease and pump to bulk storage tanks.	As required.
	3.7	Collect all parts/packaging and transfer to the site workshop for disposal or recycling.	As required.
	3.8	Install adequate toilet and ablution facilities within the mine facilities area for the site workforce and visitors.	Initial activities of site establishment phase.
	3.9	Install a self irrigating septic sewage system approved by Narrabri Shire Council.	Initial activities of site establishment phase.
	3.10	Service facilities by a licensed sewage collection / disposal contractor.	As required.
Minimisation of the potential risk of environmental impact due to coal reject storage and/or disposal.	3.11	Characterise coal rejects to establish whether any deleterious products would be produced by leachate during emplacement.	Within initial month of production of CPP reject and annually thereafter, if relevant.
	3.12	Dispose of coal rejects within the nominated Reject Emplacement Area, constructed immediately to the west of the Pit Top Area.	Continuous.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action		Timing
	3. Waste Management (Cont'd)		
Minimisation of the potential risk of environmental impact due to coal reject storage and/or disposal. (cont'd)	3.13	Construct the Reject Emplacement Area as a series of 20m wide, elongated (north-south oriented) cells commencing on the eastern side (with a compacted base with a permeability <1 x 10^{-9}m/sec if elevated salinity or other deleterious contaminant is identified as likely to be present within the leachate – see *Commitment 3.11*)	Continuous.
	3.14	Construct drainage features for each cell to divert clean water around and capture and store sediment-laden water generated by run-off from the disturbed areas.	Prior to the commencement of each cell.
	3.15	Strip and store topsoil from each cell for future re-spreading over the final landform or re-spread immediately following stripping.	Prior to the commencement of each cell.
	3.16	Paddock-dump, spread by bulldozer and then compact the coal reject to form typical lifts of about 1.5m thick. The maximum height of the reject emplacement will be restricted to 15m, ie. 10 lifts with final side slopes not exceeding 14°.	Continuous.
	3.17	Install up to four lysimeters on the downslope side of the Reject Emplacement Area. (If saline leachate is generated by CPP reject)	As the structure is constructed, if required
Minimisation of the potential risk of environmental impact due to saline waste creation, storage and/or disposal.	3.18	Line each dam or pond designed to hold either raw groundwater or processed brine with a HDPE liner with a permeability of <1 x 10^{-14}m/sec.	Prior to the commencement of water discharge into pond or dam.
	3.19	Confirm by QA inspection of the liner that the nominated permeability is achieved.	Prior to the commencement of water discharge.
	3.20	Prohibit vehicular access to the walls of the lined dam or pond.	Continuous
	3.21	Remove impermeable liner at completion of mining and dispose of to a facility licenced to accept saline waste.	Following removal of all saline groundwater or brine from the dam/pond.
	3.22	Inspect, sample and analyse ground beneath each dam or pond to confirm no leakage has occurred over the life of the pond.	Prior to final rehabilitation.
	3.23	(should saline contamination be identified), Remove and dispose of saline contaminated material (within the backfilled box cut).	As required and prior to final rehabilitation.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action		Timing
	4. Rehabilitation		
Decommission and remove the infrastructure and services no longer required for ongoing activities on the land of the Mine Site.	4.1	Confirm the proposed final land use of the Mine Site lands and identify the infrastructure and services to be retained to support this land use.	As part of the Mine Closure Plan for the mine.
	4.2	Demolish or deconstruct and remove infrastructure and services not required by the confirmed future land use.	Prior to relinquishment of Mining Lease.
The creation of a stable final landform on the Pit Top Area (and surrounding long-term disturbance areas, ie. ventilation shaft areas, Reject Emplacement Area and brine storage ponds), available for the proposed future use(s) of agriculture, and/or nature conservation.	4.3	Stabilise all earthworks, drainage lines and disturbed areas no longer required for mine-related activities in order to minimise erosion and sedimentation, and to reduce the visibility of the activities from adjacent properties and the local road network.	As required.
	4.4	Provide a low maintenance, stable and safe landform that blends with the surrounding topography and which is commensurate with re-established agricultural land uses.	Prior to mine closure.
	4.5	Ensure any areas of disturbance that require profiling meet the requirements of the final landform.	As area becomes available.
	4.6	Replace subsoil and topsoil over areas of disturbance in the same order and approximately same depths as it was removed.	As area becomes available.
	4.7	Ensure the most appropriate crop / pasture species are planted in areas returned for agricultural use.	As areas become available
	4.8	Conduct ongoing rehabilitation monitoring and maintenance throughout and beyond the operation.	Ongoing.
The progressive rehabilitation of disturbance associated with the Mining Area, ie. gas drainage and temporary ventilation activities, to create a stable final landform available for the proposed future use(s) of agriculture, forestry and/or nature conservation.	4.9	Restrict areas of disturbance to the areas identified and marked in accordance with *Commitments 1.1* to *1.5*.	Ongoing.
	4.10	Remove gas drainage equipment and backfill and cap each remaining bore hole in accordance with the former NSW Department of Primary Industries – Mineral Resources EDG01 guideline "*Borehole Sealing Requirements on Land: Coal Exploration*".	At completion of gas drainage activities.
	4.11	Allow water retained within the sump(s) to evaporate, excavate any consolidated drill cuttings and fines, remove the plastic liner and backfill each sump.	At completion of gas drainage activities.
	4.12	Respread previously stripped and stockpiled topsoil and vegetation over the backfilled sumps and other cleared areas.	At completion of gas drainage activities.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action		Timing
	4. Rehabilitation (Cont'd)		
The progressive rehabilitation of disturbance associated with the Mining Area, ie. gas drainage and temporary ventilation activities, to create a stable final landform available for the proposed future use(s) of agriculture, forestry and/or nature conservation. (cont'd)	4.13	Complete periodic inspections of the rehabilitated sites to confirm a return to the vegetation of the surrounding landform.	Annually.
	4.14	(Unless required for future access to monitor or manage subsidence related impacts), close, cross-rip and respread previously cleared vegetation over access tracks.	Once no longer required for site inspection purposes.
Cracking or surface deformation is identified promptly and remediated such that general rehabilitation objectives are not compromised.	See *Commitments 5.1* to *5.7*.		
Prevent any noxious weed infestations.	4.15	Obtain certification from plant supplier / contractor that equipment imported to the Mine Site has been cleaned and is free of soil and vegetation.	Prior to movement of equipment from hardstand of the working areas
	4.16	Undertake campaign weed spraying over the Pit Top Area and areas of surface disturbance of the Mining Area in consultation with I&I NSW-Agriculture and/or the local Noxious Weeds Inspector.	Prior to the stripping of topsoil.
	5. Subsidence Management		
Identify and remediate surface cracks to minimise impacts on local hydrology, ecology and soils are minimised.	5.1	Inspect the identified 'cracking zones' above each longwall panel to identify occurrence of cracks.	During and for a period of up to 2 years following mining of each longwall panel.
	5.2	Rip the surface over cracks not filled in by natural processes.	Continuous and as required.
	5.3	(For larger cracks for which surface ripping will not completely fill) fill with subsoil material sourced from stockpiles maintained at nearby gas drainage or ventilation sites, or within the footprint of the Reject Emplacement Area.	Continuous and as required.
	5.4	Undertake a detailed condition assessment of the 3rd order waterways within the predicted subsidence zone to enable assessment of changes post mining.	Prior to commencing longwall mining.
Identify and remediate surface cracks to minimise impacts on local hydrology, ecology and soils are minimised.	5.5	Inspect local drainage lines above the active and completed longwall panels. Monitoring should assess any restriction of flows and hence restriction of fish passage to facilitate appropriate restorative measures.	As required.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action		Timing
	5. Subsidence Management (Cont'd)		
Identify and remediate surface cracks to minimise impacts on local hydrology, ecology and soils are minimised. (cont'd)	5.6	Undertake water quality sampling from watercourses within the subsidence impact zone to determine any impacts on sediment loading and other parameters including salt loads.	During creek flow events.
	5.7	Note the effects of any ponding and commission a hydrologist or ecologist to recommend remedial actions should the area of ponding encroach upon sites of conservation or heritage significance.	During and for a period of up to 2 years following mining of each longwall panel.
Identify and minimise the impacts of subsidence-induced erosion on the local environment.	5.8	Inspect areas of the Mine Site susceptible to landslip or accelerated erosion, eg. drainage lines and steeply sloped areas of exposed Purlawaugh Formation derived subsoils.	Quarterly following mining activities which may produce subsidence
	5.9	(In the event of large-scale slope instability), undertake appropriate stabilisation works, eg. installation of deep sub-surface drainage trenches or construction of strategic catch drains along slope crests.	Continuous and as required.
	5.10	(In the event of erosion within Mine Site watercourses), stabilise the damaged or eroded banks (in accordance with an Erosion and Sediment Control Plan for the Longwall Project).	Continuous and as required.
Identify and minimise the impacts of valley closure and uplift ('upsidence') induced erosion on the local environment.	5.11	Establish survey lines along ephemeral drainage gullies and along gully crests and monitor during and after mining of each longwall panel to identify any signs of cracking or 'upsidence'.	Prior to the commencement of mining each longwall panel.
	5.12	Review predictions of 'upsidence' and valley crest movements after each longwall is completed.	Following completion of each longwall.
	5.13	(In the event that 'upsidence' results in surface cracking or erosion), undertake remedial works identified by *Commitments 5.1* to *5.7*.	Continuous and as required.
Identify and minimise the impacts of ponding on the local environment.	5.14	Sample ponded water to determine if there is any increase in salinity.	Quarterly for a period of up to 2 years upon identification of subsidence induced ponding.
	5.15	Inspect the watercourses over the subsidence zone to identify the location and extent of ponding.	Quarterly for a period of up to 2 years following identified subsidence.

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Desired Outcome	Action		Timing
	5. Subsidence Management (Cont'd)		
Identify and minimise the impacts of ponding on the local environment. (cont'd)	5.16	For ponding where there is little or no vegetation of conservation significance monitor the location and extent of ponding. (If ponded area continues to increase in area, encroaches on vegetation of conservation significance or there is an increase in water salinity), excavate a channel to reduce the gradient change over the retained chain pillars. The excavation will be undertaken in accordance with an Aboriginal Cultural Heritage Management Plan and vegetation clearing procedures.	Quarterly for a period of up to 2 years following identified subsidence. Continuous and as required.
Identify and minimise the impacts of far field displacements on local infrastructure.	5.17	Monitor surface features (such as culverts) within 800m of the eastern edge and 1.5km of the western edge of the Mining Area.	Prior to mining that may result in subsidence at the relevant structure.
	5.18	(In the event of damage to surface structures such as pipes, culverts, water tanks, dams or other soil or water conservation structures), repair the damaged infrastructure or provide appropriate compensation.	Continuous and as required.
Identify and manage the impacts of subsidence on local property infrastructure (including residences).	5.19	Commission a dilapidation survey and inspection of all structures on non-project related land within the Mine Site by a qualified building consultant.	Prior to mining that may result in subsidence at the relevant structure.
	5.20	Use the dilapidation survey and subsequent report in an individual property subsidence management plans (IPSMP) (or similar as required under any Extraction Plan requirements) prepared for each non-project related property to be impacted (to provide fair and reasonable outcomes between the affected property owner and the Proponent).	Prior to mining that may result in subsidence at the relevant structure.
	5.21	Each IPSMP will address the following issues. • Timing and scale of predicted impacts. • Monitoring on the affected property during mining. • Timing for any remaining disconnection of services. • Post-mining inspection and reporting.	Prior to mining that may result in subsidence at the relevant structure.

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Desired Outcome	Action		Timing
5. Subsidence Management (Cont'd)			
Prepare and implement a Subsidence Monitoring Program	5.22	Prepare a Subsidence Monitoring Program (or similar as required under any Extraction Plan requirements) which includes the following elements. • A transverse subsidence line across the northern and southern panels. The lines will be installed to at least the middle of the next adjacent longwall before undermining occurs. • A longitudinal line extending in-bye and out-bye from the starting and finishing point of each panel, for a minimum distance equal to the cover depth. • A survey line along the riparian management zone of Kurrajong and Pine Creeks and their tributaries over the Mine Site. • A minimum of three monitoring pegs spaced 10m apart in a line or triangle at any feature of interest, eg. dam walls, archaeological sites, to measure subsidence, tilt and strain. • Visual inspections and mapping of damage before, during and after mining.	Prior to the commencement of mining in each longwall panel.
	5.23	Place monitoring survey pegs between 10m and 20m apart with a minimum of two baseline surveys of subsidence and strain completed before mine subsidence effects occur.	Prior to the commencement of mining in each longwall panel.
	5.24	Prepare and implement an Extraction Management Plan to manage subsidence impact(s) to the satisfaction of I&I NSW and DoP	Prior to Longwall mining commencing.
6. Groundwater			
Minimise the volume of mine in-flow to the underground workings.	6.1	Seal the mine drifts and ventilation shaft using in-strata grouting or hydrophobic sealant.	At time of Mine Closure.
Manage mine in-flows to minimise the potential for contamination of surface catchments.	6.2	Divert groundwater accumulating in the underground workings to designated sumps for pumping to surface.	Ongoing.
	6.3	Discharge groundwater pumped from the underground sumps into Dam A1 only.	Ongoing.
Implement a comprehensive and ongoing groundwater monitoring program.	6.4	Record extraction volumes including weekly totals from all pumping bores, and weekly totals from the underground mine and box cut sump.	Weekly.

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Desired Outcome	Action		Timing
	6. Groundwater (Cont'd)		
Implement a comprehensive and ongoing groundwater monitoring program. (cont'd)	6.5	Record Volumes of water introduced to the mine for longwall operation and other requirements.	Weekly
	6.6	Record the groundwater quality (EC and pH) discharged from the underground workings and water supply bores.	Monthly.
	6.7	Sample and analyse water from all pumping bores and underground pumping stations.	Monthly.
	6.8	Record (by manual monitoring, or continuous automated monitoring) the standing water levels of piezometers P1 to P27 and WB1 to WB8 (and others as constructed).	Monthly initially and hence quarterly when stable flow established.
	6.9	Monitor the flow rate and water quality of the spring discharge from "Mayfield Spring".	Monthly initially and hence quarterly when stable flow established.
	6.10	Install additional multi-level vibrating wire piezometers over LW1 to LW3 to obtain detailed data as to the impact of mine subsidence on the groundwater of the various strata above the underground workings.	Prior to commencement of longwall mining.
	6.11	Collect data from the vibrating wire piezometers and compare against initial groundwater and subsidence modelling predictions.	Data collected continuously and downloaded and analysed quarterly.
	6.12	Commission an experienced hydrogeologist to collate and review the monitoring data collected annually in order to assess the impacts of the project on the groundwater environment, and to compare any observed impacts with those predicted from groundwater modelling. (see also *Commitment 16.11*)	Annually
	6.13	Develop the groundwater monitoring program in consultation with the Proponent's consultant hydrogeologist, the Department of Environment, Climate Change and Water – Office of Water and those groundwater users potentially affected by the Longwall Project. (see also *Commitment 16.12*)	Prior to commencement of longwall mining.
	6.14	Complete an initial audit of the groundwater model predictions against monitoring data.	6 months after the commencement of longwall mining.

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Desired Outcome	Action		Timing
	6. Groundwater (Cont'd)		
Implement a comprehensive and ongoing groundwater monitoring program. (cont'd)	6.15	Recalibrate the groundwater model based on groundwater model audit and generate confirmatory forward impact predictions made. Include in all forward impact predictions the impact of brine re-injection at the conclusion of mine operations and check against initial predictions. (also required for Mine Closure Plan)	6 months after the commencement of longwall mining, every 5 years thereafter, and at least 12 to 18 months prior to cessation of mining.
	6.16	Carry out regular reviews of the groundwater model predictions against monitoring data.	Every 5 years (or more frequently if in-flows deviate significantly from predictions).
	6.17	Should the recalibrated model show groundwater inflows beyond those cases described in the EA, a separate detailed impact assessment will be conducted and mitigating measures determined.	Every 5 years (or more frequently if in-flows deviate significantly from predictions).
Preparation of a contingency plan in the event that the availability or quality of groundwater is reduced for local groundwater users.	6.18	Undertake remedial action if groundwater drawdown attributable to the mine reduces the saturated thickness of any non-project related bore by 15% or more. In the event that an existing water supply is deemed (by the hydrogeologist) to be adversely affected by the Longwall Project, the Proponent will mitigate, or compensate for this impact through the provision of a replacement water supply.	As required.
	6.19	Undertake remedial action if the water quality of the dewatering discharge indicates an inflow salinity of more than 20% above that predicted by Aquaterra (2009)	As required.
	6.20	Ensure all monitoring bores are licenced with the NSW Office of Water. All *Form A's* associated with the bores will be submitted to NOW at the time drilling is undertaken.	At time of Drilling
	6.21	Ensure the project is appropriately licensed for all groundwater make and use in accordance with required licensing arrangements through the NOW.	As required
	7. Surface Water		
Minimisation of changes to existing drainage patterns of the Mine Site.	7.1	Retain selected surface water structures such as the farm dams and diversion swales to allow for continued water management across the Pit Top Area.	During construction period.

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Desired Outcome	Action		Timing
	7. Surface Water (Cont'd)		
Prevention of discharge of sediment-laden water from the Pit Top Area.	7.2	Direct runoff collected within potentially contaminated catchments of the coal processing area and Reject Emplacement Area to storage basins (SB1, SB2 and SB3).	Ongoing.
	7.3	Dewater storage basins SB1, SB2 and SB3 and discharge the water to Dam A1 (or Dams C or D) to ensure no discharge or overflow.	Ongoing.
	7.4	Design and construct the storage basins to provide the capacity nominated by WRM (2009).	Prior to commencement of longwall mining.
	7.5	Design and construct the sediment dams to provide sufficient water settlement and sediment storage zones to contain the 5 day 90%ile storm event.	Prior to commencement of longwall mining.
	7.6	Dewater sediment dams within 5 days of significant rainfall event.	With 5 days.
	7.7	Direct all water from wash-down areas and workshops to oil/water separators and containment systems. The oily fraction will be placed in a containment system for removal, as necessary.	Ongoing.
	7.8	Ensure all storage tanks are either self-bunded tanks or bunded with an impermeable surface and have a capacity to contain a minimum 110% of the largest storage tank capacity.	Ongoing.
	7.9	Restrict refuelling, oiling and greasing to designated areas, away from drainage and where spill kits are readily available.	Ongoing.
	7.10	Discharge all groundwater into Dam A1, and either use without processing in selected areas on site or process through the Water Conditioning Plant to produce fresh water raffinate and concentrated brine.	Ongoing.
	7.11	Construct storages for saline groundwater (Dam A1) and brine (Dams A2, A3, B2 and BR1 to BR5 [as required]) using in-situ material which have an average depth of 5m and batter slopes of ~1:3 (V:H).	Dams A2, A3 and B2 Prior to commencement of mine dewatering and BR1 to BR5 as required.
	7.12	Line all dams to be used to store groundwater or brine with HDPE liner (permeability $<1 \times 10^{-14}$m/sec).	Prior to commencement of mine dewatering.

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Desired Outcome	Action		Timing
	7. Surface Water (Cont'd)		
Prevention of discharge of saline water from the Pit Top Area. (cont'd)	7.13	Maintain at least 0.5m freeboard in each brine storage (sufficient to cater for design 1 in 100 year ARI event).	Ongoing.
	7.14	Commence construction of brine storage ponds from 12 months prior to the anticipated requirement to accept brine discharge.	As required.
	7.15	Ensure all storages used for the storage of treated raffinate are constructed using a compacted clay lining, to an average depth of 5m and with batter slopes of ~1:3 (V:H).	Prior to commencement of use for raffinate storage.
	7.16	Maintain discharge water quality from the Water Conditioning Plant at the 100%ile limit of 350mg/L TDS.	During discharge events to the Namoi River.
	7.17	Develop, in consultation with the DECCW, a routine discharge quality and continuous discharge volume monitoring program and incorporate these requirements into a revised Site Water Management Plan.	At least 6 months prior to initial discharge.
	7.18	Maintain the pH level of water discharged beyond ML1609 within the range 6.5-8.0.	During discharge events r

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Desired Outcome	Action		Timing
	7. Surface Water (Cont'd)		
Prevention of discharge of dirty, contaminated or saline water from the progressive disturbance areas of the Mining Area.	7.19	Prepare and implement a general Erosion and Sediment Control Plan (ESCP) (in accordance with the requirements of Landcom, 2004) to manage surface water flows within each gas drainage or ventilation shaft area. The ESCP will provide for the following management. – Prior to disturbance, the area will be marked out and 'no-go' zones identified. – If located on or adjacent to a natural drainage line, a diversion bank will be constructed up-slope of the area to be disturbed. – the requirement for a sediment basin will be determined, using the Revised Universal Soil Loss Equation (RUSLE). – If a sediment basin is required, ie. soil loss >200t/ha/year, the sediment basin design capacity will be calculated. – Soil will stockpiled away from natural drainage lines. – Sediment fencing will be installed along the down-slope boundaries of the disturbed areas. – All sediment control structures will be regularly inspected and repaired.	Prior to the commencement of gas drainage or ventilation shaft construction.
	7.20	Store potential contaminants, eg. drilling fluid, hydrocarbons, within bunded areas away from natural drainage lines.	Ongoing.
	7.21	Ensure all contaminated liquids are contained in lined sumps at each drill site.	Ongoing.
	7.22	Discharge any groundwater to a lined sump, with this water immediately directed to Dam A1 within the Pit Top Area.	Ongoing.
Minimisation of impact from dirty water contamination event.	7.23	Sample water discharging from licensed discharge points and analyse the water for suspended solids, turbidity, electrical conductivity, oil and grease, and pH.	With 24 hours of discharge.

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Desired Outcome	Action		Timing
	7. Surface Water (Cont'd)		
Minimisation of impact from dirty water contamination event. (cont'd)	7.24	In the event monitoring confirms pollution has occurred, one or more of the following measures will be adopted. - The DECCW will be advised. Salient preceding weather information will also be provided. - Additional flocculants will be used to expedite settlement of sediments. - Plans will be set for the subject sediment dam will be enlarged or an additional sediment dam will be constructed downstream which will become the new site discharge point and monitoring location.	Within 7 days.
Minimisation of impact from hydrocarbon contaminated water event.	7.25	Undertake the following actions (in the event of a major hydrocarbon spill). - Collect the contaminated soil at the site of the spill and transport to an approved waste depot or designated 'land farming' area of the Mine Site. - Construct pits around the spill with sufficient hydraulic gradient to capture seepage water and contaminated material. - Pump out water captured in pits. - Monitor the local groundwater for signs of contamination.	As required.

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Desired Outcome	Action		Timing
	7. Surface Water (Cont'd)		
Minimisation of impact from saline contamination event.	7.26	Prepare a formal contingency plan for a saline contamination event. The plan may include one or a combination of the following measures. - Dewatering from the underground workings will be transferred to an intact and lined storage structure (or ceased) along with any water remaining in the breached pond. - The breached pond or pipe will be repaired immediately and inspected by a suitably qualified person prior to re-integration into the saline water management system. - The water cart will be used to transfer non-saline water to the area of the spill to flush and dilute the water discharged. As far as practical, at least 4 times the volume of the spilled water will be used to flush the downstream environment. - Downstream vegetation will be monitored for any impacts of increased salinity and treated appropriately.	Prior to commencement of longwall mining.
Minimisation of erosion and sedimentation.	7.27	Maintain a ground cover of vegetation at 70% or better over areas disturbed but no longer required by the project	Ongoing.
	7.28	Armour the banks of the rail loop with ballast in flood zone (larger diameter competent rock).	Ongoing.
	7.29	Inspect the banks of the rail loop and remediate erosion damage within Kurrajong Creek Tributary 1.	Following flood events.
Ensure no additional salt load is added to the Namoi River catchment as a consequence of the Longwall Project.	7.30	Participate in, as required, the development of a salt accounting protocol with the DoP, DECCW and NOW.	Prior to any discharge to the Namoi River.
	7.31	Enter into an agreement for, and contribute sufficient funds to the 'Cap and Pipe the Bores' Program to ensure that there is a sufficient salt 'credit' for the Proponent to offset all planned salt discharges over the life of the mine. (Any agreement that NCOPL enters in relation to this matter will include the opportunity to 'trade' or otherwise dispose of salt credit in excess of that required to offset salt load attributable to mine water discharges.)	Prior to any discharge to the Namoi River.

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Desired Outcome	Action		Timing
	7. Surface Water (Cont'd)		
Ensure no additional salt load is added to the Namoi River catchment as a consequence of the Longwall Project. (cont'd)	7.32	Should the Cap and Pipe Bores Program prove not to be viable, develop an alternate Green Offset program in consultation with NOW and DECCW	Prior to any discharge to the Namoi River.
Identification of alternative methods of disposal/use of brine.	7.33	Initiate a study by a recognised firm of engineering consultants to investigate the technical and economic viability of alternative methods of disposal (or use) of brine and raffinate produced by the on-site Water Conditioning Plant	Initial report to be developed within 3 years of project approval, with a revised report prepared every 5 years thereafter.
Implement a comprehensive and ongoing surface water monitoring program.	7.34	Monitor surface water quality for: pH, EC, TDS, TSS, Total Organic Carbon at locations upstream and downstream of the Pit Top Area on Kurrajong and Pine Creeks and their tributaries.	Quarterly during surface flow events
	7.35	Record the volume and quality (pH, EC, TDS, TSS, Total Organic Carbon) of water extracted and discharged to the Namoi River.	Weekly.
	7.36	Monitor the quality of water within of the Brine Storage Ponds	Quarterly
	7.37	Prepare and implement contingency plans in the event elevated levels of heavy metals are recorded.	Quarterly.
Avoidance of structures in drainage lines to prevent fish passage.	7.38	Construction of drainage line crossings will be undertaken in accordance with the policy and guideline document of I&I NSW "Why do fish need to cross the road?"	As Required.
	8. Ecology		
Manage disturbance within the Pit Top Area to minimise disturbance to flora and fauna of conservation significance.	8.1	Clearly identify the boundaries of disturbance within the Pit Top Area and progressive disturbance associated with ventilation and gas drainage infrastructure. Ensure no clearing occurs outside these boundaries.	Prior to clearing. (see also *Commitments 1.1* and *1.2*).
	8.2	Avoid disturbance to the vegetation of Community 3 along Kurrajong Creek Tributary 1.	During clearing.
	8.3	Disperse and spread cleared native vegetation around disturbed areas to provide habitat, increase the seed bank and to provide a mulch material for nutrient cycling and water retention purposes.	Ongoing.
	8.4	Strip all groundcover vegetation with the topsoil to ensure maximum retention of nutrients and native seeds to facilitate rapid vegetation of the soil stockpiles.	Ongoing.

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Desired Outcome	Action		Timing
	8. Ecology (Cont'd)		
Manage progressive disturbance over the Mine Site to minimise disturbance to flora and fauna of conservation significance.	8.5	Clearly identify the boundaries of proposed disturbance. As far as practicable avoid disturbance to the vegetation of Community 3 along watercourses of the Mine Site.	Prior to clearing in the nominated area(s).
	8.6	Commission a qualified ecologist to complete a pre-clearance survey of nominated areas of disturbance (to identify whether any threatened species, population or community or their habitat is present).	Prior to clearing in the nominated area(s).
	8.7	Include an assessment of whether aquatic or fish habitat is present within the drainage features to be traversed by the access road and/or power line corridors. The location of access tracks will be determined in conjunction with an ecologist after inspecting each proposed route and determining the path with least impact on environmental values	Prior to clearing in the nominated area(s).
	8.8	(In the event that an EEC or threatened species or population is identified), relocate or reorientate proposed disturbance, if practicable.	Prior to clearing in the nominated area(s).
	8.9	If the relocation or re-orientation of the area to be disturbed is not practicable (for reasons of mine / operational safety), the consultant ecologist will relocate any fauna species residing within the area to be cleared.	
	8.10	Retain all substantial habitat trees, wherever possible.	During construction.
	8.11	Undertake any tree-felling in accordance with a Tree Felling Protocol. The Tree Felling Protocol will be developed by a qualified ecologist and will include, but not necessarily be limited to a description of: - the best time of the year for felling; - pre-felling mapping of habitat trees; - inspections of trees on the day of felling; - procedures for the safe removal of fauna species; - a relocation/release protocol; and - a protocol for the assessment and salvaging of tree hollows.	During construction.

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Desired Outcome	Action		Timing
	8. Ecology (Cont'd)		
Manage progressive disturbance over the Mine Site to minimise disturbance to flora and fauna of conservation significance. (cont'd)	8.12	Disperse and spread cleared native vegetation around disturbed areas to provide habitat, increase the seed bank and to provide a mulch material for nutrient cycling and water retention purposes.	Following clearing if areas available, otherwise when revegetation area available.
	8.13	Strip all groundcover vegetation with the topsoil to ensure maximum retention of nutrients and native seeds to facilitate rapid vegetation of the soil stockpiles.	Ongoing.
	8.14	Re-site all hollows from hollow-bearing trees removed where practicable.	Ongoing.
Minimise long term impact on flora and fauna on and around the Mine Site.	8.15	Implement a weed management strategy, in consultation with the Livestock Health and Pest Authority and the Narrabri Shire Council weeds officer, for the retained or rehabilitated natural vegetation within the Mine Site.	To be developed in the Landscape Management Plan for the Project in accordance with the Stage 1 conditional requirement.
	8.16	Implement a feral animal management program to lower the predator impact upon small terrestrial native species.	In accordance with Landscape Management Plan.
	8.17	Inspect the sediment dams, evaporation ponds and brine storage ponds for fauna during the course of regular maintenance and operational inspections.	Ongoing.
	8.18	Undertake regular reviews of the revegetation program to ensure it remains relevant.	Annually.
	8.19	Time clearing within woodland communities, where practicable, to avoid fauna breeding seasons.	Ongoing.
	8.20	Undertake progressive and final rehabilitation across the Project Site to recreate a final land use of agriculture and native vegetation.	Ongoing.
Ensure the biodiversity value of the Mine Site and surrounding areas is maintained or improved.	8.21	Establish and implement a Biodiversity Offset Management Plan to the satisfaction of DoP (and in consultation with DECCW), to account for that area disturbed by the Longwall Project and in particular regard for Bertya Opponens, the Superb Parrot and Inland Grey Box EEC.	Within 9 months of Project Approval.
	9. Indigenous Heritage		
Employees and contractors who are sensitive to, and respectful of, the Aboriginal heritage on the Mine Site.	9.1	Involve all site employees and contractors in an awareness program re: Aboriginal heritage issues.	At Site Induction (and re-induction).

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Desired Outcome	Action		Timing
	9. Indigenous Heritage (Cont'd)		
Ensure protection of Aboriginal sites and artefacts of scientific significance (Aboriginal Sites 10, 19, 38 and 39).	9.2	Identify the boundaries of Aboriginal Sites 10, 19, 38 and 39 in conjunction with the Aboriginal stakeholders and the archaeologist and fence off (with fluorescent para-webbing (or similar material)).	Prior to any surface disturbance within 100m of the nominated sites.
	9.3	Erect a sign on the fencing identifying an "Environmental Protection Zone".	Prior to any surface disturbance within 100m of the nominated sites.
	9.4	Prohibit access to these sites by locating all surface disturbance (including roads) at least 10m from these fenced off areas.	Prior to any surface disturbance within 100m of the nominated sites.
	9.5	Remove the fencing (erected as nominated in *Commitment 9.3*) to allow the return of grazing to reduce the potential grass-fire hazard.	Following the completion of surface disturbance in the vicinity of the protected site.
Manage identified Aboriginal sites and artefacts (of Panels 1 to 7) in accordance with agreed management principles.	9.6	For Aboriginal Sites 10, 19, 38 and 39, design surface disturbing activities such as gas drainage operation, ventilation and access road construction to provide a buffer of at least 10m from the site fencing.	Prior to any surface disturbance.
	9.7	For all other Aboriginal sites, design surface disturbing activities such as gas drainage operations, ventilation and access road construction to avoid wherever possible the identified Aboriginal sites.	Prior to any surface disturbance within 100m of any other Aboriginal site.
	9.8	In the event that one of the Aboriginal sites (other than Aboriginal Sites 10, 19, 38 and 39) cannot be avoided, commission an archaeologist and invite representatives of registered Aboriginal stakeholders (Gomeroi and Narrabri LALC) to salvage the artefacts identified at the affected site ("the Salvage Area").	Prior to salvage.
	9.9	Undertake a full analysis of the material salvaged from within the Salvage Area by allowing the archaeologist to take the artefacts for further analysis.	Following salvage and prior to any surface disturbance.
	9.10	Return the salvaged artefacts to the authorised Aboriginal organisation.	Within 21 days of salvage.

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Desired Outcome	Action		Timing
	9. Indigenous Heritage (Cont'd)		
Manage identified Aboriginal sites and artefacts (of Panels 1 to 7) in accordance with agreed management principles. (cont'd)	9.11	Place the salvaged artefacts in the care and control of the Aboriginal organisation agreed to by Narrabri LALC and Gomeroi. (The Proponent (if required) has agreed to provide an interim 'keeping place' in a designated storage facility within the Pit Top Area until such time as a suitable location is identified and agreed to by Narrabri LALC and Gomeroi).	Following salvage.
	9.12	Commission the preparation of a report ("Salvage Report") including full descriptions of the salvaged material, and an interpretation of the archaeological record within the Salvage Area.	Following salvage
	9.13	Provide copies of the Salvage Report to Narrabri LALC, Gomeroi and the DECCW	Within 3 months of salvage
Manage Aboriginal sites and artefacts (within the remaining Mining Area) in accordance with agreed management principles.	9.14	As mining approaches the completion of Panels 1 to 7, undertake a further detailed field survey, involving representatives of the registered Aboriginal stakeholders, above the Mining Area to be disturbed over the ensuing 7 years.	At least 12 Months prior to completion of mining in Panel 7.
	9.15	Identify and protect through fencing and signage, those sites determined to be of high scientific significance as agreed and determined in consultation between the Proponent, the registered Aboriginal stakeholders and the archaeologist.	Prior to any surface disturbance associated with Panel 8.
	9.16	In the event that an identified site cannot be avoided, commission an archaeologist and invite representatives of registered Aboriginal stakeholders (Gomeroi and Narrabri LALC) to salvage the identified artefacts. All salvage is to be undertaken as per *Commitments 9.9* to *9.13* above.	Prior to any surface disturbance

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Desired Outcome	Action		Timing
	9. Indigenous Heritage (Cont'd)		
Manage Aboriginal heritage values in accordance with agreed management principles.	9.17	Prepare, in consultation with the registered Aboriginal stakeholders and the DECCW, an updated Aboriginal Heritage Cultural Management Plan (AHCMP). The ACHMP will include: - protocols and procedures to ensure that all commitments (see *Commitments 9.1* to *9.20*) are implemented in full; - consultation and communication framework between the Proponent, registered Aboriginal stakeholders and the DECCW; - the accountabilities and responsibilities of the Proponent and registered Aboriginal stakeholders; and - All legal reporting requirements nominated by the DECCW.	Within 6 months of receiving Project Approval
Appropriate protection and/or salvage of Aboriginal sites and artefacts identified beyond the Aboriginal sites defined during previous field surveys.	9.18	Ensure that if any further Aboriginal artefacts are uncovered at any time during the life of the mine, work in the vicinity of the subject area ceases and the Proponent follows the procedures recorded in the ACHMP.	In the event of an Aboriginal site or artefact being identified.
	9.19	Wherever possible, if a tree is identified as having culturally made scars, it is retained *in situ* and protected.	In the event of a scarred tree being identified.
	9.20	Ensure that, where it is not possible to retain a scarred tree *in-situ*, the tree is cut down to preserve the scar, and relocated into a designated protected area. All activity associated with cutting of the tree and preservation of the scar is to be conducted in consultation with the Aboriginal stakeholders and the archaeologist.	In the event of a scarred tree being identified.

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Desired Outcome	Action		Timing
		10. Noise	
All activities are undertaken in such a manner as to reduce the noise level generated and minimise impacts on surrounding landholders and/or residents.	10.1	Ensure that the approved hours of operation are adhered to.	Ongoing.
	10.2	Use equipment with lower sound power levels in preference to more noisy equipment.	Ongoing.
	10.3	Regularly service all equipment used on-site to ensure the sound power levels remain at or below the levels used in the modelling to assess generated noise levels and compliance with the criteria.	Ongoing.
	10.4	Maintain a dialogue between the Proponent and surrounding neighbours and the local community to ensure any concerns over construction, operational or transport noise are addressed.	Ongoing.
Noise generated by construction activities does not exceed DECCW nominated criteria nor significantly impact on neighbouring landowners and/or residents.	10.5	Ensure that all equipment emits sound power levels consistent with the schedules in *Appendix A* of Spectrum Acoustics (2009).	Ongoing.
	10.6	Restrict the operation of a maximum of two (2) scrapers during construction operations under temperature inversion conditions, to one of the following areas only. • the longwall unit assembly area; • the ROM coal pad area; • the Reject Emplacement Area; or • the Brine Storage Area.	During construction phase.
	10.7	Undertake noise monitoring at the private residences most likely to be affected by construction noise.	As required during construction works with real time noise monitoring and attended quarterly monitoring.
	10.8	In the event that noise monitoring confirms exceedance of noise criteria at privately owned residences, where noise mitigation measures prove ineffective, negotiated agreements will be sought with the affected parties in accordance with the Industrial Noise Policy	As required if exceedances cannot be mitigated.
	10.9	In accordance with the Noise Management Plan and to account for inversion impacts, develop an operational protocol in consultation with the DECCW to clearly define operational procedures to be adopted during inversion conditions to minimise impact at adjoining privately owned residences	Within 3 months of approval.

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Desired Outcome	Action		Timing
	10. Noise (Cont'd)		
Noise generated by operational activities does not exceed DECCW nominated criteria nor significantly impact on neighbouring landowners and/or residents.	10.10	Fully enclose the rotary breaker within a shed (or similar) clad with tilt-up aerated concrete panels, or similar.	Prior to commencement of coal processing.
	10.11	Enclose the coal processing plant with clad steel sheeting and line 50% of the internal surface with acoustic insulation.	Prior to commencement of coal processing.
	10.12	Refrain from using the bulldozer on the Reject Emplacement Area in both the morning and evening periods.	During temperature inversion conditions.
	10.13	Limit the number of truck movements to the Reject Emplacement Area to 1 load per 15 minute period.	During temperature inversion conditions
	10.14	Ensure specific noise attenuation is provided to surface drills when operating over LW1 to LW3 and LW24 to LW26 to achieve a sound power level of 109dB(A).	Prior to surface drilling (under inversion conditions) above the nominated longwall panels
	10.15	Update the existing Noise Management Plan.	Within 6 months of approval
Noise generated by transport activities does not exceed DECCW nominated criteria nor significantly impact on neighbouring landowners and/or residents.	10.16	Ensure strict adherence to hours of operation, including transport activities.	Ongoing.
	10.17	Instruct all project employees and contractors to enter and exit the Mine Site in a courteous manner and without causing undue traffic noise.	On induction (and re-induction).
	10.18	Maintain the on-site road network to limit body noise from empty trucks travelling on internal roads.	Ongoing.
Blasting undertaken that complies with the nominated DECCW criteria.	10.19	Ensure that all blasts are designed by a suitably qualified and experienced blasting engineer or shot-firer and that each blast is designed to ensure compliance with the relevant assessment criteria or conditional requirements	As required.
Implementation of an appropriate noise monitoring program to ensure continuing compliance with DECCW guideline levels during longwall mining operations.	10.20	Undertake attended noise monitoring at the residences most likely to be affected by Longwall Project generated noise. "Bow Hills" "Belah Park" "Naroo" "Matilda"[1] "Oakleigh" "Haylin View"[1] "Newhaven" "Merrilong"[1]	Quarterly.

[1] Monitoring to commence as surface activities approach the eastern end of the southern longwall panels.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action		Timing
	10. Noise (Cont'd)		
Implementation of an appropriate noise monitoring program to ensure continuing compliance with DECCW guideline levels during longwall mining operations. (within the remaining Mining Area). (cont'd)	10.21	Increase the frequency of monitoring during the first winter (May to September) of mining operations proposed under this approval. This will also incorporate real time noise monitoring as required under the Stage 1 modification approval.	Monthly.
	10.22	Review and submit noise monitoring results to the DECCW.	Annually.
	11. Air Quality		
Site activities are undertaken without exceeding DECCW air quality criteria or goals.	11.1	Minimise the extent of clearing across the Mine Site including the campaigns to construct the area for reject emplacement and construct brine storage ponds.	Ongoing.
	11.2	Retain cleared trees and branches on the margins of cleared areas for use in stabilising disturbed areas once they are no longer required.	Ongoing.
	11.3	Undertake soil stripping at times when most appropriate (such as when there is sufficient soil moisture to prevent significant lift-off of dust and at times other than periods of high winds).	Ongoing.
	11.4	Operate water sprays on all continuous miners, the longwall unit and the breaker feeder to minimise dust creation underground.	Ongoing.
	11.5	Apply water to the coal at the feed hopper, crusher and at all conveyor transfer and discharge points.	Ongoing.
	11.6	Fit all surface conveyors with appropriate cleaning and collection devices to minimise the amount of material falling from the return conveyor belts.	Prior to commencement of coal processing.
	11.7	Enclose the rotary breaker . (see *Commitment 10.10*)	Prior to commencement of coal processing.
	11.8	Partially enclose all surface conveyors to minimise dust lift off.	Prior to commencement of coal processing.
	11.9	Cease construction of the brine storage ponds when the prevailing winds are from the northwest quadrant.	Ongoing.
	11.10	Apply water onto stockpiles and hardstand areas.	Ongoing.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action		Timing
11. Air Quality (Cont'd)			
Site activities are undertaken without exceeding DECCW air quality criteria or goals. (cont'd)	11.11	Progressively rehabilitate areas of disturbance including gas drainage areas.	Ongoing.
	11.12	Progressively rehabilitate areas no longer required for operational purposes.	Ongoing.
Minimise the potential for spontaneous combustion of the coal stored and handled on site.	11.13	Minimise the length of time coal is held in stockpiles.	Ongoing.
	11.14	Monitor coal stockpiles for signs of spontaneous combustion.	Ongoing.
	11.15	Immediately report incidents to the appropriate authorities.	Ongoing.
	11.16	Extinguish fire by removal from stockpile, spreading and saturation with water.	In the event of ignition.
Ensure no employee's health is adversely affected as a result of employment at the Longwall Project.	11.17	Install underground ventilation system to provide fresh air to employees.	Ongoing and as required.
Minimise greenhouse gas, other gas and odour emissions through reduction in diesel consumption.	11.18	Optimise and schedule vehicle operations to minimise vehicle movements.	Ongoing.
	11.19	Maintain engines according to manufacturers' guidelines and keep tyres at optimum pressure.	Ongoing.
	11.20	Minimise vehicle idling time.	Ongoing.
	11.21	Prepare an updated Energy Savings Action Plan (ESAP).	Within 12 months of Project Approval.
Implementation of an appropriate air quality monitoring program to ensure continuing compliance with DECCW guideline levels.	11.22	Monitor deposited dust levels at 8 sites (ND1 to ND8).	Monthly.
	11.23	Monitor PM_{10} levels at 2 sites (ND9 to ND10).	1 in 6 days as per DECCW schedule.
	11.24	Review and submit dust monitoring results to relevant government agency.	Annually.
12. Soils and Land Capability			
Maintenance of soil value for rehabilitation and minimisation of soil loss though erosion.	12.1	Strip topsoil to a depth of 15cm and strip subsoil to a depth of 25cm (where sufficient soil depths are available).	During soil stripping operations.
	12.2	Avoid stripping or replacing under wet conditions.	During soil stripping operations.
	12.3	Stockpile topsoil and subsoil separately with topsoil stockpiles not exceeding 2m in height and subsoil stockpiles not exceeding 3m in height.	During stockpiling operations.
	12.4	Carefully select soil stockpile locations to avoid subsequent movement, to ensure that the soil structure is not degraded.	During soil stripping operations.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action		Timing
	12. Soils and Land Capability (Cont'd)		
Maintenance of soil value for rehabilitation and minimisation of soil loss though erosion. (cont'd)	12.5	Position soil stockpiles to prevent surface water runoff coming into contact with the soil stockpiles.	During soil stockpiling operations.
	12.6	Construct soil stockpiles with a 'rough' surface to assist in runoff control and seed retention and germination.	During soil stockpiling operations.
	12.7	Construct up slope water diversion banks to direct overland surface water flow away from soil stockpiles.	During soil stockpiling operations.
	12.8	Install protective earthworks such as straw bale or contour bank protection to protect the soil stockpile from overland flow as required.	Following stockpile construction.
	12.9	Install silt-stop fencing or similar protection immediately down slope of stockpiles and retain until such time as they develop a stable cover of vegetation.	Following stockpile construction.
	12.10	Sow soil stockpiles with stabilising groundcover species.	Following stockpile construction.
	12.11	Retain soil conservation structures, or if disturbed, reinstate these structures to maintain pre-mining soil and water management on the Mine Site.	Ongoing.
Minimise erosion on the Mine Site as a consequence of subsidence.	12.12	Inspect drainage lines, predicted surface cracking zones and other areas of the Mine Site susceptible to erosion, ie. soils of the Purlawaugh Formation on slopes >10°.	At least quarterly.
	12.13	Undertake remedial actions on areas of accelerated erosion, eg. reinstatement or realignment of contour banks, regrading of channels, sowing of cover crops, etc.	Ongoing and as required.
Ensure no tunnelling erosion occurs as a consequence of pipeline channel excavation and backfill.	12.14	Replace soil material in the reverse order to that removed, ie. lower subsoil layers, upper subsoil layers then topsoil	When under construction.
Remediate contaminated soils.	12.15	Excavate and remove soils contaminated with hydrocarbons or saline water.	Within one month of contamination occurring.
	12.16	(If the contamination is widespread) Remove contaminated material to facility licensed to accept the nominated contamination.	Within one month of contamination occurring.
	12.17	(If the hydrocarbon contamination is limited in area) Remove to a designated 'land farming' location (away from natural drainage) for bio-remediation of hydrocarbon contaminated material.	Within one month of contamination occurring.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action		Timing
13. Transportation			
All motorists travel safely to and from the Mine Site with minimal disruption to Kamilaroi Highway or Kurrajong Creek Road traffic.	13.1	Transport coal entirely by rail.	Ongoing.
	13.2	Erect appropriate road signage.	As required.
	13.3	Ensure all employees and contractors are regularly informed about the safe driving requirements to and from the Mine Site.	On induction and ongoing.
	13.4	Instruct all employees regarding the possible scenario where the rail crossing is closed at shift change-over and requirement for patience whilst the crossing is closed	On induction.
	13.5	Transport all oversize loads with all necessary permits.	As required.
	13.6	Manage the maintenance of the Mine Access Road, Kurrajong Creek Road, North Western Branch Railway Crossing.	Ongoing for the life of the mine.
An improved understanding of the cumulative impacts of increased rail traffic on all stakeholders impacted by increased rail traffic to Port Newcastle.	13.7	Work co-operatively with the relevant authorities, and as required ARTC, in terms of financial and in kind commitment of resources (to be agreed with the relevant authority and on an equitable basis with other rail users) in a study into the cumulative impacts of increased rail traffic from all sources.	When commissioned by the relevant authority.
An understanding of the implications of the cumulative impacts of increased rail traffic, on traffic flow in and about the township of Gunnedah.	13.8	Work co-operatively with Gunnedah Shire Council in terms of financial and in-kind commitment of resources (to be agreed with Gunnedah Shire Council and on an equitable basis with other rail users) in an Integrated Traffic Management Study to be commissioned by Gunnedah Shire Council.	When commissioned by Gunnedah Shire Council.
14. Visual			
The operation of the Siding Springs Observatory is not affected by project operations.	14.1	Use soft lighting on the Pit Top Area to minimise impact on surrounding residents while allowing for evening maintenance and deliveries / night train loading activities.	Night-time operations.
Restriction of vantage points of project activities from neighbouring residences and public roads.	14.2	Maintain the perimeter amenity bund and vegetate with native grasses, shrubs and trees.	During the site establishment phase.
	14.3	Construct and vegetate a bund wall around the ventilation shaft areas to restrict the visibility of the activities from neighbouring residences.	During the site establishment phase.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action		Timing
	14. Visual (Cont'd)		
Restriction of vantage points of project activities from neighbouring residences and public roads. (cont'd)	14.4	Rehabilitate and revegetate all areas no longer required for site operations to ensure the maximum area of grassed paddock is present.	Ongoing.
	14.5	Construct/paint the load-out bin above the rail load-out area and site buildings in a grey/green hue to limit their overall visibility	During the site establishment phase.
	15. Community Contributions		
Keep surrounding land owners and land users informed about site activities	15.1	Maintain the Community Consultative Committee or similar and include local community representatives.	Ongoing.
	15.2	Provide regular newsletters regarding project progress and operations.	Ongoing.
Contribute to the Local Community through appropriate contributions to Community Enhancement Activities	15.3	Provide funding of $100,000 to the Gunnedah Shire Council Community Enhancement fund. Funding to be spread out equally over 5 annual instalments.	For 5 Years.
	15.4	Provide funding of $1 500 000 to the Narrabri Shire Council Community Enhancement Fund. Funding to be provided in two instalments over two years.	2 Years.
	16. Environmental Monitoring		
Implement a comprehensive and ongoing surface water monitoring program.	16.1	Monitor surface water quality for: pH, EC, TDS, TSS, Total Organic Carbon at locations upstream and downstream of the Pit Top Area on Kurrajong and Pine Creeks and their tributaries. (See also *Commitment 7.27*)	Quarterly during surface flows.
	16.2	Record the volume and quality (pH, EC, TDS, TSS, Total Organic Carbon) of water extracted and discharged to the Namoi River. (See also *Commitment 7.28*)	Weekly.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action		Timing
	16. Environmental Monitoring (Cont'd)		
Implement a comprehensive and ongoing groundwater monitoring program. (cont'd) (cont'd)	16.3	Record extraction volumes including weekly totals from all pumping bores, and weekly totals from underground and open cut sump. (see also *Commitment 6.4*)	Weekly.
	16.4	Record Volumes of water introduced to the mine for longwall operation and other requirements. (see also *Commitment 6.5*)	Weekly.
	16.5	Record the groundwater quality (EC and pH) discharged from the underground workings and water supply bores. (see also *Commitment 6.6*)	Monthly.
	16.6	Sample and analyse water from all pumping bores and underground for the following parameters. • EC, TDS, TSS and pH. • Calcium, magnesium, sodium and potassium. • Carbonate, bicarbonate, sulphate and chloride. • Aluminium, arsenic, boron, cobalt, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver, selenium, zinc. • Ammonia, nitrate, phosphorus, reactive phosphorus. (see also *Commitment 6.7*)	Quarterly
	16.7	Record (by manual monitoring, or continuous automated monitoring) the standing water levels of piezometers P1 to P27 and WB1 to WB8 (and others as constructed). (see also *Commitment 6.8*)	Monthly initially and Quarterly after first 12 months
	16.8	Monitor the flow rate and water quality of the spring discharge from "Mayfield Spring". (see also *Commitment 6.9*)	Monthly initially and Quarterly after first 12 months.
	16.9	Install additional multi-level vibrating wire piezometers over LW1 to LW3 to obtain detailed data as to the impact of mine subsidence on the groundwater of the various strata above the underground workings. (see also *Commitment 6.10*)	Prior to commencement of longwall mining.
	16.10	Collect data from the vibrating wire piezometers and compare against initial groundwater and subsidence modelling predictions. (see also *Commitment 6.11*)	Data collected continuously and downloaded and analysed quarterly.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action	Timing
	16. Environmental Monitoring (Cont'd)	
Implement a comprehensive and ongoing groundwater monitoring program. (cont'd)	16.11 Commission an experienced hydrogeologist to collate and review the monitoring data collected annually in order to assess the impacts of the project on the groundwater environment, and to compare any observed impacts with those predicted from groundwater modelling. (see also *Commitment 6.12*)	Annually
	16.12 Develop the groundwater monitoring program in consultation with the Proponent's consultant hydrogeologist, the Department of Environment, Climate Change and Water – Office of Water and those groundwater users potentially affected by the project. (see also *Commitment 6.13*)	Prior to commencement of longwall mining.
Implementation of an appropriate noise monitoring program to ensure continuing compliance with DEC guideline levels.	16.13 Undertake attended noise monitoring at the residences most likely to be affected by Longwall Project generated noise. "Bow Hills" "Belah Park" "Naroo" "Matilda"[2] "Oakleigh" "Haylin View"[2] "Newhaven" "Merrilong"[2] (see also *Commitment 10.20*)	Quarterly
	16.14 Increase the frequency of monitoring during the first winter (May to September) of construction or mining operations. (see also *Commitment 10.21*) This will also incorporate real time noise monitoring in accordance with requirements under the Stage 1 modification approval.	Monthly
	16.15 Review and submit noise monitoring results to the DECCW. (see also *Commitment 10.22*)	Annually
Implementation of an appropriate air quality monitoring program to ensure continuing compliance with DEC guideline levels.	16.16 Monitor deposited dust levels at 8 sites (ND1 to ND8). (see also *Commitment 11.22*)	Monthly
	16.17 Monitor PM_{10} levels at 2 sites (ND9 to ND10). (see also *Commitment 11.23*)	1 in 6 days as per DECCW schedule.
	16.18 Review and submit dust monitoring result to relevant government agency. (see also Commitment 11.24)	Annually.

[2] Monitoring to commence as surface activities approach the eastern end of the southern longwall panels.

Statement of Commitments for Site Operations and Management

Desired Outcome	Action		Timing
17. Documentation			
A systematic set of documents are in place to guide the planning and implementation of all environmental management strategies.	17.1	Incorporate the environmental procedures in an on-site management system.	Prior to relevant activity.
	17.2	Prepare or update the following management and monitoring plans; • Mining Operations Plan • Aboriginal Cultural Heritage Management Plan • Energy Savings Action Plan • Waste Management Plan • Water Management Plan • Landscape Management Plan • Greenhouse Gas Minimisation Plan • Gas Drainage & Outburst Management Plan • Major Hazard Management Plan • Salinity Contamination Contingency Plan • Extraction Management Plan • Erosion & Sediment Control Plan • Noise Monitoring Program	Various and as nominated by project approval.
	17.3	Incorporate relevant environmental data / information in Annual Environmental Management Reports.	Annually.
18. General			
All buildings meet necessary building codes and specifications.	18.1	Construct all buildings with certification by Narrabri Shire Council.	During site establishment phase.
All employees and contractors are trained and assessed as competent to undertake those activities influencing the environment.	18.2	Implement a policy encouraging employment of local district personnel, with arrangements for training and certification.	Prior to commencement of project.
	18.3	Include environmental issues in the site induction process for new employees and/or contractors.	Prior to commencement of project.
	18.4	Develop and incorporate an environmental training program to ensure all employees and contractors are environmentally responsible and follow all relevant site-specific procedures.	Prior to commencement of project.
	18.5	Include environmental issues in the agenda for toolbox meetings with employees and/or contractors.	Ongoing.

APPENDIX 4
GENERAL TERMS OF PLANNING AGREEMENTS

Continuation of Stage 1 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 Stage 1 project approval (17 November 2007).
Narrabri Shire Monetary Contribution – Provision of bush fire services	$7,000	One instalment to be paid within 12 months of Stage 1 project approval (17 November 2007).
Narrabri Shire Community Infrastructure Contribution	$93,000	An initial instalment of $13,000 to be paid within 12 months of Stage 1 project approval (17 November 2007) 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 Stage 1 project approval (17 November 2007).

Notes:

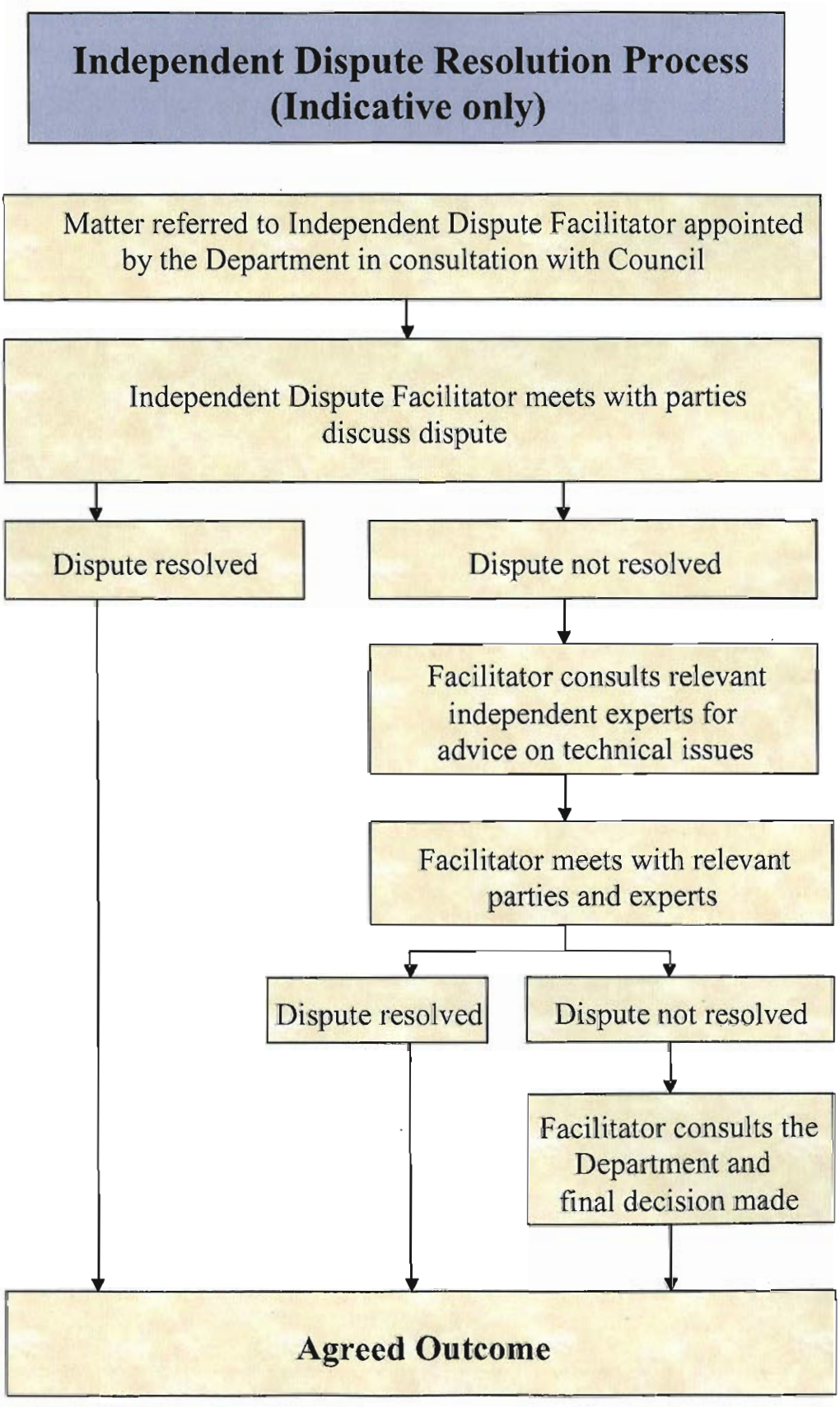
- The Gunnedah Urban Riverine Scheme Contributions must be reviewed and adjusted to take into account any increase in the CPI over time, in accordance with the Planning Agreement between the Proponent and Gunnedah Shire Council required under this approval.
- The Community Infrastructure Contribution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

Stage 2 Planning Agreements

Funding Area	Minimum Proponent Contribution	Funding Time Frame
Narrabri Shire Narrabri Swimming Complex	$1,500,000	First contribution of $750,000 to be made in conjunction with the 2010 Stage 1 community enhancement contribution. Second contribution of $750,000 to be paid in conjunction with the 2011 Stage 1 community enhancement contribution.
Gunnedah Shire Monetary Contribution	$100,000	$20,000 each year for a period of 5 years with the first instalment to be paid in conjunction with the 2010 Stage 1 community enhancement contribution.

Notes: The notes for Stage 1 Community Enhancement Program contributions apply to Stage 2 Community Enhancement contributions.

APPENDIX 5
INDEPENDENT DISPUTE RESOLUTION PROCEDURE



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 600
GUNNEDAH NSW 2380

Licence Type

Premises

Premises

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

Scheduled Activity

Mining for coal
Coal works

Fee Based Activity	**Scale**
Mining for coal	> 2000000 - 3500000 T produced
Coal works	> 2000000 - 5000000 T loaded

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

Department of Environment & Climate Change NSW

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 600
GUNNEDAH NSW 2380

subject to the conditions which follow.

1 Administrative conditions

A1 What the licence authorises and regulates

A1.1 Not applicable.

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
Mining for coal
Coal works

Fee Based Activity	Scale
Mining for coal	> 2000000 - 3500000 T produced
Coal works	> 2000000 - 5000000 T loaded

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

Premises Details
Location of premises is shown on figures titled "Figure 1.1 Project Site Location" and "Figure 2.1 (Preferred) Indicative Project Site Layout" submitted by Licensee with licence application dated 21-09-07. Copy on file 25147A1/03

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.

Environment Protection Licence

Licence - 12789

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 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

P1.3 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

Environment Protection Licence

Licence - 12789

Water and land

EPA identification no.	Type of monitoring point	Type of discharge point	Description of location
11	Wet weather discharge Discharge water quality monitoring	Wet weather discharge Discharge water quality monitoring	Discharge point on northern side of mine boundary labelled as "SD4" on Figure titled "Wet Weather Discharge Monitoring Locations" provided with licence variation application dated 10 February 2009.
12	Wet weather discharge Discharge water quality monitoring	Wet weather discharge Discharge water quality monitoring	Discharge point on eastern side of mine boundary labelled as "SD5" on Figure titled "Wet Weather Discharge Monitoring Locations" provided with licence variation application dated 10 February 2009.
13	Wet weather discharge Discharge water quality monitoring	Wet weather discharge Discharge water quality monitoring	Discharge point on south eastern side of mine boundary labelled as "SD2" on Figure titled "Wet Weather Discharge Monitoring Locations" provided with licence variation application dated 10 February 2009.
14	Ambient Water Quality Monitoring		Upstream of mine discharge point on Kurrajong Creek Tributary 1 labelled as "KC1US" on Figure titled "Wet Weather Discharge Monitoring Locations" provided with licence variation application dated 10 February 2009.
15	Ambient Water Quality Monitoring		Downstream of mine discharge point on Kurrajong Creek Tributary 1 labelled as "KC1DS" on Figure titled "Wet Weather Discharge Monitoring Locations" provided with licence variation application dated 10 February 2009.

EPA identification no.	Type of monitoring point	Type of discharge point	Description of location
16	Ambient Water Quality Monitoring		Upstream of mine discharge point on Kurrajong Creek Tributary 2 labelled as "KC2US" on Figure titled "Wet Weather Discharge Monitoring Locations" provided with licence variation application dated 10 February 2009.
17	Ambient Water Quality Monitoring		Downstream of mine discharge point on Kurrajong Creek Tributary 2 labelled as "KC2DS" on Figure titled "Wet Weather Discharge Monitoring Locations" provided with licence variation application dated 10 February 2009.

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 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L3.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L3.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.

Water and Land

POINTS 11,12,13

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile Concentration Limit
Oil and Grease	milligrams per litre	-	-	-	10
pH	pH	-	-	-	6.5-8.5
Total suspended solids	milligrams per litre	-	-	-	50

L3.4 The Total Suspended Solids concentration limits specified for Points 11, 12 and 13 may be exceeded for water discharged provided that:

(a) the discharge occurs solely as a result of rainfall measured at the premises that exceeds 38.4 millimetres over any consecutive 5 day period immediately prior to the discharge occurring; and

(b) all practical measures have been implemented to dewater all sediment dams within 5 days of rainfall such that they have sufficient capacity to store run off from a 38.4 millimetre, 5 day rainfall event.

Note: 38.4 mm equates to the 5 day 90%ile rainfall depth for Gunnedah sourced from Table 6.3a Managing Urban Stormwater: Soils and Construction Volume 1: 4th edition, March 2004.

L4 Volume and mass limits

L4.1 Not applicable.

L5 Waste

L5.1 Not applicable.

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.

L6.4 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.

L7.3 The airblast overpressure level from blasting operations listed in Conditions 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.

L7.6 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 metres 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) blasts 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:

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	Once a month (min. of 4 weeks)	AM-19

POINTS 9,10

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

POINTS 11,12,13

Pollutant	Units of measure	Frequency	Sampling Method
Conductivity	microsiemens per centimetre	Special Frequency 1	In situ
Oil and Grease	milligrams per litre	Special Frequency 1	Grab sample
Total organic carbon	milligrams per litre	Special Frequency 1	Grab sample
Total suspended solids	milligrams per litre	Special Frequency 1	Grab sample
pH	pH	Special Frequency 1	In situ

POINTS 14,15,16,17

Pollutant	Units of measure	Frequency	Sampling Method
Conductivity	microsiemens per centimetre	Special Frequency 2	In situ
Oil and Grease	milligrams per litre	Special Frequency 2	Grab sample
Total organic carbon	milligrams per litre	Special Frequency 2	Grab sample
Total suspended solids	milligrams per litre	Special Frequency 2	Grab sample
pH	pH	Special Frequency 2	In situ

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 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

For the purposes of the table(s) above Special Frequency 1 means the collection of samples as soon as practicable after each discharge commences and in any case not more than 12 hours after each discharge commences.

For the purposes of the table(s) above Special Frequency 2 means the collection of samples quarterly (in the event of flow during the quarter) at a time when there is flow and as soon as practicable after each wet weather discharge from points 11, 12 or 13 commences and in any case not more than 12 hours after each discharge commences.

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 Environment 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.

E2 Noise Impacts

E2.1 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.

Dictionary

General Dictionary

Environment Protection Licence

Licence - 12789

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
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.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
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
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.
restricted solid 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
special 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*.
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

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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 type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Mr Robert O'Hern

Environment Protection Authority

(By Delegation)

Date of this edition - 18-Aug-2009

End Notes

1	Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
2	Licence varied by notice 1100826, issued on 18-Aug-2009, which came into effect on 18-Aug-2009.

Appendix 3

COMPLIANCE REVIEW

PA 05_0102 MOD 1 (Table A3-1)

EPL 12789 (Table A3-2)

ML 1609 (Table A3-3)

TABLE A3-1

PROJECT APPROVAL 05_0102 MOD 1

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); (c) modification application 05_0102 MOD 1, supporting Environmental Assessment title "Narrabri Coal Mine – Section 75W Modification", dated October 2009 and Proponent's Response to Submissions dated 10 February 2010; and (d) 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	As per condition.
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	142,000t coal produced during reporting period.
7.	The proponent shall transport all coal from the site by rail.	Yes	As per condition.
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	As per condition.

Condition	Conditional Requirement	Compliance	Comments
8A.	The proponent shall prepare revisions of any strategies, plans or programs required under this approval if directed to do so by the Director-General. Such revisions shall be prepared to the satisfaction of, and within a timeframe approved by, the Director- General.	Yes	As per condition.
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	As per condition.
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 NOW.	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 NOW and DECCW, and to the satisfaction of the Director-General.	N/A	Mining commenced end June 2010.
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 NOW and DECCW, and approved by the Director General.	N/A	Not yet triggered however construction of the water conditioning plant has commenced.
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 DECCW; and (c)prior to commissioning the ponds, submit an "as constructed" report, produced by an experienced and qualified engineer, to DECCW; to the satisfaction of the Director General.	Yes Yes No	Ponds constructed to design criteria as approved by DECC.
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 DECCW and NOW 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 (CPSWMP) on 20th February 2008 conditional on a full Site Water Management Plan (SWMP) being submitted prior to commencement of mining operations. The SWMP for the operational phase was submitted to DECCW, DoP and NOW on the 17th March 2010 and was approved by DoP on the 13th July 2010.
8.	The Site Water Balance must….	Yes	As per condition.
9.	The Erosion and Sediment Control Plan must….	Yes	As per condition.
10.	The Surface Water Monitoring Plan must….	Yes	As per condition.
11.	The Groundwater monitoring program must……..	Yes	As per condition.
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	No noise exceedances recorded during the reporting period.

Condition	Conditional Requirement	Compliance	Comments
12A.	If the noise generated by the project exceeds the criteria in Table 1A at any residence on privately-owned land, or on more than 25% of any privately-owned land, then the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 5-7 of schedule 3A.	N/A	No exceedances during reporting period and no requests from landowners.
12B.	If the noise generated by the project is equal to or exceeds the criteria in Table 1B at any residence on privately-owned land, then the Proponent shall, upon receiving a written request from the landowner, implement reasonable and feasible noise mitigation measures (such as double glazing, insulation, and/or air conditioning) at the residence in consultation with the landowner…..	N/A	No exceedances during reporting period and no requests from landowners.
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	Access road sealed. Rail loop and loading point cut below surface level to assist noise reduction. Real time noise monitoring and inversion monitoring included in updated Noise Management Plan. See Section 3.10 for noise discussions.
13A.	The Proponent shall prepare and implement a Noise Management Plan for the mine's activities to the satisfaction of the Director-General. This Plan shall: (a) be prepared in consultation with DECCW by a suitably qualified expert whose appointment has been approved by the DG; (b)be submitted to the DG for approval by 31 May 2010; (c)include a Noise Monitoring Program incorporating real-time noise and temperature inversion monitoring; and (d)include reactive noise control measures to manage noise impacts for sensitive receivers.	Yes	Issued to DoP 28th May 2010.

Condition	Conditional Requirement	Compliance	Comments
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 DECCW; (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 conducted in accordance with the Noise Monitoring Program 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.	N/A	No surface or near surface blasting during the reporting period.
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.	N/A	No surface or near surface blasting during the reporting period.
17.	The proponent shall only carry out blasting associated with construction activities on site between 10am and 4pm Monday to Friday.	N/A	No surface or near surface blasting during the reporting period.
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.	N/A	No surface or near surface blasting during the reporting period.
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.

Condition	Conditional Requirement	Compliance	Comments
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.	No	Annual average deposited dust criteria exceeded at ND-4 "Matoppo" and ND-5 "Claremont". See AEMR Section 3.1.3 for details.
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 DECCW; 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 (DECCW, 2007)*, or its latest version.	No	Some data not collected during the reporting period due to station malfunction.
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.

Condition	Conditional Requirement	Compliance	Comments
29.	The proponent shall prepare and implement a detailed Landscape Management Plan for the site to the satisfaction of the Director-General and I&I NSW. 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 NOW, DECCW and NSC; and (d)include a Rehabilitation Management Plan and Mine Closure Plan.	Yes	Landscape Management Plan approved in March 2010.
30.	The Rehabilitation Management Plan must……..	No	See response to 29 above.
31.	The mine closure plan must…….	No	See response to 29 above.
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 DECCW 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.

Condition	Conditional Requirement	Compliance	Comments
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	As per condition.
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. Currently seeking final sign-off from NSC (request sent to NSC in February 2010).
36.	The proponent shall minimise 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.
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 DECCW; (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 minimise 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 minimises options.

Condition	Conditional Requirement	Compliance	Comments
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.	No	A draft Greenhouse Gas Minimisation Plan was prepared by Heggies Pty Ltd and submitted to DoP on 24/11/09. Subsequent verbal discussions with the DoP identified that the supplied plan was inadequate in meeting the requirements of the condition. It was agreed that a revised plan would issue in conjunction with the Stage 2 Project Approval requirements.
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 3A: Additional Procedures			
1.	If the results of the monitoring required in schedule 3 identify that impacts generated by the project are greater than the relevant impact assessment criteria, except where a negotiated agreement has been entered into in relation to that impact then the Proponent shall, within 2 weeks of obtaining the monitoring results, notify the DG, the affected landowners and tenants (including tenants in mine-owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show that the project in complying with the criteria in schedule 3.	No	Notification has not occurred for deposited dust exceedances which have all occurred on mine owned property.

Condition	Conditional Requirement	Compliance	Comments
2.	If the results of monitoring required in Schedule 3 identify that the impacts generated by the project are greater than the relevant air quality impact assessment criteria in schedule 3, then the Proponent shall send the relevant landowners and tenants (including tenants of mine-owned properties) a copy of the NSW Health fact sheet "Mine Dust and You" (and associated updates) in conjunction with the notification required in condition 1.	No	Notification has not occurred for deposited dust exceedances which have all occurred on mine owned property.
3.	If a landowner considers the project to be exceeding the impact assessment criteria in schedule 3, then he/she may ask the DG in writing for an independent review of the impacts of the project on his/her land. (see consent for independent review process).	N/A	No requests during reporting period.
4.	If the independent review determines that the project is complying….. then the Proponent may discontinue the independent review with the approval of the DG. If the independent review determines that the project is not complying…. (see consent for further details).	N/A	No requests during reporting period.
5.	Within 3 months of receiving a written request from a landowner with acquisition rights, the Proponent shall make a binding written offer to the landowner based on:……..	N/A	No requests during reporting period.
6.	The Proponent shall pay all reasonable costs associated with the land acquisition process described in condition 5 above.	N/A	No requests during reporting period.
7.	If the Proponent and landowner agree that only part of the land shall be acquired, then the Proponent shall also pay all reasonable costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of the plan at the Office of the Registrar-General.	N/A	No requests during reporting period.
Schedule 4: Environmental Management, Monitoring, Auditing and Reporting			
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……	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	To be submitted as part of Stage 2 consent requirements.

Condition	Conditional Requirement	Compliance	Comments
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.	No	All occurrences reported, but not within 24 hours.
4.	Within 6 days of notifying the Department and other relevant agencies….	No	All occurrences reported, but not within 6 days.
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	As per condition.
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	Yes	NCOPL requested in early February 2010 that the Independent Environmental Audit be postponed until 12 months after the commencement of mining (ie. audit due in June 2011). Stage 2 consent required audit to be commissioned by September 2010. Umwelt commissioned and site inspection conducted in February 2011.
7.	Within 6 weeks of completing this audit….	N/A	See Condition 4(6) above.
8.	Within 3 months of submitting the audit….	N/A	Not yet triggered. See Condition 4(6) above.

Condition	Conditional Requirement	Compliance	Comments
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.
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)	Yes	As per requirements.

TABLE A3-2

Compliance Review – Environment Protection Licence 12789

Condition	Conditional Requirement	Compliance	Comments
A1.2	Carry out Coal Mining not exceeding 3,500,000t	Yes	Coal production during reporting period – 142,000t
A1.4	The licensee must not commence scheduled activities on the premises without prior approval from DECC.	Yes	As per condition.
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.	Yes	As per condition.
P1.1 & P1.2	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	Monitor weather parameters at the location specified.	Yes	As per condition.
L1.1	Comply with Section 120 of the POEO Act 1997 (re water quality)	Yes	As per condition.
L3	Discharge water quality must not exceed the parameters specified.	Yes	No discharges during the reporting period.
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.	Yes	No exceedances at non-project related residences. See Section 3.10.3.
L6.2	To determine compliance, measure noise within 30m of noise sensitive residences or receptors.	Yes	Except “Kurrajong” as access was denied by landholder.
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	N/A	No surface or near surface blasting during reporting period.
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.	N/A	No surface or near surface blasting during reporting period.
L7.7	Carry out blasting between 10:00am-4:00pm Monday to Friday	N/A	No surface or near surface blasting during reporting period.
L7.8	Blasting is limited to: a) Maximum two (2) blasts per day b) Five (5)blasts a week	N/A	No surface or near surface blasting during reporting period.

Condition	Conditional Requirement	Compliance	Comments
O1.1	Carry out licensed activities in a competent manner, i.e. (a) Processing, handling, movement and storage of materials and substances; & (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.
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 authorised officer.	Yes	As above
M1.3	(a) Sampling date; (b) Sampling time (c) Sampling location (d) Sample collectors name	Yes	As per condition.
M2.1	Monitor each monitoring point for pollutants as specified in licence	Yes	As per condition.
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.
M7.1	Monitor weather parameters specified	No	Some data not collected due to station malfunction.
M8	Monitor specified noise parameters at nominated properties	Yes	As per condition.

Condition	Conditional Requirement	Compliance	Comments
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 authorised 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 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.

Condition	Conditional Requirement	Compliance	Comments
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	No	As constructed report not yet supplied to DECCW.
E2.1	Noise impacts where wind speed exceeds 3 meters per second at 10 meters 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 meters per second at 10 meters above the ground should be developed and implemented.	Yes	No specific complaints made relating to noise and impacts of wind speed on noise propagation. Attended monitoring undertaken when speeds at <3m/s.

TABLE A3-3

Compliance Review – ML 1609

Condition	Conditional Requirement	Compliance	Comments
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	As per condition.
2	All practicable measures to prevent and/or minimise any harm to the environment.	Yes	All measures taken to reduce impact.
3	Conduct mining operations in accordance with a MOP.	Yes	As per condition.
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.	N/A	Narrabri Coal has been issued with a modification to the Stage 2 consent which requires the submission of an Extraction Plan. This Extraction Plan will remove the requirement to prepare a Subsidence Management Plan under the terms of ML 1609.
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	As per condition.
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 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.	N/A	See Section 3.9.
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.	N/A	See Section 3.9.
16	Ensure the safety of persons or stock.	Yes	Safety measures a priority on site.

Condition	Conditional Requirement	Compliance	Comments
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, unless in consultation with NSC.
21(b)	The cost incurred in fixing any damage to roads must be paid to the designated authority.	Yes	As per condition.
22	Access tracks must be kept to a minimum.	Yes	Access tracks are minimised.
23(a)	The lease holder must not fell trees, strip bark or cut timber on the lease without the consent of the landholder.	Yes	As per requirement.
23(b)	The lease holder must not cut, destroy, ringbark or remove any timber or other vegetative cover on the lease area except such as directly obstructs or prevents the carrying on of operations.	Yes	As per requirement.
23(c)	The lease holder must obtain all necessary approvals or licences before using timber from any Crown land within the lease area.	N/A	No timber removed from Crown land.
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 or 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.

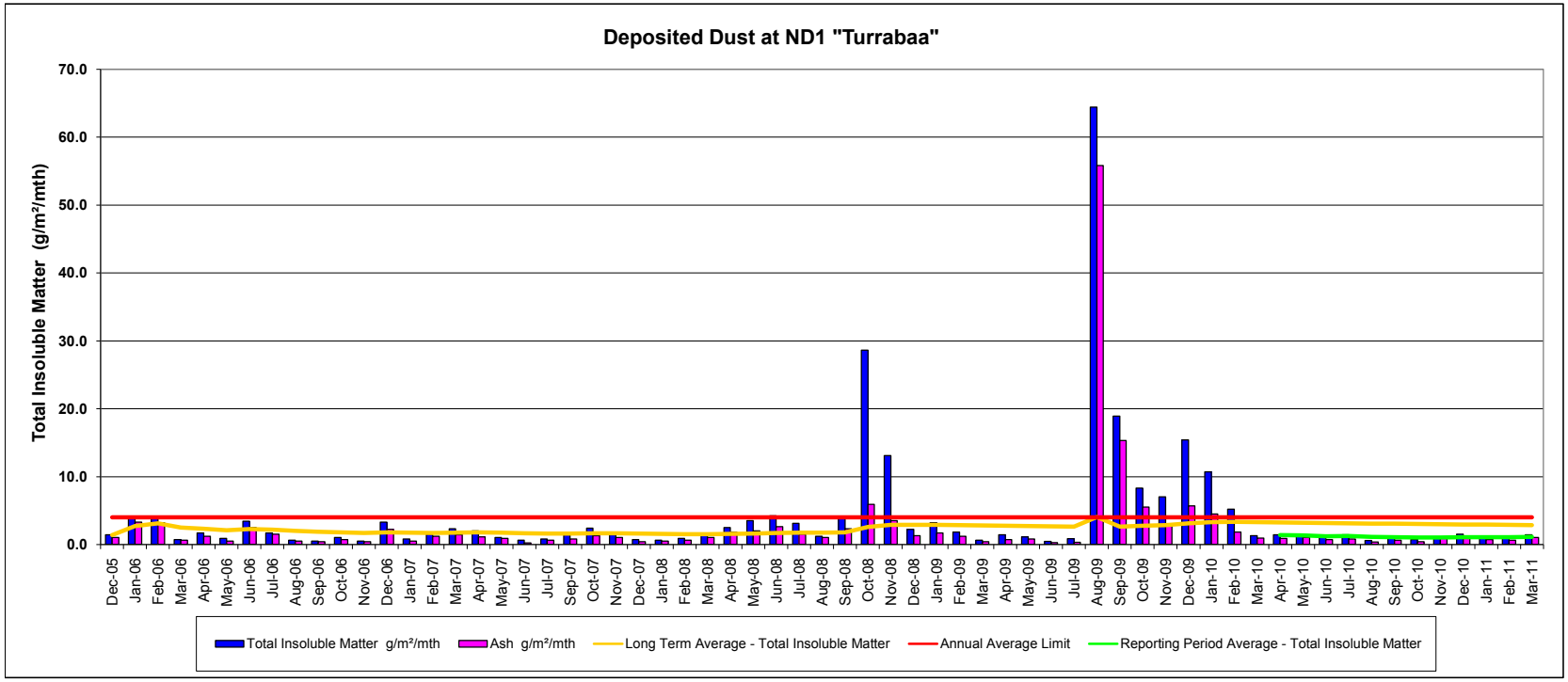
Appendix 4

DUST MONITORING RESULTS

Deposited Dust - ND1 "Turrabaa"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
21959.01	ND1	05-Jan-06	Dec-05	Client	1045	2710	1.4		1.4	4.0	1.0	
22569.01	ND1	03-Feb-06	Jan-06	Client	1045	205	4.0		2.7	4.0	3.3	
22720.01	ND1	09-Mar-06	Feb-06	Client	1310	1135	3.9		3.1	4.0	3.2	
23204.01	ND1	03-Apr-06	Mar-06	Client	1035	135	0.7		2.5	4.0	0.6	
23295.01	ND1	02-May-06	Apr-06	Client	0905	650	1.7		2.3	4.0	1.2	
23630.01	ND1	02-Jun-06	May-06	Client	0825	<10	0.9		2.1	4.0	0.5	
23882.01	ND1	28-Jun-06	Jun-06	Client	1641	660	3.4		2.3	4.0	2.5	
24078.01	ND1	31-Jul-06	Jul-06	Client	0920	1600	1.7		2.2	4.0	1.5	
24412.01	ND1	30-Aug-06	Aug-06	Client	1357	40	0.6		2.0	4.0	0.5	
24689.01	ND1	03-Oct-06	Sep-06	Client	1410	550	0.5		1.9	4.0	0.4	
24973.01	ND1	02-Nov-06	Oct-06	Client	1344	375	1.0		1.8	4.0	0.7	
25439.01	ND1	04-Dec-06	Nov-06	Client	1340	375	0.5		1.7	4.0	0.4	
25536.01	ND1	02-Jan-07	Dec-06	Client	1145	510	3.3		1.8	4.0	2.2	
25839.01	ND1	02-Feb-07	Jan-07	Client	1215	380	0.8		1.7	4.0	0.5	
26116.01	ND1	05-Mar-07	Feb-07	Client	1445	940	1.5		1.7	4.0	1.2	
26423.01	ND1	03-Apr-07	Mar-07	Client	1200	<50	2.3		1.8	4.0	1.4	
26626.01	ND1	02-May-07	Apr-07	Client	1200	395	2.0		1.8	4.0	1.1	
26955.01	ND1	05-Jun-07	May-07	Client	1245	1250	1.0		1.7	4.0	0.9	
27229.01	ND1	02-Jul-07	Jun-07	Client	1205	1350	0.6		1.7	4.0	0.2	
27526.01	ND1	03-Aug-07	Jul-07	Client	0815	155	0.8		1.6	4.0	0.6	
28113.01	ND1	04-Oct-07	Sep-07	Client	1245	70	1.4		1.6	4.0	0.8	
28392.01	ND1	05-Nov-07	Oct-07	Client	1445	680	2.4		1.7	4.0	1.3	
28656.01	ND1	04-Dec-07	Nov-07	Client	1120	1380	1.4		1.6	4.0	1.0	
28917.01	ND1	03-Jan-08	Dec-07	Client	1430	1770	0.7		1.6	4.0	0.4	
29219.01	ND1	04-Feb-08	Jan-08	Client	1315	1480	0.6		1.6	4.0	0.5	
29519.01	ND1	03-Mar-08	Feb-08	Client	1035	2485	0.9		1.5	4.0	0.6	
29767.01	ND1	02-Apr-08	Mar-08	Client	1155	140	1.6		1.5	4.0	1.0	
30049.01	ND1	09-May-08	Apr-08	Client	0945	530	2.5		1.6	4.0	1.8	
30380-01	ND1	02-Jun-08	May-08	Client	1342	320	3.5		1.6	4.0	2.0	
30654.01	ND1	01-Jul-08	Jun-08	Client	1330	1115	4.2		1.7	4.0	2.6	
30896.01	ND1	04-Aug-08	Jul-08	Client	1000	640	3.1		1.8	4.0	1.5	
31204.01	ND1	01-Sep-08	Aug-08	Client	1030	890	1.2		1.8	4.0	1.0	
31522.01	ND1	02-Oct-08	Sep-08	Client	0830	1925	3.8		1.8	4.0	2.3	
31769.01	ND1	03-Nov-08	Oct-08	Client	1049	1365	28.6		2.6	4.0	5.9	
32017.01	ND1	03-Dec-08	Nov-08	Client	1115	1525	13.1		2.9	4.0	3.5	
32512.01	ND1	05-Jan-09	Dec-08	Client	0935	2770	2.2		2.9	4.0	1.3	
32240.01	ND1	02-Feb-09	Jan-09	Client	0930	595	3.2		2.9	4.0	1.7	
32857.01	ND1	02-Mar-09	Feb-09	Client	0815	2600	1.8		2.9	4.0	1.2	
2600 1003-00	ND1	01-Apr-09	Mar-09	ALS		15	0.6		2.8	4.0	0.4	Insects, Bird droppings
2600 1021-00	ND1	01-May-09	Apr-09	ALS		1000	1.4		2.8	4.0	0.7	Bird droppings
2600 1031-01	ND1	01-Jun-09	May-09	ALS		900	1.1		2.7	4.0	0.8	
2600 1041-01	ND1	06-Jul-09	Jun-09	ALS		350	0.4		2.7	4.0	0.3	Insects
2600 1053-01	ND1	03-Aug-09	Jul-09	ALS	0915	600	0.9		2.6	4.0	0.3	Insects, Bird Droppings, Plant Material
2600 1065-00	ND1	31-Aug-09	Aug-09	ALS	0925	100	64.4		4.0	4.0	55.8	Insects, Bird Droppings, Plant Material
2600 1065-00	ND1	28-Sep-09	Sep-09	ALS	0925	800	18.9		2.6	4.0	15.3	Insects, Bird Droppings, Plant Material
2600 1125-00	ND1	03-Nov-09	Oct-09	ALS	1007	900	8.3		2.8	4.0	5.5	Insects, Bird Droppings, Plant Material
2600 1204-115	ND1	01-Dec-09	Nov-09	ALS	0950	100	7.0		2.9	4.0	2.9	Insects, Bird droppings
2600 1222-00	ND1	31-Dec-09	Dec-09	ALS	0955	2200	15.4		3.1	4.0	5.7	Insects, Plant Material
2600 1234-00	ND1	01-Feb-10	Jan-10	ALS	1120	2200	10.7		3.3	4.0	4.5	Insects, Bird Droppings, Plant Material
2600 1247-00	ND1	03-Mar-10	Feb-10	ALS	1030	1100	5.2		3.3	4.0	1.8	Insects, Bird Droppings, Plant Material

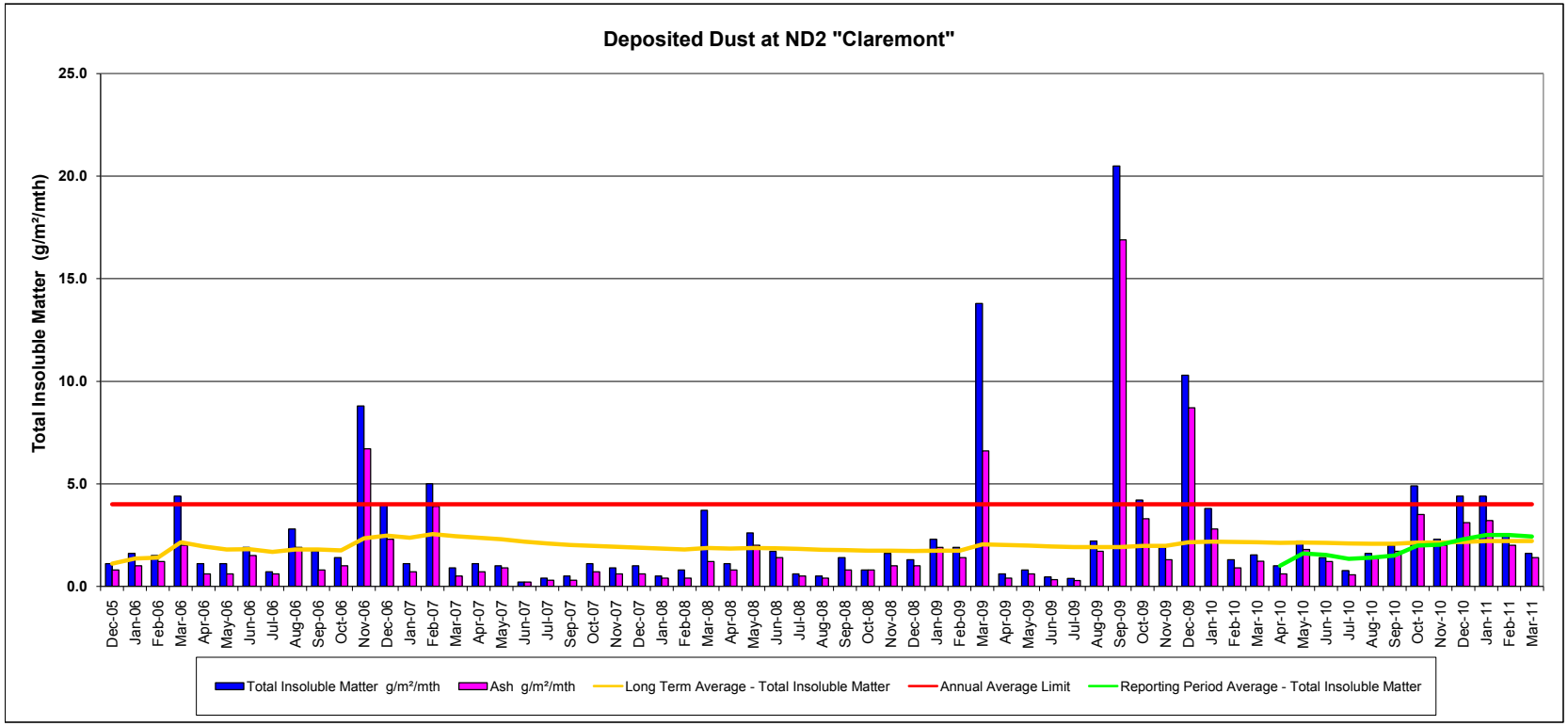
Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
2600 1260	ND1	31-Mar-10	Mar-10	ALS	0945	500	1.3		3.3	4.0	0.9	Insects, Plant Material
2600 1268	ND1	28-Apr-10	Apr-10	ALS	0920	200	1.4	1.4	3.2	4.0	0.9	Insects, Plant Material
26001277	ND1	26-May-10	May-10	ALS	0905	300	1.3	1.4	3.2	4.0	1.0	Insects, Bird Droppings, Plant Material
2600-1288	ND1	23-Jun-10	Jun-10	ALS	1115	300	1.0	1.2	3.2	4.0	0.7	Insects, Bird Droppings, Plant Material
26001298	ND1	21-Jul-10	Jul-10	ALS	0940	800	1.4	1.3	3.1	4.0	0.8	Insects, Bird Droppings,Plant Material
26001309915	ND1	20-Aug-10	Aug-10	ALS	1355	2300	0.6	1.1	3.1	4.0	0.4	Insects, Plant material
26001319	ND1	20-Sep-10	Sep-10	ALS	1205	1200	0.9	1.1	3.0	4.0	0.6	Insects, Plant material
2600-1340-18	ND1	20-Oct-10	Oct-10	ALS	1135	800	0.7	1.0	3.0	4.0	0.4	
EN1002881-001	ND1	19-Nov-10	Nov-10	ALS	1208	1800	1.1	1.0	3.0	4.0	1.0	
EN1003078-001	ND1	21-Dec-10	Dec-10	ALS	0900	2000	1.5	1.1	2.9	4.0	0.9	
EN1100178-001	ND1	20-Jan-11	Jan-11	ALS	0945	750	1.1	1.1	2.9	4.0	0.7	
EN1100432-001	ND1	21-Feb-11	Feb-11	ALS	0915	200	1.1	1.1	2.9	4.0	0.6	
EN1100689-001	ND1	23-Mar-11	Mar-11	ALS	0930	600	1.4	1.1	2.9	4.0	1.0	



Deposited Dust - ND2 "Claremont"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
21959.02	ND2	05-Jan-06	Dec-05	Client	1105	2750	1.1		1.1	4.0	0.8	
22569.02	ND2	03-Feb-06	Jan-06	Client	1355	475	1.6		1.4	4.0	1.0	
22720.02	ND2	09-Mar-06	Feb-06	Client	1245	1175	1.5		1.4	4.0	1.2	
23204.02	ND2	03-Apr-06	Mar-06	Client	1055	225	4.4		2.2	4.0	2.0	
23295.02	ND2	02-May-06	Apr-06	Client	0900	775	1.1		1.9	4.0	0.6	
23630.02	ND2	02-Jun-06	May-06	Client	0840	<10	1.1		1.8	4.0	0.6	
23882.02	ND2	28-Jun-06	Jun-06	Client	1650	800	1.9		1.8	4.0	1.5	
24078.02	ND2	31-Jul-06	Jul-06	Client	0923	1700	0.7		1.7	4.0	0.6	
24412.02	ND2	30-Aug-06	Aug-06	Client	1407	40	2.8		1.8	4.0	1.9	
24689.02	ND2	03-Oct-06	Sep-06	Client	1422	750	1.7		1.8	4.0	0.8	
24973.02	ND2	02-Nov-06	Oct-06	Client	1341	450	1.4		1.8	4.0	1.0	
25439.02	ND2	04-Dec-06	Nov-06	Client	1310	950	8.8		2.3	4.0	6.7	
25536.02	ND2	02-Jan-07	Dec-06	Client	1155	750	4.0		2.5	4.0	2.3	
25839.02	ND2	02-Feb-07	Jan-07	Client	1220	320	1.1		2.4	4.0	0.7	
26116.02	ND2	05-Mar-07	Feb-07	Client	1345	1080	5.0		2.5	4.0	3.9	
26423.02	ND2	03-Apr-07	Mar-07	Client	0955	200	0.9		2.4	4.0	0.5	
26626.02	ND2	02-May-07	Apr-07	Client	1100	400	1.1		2.4	4.0	0.7	
26955.02	ND2	05-Jun-07	May-07	Client	1145	1350	1.0		2.3	4.0	0.9	
27229.02	ND2	02-Jul-07	Jun-07	Client	1215	1565	0.2		2.2	4.0	0.2	
27526.02	ND2	03-Aug-07	Jul-07	Client	0835	210	0.4		2.1	4.0	0.3	
28113.02	ND2	04-Oct-07	Sep-07	Client	1140	50	0.5		2.0	4.0	0.3	
28392.02	ND2	05-Nov-07	Oct-07	Client	1500	635	1.1		2.0	4.0	0.7	
28656.02	ND2	04-Dec-07	Nov-07	Client	1130	1140	0.9		1.9	4.0	0.6	
28917.02	ND2	03-Jan-08	Dec-07	Client	1440	1800	1.0		1.9	4.0	0.6	
29219.02	ND2	04-Feb-08	Jan-08	Client	1325	1410	0.5		1.8	4.0	0.4	
29219.02	ND2	03-Mar-08	Feb-08	Client	1045	2065	0.8		1.8	4.0	0.4	
29767.02	ND2	02-Apr-08	Mar-08	Client	1110	85	3.7		1.9	4.0	1.2	
30049.02	ND2	09-May-08	Apr-08	Client	0855	480	1.1		1.8	4.0	0.8	
30380-02	ND2	02-Jun-08	May-08	Client	1230	175	2.6		1.9	4.0	2.0	
30654.02	ND2	01-Jul-08	Jun-08	Client	1225	1075	1.7		1.9	4.0	1.4	
30896.02	ND2	04-Aug-08	Jul-08	Client	1010	625	0.6		1.8	4.0	0.5	
31204.02	ND2	01-Sep-08	Aug-08	Client	1040	980	0.5		1.8	4.0	0.4	
31522.02	ND2	02-Oct-08	Sep-08	Client	0840	1815	1.4		1.8	4.0	0.8	
31769.02	ND2	03-Nov-08	Oct-08	Client	1106	1080	0.8		1.7	4.0	0.8	
32017.02	ND2	03-Dec-08	Nov-08	Client	1200	1675	1.6		1.7	4.0	1.0	
32512.02	ND2	05-Jan-09	Dec-08	Client	0943	2765	1.3		1.7	4.0	1.0	
32240.02	ND2	02-Feb-09	Jan-09	Client	0950	635	2.3		1.7	4.0	1.9	
32857.02	ND2	02-Mar-09	Feb-09	Client	0845	2580	1.9		1.7	4.0	1.4	
2600 1003-00	ND2	01-Apr-09	Mar-09	ALS		15	13.8		2.0	4.0	6.6	Insects, Bird droppings
2600 1021-00	ND2	01-May-09	Apr-09	ALS		1000	0.6		2.0	4.0	0.4	Insects, Bird droppings
2600 1031-01	ND2	01-Jun-09	May-09	ALS		900	0.8		2.0	4.0	0.6	
2601 1041-01	ND2	06-Jul-09	Jun-09	ALS		400	0.5		1.9	4.0	0.3	Insects
2601 1053-01	ND2	03-Aug-09	Jul-09	ALS	0920	550	0.4		1.9	4.0	0.3	Insects, Bird Droppings, Plant Material
2600 1065-00	ND2	31-Aug-09	Aug-09	ALS	0935	100	2.2		1.9	4.0	1.7	Insects, Plant Material
2600 1065-00	ND2	28-Sep-09	Sep-09	ALS	1300	1000	20.5		1.9	4.0	16.9	Insects, Plant Material
2600 1125-00	ND2	03-Nov-09	Oct-09	ALS	1012	900	4.2		2.0	4.0	3.3	Insects, Bird Droppings
2600 1204-115	ND2	01-Dec-09	Nov-09	ALS	0956	100	1.9		2.0	4.0	1.3	Insects
2600 1222-00	ND2	31-Dec-09	Dec-09	ALS	1030	2400	10.3		2.1	4.0	8.7	Insects
2600 1234-00	ND2	01-Feb-10	Jan-10	ALS	1125	2200	3.8		2.2	4.0	2.8	Insects, Plant Material
2600 1247-00	ND2	03-Mar-10	Feb-10	ALS	1035	1100	1.3		2.2	4.0	0.9	Insects, Plant Material

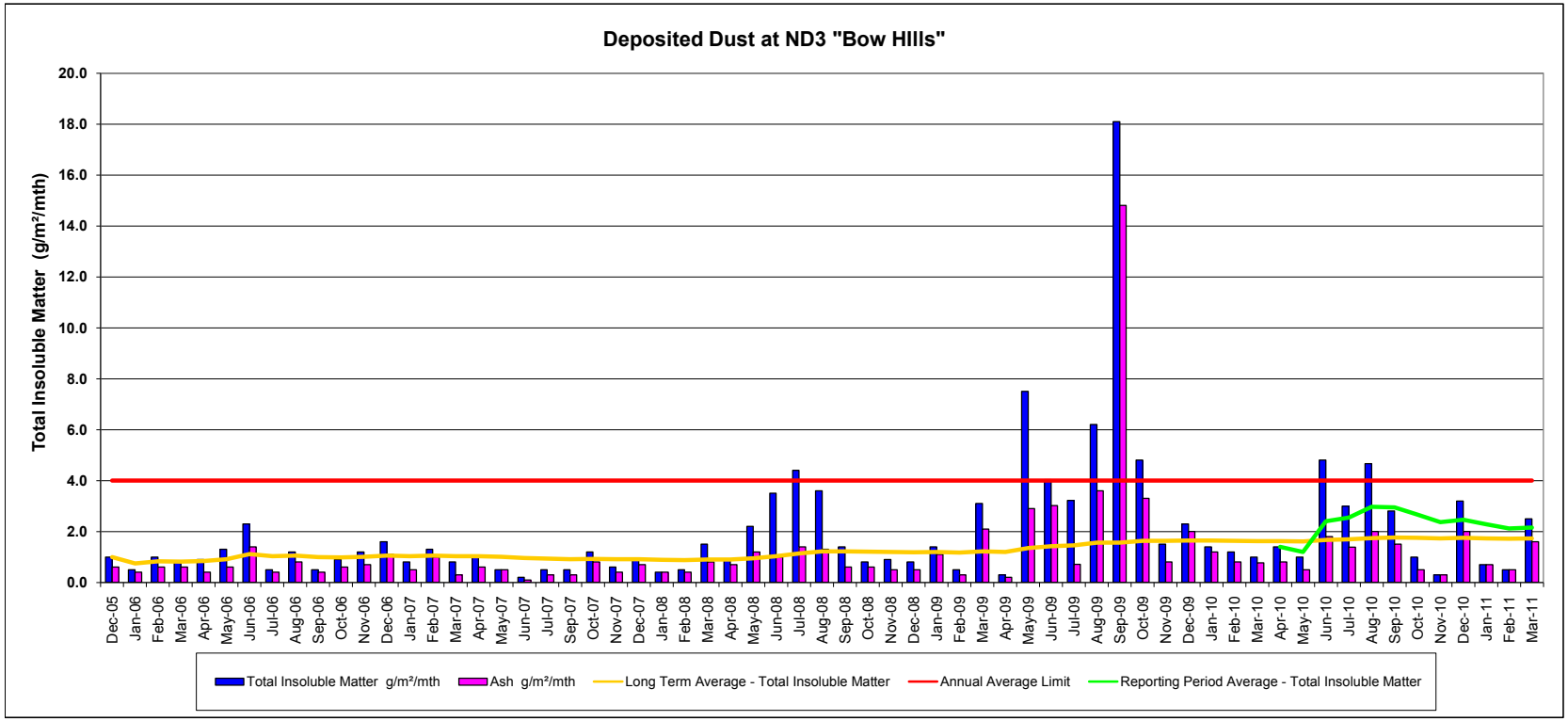
Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
2600 1260	ND2	31-Mar-10	Mar-10	ALS	0955	600	1.5		2.1	4.0	1.2	Insects, Plant Material
2600 1268	ND2	28-Apr-10	Apr-10	ALS	0925	150	1.0	1.0	2.1	4.0	0.6	Insects, Plant Material
26001277	ND2	26-May-10	May-10	ALS	0920	300	2.2	1.6	2.1	4.0	1.8	Insects
2600-1288	ND2	23-Jun-10	Jun-10	ALS	1110	300	1.4	1.5	2.1	4.0	1.2	Plant Material
26001298	ND2	21-Jul-10	Jul-10	ALS	0945	800	0.8	1.3	2.1	4.0	0.6	Insects,Plant Material
26001309915	ND2	20-Aug-10	Aug-10	ALS	1405	2300	1.6	1.4	2.1	4.0	1.3	Insects, Plant material
26001319	ND2	20-Sep-10	Sep-10	ALS	1220	1400	2.0	1.5	2.1	4.0	1.7	Insects, Plant material
2600-1340-18	ND2	20-Oct-10	Oct-10	ALS	1150	800	4.9	2.0	2.1	4.0	3.5	
EN1002881-002	ND2	19-Nov-10	Nov-10	ALS	1215	1800	2.3	2.0	2.1	4.0	2.0	
EN1003078-002	ND2	21-Dec-10	Dec-10	ALS	0910	2000	4.4	2.3	2.2	4.0	3.1	
EN1100178-002	ND2	20-Jan-11	Jan-11	ALS	0955	500	4.4	2.5	2.2	4.0	3.2	
EN1100432-002	ND2	21-Feb-11	Feb-11	ALS	0920	300	2.5	2.5	2.2	4.0	2.0	
EN1100689-002	ND2	23-Mar-11	Mar-11	ALS	1020	400	1.6	2.4	2.2	4.0	1.4	



Deposited Dust - ND3 "Bow Hills"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
21959.03	ND3	05-Jan-06	Dec-05	Client	1040	2550	1.0		1.0	4.0	0.6	
22569.03	ND3	03-Feb-06	Jan-06	Client	1340	475	0.5		0.8	4.0	0.4	
22720.03	ND3	09-Mar-06	Feb-06	Client	1235	1285	1.0		0.8	4.0	0.6	
23204.03	ND3	03-Apr-06	Mar-06	Client	1100	350	0.8		0.8	4.0	0.6	
23295.03	ND3	02-May-06	Apr-06	Client	0845	700	0.9		0.8	4.0	0.4	
23630.03	ND3	02-Jun-06	May-06	Client	0815	<10	1.3		0.9	4.0	0.6	
23882.03	ND3	28-Jun-06	Jun-06	Client	1630	660	2.3		1.1	4.0	1.4	
24078.03	ND3	31-Jul-06	Jul-06	Client	0930	1550	0.5		1.0	4.0	0.4	
24412.03	ND3	30-Aug-06	Aug-06	Client	1502	75	1.2		1.1	4.0	0.8	
24689.03	ND3	03-Oct-06	Sep-06	Client	1059	700	0.5		1.0	4.0	0.4	
24973.03	ND3	02-Nov-06	Oct-06	Client	1352	365	0.9		1.0	4.0	0.6	
25439.03	ND3	04-Dec-06	Nov-06	Client	1215	770	1.2		1.0	4.0	0.7	
25536.03	ND3	02-Jan-07	Dec-06	Client	1130	600	1.6		1.1	4.0	1.1	
25839.03	ND3	02-Feb-07	Jan-07	Client	1115	560	0.8		1.0	4.0	0.5	
26116.03	ND3	05-Mar-07	Feb-07	Client	1255	890	1.3		1.1	4.0	1.0	
26423.03	ND3	03-Apr-07	Mar-07	Client	0900	220	0.8		1.0	4.0	0.3	
26626.03	ND3	02-May-07	Apr-07	Client	1050	500	1.0		1.0	4.0	0.6	
26955.03	ND3	05-Jun-07	May-07	Client	1100	1285	0.5		1.0	4.0	0.5	
27229.03	ND3	02-Jul-07	Jun-07	Client	1405	1350	0.2		1.0	4.0	0.1	
27526.03	ND3	03-Aug-07	Jul-07	Client	0950	265	0.5		0.9	4.0	0.3	
28113.03	ND3	04-Oct-07	Sep-07	Client	1250	25	0.5		0.9	4.0	0.3	
28392.03	ND3	05-Nov-07	Oct-07	Client	1545	785	1.2		0.9	4.0	0.8	
28656.03	ND3	04-Dec-07	Nov-07	Client	1255	1370	0.6		0.9	4.0	0.4	
28917.03	ND3	03-Jan-08	Dec-07	Client	1545	1560	0.9		0.9	4.0	0.7	
29219.03	ND3	04-Feb-08	Jan-08	Client	1400	1365	0.4		0.9	4.0	0.4	
29219.03	ND3	03-Mar-08	Feb-08	Client	1630	1885	0.5		0.9	4.0	0.4	
29767.03	ND3	02-Apr-08	Mar-08	Client	1210	130	1.5		0.9	4.0	0.8	
30049.03	ND3	09-May-08	Apr-08	Client	1005	405	0.9		0.9	4.0	0.7	
30380-03	ND3	02-Jun-08	May-08	Client	1400	220	2.2		0.9	4.0	1.2	
30654.03	ND3	01-Jul-08	Jun-08	Client	1350	1060	3.5		1.0	4.0	1.0	
30896.03	ND3	04-Aug-08	Jul-08	Client	1055	685	4.4		1.1	4.0	1.4	
31204.03	ND3	01-Sep-08	Aug-08	Client	1147	945	3.6		1.2	4.0	1.3	
31522.03	ND3	02-Oct-08	Sep-08	Client	1000	1645	1.4		1.2	4.0	0.6	
31769.03	ND3	03-Nov-08	Oct-08	Client	1222	1395	0.8		1.2	4.0	0.6	
32017.03	ND3	03-Dec-08	Nov-08	Client	1106	1710	0.9		1.2	4.0	0.5	
32512.03	ND3	05-Jan-09	Dec-08	Client	1108	2760	0.8		1.2	4.0	0.5	
32240.03	ND3	02-Feb-09	Jan-09	Client	1145	465	1.4		1.2	4.0	1.1	
32857.03	ND3	02-Mar-09	Feb-09	Client	1118	2420	0.5		1.2	4.0	0.3	
2600 1003-00	ND3	01-Apr-09	Mar-09	ALS		100	3.1		1.2	4.0	2.1	Insects
2600 1021-00	ND3	01-May-09	Apr-09	ALS		800	0.3		1.2	4.0	0.2	
2600 1031-01	ND3	01-Jun-09	May-09	ALS		800	7.5		1.4	4.0	2.9	Bird droppings, plant material
2602 1041-01	ND3	06-Jul-09	Jun-09	ALS		350	4.0		1.4	4.0	3.0	Bird Droppings, Insects
2602 1053-01	ND3	03-Aug-09	Jul-09	ALS	1100	450	3.2		1.5	4.0	0.7	Insects, Bird Droppings, Plant Material
2600 1065-00	ND3	31-Aug-09	Aug-09	ALS	1155	100	6.2		1.6	4.0	3.6	Insects, Bird Droppings, Plant Material
2600 1065-00	ND3	28-Sep-09	Sep-09	ALS	1451	600	18.1		1.6	4.0	14.8	Insects, Bird Droppings
2600 1125-00	ND3	03-Nov-09	Oct-09	ALS	1111	700	4.8		1.6	4.0	3.3	Insects, Plant Material
2600 1204-115	ND3	01-Dec-09	Nov-09	ALS	1155	100	1.5		1.6	4.0	0.8	Bird droppings, Plant Material
2600 1222-00	ND3	31-Dec-09	Dec-09	ALS	1142	2300	2.3		1.7	4.0	2.0	Insects
2600 1234-00	ND3	01-Feb-10	Jan-10	ALS	1220	2200	1.4		1.6	4.0	1.2	Insects
2600 1247-00	ND3	03-Mar-10	Feb-10	ALS	1240	1200	1.2		1.6	4.0	0.8	Insects, Plant Material

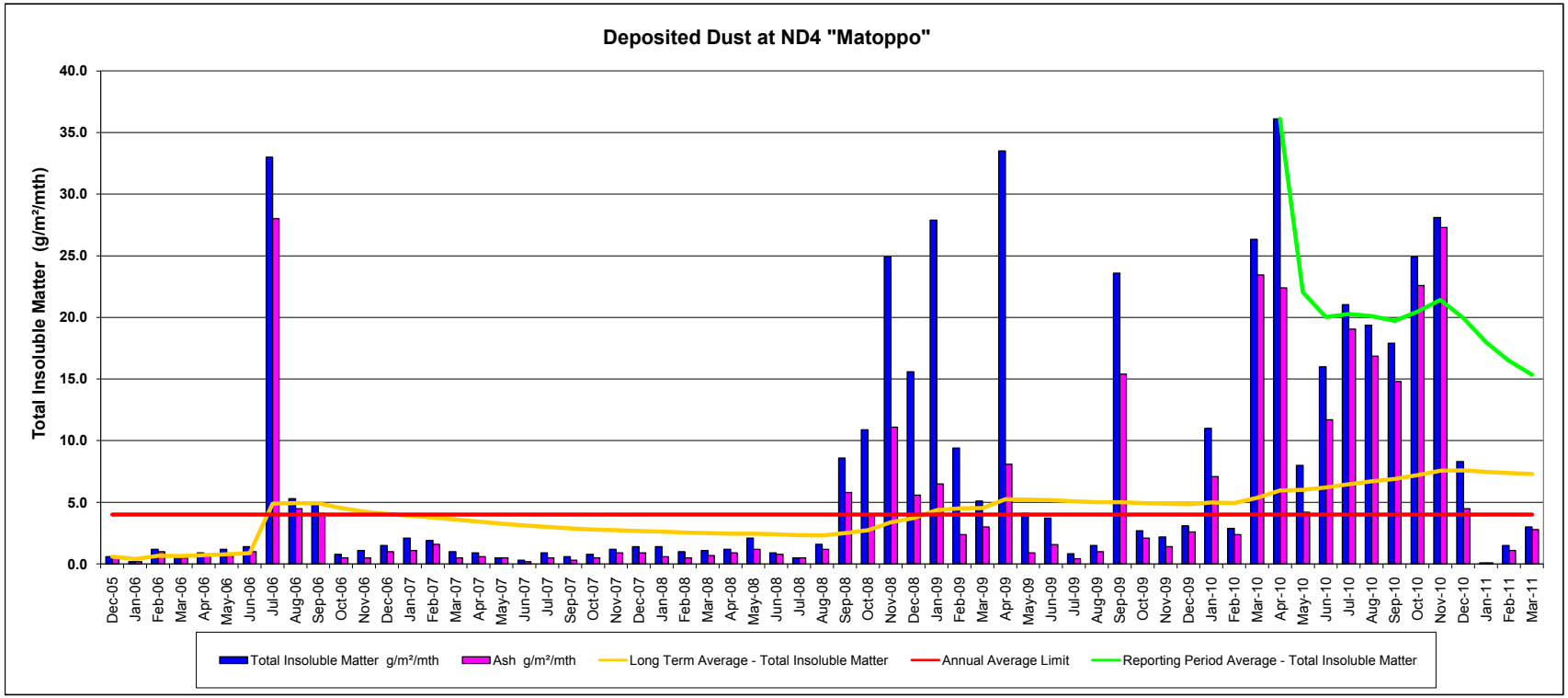
Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
2600 1260	ND3	31-Mar-10	Mar-10	ALS	1230	500	1.0		1.6	4.0	0.8	Insects, Plant Material
2600 1268	ND3	28-Apr-10	Apr-10	ALS	1140	150	1.4	1.4	1.6	4.0	0.8	Insects, Plant Material
26001277	ND3	26-May-10	May-10	ALS	1155	300	1.0	1.2	1.6	4.0	0.5	Insects
2600-1288	ND3	23-Jun-10	Jun-10	ALS	0935	500	4.8	2.4	1.7	4.0	1.8	Insects, Bird Droppings, Plant Material
26001298	ND3	21-Jul-10	Jul-10	ALS	1215	750	3.0	2.5	1.7	4.0	1.4	Bird Droppings
26001309915	ND3	20-Aug-10	Aug-10	ALS	1510	2000	4.7	3.0	1.7	4.0	2.0	Insects, Plant material
26001319	ND3	20-Sep-10	Sep-10	ALS	1340	1300	2.8	2.9	1.8	4.0	1.5	Insects, Plant material
2600-1340-18	ND3	20-Oct-10	Oct-10	ALS	1340	800	1.0	2.7	1.8	4.0	0.5	
EN1002881-003	ND3	19-Nov-10	Nov-10	ALS	1300	1500	0.3	2.4	1.7	4.0	0.3	
EN1003078-003	ND3	21-Dec-10	Dec-10	ALS	1025	2000	3.2	2.5	1.8	4.0	2.0	
EN1100178-003	ND3	20-Jan-11	Jan-11	ALS	1100	1000	0.7	2.3	1.7	4.0	0.7	
EN1100432-003	ND3	21-Feb-11	Feb-11	ALS	1050	400	0.5	2.1	1.7	4.0	0.5	
EN1100689-003	ND3	23-Mar-11	Mar-11	ALS	1135	350	2.5	2.2	1.7	4.0	1.6	



Deposited Dust - ND4 "Matoppo"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
21959.04	ND4	05-Jan-06	Dec-05	Client	1010	2280	0.6		0.6	4.0	0.5	
22569.04	ND4	03-Feb-06	Jan-06	Client	1430	<10	0.2		0.4	4.0	0.2	
22720.04	ND4	09-Mar-06	Feb-06	Client	1215	980	1.2		0.7	4.0	1.0	
23204.04	ND4	03-Apr-06	Mar-06	Client	1115	250	0.6		0.7	4.0	0.5	
23295.04	ND4	02-May-06	Apr-06	Client	0830	600	0.9		0.7	4.0	0.6	
23630.04	ND4	02-Jun-06	May-06	Client	0755	<10	1.2		0.8	4.0	0.7	
23882.04	ND4	28-Jun-06	Jun-06	Client	1745	575	1.4		0.9	4.0	1.0	
24078.04	ND4	31-Jul-06	Jul-06	Client	0800	1450	33.0		4.9	4.0	28.0	
24412.04	ND4	30-Aug-06	Aug-06	Client	1453	20	5.3		4.9	4.0	4.5	
25689.04	ND4	03-Oct-06	Sep-06	Client	1110	550	4.8		4.9	4.0	4.1	
24973.04	ND4	02-Nov-06	Oct-06	Client	1307	200	0.8		4.5	4.0	0.5	
25439.04	ND4	04-Dec-06	Nov-06	Client	1225	325	1.1		4.3	4.0	0.5	
25536.04	ND4	02-Jan-07	Dec-06	Client	1330	420	1.5		4.0	4.0	1.0	
25839.04	ND4	02-Feb-07	Jan-07	Client	1135	75	2.1		3.9	4.0	1.1	
26116.04	ND4	05-Mar-07	Feb-07	Client	1310	625	1.9		3.8	4.0	1.6	
26423.04	ND4	03-Apr-07	Mar-07	Client	0915	115	1.0		3.6	4.0	0.5	
26626.04	ND4	02-May-07	Apr-07	Client	1015	415	0.9		3.4	4.0	0.6	
26955.04	ND4	05-Jun-07	May-07	Client	1110	975	0.5		3.3	4.0	0.5	
27229.04	ND4	02-Jul-07	Jun-07	Client	1330	1330	0.3		3.1	4.0	0.2	
27526.04	ND4	03-Aug-07	Jul-07	Client	1005	110	0.9		3.0	4.0	0.5	
28113.04	ND4	04-Oct-07	Sep-07	Client	1305	35	0.6		2.9	4.0	0.3	
28392.04	ND4	05-Nov-07	Oct-07	Client	1605	605	0.8		2.8	4.0	0.5	
28656.04	ND4	04-Dec-07	Nov-07	Client	1225	1040	1.2		2.7	4.0	0.9	
28917.04	ND4	03-Jan-08	Dec-07	Client	1555	1540	1.4		2.7	4.0	0.9	
29219.04	ND4	04-Feb-08	Jan-08	Client	1415	1535	1.4		2.6	4.0	0.6	
29219.04	ND4	03-Mar-08	Feb-08	Client	1515	1505	1.0		2.6	4.0	0.5	
29767.04	ND4	02-Apr-08	Mar-08	Client	1220	80	1.1		2.5	4.0	0.7	
30049.04	ND4	09-May-08	Apr-08	Client	1020	455	1.2		2.5	4.0	0.9	
30380-04	ND4	02-Jun-08	May-08	Client	1410	120	2.1		2.4	4.0	1.2	
30654.04	ND4	01-Jul-08	Jun-08	Client	1400	790	0.9		2.4	4.0	0.8	
30896.04	ND4	04-Aug-08	Jul-08	Client	1105	455	0.5		2.3	4.0	0.5	
31204.04	ND4	01-Sep-08	Aug-08	Client	1200	800	1.6		2.3	4.0	1.2	
31522.04	ND4	02-Oct-08	Sep-08	Client	0945	1285	8.6		2.5	4.0	5.8	
31769.04	ND4	03-Nov-08	Oct-08	Client	1236	1350	10.9		2.8	4.0	4.0	
32017.04	ND4	03-Dec-08	Nov-08	Client	1310	1455	24.9		3.4	4.0	11.1	
32512.04	ND4	05-Jan-09	Dec-08	Client	1057	2175	15.6		3.7	4.0	5.6	
32240.04	ND4	02-Feb-09	Jan-09	Client	1130	440	27.9		4.4	4.0	6.5	
32857.04	ND4	02-Mar-09	Feb-09	Client	1045	1970	9.4		4.5	4.0	2.4	
2600 1003-00	ND4	01-Apr-09	Mar-09	ALS		100	5.1		4.5	4.0	3.0	Bird Droppings
2600 1021-00	ND4	01-May-09	Apr-09	ALS		800	33.5		5.2	4.0	8.1	Insects, Bird droppings
2600 1031-01	ND4	01-Jun-09	May-09	ALS		800	4.1		5.2	4.0	0.9	Bird droppings, plant material
2603 1041-01	ND4	06-Jul-09	Jun-09	ALS		350	3.7		5.2	4.0	1.6	Bird Droppings, Insects
2603 1053-01	ND4	03-Aug-09	Jul-09	ALS	1050	450	0.8		5.1	4.0	0.4	Insects, Plant Material
2600 1065-00	ND4	31-Aug-09	Aug-09	ALS	1140	100	1.5		5.0	4.0	1.0	Insects, Plant Material
2600 1065-00	ND4	28-Sep-09	Sep-09	ALS	1440	600	23.6		5.0	4.0	15.4	Insects, Bird Droppings, Plant Material
2600 1125-00	ND4	03-Nov-09	Oct-09	ALS	1100	700	2.7		5.0	4.0	2.1	Insects, Plant Material
2600 1204-115	ND4	01-Dec-09	Nov-09	ALS	1125	20	2.2		4.9	4.0	1.4	Insects, Bird Droppings, Plant Material
2600 1222-00	ND4	31-Dec-09	Dec-09	ALS	1100	2400	3.1		4.9	4.0	2.6	
2600 1234-00	ND4	01-Feb-10	Jan-10	ALS	1210	1600	11.0		5.0	4.0	7.1	Insects, Bird Droppings, Plant Material
2600 1247-00	ND4	03-Mar-10	Feb-10	ALS	1225	1000	2.9		4.9	4.0	2.4	Insects

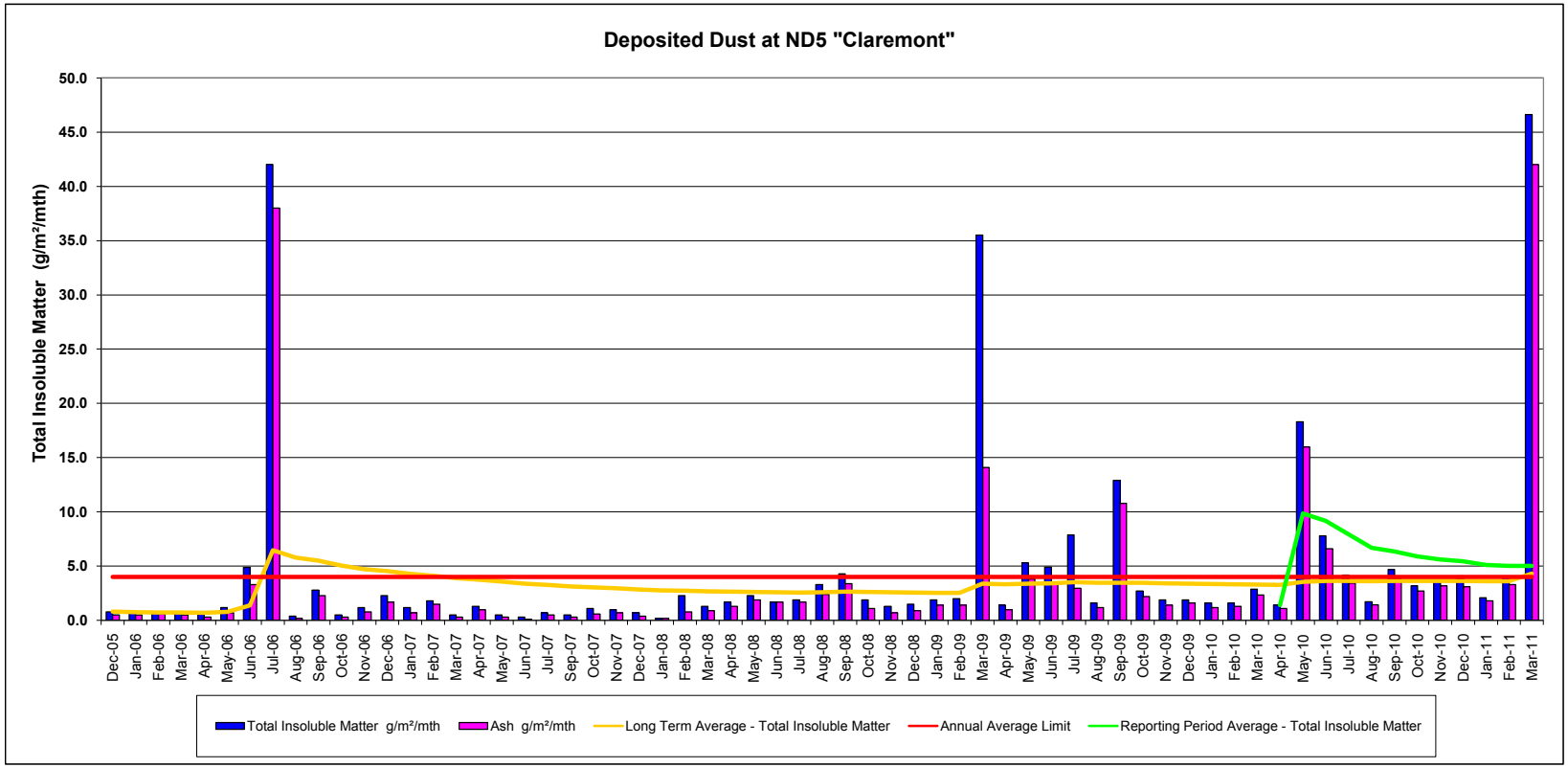
Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
2600 1260	ND4	31-Mar-10	Mar-10	ALS	1215	600	26.3		5.4	4.0	23.4	Insects, Plant Material
2600 1268	ND4	28-Apr-10	Apr-10	ALS	1130	75	36.1	36.1	6.0	4.0	22.4	Insects, Bird Droppings, Plant Material, Farming
26001277	ND4	26-May-10	May-10	ALS	1135	300	8.0	22.1	6.0	4.0	4.2	Plant Material
2600-1288	ND4	23-Jun-10	Jun-10	ALS	0945	400	16.0	20.0	6.2	4.0	11.7	Insects, Bird Droppings, Plant Material
26001298	ND4	21-Jul-10	Jul-10	ALS	1150	600	21.0	20.3	6.5	4.0	19.1	Insects
26001309915	ND4	20-Aug-10	Aug-10	ALS	1500	1800	19.4	20.1	6.7	4.0	16.9	Insects, Plant material, Bird droppings
26001319	ND4	20-Sep-10	Sep-10	ALS	1325	1200	17.9	19.7	6.9	4.0	14.8	Insects, Plant material, Bird droppings
2600-1340-18	ND4	20-Oct-10	Oct-10	ALS	1245	800	24.9	20.5	7.2	4.0	22.6	
EN1002881-004	ND4	19-Nov-10	Nov-10	ALS	1250	1800	28.1	21.4	7.6	4.0	27.3	No Funnel
EN1003078-004	ND4	21-Dec-10	Dec-10	ALS	1000	900	8.3	20.0	7.6	4.0	4.5	No Funnel
EN1100178-004	ND4	20-Jan-11	Jan-11	ALS	1045	0	0.1	18.0	7.5	4.0	0.1	No Funnel
EN1100432-004	ND4	21-Feb-11	Feb-11	ALS	1040	700	1.5	16.5	7.4	4.0	1.1	
EN1100689-004	ND4	23-Mar-11	Mar-11	ALS	1049	200	3.0	15.4	7.3	4.0	2.8	



Deposited Dust - ND5 "Claremont"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
21959.05	ND5	05-Jan-06	Dec-05	Client	1050	1360	0.8		0.8	4.0	0.5	
22569.05	ND5	03-Feb-06	Jan-06	Client	1405	125	0.7		0.8	4.0	0.5	
22720.05	ND5	09-Mar-06	Feb-06	Client	1310	950	0.7		0.7	4.0	0.6	
23204.05	ND5	03-Apr-06	Mar-06	Client	1045	125	0.7		0.7	4.0	0.5	
23295.05	ND5	02-May-06	Apr-06	Client	0910	500	0.6		0.7	4.0	0.3	
23630.05	ND5	02-Jun-06	May-06	Client	0830	<10	1.2		0.8	4.0	0.7	
23882.05	ND5	28-Jun-06	Jun-06	Client	1732	610	4.9		1.4	4.0	3.3	
24078.05	ND5	31-Jul-06	Jul-06	Client	0810	1430	42.0		6.5	4.0	38.0	
24412.05	ND5	30-Aug-06	Aug-06	Client	1446	30	0.4		5.8	4.0	0.2	
25689.05	ND5	03-Oct-06	Sep-06	Client	1120	700	2.8		5.5	4.0	2.3	
24973.05	ND5	02-Nov-06	Oct-06	Client	1313	345	0.5		5.0	4.0	0.3	
25439.05	ND5	04-Dec-06	Nov-06	Client	1235	620	1.2		4.7	4.0	0.8	
25536.05	ND5	02-Jan-07	Dec-06	Client	1340	620	2.3		4.5	4.0	1.7	
25839.05	ND5	02-Feb-07	Jan-07	Client	1155	260	1.2		4.3	4.0	0.7	
26114.05	ND5	05-Mar-07	Feb-07	Client	1320	880	1.8		4.1	4.0	1.5	
26423.05	ND5	03-Apr-07	Mar-07	Client	0925	170	0.5		3.9	4.0	0.3	
26626.05	ND5	02-May-07	Apr-07	Client	1030	380	1.3		3.7	4.0	1.0	
26955.05	ND5	05-Jun-07	May-07	Client	1120	1150	0.5		3.6	4.0	0.3	
27229.05	ND5	02-Jul-07	Jun-07	Client	1345	1310	0.3		3.4	4.0	0.1	
27526.05	ND5	03-Aug-07	Jul-07	Client	1015	185	0.7		3.3	4.0	0.5	
28113.05	ND5	04-Oct-07	Sep-07	Client	1310	45	0.5		3.1	4.0	0.3	
28392.05	ND5	05-Nov-07	Oct-07	Client	1610	625	1.1		3.0	4.0	0.6	
28656.05	ND5	04-Dec-07	Nov-07	Client	1235	1210	1.0		2.9	4.0	0.7	
28917.05	ND5	03-Jan-08	Dec-07	Client	1605	1335	0.7		2.9	4.0	0.4	
29219.05	ND5	04-Feb-08	Jan-08	Client	1425	1235	0.2		2.7	4.0	0.2	
29219.05	ND5	03-Mar-08	Feb-08	Client	1545	1985	2.3		2.7	4.0	0.8	
29767.05	ND5	02-Apr-08	Mar-08	Client	1245	100	1.3		2.7	4.0	0.9	
30049.05	ND5	09-May-08	Apr-08	Client	1050	425	1.7		2.6	4.0	1.3	
30380-05	ND5	02-Jun-08	May-08	Client	1440	190	2.3		2.6	4.0	1.9	
30654.05	ND5	01-Jul-08	Jun-08	Client	1425	870	1.7		2.6	4.0	1.7	
30896.05	ND5	04-Aug-08	Jul-08	Client	1115	510	1.9		2.6	4.0	1.7	
31204.05	ND5	01-Sep-08	Aug-08	Client	1210	840	3.3		2.6	4.0	2.4	
31522.05	ND5	02-Oct-08	Sep-08	Client	0935	1495	4.3		2.6	4.0	3.4	
31769.05	ND5	03-Nov-08	Oct-08	Client	1250	1220	1.9		2.6	4.0	1.1	
32017.05	ND5	03-Dec-08	Nov-08	Client	1250	1440	1.3		2.6	4.0	0.7	
32512.05	ND5	05-Jan-09	Dec-08	Client	1030	2760	1.5		2.6	4.0	0.9	
32240.05	ND5	02-Feb-09	Jan-09	Client	1115	450	1.9		2.5	4.0	1.4	
32857.05	ND5	02-Mar-09	Feb-09	Client	1000	2300	2.0		2.5	4.0	1.4	
2600 1003-00	ND5	01-Apr-09	Mar-09	ALS		100	35.5		3.4	4.0	14.1	Insects, Bird droppings
2600 1021-00	ND5	01-May-09	Apr-09	ALS		800	1.4		3.3	4.0	1.0	Bird droppings
2600 1031-01	ND5	01-Jun-09	May-09	ALS		750	5.3		3.4	4.0	3.8	Plant material
2604 1041-01	ND5	06-Jul-09	Jun-09	ALS		400	4.9		3.4	4.0	3.5	Insects, Plant Material
2604 1053-01	ND5	03-Aug-09	Jul-09	ALS	1035	450	7.9		3.5	4.0	3.0	Insects, Bird Droppings
2600 1065-00	ND5	31-Aug-09	Aug-09	ALS	1113	100	1.6		3.5	4.0	1.2	Insects, Plant Material
2600 1065-00	ND5	28-Sep-09	Sep-09	ALS	1428	700	12.9		3.5	4.0	10.8	Insects, Plant Material
2600 1125-00	ND5	03-Nov-09	Oct-09	ALS	1050	800	2.7		3.5	4.0	2.2	Insects, Bird Droppings
2600 1204-115	ND5	01-Dec-09	Nov-09	ALS	1116	100	1.9		3.4	4.0	1.4	Insects, Plant Material
2600 1222-00	ND5	31-Dec-09	Dec-09	ALS	1115	2400	1.9		3.4	4.0	1.6	
2600 1234-00	ND5	01-Feb-10	Jan-10	ALS	1205	1800	1.6		3.3	4.0	1.2	Insects, Plant Material
2600 1247-00	ND5	03-Mar-10	Feb-10	ALS	1210	1000	1.6		3.3	4.0	1.3	Insects
2600 1260	ND5	31-Mar-10	Mar-10	ALS	1150	600	2.9		3.3	4.0	2.3	Insects, Plant Material

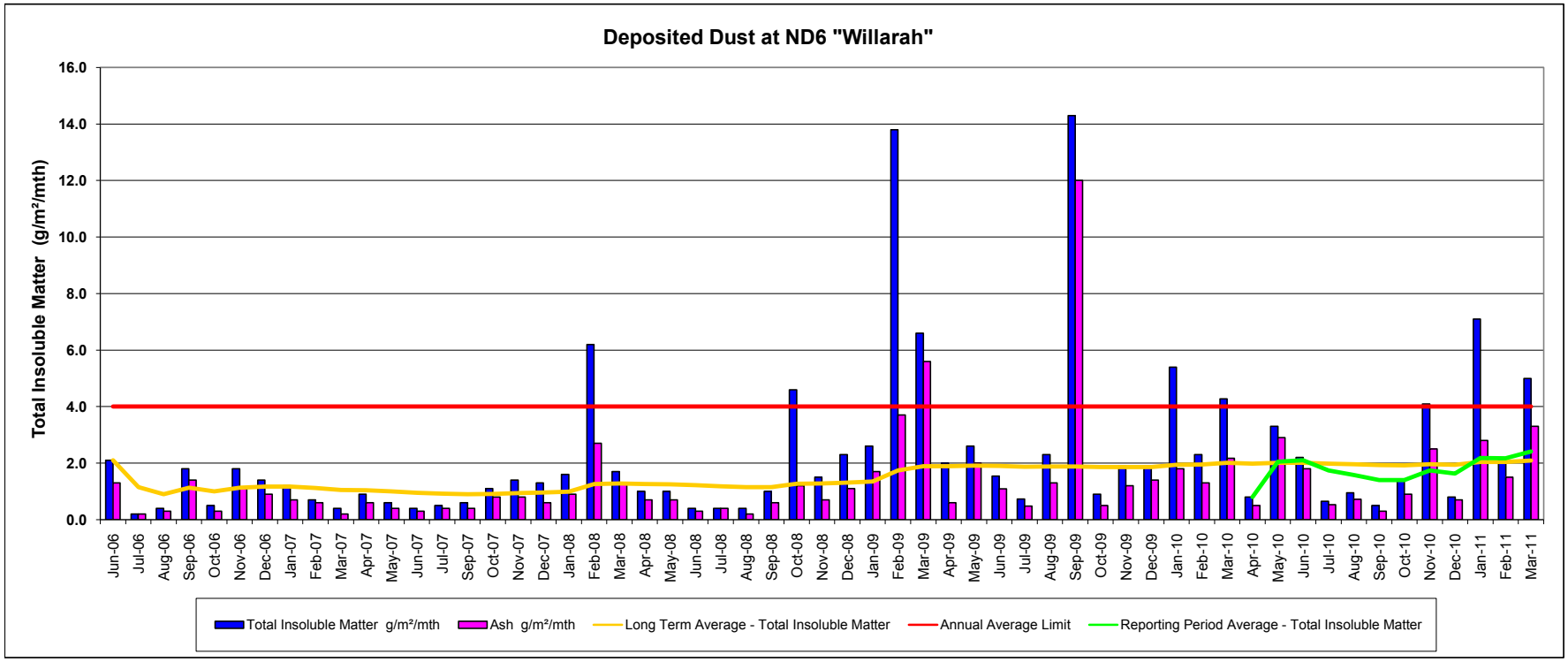
Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
2600 1268	ND5	28-Apr-10	Apr-10	ALS	1110	150	1.4	1.4	3.3	4.0	1.1	Insects, Plant Material
26001277	ND5	26-May-10	May-10	ALS	1110	300	18.3	9.9	3.6	4.0	16.0	Insects
2600-1288	ND5	23-Jun-10	Jun-10	ALS	0955	400	7.8	9.2	3.6	4.0	6.6	Insects, Plant Material
26001298	ND5	21-Jul-10	Jul-10	ALS	1130	650	4.2	7.9	3.6	4.0	3.4	Insects, Plant Material
26001309915	ND5	20-Aug-10	Aug-10	ALS	1450	2300	1.7	6.7	3.6	4.0	1.4	Insects, Plant material
26001319	ND5	20-Sep-10	Sep-10	ALS	1300	1300	4.7	6.3	3.6	4.0	3.8	Insects, Plant material
2600-1340-18	ND5	20-Oct-10	Oct-10	ALS	1230	600	3.2	5.9	3.6	4.0	2.7	
EN1002881-005	ND5	19-Nov-10	Nov-10	ALS	1240	1500	3.6	5.6	3.6	4.0	3.2	
EN1003078-005	ND5	21-Dec-10	Dec-10	ALS	0940	2000	4.1	5.4	3.6	4.0	3.1	
EN1100178-005	ND5	20-Jan-11	Jan-11	ALS	1035	400	2.1	5.1	3.6	4.0	1.8	
EN1100432-005	ND5	21-Feb-11	Feb-11	ALS	1015	700	4.0	5.0	3.6	4.0	3.3	
EN1100689-005	ND5	23-Mar-11	Mar-11	ALS	1120	300	46.6	5.0	4.3	4.0	42.0	Amenity bund construction and frequent use of adjacent unsealed road



Deposited Dust - ND6 "Willarah"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
23882.06	ND6	28-Jun-06	Jun-06	Client	1720	60	2.1		2.1	4.0	1.3	
24078.06	ND6	31-Jul-06	Jul-06	Client	0830	1280	0.2		1.2	4.0	0.2	
24412.06	ND6	30-Aug-06	Aug-06	Client	1438	30	0.4		0.9	4.0	0.3	
25689.06	ND6	03-Oct-06	Sep-06	Client	1131	400	1.8		1.1	4.0	1.4	
24973.06	ND6	02-Nov-06	Oct-06	Client	1318	255	0.5		1.0	4.0	0.3	
25439.06	ND6	04-Dec-06	Nov-06	Client	1245	560	1.8		1.1	4.0	1.1	
25536.06	ND6	02-Jan-07	Dec-06	Client	1350	280	1.4		1.2	4.0	0.9	
25839.06	ND6	02-Feb-07	Jan-07	Client	1145	60	1.2		1.2	4.0	0.7	
26114.06	ND6	05-Mar-07	Feb-07	Client	1330	890	0.7		1.1	4.0	0.6	
26423.06	ND6	03-Apr-07	Mar-07	Client	0930	<50	0.4		1.1	4.0	0.2	
26626.06	ND6	02-May-07	Apr-07	Client	1035	435	0.9		1.0	4.0	0.6	
26955.06	ND6	05-Jun-07	May-07	Client	1127	1105	0.6		1.0	4.0	0.4	
27229.06	ND6	02-Jul-07	Jun-07	Client	1350	1305	0.4		1.0	4.0	0.3	
27526.06	ND6	03-Aug-07	Jul-07	Client	1025	105	0.5		0.9	4.0	0.4	
28113.06	ND6	04-Oct-07	Sep-07	Client	1325	75	0.6		0.9	4.0	0.4	
28392.06	ND6	05-Nov-07	Oct-07	Client	1620	595	1.1		0.9	4.0	0.8	
28656.06	ND6	04-Dec-07	Nov-07	Client	1245	880	1.4		0.9	4.0	0.8	
28917.06	ND6	03-Jan-08	Dec-07	Client	1615	1445	1.3		1.0	4.0	0.6	
29219.06	ND6	04-Feb-08	Jan-08	Client	1440	925	1.6		1.0	4.0	0.9	
29219.06	ND6	03-Mar-08	Feb-08	Client	1600	1750	6.2		1.3	4.0	2.7	
29767.06	ND6	02-Apr-08	Mar-08	Client	1255	160	1.7		1.3	4.0	1.3	
30049.06	ND6	09-May-08	Apr-08	Client	1055	345	1.0		1.3	4.0	0.7	
30380-06	ND6	02-Jun-08	May-08	Client	1450	190	1.0		1.3	4.0	0.7	
30654.06	ND6	01-Jul-08	Jun-08	Client	1435	885	0.4		1.2	4.0	0.3	
30896.06	ND6	04-Aug-08	Jul-08	Client	1120	595	0.4		1.2	4.0	0.4	
31204.06	ND6	01-Sep-08	Aug-08	Client	1215	695	0.4		1.2	4.0	0.2	
31522.06	ND6	02-Oct-08	Sep-08	Client	0920	1465	1.0		1.1	4.0	0.6	
31769.06	ND6	03-Nov-08	Oct-08	Client	1300	1295	4.6		1.3	4.0	1.2	
32017.06	ND6	03-Dec-08	Nov-08	Client	1300	1505	1.5		1.3	4.0	0.7	
32512.06	ND6	05-Jan-09	Dec-08	Client	1022	2750	2.3		1.3	4.0	1.1	
32240.06	ND6	02-Feb-09	Jan-09	Client	1103	480	2.6		1.4	4.0	1.7	
32857.06	ND6	02-Mar-09	Feb-09	Client	0950	1900	13.8		1.7	4.0	3.7	
2600 1003-00	ND6	01-Apr-09	Mar-09	ALS		100	6.6		1.9	4.0	5.6	Insects, frogs
2600 1021-00	ND6	01-May-09	Apr-09	ALS		600	2.0		1.9	4.0	0.6	Insects, Bird droppings
2600 1031-01	ND6	01-Jun-09	May-09	ALS		750	2.6		1.9	4.0	2.0	
2605 1041-01	ND6	06-Jul-09	Jun-09	ALS		400	1.5		1.9	4.0	1.1	Insects
2605 1053-01	ND6	03-Aug-09	Jul-09	ALS	1030	500	0.7		1.9	4.0	0.5	Insects, Plant Material
2600 1065-00	ND6	31-Aug-09	Aug-09	ALS	1105	100	2.3		1.9	4.0	1.3	Insects, Plant Material
2600 1065-00	ND6	28-Sep-09	Sep-09	ALS	1420	700	14.3		1.9	4.0	12.0	Insects, Plant Material
2600 1125-00	ND6	03-Nov-09	Oct-09	ALS	1045	800	0.9		1.9	4.0	0.5	Bird Droppings, Plant Material
2600 1204-115	ND6	01-Dec-09	Nov-09	ALS	1110	50	1.9		1.9	4.0	1.2	Insects, Plant Material
2600 1222-00	ND6	31-Dec-09	Dec-09	ALS	1125	2400	1.9		1.9	4.0	1.4	Bird Droppings
2600 1234-00	ND6	01-Feb-10	Jan-10	ALS	1200	1800	5.4		1.9	4.0	1.8	Insects, Plant Material
2600 1247-00	ND6	03-Mar-10	Feb-10	ALS	1215	900	2.3		2.0	4.0	1.3	Insects, Bird Droppings
2600 1260	ND6	31-Mar-10	Mar-10	ALS	1200	500	4.3		2.0	4.0	2.2	Insects, Plant Material
2600 1268	ND6	28-Apr-10	Apr-10	ALS	1120	150	0.8	0.8	2.0	4.0	0.5	Insects, Plant Material

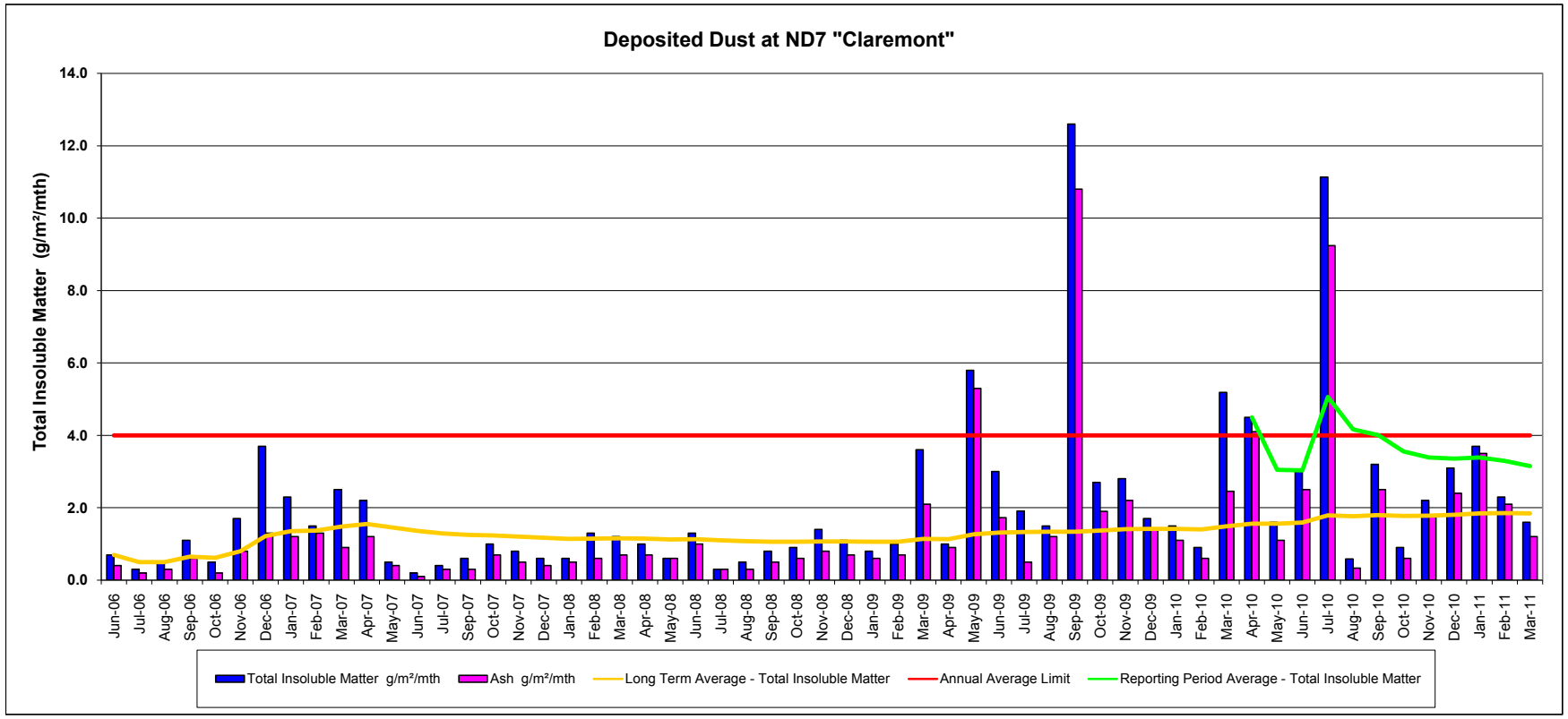
Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
26001277	ND6	26-May-10	May-10	ALS	1120	300	3.3	2.1	2.0	4.0	2.9	Insects, Plant Material
2600-1288	ND6	23-Jun-10	Jun-10	ALS	1005	200	2.2	2.1	2.0	4.0	1.8	Insects, Plant Material
26001298	ND6	21-Jul-10	Jul-10	ALS	1140	600	0.6	1.7	2.0	4.0	0.5	Insects
26001309915	ND6	20-Aug-10	Aug-10	ALS	1445	2300	1.0	1.6	2.0	4.0	0.7	Insects, Plant material
26001319	ND6	20-Sep-10	Sep-10	ALS	1310	1100	0.5	1.4	1.9	4.0	0.3	Insects, Plant material
2600-1340-18	ND6	20-Oct-10	Oct-10	ALS	1240	600	1.4	1.4	1.9	4.0	0.9	
EN1002881-006	ND6	19-Nov-10	Nov-10	ALS	1245	1500	4.1	1.7	2.0	4.0	2.5	
EN1003078-006	ND6	21-Dec-10	Dec-10	ALS	0950	2000	0.8	1.6	1.9	4.0	0.7	
EN1100178-006	ND6	20-Jan-11	Jan-11	ALS	1025	300	7.1	2.2	2.0	4.0	2.8	Dead frog in bottle
EN1100432-006	ND6	21-Feb-11	Feb-11	ALS	1000	500	2.1	2.2	2.0	4.0	1.5	
EN1100689-006	ND6	23-Mar-11	Mar-11	ALS	1115	250	5.0	2.4	2.1	4.0	3.3	Dead praying mantis in bottle



Deposited Dust - ND7 "Claremont"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
23882.07	ND7	28-Jun-06	Jun-06	Client	1709	90	0.7		0.7	4.0	0.4	
24078.07	ND7	31-Jul-06	Jul-06	Client	0845	1375	0.3		0.5	4.0	0.2	
24412.07	ND7	30-Aug-06	Aug-06	Client	1426	35	0.5		0.5	4.0	0.3	
25689.07	ND7	03-Oct-06	Sep-06	Client	1440	600	1.1		0.7	4.0	0.6	
24973.07	ND7	02-Nov-06	Oct-06	Client	1328	340	0.5		0.6	4.0	0.2	
25439.07	ND7	04-Dec-06	Nov-06	Client	1255	780	1.7		0.8	4.0	0.8	
25536.07	ND7	02-Jan-07	Dec-06	Client	1205	700	3.7		1.2	4.0	1.3	
25839.07	ND7	02-Feb-07	Jan-07	Client	1230	140	2.3		1.4	4.0	1.2	
26114.07	ND7	05-Mar-07	Feb-07	Client	1355	925	1.5		1.4	4.0	1.3	
26423.07	ND7	03-Apr-07	Mar-07	Client	1000	205	2.5		1.5	4.0	0.9	
26626.07	ND7	02-May-07	Apr-07	Client	1120	290	2.2		1.5	4.0	1.2	
26955.07	ND7	05-Jun-07	May-07	Client	1150	1025	0.5		1.5	4.0	0.4	
27299.07	ND7	02-Jul-07	Jun-07	Client	1225	1270	0.2		1.4	4.0	0.1	
27526.07	ND7	03-Aug-07	Jul-07	Client	0845	205	0.4		1.3	4.0	0.3	
28113.07	ND7	04-Oct-07	Sep-07	Client	1150	60	0.6		1.2	4.0	0.3	
28392.07	ND7	05-Nov-07	Oct-07	Client	1505	630	1.0		1.2	4.0	0.7	
28656.07	ND7	04-Dec-07	Nov-07	Client	1140	1050	0.8		1.2	4.0	0.5	
28917.07	ND7	03-Jan-08	Dec-07	Client	1510	1610	0.6		1.2	4.0	0.4	
29219.07	ND7	04-Feb-08	Jan-08	Client	1335	1580	0.6		1.1	4.0	0.5	
29219.07	ND7	03-Mar-08	Feb-08	Client	1000	1565	1.3		1.2	4.0	0.6	
29767.07	ND7	02-Apr-08	Mar-08	Client	1130	105	1.2		1.2	4.0	0.7	
30049.07	ND7	09-May-08	Apr-08	Client	0920	355	1.0		1.1	4.0	0.7	
30380-07	ND7	02-Jun-08	May-08	Client	1255	170	0.6		1.1	4.0	0.6	
30654.07	ND7	01-Jul-08	Jun-08	Client	1250	985	1.3		1.1	4.0	1.0	
30896.07	ND7	04-Aug-08	Jul-08	Client	1040	475	0.3		1.1	4.0	0.3	
31204.07	ND7	01-Sep-08	Aug-08	Client	1115	695	0.5		1.1	4.0	0.3	
31522.07	ND7	02-Oct-08	Sep-08	Client	0910	1340	0.8		1.1	4.0	0.5	
31769.07	ND7	03-Nov-08	Oct-08	Client	1140	1290	0.9		1.1	4.0	0.6	
32017.07	ND7	03-Dec-08	Nov-08	Client	1220	1345	1.4		1.1	4.0	0.8	
32512.07	ND7	05-Jan-09	Dec-08	Client	1009	2495	1.1		1.1	4.0	0.7	
32240.07	ND7	02-Feb-09	Jan-09	Client	1027	695	0.8		1.1	4.0	0.6	
32857.07	ND7	02-Mar-09	Feb-09	Client	0926	1950	1.0		1.1	4.0	0.7	
2600 1003-00	ND7	01-Apr-09	Mar-09	ALS		100	3.6		1.1	4.0	2.1	Insects, Bird droppings
2600 1021-00	ND7	01-May-09	Apr-09	ALS		800	1.0		1.1	4.0	0.9	Insects
2600 1031-01	ND7	01-Jun-09	May-09	ALS		750	5.8		1.3	4.0	5.3	Plant material
2606 1041-01	ND7	06-Jul-09	Jun-09	ALS		450	3.0		1.3	4.0	1.7	Insects, Plant Material
2606 1053-01	ND7	03-Aug-09	Jul-09	ALS	1015	400	1.9		1.3	4.0	0.5	Insects, Bird Droppings, Plant Material
2600 1065-00	ND7	31-Aug-09	Aug-09	ALS	1050	75	1.5		1.3	4.0	1.2	Insects, Plant Material
2600 1065-00	ND7	28-Sep-09	Sep-09	ALS	1410	600	12.6		1.3	4.0	10.8	Insects
2600 1125-00	ND7	03-Nov-09	Oct-09	ALS	1034	850	2.7		1.4	4.0	1.9	Insects, Plant Material
2600 1204-115	ND7	01-Dec-09	Nov-09	ALS	1100	100	2.8		1.4	4.0	2.2	Insects, Plant Material
2600 1222-00	ND7	04-Jan-10	Dec-09	ALS	1230	2500	1.7		1.4	4.0	1.4	Insects, Plant Material
2600 1234-00	ND7	01-Feb-10	Jan-10	ALS	1140	400	1.5		1.4	4.0	1.1	Insects, Plant Material
2600 1247-00	ND7	03-Mar-10	Feb-10	ALS	1150	800	0.9		1.4	4.0	0.6	Insects
2600 1260	ND7	31-Mar-10	Mar-10	ALS	1130	600	5.2		1.5	4.0	2.5	Insects, Plant Material
2600 1268	ND7	28-Apr-10	Apr-10	ALS	1050	150	4.5	4.5	1.6	4.0	4.1	Insects, Plant Material
26001277	ND7	26-May-10	May-10	ALS	1050	250	1.6	3.1	1.6	4.0	1.1	Insects, Plant Material

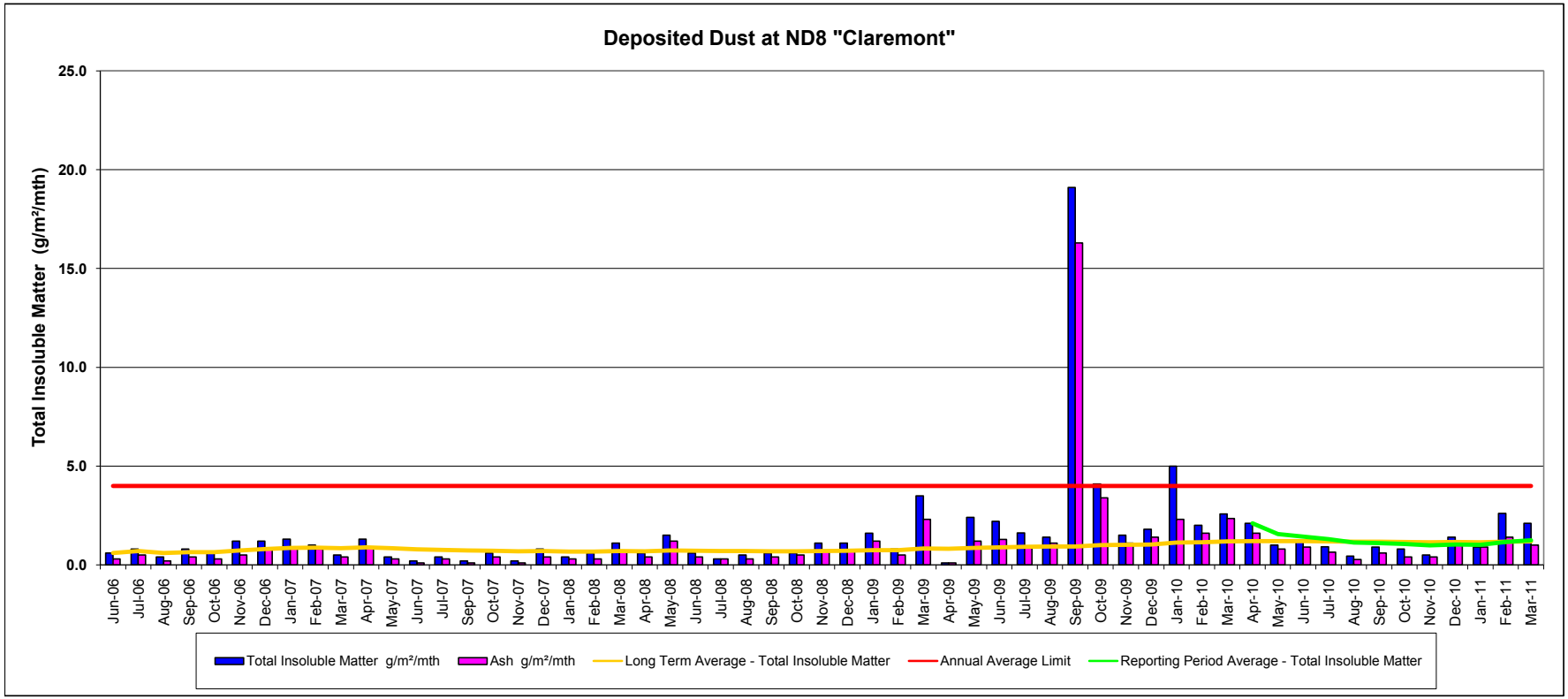
Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
2600-1288	ND7	23-Jun-10	Jun-10	ALS	1100	200	3.0	3.0	1.6	4.0	2.5	Insects, Plant Material
26001298	ND7	21-Jul-10	Jul-10	ALS	1120	700	11.1	5.1	1.8	4.0	9.2	Insects,Bird Droppings, Plant Material
26001309915	ND7	20-Aug-10	Aug-10	ALS	1430	2300	0.6	4.2	1.8	4.0	0.3	Insects, Plant material
26001319	ND7	20-Sep-10	Sep-10	ALS	1245	1200	3.2	4.0	1.8	4.0	2.5	Insects, Plant material
2600-1340-18	ND7	20-Oct-10	Oct-10	ALS	1215	600	0.9	3.6	1.8	4.0	0.6	
EN1002881-007	ND7	19-Nov-10	Nov-10	ALS	1230	1500	2.2	3.4	1.8	4.0	1.8	
EN1003078-007	ND7	21-Dec-10	Dec-10	ALS	0925	2000	3.1	3.4	1.8	4.0	2.4	
EN1100178-007	ND7	20-Jan-11	Jan-11	ALS	1015	300	3.7	3.4	1.8	4.0	3.5	
EN1100432-007	ND7	21-Feb-11	Feb-11	ALS	0945	400	2.3	3.3	1.8	4.0	2.1	
EN1100689-007	ND7	23-Mar-11	Mar-11	ALS	1035	200	1.6	3.2	1.8	4.0	1.2	



Deposited Dust - ND8 "Claremont"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
23882.08	ND8	28-Jun-06	Jun-06	Client	1658	75	0.6		0.6	4.0	0.3	
24078.08	ND8	31-Jul-06	Jul-06	Client	0905	1300	0.8		0.7	4.0	0.5	
24412.08	ND8	30-Aug-06	Aug-06	Client	1414	10	0.4		0.6	4.0	0.2	
25689.08	ND8	03-Oct-06	Sep-06	Client	1429	400	0.8		0.7	4.0	0.4	
24973.08	ND8	02-Nov-06	Oct-06	Client	1334	200	0.6		0.6	4.0	0.3	
25439.08	ND8	04-Dec-06	Nov-06	Client	1305	370	1.2		0.7	4.0	0.5	
25536.08	ND8	02-Jan-07	Dec-06	Client	1220	500	1.2		0.8	4.0	0.8	
25839.08	ND8	02-Feb-07	Jan-07	Client	1235	170	1.3		0.9	4.0	0.9	
26114.08	ND8	05-Mar-07	Feb-07	Client	1410	750	1.0		0.9	4.0	0.8	
26423.08	ND8	03-Apr-07	Mar-07	Client	1015	<50	0.5		0.8	4.0	0.4	
26626.08	ND8	02-May-07	Apr-07	Client	1105	285	1.3		0.9	4.0	0.9	
26955.08	ND8	05-Jun-07	May-07	Client	1200	1040	0.4		0.8	4.0	0.3	
27299.08	ND8	02-Jul-07	Jun-07	Client	1235	1265	0.2		0.8	4.0	0.1	
27526.08	ND8	03-Aug-07	Jul-07	Client	0855	100	0.4		0.8	4.0	0.3	
28113.08	ND8	04-Oct-07	Sep-07	Client	1155	20	0.2		0.7	4.0	0.1	
28392.08	ND8	05-Nov-07	Oct-07	Client	1510	570	0.6		0.7	4.0	0.4	
28656.08	ND8	04-Dec-07	Nov-07	Client	1150	755	0.2		0.7	4.0	0.1	
28917.08	ND8	03-Jan-08	Dec-07	Client	1500	1595	0.8		0.7	4.0	0.4	
29219.08	ND8	04-Feb-08	Jan-08	Client	1345	1230	0.4		0.7	4.0	0.3	
29219.08	ND8	03-Mar-08	Feb-08	Client	1125	1585	0.6		0.7	4.0	0.3	
29767.08	ND8	02-Apr-08	Mar-08	Client	1120	70	1.1		0.7	4.0	0.7	
30049.08	ND8	09-May-08	Apr-08	Client	0910	410	0.6		0.7	4.0	0.4	
30380.08	ND8	02-Jun-08	May-08	Client	1245	50	1.5		0.7	4.0	1.2	
30654.08	ND8	01-Jul-08	Jun-08	Client	1235	795	0.6		0.7	4.0	0.4	
30896.08	ND8	04-Aug-08	Jul-08	Client	1030	465	0.3		0.7	4.0	0.3	
31204.08	ND8	01-Sep-08	Aug-08	Client	1050	835	0.5		0.7	4.0	0.3	
31522.08	ND8	02-Oct-08	Sep-08	Client	0850	1510	0.6		0.7	4.0	0.4	
31769.08	ND8	03-Nov-08	Oct-08	Client	1120	1455	0.6		0.7	4.0	0.5	
32017.08	ND8	03-Dec-08	Nov-08	Client	1210	1460	1.1		0.7	4.0	0.7	
32512.08	ND8	05-Jan-09	Dec-08	Client	0955	2740	1.1		0.7	4.0	0.7	
32240.08	ND8	02-Feb-09	Jan-09	Client	1007	725	1.6		0.7	4.0	1.2	
32857.08	ND8	02-Mar-09	Feb-09	Client	0906	2250	0.8		0.7	4.0	0.5	
2600 1003-00	ND8	01-Apr-09	Mar-09	ALS		100	3.5		0.8	4.0	2.3	Insects
2600 1021-00	ND8	01-May-09	Apr-09	ALS		800	0.1		0.8	4.0	0.1	Insects
2600 1031-01	ND8	01-Jun-09	May-09	ALS		750	2.4		0.9	4.0	1.2	
2607 1041-01	ND8	06-Jul-09	Jun-09	ALS		350	2.2		0.9	4.0	1.3	Insects
2607 1053-01	ND8	03-Aug-09	Jul-09	ALS	0925	450	1.6		0.9	4.0	0.9	Insects, Plant Material
2600 1065-00	ND8	31-Aug-09	Aug-09	ALS	0940	100	1.4		0.9	4.0	1.1	Insects, Plant Material
2600 1065-00	ND8	28-Sep-09	Sep-09	ALS	1310	800	19.1		0.9	4.0	16.3	Insects
2600 1125-00	ND8	03-Nov-09	Oct-09	ALS	1018	900	4.1		1.0	4.0	3.4	Insects
2600 1204-115	ND8	01-Dec-09	Nov-09	ALS	1000	100	1.5		1.0	4.0	1.1	Insects, Plant Material
2600 1222-00	ND8	31-Dec-09	Dec-09	ALS	1015	2500	1.8		1.0	4.0	1.4	Insects
2600 1234-00	ND8	01-Feb-10	Jan-10	ALS	1130	2200	5.0		1.1	4.0	2.3	Insects, Plant Material
2600 1247-00	ND8	03-Mar-10	Feb-10	ALS	1050	1000	2.0		1.2	4.0	1.6	Insects
2600 1260	ND8	31-Mar-10	Mar-10	ALS	1010	600	2.6		1.2	4.0	2.3	Insects, Plant Material
2600 1268	ND8	28-Apr-10	Apr-10	ALS	0935	150	2.1	2.1	1.2	4.0	1.6	Insects, Plant Material

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time: (d)	Volume Collected (ml)	Total Insoluble Matter g/m²/mth	Reporting Period Average - Total Insoluble Matter	Long Term Average - Total Insoluble Matter	Annual Average Limit	Ash g/m²/mth	Comment
26001277	ND8	26-May-10	May-10	ALS	0935	300	1.0	1.6	1.2	4.0	0.8	Insects
2600-1288	ND8	23-Jun-10	Jun-10	ALS	1015	100	1.2	1.4	1.2	4.0	0.9	Insects, Plant Material
26001298	ND8	21-Jul-10	Jul-10	ALS	0955	800	0.9	1.3	1.2	4.0	0.6	Insects
26001309915	ND8	20-Aug-10	Aug-10	ALS	1410	2300	0.4	1.1	1.2	4.0	0.3	Insects, Plant material
26001319	ND8	20-Sep-10	Sep-10	ALS	1235	1200	0.9	1.1	1.2	4.0	0.6	Insects, Plant material
2600-1340-18	ND8	20-Oct-10	Oct-10	ALS	1200	800	0.8	1.1	1.2	4.0	0.4	
EN1002881-008	ND8	19-Nov-10	Nov-10	ALS	1220	1800	0.5	1.0	1.2	4.0	0.4	
EN1003078-008	ND8	21-Dec-10	Dec-10	ALS	0915	2000	1.4	1.0	1.2	4.0	1.1	
EN1100178-008	ND8	20-Jan-11	Jan-11	ALS	1000	500	0.9	1.0	1.2	4.0	0.9	
EN1100432-008	ND8	21-Feb-11	Feb-11	ALS	0930	400	2.6	1.2	1.2	4.0	1.4	
EN1100689-008	ND8	23-Mar-11	Mar-11	ALS	1010	500	2.1	1.2	1.2	4.0	1.0	



Claremont PM_{10} High Volume Air Sampler

Site	Site Id	Datum	Zone	Easting	Northing
Claremont PM10	ND-9	MGA	55	777047	6619621
Date	**mg/paper**	**µg/m^3**	**Annual Average**	**Annual Average Limit**	**24hr Limit**
1/12/2007	11.1	7	7.00	30	50
7/12/2007	20.5	14	10.50	30	50
13/12/2007	14.2	9	10.00	30	50
19/12/2007	16.1	11	10.25	30	50
25/12/2007	20.7	13	10.80	30	50
31/12/2007	14.1	9	10.50	30	50
6/01/2008	20.9	14	11.00	30	50
12/01/2008	37.4	24	12.63	30	50
18/01/2008	19.4	12	12.56	30	50
24/01/2008	33	21	13.40	30	50
30/01/2008	35.6	23	14.27	30	50
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

Date	mg/paper	µg/m^3	Annual Average	Annual Average Limit	24hr Limit
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
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
1/03/2009	29.2	19	10.11	30	50
7/03/2009	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
6/04/2009	19.4	12	9.49	30	50
12/04/2009	12.3	8	9.61	30	50
18/04/2009	46.2	29	9.97	30	50

Date	mg/paper	µg/m^3	Annual Average	Annual Average Limit	24hr Limit
24/04/2009	9.3	6	10.05	30	50
30/04/2009	12.9	8	10.16	30	50
6/05/2009	20	13	10.23	30	50
12/05/2009	26	16	10.44	30	50
18/05/2009	34.3	21	10.67	30	50
24/05/2009	12.9	8	10.75	30	50
30/05/2009	8.7	5	10.79	30	50
5/06/2009	4.2	3	10.80	30	50
11/06/2009	5	3	10.82	30	50
17/06/2009	1.6	1	10.80	30	50
23/06/2009	2.3	1	10.80	30	50
29/06/2009	4.9	5	10.82	30	50
5/07/2009	5	3	10.77	30	50
11/07/2009	8.5	5	10.80	30	50
17/07/2009	1	1	10.80	30	50
23/07/2009	17	11	10.89	30	50
29/07/2009	5.3	3	10.89	30	50
4/08/2009	10.9	7	10.93	30	50
10/08/2009	35.4	22	11.28	30	50
16/08/2009	14.8	9	11.38	30	50
22/08/2009	25.9	16	11.41	30	50
28/08/2009	16.7	10	11.46	30	50
3/09/2009	25.9	16	11.67	30	50
9/09/2009	1.4	1	11.67	30	50
15/09/2009	29.3	19	11.82	30	50
21/09/2009	10.4	7	11.56	30	50
27/09/2009	61.5	39	12.05	30	50
3/10/2009	57.8	36	12.21	30	50
9/10/2009	17.4	11	12.26	30	50
15/10/2009	32.9	21	12.46	30	50
21/10/2009	44.2	28	12.66	30	50
27/10/2009	11.8	7	12.57	30	50
2/11/2009	24.6	16	12.52	30	50
8/11/2009	18.6	12	12.57	30	50
14/11/2009	28	18	12.82	30	50
20/11/2009	66.1	44	13.49	30	50
26/11/2009	53.7	35	14.02	30	50
2/12/2009	20.4	13	14.08	30	50
8/12/2009	170.1	114	15.70	30	50
14/12/2009	89.5	58	16.43	30	50
20/12/2009	39.9	26	16.70	30	50
26/12/2009	26.5	16	16.55	30	50
1/01/2010	10	7	16.39	30	50
7/01/2010	10.5	7	16.13	30	50
13/01/2010	40	27	16.31	30	50

Date	mg/paper	µg/m^3	Annual Average	Annual Average Limit	24hr Limit
19/01/2010	40.9	26	16.52	30	50
25/01/2010	44.7	29	16.72	30	50
31/01/2010	17	11	16.67	30	50
6/02/2010	13.9	9	16.48	30	50
12/02/2010	25.8	17	16.73	30	50
18/02/2010	14.1	9	16.70	30	50
24/02/2010	25.3	16	16.65	30	50
2/03/2010	11.3	7	16.52	30	50
8/03/2010	15.7	10	16.48	30	50
14/03/2010	3.5	2	16.12	30	50
20/03/2010	20.6	13	16.00	30	50
26/03/2010	39.3	25	16.30	30	50
1/04/2010	6	4	16.17	30	50
7/04/2010	11.2	7	16.15	30	50
13/04/2010	14.6	9	15.82	30	50
19/04/2010	20.7	13	15.93	30	50
25/04/2010	9.4	6	15.90	30	50
1/05/2010	24	15	15.93	30	50
7/05/2010	11.1	7	15.78	30	50
13/05/2010	23.5	14	15.67	30	50
19/05/2010	15.5	10	15.70	30	50
25/05/2010	52.9	34	16.18	30	50
31/05/2010	2.7	2	16.17	30	50
6/06/2010	1.6	1	16.13	30	50
12/06/2010	3.4	2	16.15	30	50
18/06/2010	4.3	3	16.18	30	50
24/06/2010	3.3	2	16.13	30	50
30/06/2010	3.6	2	16.12	30	50
6/07/2010	10	6	16.13	30	50
12/07/2010	9.6	6	16.22	30	50
18/07/2010	11.6	7	16.15	30	50
24/07/2010	2.3	1	16.12	30	50
30/07/2010	0	0	16.00	30	50
5/08/2010	7.8	5	15.72	30	50
11/08/2010	4.5	3	15.62	30	50
17/08/2010	5.9	4	15.42	30	50
23/08/2010	4.9	3	15.30	30	50
29/08/2010	5.9	4	15.10	30	50
4/09/2010	9.6	6	15.18	30	50
10/09/2010	2.9	2	14.90	30	50
16/09/2010	4	2	14.82	30	50
22/09/2010	24.8	16	14.43	30	50
28/09/2010	26.2	17	14.12	30	50
4/10/2010	12.8	8	14.07	30	50
10/10/2010	12.9	8	13.85	30	50

Date	mg/paper	µg/m^3	Annual Average	Annual Average Limit	24hr Limit
16/10/2010	2.6	2	13.42	30	50
22/10/2010	16.1	10	13.47	30	50
28/10/2010	16.3	11	13.38	30	50
3/11/2010	8.2	5	13.27	30	50
9/11/2010	9.6	6.8	13.08	30	50
15/11/2010	14	8.6	12.49	30	50
21/11/2010	14	8.6	12.05	30	50
27/11/2010	19.2	11.8	12.03	30	50
3/12/2010	13.5	8	10.26	30	50
9/12/2010	28.5	17	9.58	30	50
15/12/2010	32.5	19.3	9.47	30	50
21/12/2010	7.1	4.2	9.27	30	50
27/12/2010	1.5	0.9	9.17	30	50
2/01/2011	15.7	9.4	9.21	30	50
8/01/2011	17.4	10.4	8.93	30	50
14/01/2011	18	10.7	8.68	30	50
20/01/2011	8.8	5.2	8.28	30	50
26/01/2011	28.1	16.7	8.38	30	50
1/02/2011	38.7	23.7	8.62	30	50
7/02/2011	31.2	19.1	8.66	30	50
13/02/2011	25.5	15.6	8.77	30	50
19/02/2011	33.8	20.7	8.85	30	50
25/02/2011	45.6	28	9.20	30	50
3/03/2011	17.2	10.2	9.20	30	50
9/03/2011	18.7	11.1	9.35	30	50
15/03/2011	9.6	5.7	9.23	30	50
21/03/2011	5.7	3.4	8.87	30	50
27/03/2011	14.6	8.7	8.95	30	50

Turrabaa PM_{10} High Volume Air Sampler

Site	Site Id	Datum	Zone	Easting	Northing
Turrabaa PM10	ND-10	MGA	55	779775	6619367
Date	**mg/paper**	**µg/m^3**	**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
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

Date	mg/paper	µg/m^3	Annual Average	Annual Average Limit	24hr Limit
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
1/03/2009	31.4	21	16.24	30	50
7/03/2009	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
6/04/2009	12.2	8	16.56	30	50
12/04/2009	9.5	6	16.43	30	50
18/04/2009	38.1	25	16.34	30	50
24/04/2009	4.8	3	16.38	30	50
30/04/2009	10.1	6	16.15	30	50
6/05/2009	23.5	15	15.85	30	50
12/05/2009	35.5	23	15.82	30	50
18/05/2009	27.9	18	14.97	30	50
24/05/2009	18	12	14.70	30	50
30/05/2009	9.2	6	14.61	30	50
5/06/2009	4	3	14.61	30	50
11/06/2009	5.4	4	14.28	30	50
17/06/2009	4.3	3	14.30	30	50
23/06/2009	1.5	1	14.30	30	50
29/06/2009	5.9	6	14.33	30	50
5/07/2009	1.6	1	14.23	30	50
11/07/2009	9	6	14.31	30	50
17/07/2009	2.2	1	14.25	30	50
23/07/2009	18.8	12	14.26	30	50
29/07/2009	6.6	4	14.30	30	50
4/08/2009	10.7	7	14.36	30	50
10/08/2009	24	15	14.51	30	50
16/08/2009	16.5	11	14.52	30	50
22/08/2009	26.4	17	14.51	30	50
28/08/2009	14.5	9	14.44	30	50

Date	mg/paper	µg/m^3	Annual Average	Annual Average Limit	24hr Limit
3/09/2009	24.4	16	14.64	30	50
9/09/2009	2	1	14.61	30	50
15/09/2009	19.6	13	14.62	30	50
21/09/2009	14.3	9	14.20	30	50
27/09/2009	59.4	38	14.64	30	50
3/10/2009	63.3	41	14.69	30	50
9/10/2009	24.3	16	14.79	30	50
15/10/2009	42.9	28	14.97	30	50
21/10/2009	35.6	23	14.74	30	50
27/10/2009	26.5	16	14.77	30	50
2/11/2009	22.8	15	14.41	30	50
8/11/2009	13.7	9	14.02	30	50
14/11/2009	25.4	17	14.11	30	50
20/11/2009	72.2	49	14.87	30	50
26/11/2009	41.7	28	15.16	30	50
2/12/2009	15.4	10	15.07	30	50
8/12/2009	125.3	86	16.31	30	50
14/12/2009	78.9	53	16.93	30	50
20/12/2009	35.9	24	17.13	30	50
26/12/2009	22.3	15	16.93	30	50
1/01/2010	11.4	8	16.79	30	50
7/01/2010	19.2	13	16.59	30	50
13/01/2010	34.7	24	16.66	30	50
19/01/2010	31.5	21	16.70	30	50
25/01/2010	34	23	16.84	30	50
31/01/2010	25.8	17	16.84	30	50
6/02/2010	12.9	9	16.61	30	50
12/02/2010	19.8	13	16.52	30	50
18/02/2010	16.1	11	16.62	30	50
24/02/2010	21.5	14	16.59	30	50
2/03/2010	14	9	16.39	30	50
8/03/2010	6.4	4	16.16	30	50
14/03/2010	0	<1	15.93	30	50
20/03/2010	26.9	18	15.75	30	50
26/03/2010	39.8	22	15.85	30	50
1/04/2010	10.1	7	15.83	30	50
7/04/2010	7.3	5	15.81	30	50
13/04/2010	12.3	8	15.53	30	50
19/04/2010	2.5	2	15.51	30	50
25/04/2010	8.4	5	15.49	30	50
1/05/2010	16.9	11	15.42	30	50
7/05/2010	14	9	15.19	30	50
13/05/2010	20.4	13	15.10	30	50
19/05/2010	13.6	9	15.05	30	50
25/05/2010	8.8	6	15.05	30	50

Date	mg/paper	µg/m^3	Annual Average	Annual Average Limit	24hr Limit
31/05/2010	3.5	2	15.03	30	50
6/06/2010	2.2	1	14.98	30	50
12/06/2010	1.4	1	14.95	30	50
18/06/2010	2.9	2	14.97	30	50
24/06/2010	1.9	1	14.88	30	50
30/06/2010	2.1	1	14.88	30	50
6/07/2010	6.4	4	14.85	30	50
12/07/2010	7.4	5	14.92	30	50
18/07/2010	9.7	6	14.81	30	50
24/07/2010	3	2	14.78	30	50
30/07/2010	0	0	14.66	30	50
5/08/2010	5.3	3	14.46	30	50
11/08/2010	8	5	14.36	30	50
17/08/2010	8.6	5	14.15	30	50
23/08/2010	5.8	4	14.07	30	50
29/08/2010	3.2	2	13.83	30	50
4/09/2010	8.7	6	13.92	30	50
10/09/2010	4.1	3	13.75	30	50
16/09/2010	2.3	1	13.61	30	50
22/09/2010	22.5	15	13.22	30	50
28/09/2010	20	13	12.75	30	50
4/10/2010	9.4	6	12.58	30	50
10/10/2010	8	5	12.19	30	50
16/10/2010	0.1	0	11.80	30	50
22/10/2010	8.5	6	11.63	30	50
28/10/2010	15.5	10	11.54	30	50
3/11/2010	8.9	5.4	11.48	30	50
9/11/2010	9.6	5.9	11.29	30	50
15/11/2010	8.5	5.2	10.55	30	50
21/11/2010	10.4	6.4	10.18	30	50
27/11/2010	13.5	8.3	10.16	30	50
3/12/2010	10.3	6.3	8.81	30	50
9/12/2010	12.8	7.8	8.04	30	50
15/12/2010	11.6	7.1	7.75	30	50
21/12/2010	5.9	3.6	7.56	30	50
27/12/2010	2.7	1.6	7.45	30	50
2/01/2011	11.5	7	7.35	30	50
8/01/2011	5.4	3.3	7.00	30	50
14/01/2011	10.2	6.2	6.75	30	50
20/01/2011	11.5	7	6.48	30	50
26/01/2011	23.9	14.6	6.44	30	50
1/02/2011	20.3	12.4	6.49	30	50
7/02/2011	14	8.6	6.42	30	50
13/02/2011	20.8	12.7	6.45	30	50
19/02/2011	12.1	7.4	6.34	30	50

Date	mg/paper	µg/m^3	Annual Average	Annual Average Limit	24hr Limit
25/02/2011	15.5	9.5	6.34	30	50
3/03/2011	18.5	11.3	6.47	30	50
9/03/2011	9.4	5.8	6.46	30	50
15/03/2011	9.2	5.6	6.25	30	50
21/03/2011	2.8	1.7	5.91	30	50
27/03/2011	14.9	9.1	5.95	30	50

Appendix 5

WET WEATHER AND SURFACE WATER MONITORING DATA

Kurrajong Creek 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)	Total Organic Carbon (TOC)	Comments
	31 July 2007	KCUS		7.9	255	22		<10	
	31 July 2007	KCDS		8	205	163		15	
	31 July 2007	KC2US		6.7	75	84		18	
	31 July 2007	KC2DS		6.7	85	21		12	
	31 July 2007	KC1US		8.2	1300	15		<10	
	31 July 2007	KC1DS		6.9	430	39		<10	
31489.01	23 September 2008	KC2US	0950	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	-	
ES0919730-001	29 December 2009	KC2DS	1055	7.15	95	48	-	13	Oil & Grease not reported for any location due to incorrect sample bottle and insufficient sample. No site discharge - only adjacent creek samples
ES0919730-002	29 December 2009	KCDS	1100	6.94	187	33	-	11	
ES0919730-003	29 December 2009	KC2US	1105	6.67	86	4	-	16	
ES0919730-004	29 December 2009	KC1US	1115	6.7	74	47	-	6	
ES0919730-005	29 December 2009	KCUS	1125	7.05	305	52	-	9	
ES0919730-007	29 December 2009	PC	1225	7.23	83	117	-	8	
ES0919730-008	29 December 2009	KC1DS	1215	7.12	171	79	-	10	
ES1000146-001	5 January 2010	KCUS	0930	7.24	804	2	<5	10	
ES1000146-002	5 January 2010	KC1US	1000	7.42	126	8	<5	12	
ES1000146-003	5 January 2010	KCDS	1030	7.41	456	2	<5	14	
ES1000146-004	5 January 2010	SD5	1130	7.23	155	18	<5	8	Discharge
ES1000146-005	5 January 2010	PC1	1155	7.3	174	7	<5	12	
ES1000146-006	5 January 2010	PC	1215	7.38	121	8	<5	15	
ES1000146-007	5 January 2010	KC1DS	1235	7.28	419	6	<5	10	
ES1000146-008	5 January 2010	KC2DS	1250	7.47	178	22	<5	12	
ES1013938-001	14 July 2010	PC1	0910	8.5	37	126	<5	13	
ES1013938-002	14 July 2010	PC	0940	8.65	226	10	<5	9	
ES1013938-003	14 July 2010	KC1 DS	1000	8.01	552	27	-	13	
ES1013938-004	14 July 2010	KC2 DS	1010	7.92	211	142	<5	16	
ES1015034-001	28 July 2010	KCUS	1447	8.18	72	130	<5	12	
ES1015034-002	28 July 2010	PC	1531	7.95	170	151	<5	11	
ES1015034-003	28 July 2010	PCl	1545	7.978	37	132	<5	9	
ES1015034-004	28 July 2010	KCIDS	1402	7.77	36	90	<5	9	
ES1016053-001	10 August 2010	KCUS	0830	7.45	33	296	<5	5	
ES1016053-002	10 August 2010	KC1US	8050	7.65	169	2760	<5	10	
ES1016053-003	10 August 2010	KC2US	0910	7.7	37	62	<5	12	
ES1016053-004	10 August 2010	PC1	1000	7.54	43	1320	<5	6	
ES1016053-005	10 August 2010	PC	1030	6.83	62	167	<5	7	
ES1016053-006	10 August 2010	KC1DS	1050	6.8	64	380	<5	9	
ES1016053-007	10 August 2010	KC2DS	1110	6.76	114	40	<5	17	
ES1016053-008	10 August 2010	KCDS	0930	7.08	30	326	<5	4	
ES1016966-101	23 August 2010	KCUS	1000	8.04	100	236	<5	9	
ES1016966-102	23 August 2010	KC1US	1040	7.84	210	1600	<5	5	
ES1016966-103	23 August 2010	KC2US	1100	8.05	58	48	<5	15	
ES1016966-104	23 August 2010	KCDS	1130	7.97	50	122	<5	5	
ES1016966-105	23 August 2010	SD5	1150	7.9	60	22	<5	11	No discharge. Sampled to determine sediment level.
ES1016966-106	23 August 2010	PC1	1210	7.94	49	476	<5	7	
ES1016966-107	23 August 2010	KC1DS	1310	7.37	193	146	<5	8	
ES1016966-108	23 August 2010	KC2DS	1330	7.63	94	35	<5	15	
ES1016966-109	23 August 2010	PC	1230	7.71	70	142	<5	10	
ES1018432-001	10 September 2010	KCUS	0830	7.44	909	246	<5	8	
ES1018432-002	10 September 2010	KC1US	0845	7.2	154	193	<5	10	
ES1018432-003	10 September 2010	KC2US	0900	6.84	147	81	<5	11	
ES1018432-004	10 September 2010	KCDS	0915	7.26	492	116	<5	10	
ES1018432-005	10 September 2010	PC1	0935	7.18	65	176	<5	10	
ES1018432-006	10 September 2010	PC	1000	7.21	159	26	<5	17	
ES1018432-007	10 September 2010	KC1DS	1015	7.66	955	131	<5	12	
ES1018432-008	10 September 2010	KC2DS	1030	7.25	133	84	<5	16	
ES1023281-001	16 November 2010	KCUS	0830	7.83	866	162	10	12	
ES1023281-002	16 November 2010	PC1	0900	7.27	98	260	9	9	
ES1023281-003	16 November 2010	PC	0915	6.94	179	127	39	20	Elevated Oil and Grease
ES1024687-001	30 November 2010	KC2US	1415	6.99	86	40	<5	14	
ES1024687-002	30 November 2010	KCUS	1430	7.12	93	20	<5	15	
ES1024687-003	30 November 2010	KC1US	1510	6.97	64	124	<5	10	
ES1024687-004	30 November 2010	PC	1535	6.9	46	40	<10	14	
ES1024687-005	30 November 2010	PC1	1600	7.42	101	136	<10	10	
ES1024687-006	30 November 2010	KCDS	1730	7.11	191	191	<5	14	
ES1024687-007	30 November 2010	KC1DS	1745	7.23	150	150	<5	15	
ES1024687-008	30 November 2010	KC2DS	1800	7.2	101	101	<5	12	

Narrabri - Surface Water Monitoring

Sample No.	Date	Sample Location	Time	pH	Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Grease & Oil (mg/L)	Total Organic Carbon (TOC)	Comments
ES0908566-001	11 June 2009	SD1	0825	8.38	378	74	<5	8	
ES0908566-002	11 June 2009	SD2	0840	8.15	254	89	<5	5	
ES0908566-003	11 June 2009	SD3	0845	7.85	308	328	<5	11	
ES0908566-004	11 June 2009	SD4	0845	8.27	421	262	<5	7	
ES0908566-005	11 June 2009	SD5	0900	8.07	228	26	<5	16	
ES0908566-006	11 June 2009	SB1	0915	8.23	1390	11	<5	3	
ES0912774-001	26 August 2009	SD1	1115	9.54	363	8	<5	8	
ES0912774-002	26 August 2009	SD2	1125	8.33	274	28	<5	4	
ES0912774-003	26 August 2009	SD3	1142	7.97	326	141	<5	12	
ES0912774-004	26 August 2009	SD4	1150	8.37	498	66	<5	6	
ES0912774-005	26 August 2009	SD5	1205	8.25	256	24	<5	5	
ES0912774-006	26 August 2009	SB1	1225	8.37	2020	21	<5	<1	
ES0918374-001	1 December 2009	SD1	1220	8.66	722	68	<10	14	
ES0918374-002	1 December 2009	SD2	1225	8.41	374	1870	<10	5	
ES0918374-003	1 December 2009	SD3	1210	8.37	550	216	<10	7	
ES0918374-004	1 December 2009	SD4	1215	9.3	1150	204	<10	10	
ES0918374-005	1 December 2009	SD5	1230	8.68	417	52	<10	5	
ES0918374-006	1 December 2009	SB1	1200	8.82	5250	26	<10	<1	
ES1004140-001	3 March 2010	SD1	1330	8.29	326	44	<5	5	
ES1004140-002	3 March 2010	SD2	1300	8.74	271	126	<5	6	
ES1004140-003	3 March 2010	SD3	1400	8.14	286	326	<5	15	
ES1004140-004	3 March 2010	SD5	1315	8.2	218	44	<5	6	
ES1004140-005	3 March 2010	SB1	1400	8.2	947	480	<5	<2	
ES1009341-001	14 May 2010	SD1	0945	8.78	381	16	<5	6	
ES1009341-002	12 May 2010	SD4	1325	8.85	543	80	7	6	
ES1009341-003	12 May 2010	SD3	1310	8.14	472	92	<5	10	
ES1009341-004	12 May 2010	SD5	1340	8.62	261	36	8	8	
ES1009341-005	12 May 2010	SB1	1410	9	607	100	<5	7	
ES1016572-001	17 August 2010	SD2	1140	7.62	129	72	<5	8	
ES1016572-002	17 August 2010	SD3	1115	7.84	247	299	<5	6	
ES1016572-003	17 August 2010	SD4	1130	7.89	306	120	<5	6	
ES1016572-004	17 August 2010	A1	1040	9.09	1390	36	<5	8	
ES1016572-005	17 August 2010	A2	1100	8.73	541	82	<5	7	
ES1016572-006	17 August 2010	SB1	1020	8.52	432	82	<5	3	
ES1025816-001	13 December 2010	SD2	1330	7.5	157	107	<5	10	
ES1025816-002	13 December 2010	SD5	1400	7.46	139	46	<5	10	
ES1025816-003	13 December 2010	SD4	1425	7.88	290	146	<5	6	
ES1025816-004	13 December 2010	A1	1445	9.25	1280	25	<5	9	
ES1025816-005	13 December 2010	A2	1455	9.13	840	10	<5	7	
ES1025816-006	13 December 2010	SB1	1510	9.02	583	75	<5	5	
ES1102986-001	10 February 2011	A1	1115	9.16	1260	14	<5	12	
ES1102986-002	10 February 2011	A2	1130	9.17	874	<5	<5	10	
ES1102986-003	10 February 2011	A3	1145	9.19	11300	16	<5	35	
ES1102986-004	10 February 2011	SB1	1345	9.73	2150	52	<5	56	
ES1102986-005	10 February 2011	SD5	1410	8.6	199	54	<5	16	

Appendix 6

GROUNDWATER MONITORING DATA

Site ID	Piezometer / Water Bore	Date	Time	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals																Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	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	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/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							
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	0826	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	0925	39.96	40.94																																					
		9-Sep-08	0830	42.82	43.80	7.6	470	20.8		0.008	0.684	0.003	0.0008	0.094	0.041	0.128	56.7	0.516	2.33	0.154	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				2380
		14-Nov-08	0956	45.86	46.84																																					
		3-Dec-08	1505	45.18	46.16																																					
		16-Feb-09	1255	42.24	43.22																																					
		11-Jun-09	1500							<0.001	0.237	<0.001	<0.0001	0.001	0.002	0.096	0.71	0.198	0.266	0.025	<0.1	0.235	<0.0001		3840	25	26	846	23	40.7	693	<10	<1	<1	1000	1000	39.6	1.33	0.24				2300
		17-Aug-09	0930	35.79	36.77	7.3	3920	23.5		0.009	0.954	0.002	0.0005	0.094	0.051	0.236	56.5	0.24	1.38	0.206	0.14	0.347	0.0002		4130	20	27	892	22	42.6	614	48.2	<1	<1	1120	1120	40.6	2.24	0.48				2520
		17-Nov-09	0920	42.30	43.28	7.21	2940	34.4		0.003	0.31	<0.001	0.0002	0.032	0.007	0.121	7.74	0.236	0.403	0.041	0.02	0.091	<0.0001		2370	7	20	471	13	22.8	346	40.4	<1	<1	624	624	23	0.57	0.35				1420
		24-Feb-10	1255	42.13	43.11																																					
		24-Jun-10	1515	37.00	37.98	7.44	4060	21	<0.01	<0.001				<0.005		0.006	<0.05	0.002	0.009	0.003		0.036	<0.0001	7.5	3810	23	29	928	28	44.6	662	44.2	<1	<1	1080	1080	41.2	3.9		<0.01	1.8	1.8	
		3-Sep-10	1100	34.86	35.84	7.53	3830	22.1																																			
		9-Feb-11	1340	30.08	31.06	7.31	2960	28.4	<0.01	<0.001				<0.005		0.019	<0.05	0.012	0.06	0.004		0.088	<0.0001	7.47	3770	19	22	792	22	37.8	680	39	<1	<1	957	957	39.1	1.78		<0.01	0.69	0.69	
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	0846	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	15700	20.8		0.010	1.40	0.004	0.0006	0.024	0.029	0.057	33.4	0.091	2.96	0.048	0.06	0.093	<0.0001		17100	189	453	4060	126	227	5650	366	<1	<1	2550	2550	218	1.97	4.52				12900
		14-Nov-08	1012	29.64	30.56																																					
		3-Dec-08	1445	29.51	30.43																																					
		16-Feb-09	1329	29.32	30.23																																					
		11-Jun-09	1500							0.004	0.613	<0.001	<0.0001	0.016	0.021	0.025	8.81	0.124	2.44	0.039	0.02	0.108	<0.0001		19300	184	397	3770	90	208	5790	181	<1	<1	2890	2890	225	3.83	3.31				13400
		17-Aug-09	1125	29.33	30.24	6.5	33100	25.3		0.004	0.896	<0.001	0.0001	0.026	0.024	0.057	7.47	0.032	2.37	0.057	0.02	0.064	0.0002		20300	250	585	3650	83	222	5720	247	<1	<1	3000	3000	226	1.12	2.47				12800
		17-Nov-09	1020	29.31	30.22	6.58	20400	32.4		0.041	8.41	0.008	0.0009	0.215	0.103	0.463	167	0.152	4.64	0.284	0.25	0.493	0.0002		18900	6	434	3630	78	196	5300	276	<1	393	2360	2750	210	3.51	2.88				12800
		24-Feb-10	1220	29.29	30.20																																					
		24-Jun-10	1415	29.19	30.10	6.62	19740	21	<0.01	0.003				<0.005		0.002	<0.05	0.012	1.53	0.035		0.098	<0.0001	6.92	17200	115	465	3320	108	191	5960	362	<1	<1	<1	<1	176	4.22		<0.01	0.2	0.2	
		3-Sep-10	0930	29.06	29.97	6.8	19650	21.5																																			
		8-Feb-11	1030	29.07	29.98	6.27	17090	25	0.01	0.005				<0.005		0.01	<0.05	0.002	1.64	1.64		0.013	<0.0001	6.45	20600	170	440	4520	91	244	6080	408	<1	<1	3380	3380	248	0.82		<0.01	<0.01	<0.01	
P3	NG3	1-Nov-07	1530	9.92	10.85																																					
		17-Dec-07		10.07	11.00																																					
		23-Jan-08	1400	9.32	10.25																																					
		3-Mar-08	1640	9.87	10.80																																					
		2-Apr-08	1200	9.89	10.83																																					
		9-May-08	1002	9.90	10.83																																					
		2-Jun-08	1353	9.90	10.84																																					
		1-Jul-08	1345	9.91	10.84																																					
		11-Aug-08	1610	9.92	10.85																																					
		9-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	0.76	0.030	0.496	0.014	<0.01	0.014	<0.0001		15800	331	504	3190	60	198	5250	1230	<1	<1	1310	1310	200	0.44	0.94				11700
		14-Nov-08	0930	9.89	10.83																																					
		1-Dec-08	1120	9.86	10.80																																					
		12-Jan-09	1223	9.86	10.80																																					
		9-Dec-09	0945	9.90	10.83	6.64	18620	25.8	0.02	<0.001				<0.005		0.004	<0.05	<0.001	0.348	0.025		0.016	<0.0001	6.82	14500	257	467	3440	51	202	5230	1160	<1	<1	1270	1270	197	1.24		0.02	<0.01	<0.01	
		24-Feb-10	0920	9.90	10.83																																					
		23/Jun/10	1205	9.92	10.85	6.3	18570	21	<0.01	0.003				<0.001		0.012	<0.05	0.003	0.358	0.014		0.069	<0.0001	6.68	13900	266	450	3490	53	203	5860	1310	<1	<1	1340	1340	219	3.79		<0.01	0.03	0.03	
		03/Sep/10	0915	9.89	10.82	6.57	17620	21.1																																			
		08/Feb/11	1200	9.90	10.83	6.48	14780	25.9	<0.01	0.003				<0.005		0.004	<0.05	<0.001	0.27	0.013		0.014	<0.0001	6.47	18800	300	0.27	3040	50	190	5100	1120	<1	<1	1240	1240	192	0.59		0.02	0.02	0.02	
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	3.93	0.027	6.20	0.024	<0.01	0.013	<0.0001		17700	355	699	4550	124	276	7650	1700	<1	<1	1840	1840	288	2.10	1.70				16800
		14-Nov-08	0920	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																																					
		9-Jun-09	1100	18.55	19.40	6.9	25600	20.8		0.003	0.165	<0.001	<0.0001	0.056	0.026	0.006	14.4	0.047	4.99	0.066	0.02	0.044	<0.0001		25200	288	640	5670	86	316	7850	1470	<1	<1	2220	2220	297	3.1	0.48				16200
		24-Aug-09	1310	18.11	18.99																																					
		18-Nov-09	1455	18.12	19.00	6.51	25700	25.1	0.04	0.004				<0.005		0.013	<0.05	0.009	3.61	0.043		0.053	<0.0001	6.73	23700	351	706	6200	115	348	8700	1560	<1	<1	1850	1820	314	5.04		<0.01	0.1	0.1	
		18-Feb-10	1100	17.88	18.76																																					
		22-Jun-10	1420	18.09	18.97	8.2	25700	22	<0.01	0.001				<0.005		0.006	0.09	0.001	3.19	0.024		0.032	<0.0001	6.71	23700	249	591	5070	98	284	8020	1430	<1	<1	2340	2340	303	3.22		<0.01	0.04	0.04	
		3-Sep-10	1130	17.98	18.86	6.69	24290	22.1																																			
		7-Feb-11	1430	17.97	18.85	6.94	19920	28.6	0.01	0.004				<0.001		0.015	<0.05	<0.001	3.19	0.009		0.029	<0.0001	6.42	25600	232	599	5580	103	306	8050	1490	<1	<1	2070	2070	299	1.1		<0.01	0.05	0.05	
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	2.01	0.081	1.92	0.051	<0.01	0.031	<0.0001		24600	456	494	3960	71	238	7300	719	<1	<1	1860	1860	258	4.16	2.03				12700
		14-Nov-08	0908	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																																					
		9-Jun-09	1215	25.06	25.99	6.6	25800	20.4		0.014	0.985	0.001	0.0003	0.032	0.022	0.597	19.7	0.336	1.16	0.091	0.04	1.14	0.0002		25100	361	536	5700	63	312	8230	765	<1	<1	1920	1920	286	4.19	0.91				15900
		1-Dec-09	1245	24.68	25.62	6.74	25600	25.8	<0.01	0.001				0.009		0.095	<0.05	0.008	0.659	0.053		0.167	<0.0001	6.76	20800	381	577	5830	73	322	8480	739	<1	<1	1940	1940	294	4.54		0.26	6.42	6.68	
		18-Feb-10	1115	24.99	25.93																																					
		23-Jun-10	1305	23.58	24.52	6.74	26100	22	<0.01	<0.001				<0.001		0.007	<0.05	<0.001	0.402	0.029		0.055	<0.0001	6.77	18300	314	503	5550	74	300	9320	996	<1	<1	1900	1900	322	3.43		<0.01	8.45	8.45	
		3-Sep-10	1150	23.53	24.47	6.75	16840	22.5																																			
		9-Feb-11	12:30	23.05	23.99	6.69	19520	26.3	0.03	0.006				0.006		0.16	<0.05	0.003	0.435	0.028		0.949	<0.0001	6.76	27200	359	570	3040	83	332	8610	1070	<1	<1	1970	1970	304	4.33		<0.01	5.32	5.32	
P6	NG6	1-Nov-07	1640	90.21	91.10																																					

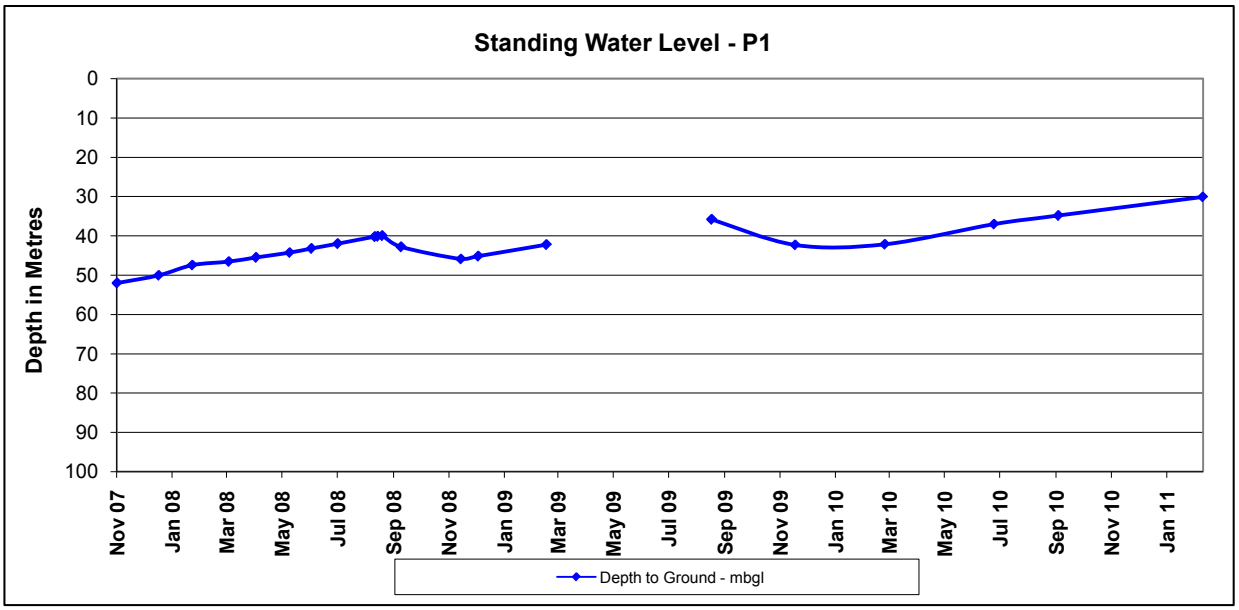
Site ID	Piezometer / Water Bore	Date	Time	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals																Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	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	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/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							
		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																																					
		24-Aug-09	1400			Dry																																					
		17-Nov-09	1140			Dry																																					
		24-Feb-10	1035	89.82	90.71																																					
		24-Jun-10	1000			Dry																																					
		2-Sep-10	1400			Dry																																					
		9-Feb-11	1400			Dry																																					
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	0.79	0.117	0.095	0.005	<0.01	0.033	<0.0001		149	1	1	25	3	1.33	26	4	<1	<1	19	19	1.20		0.55				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																																					
		9-Jun-09	1425			Dry																																					
		24-Aug-09	1415	86.26	87.20	8.9	170	22.4		<0.001	0.064	<0.001	0.0002	0.007	0.004	0.016	2.72	0.022	0.074	0.012	<0.01	0.066	<0.0001		147	3	1	18	3	1.27	26.2	3.47	<1	<1	24	24	1.27		<0.01				107
		17-Nov-09	1230	62.84	63.78	5.52	212	25		<0.001	0.029	<0.001	0.0001	0.004	0.002	0.053	0.49	0.047	0.023	0.013	<0.01	0.173	<0.0001		160	2	1	19	3	1.11	27	3.09	<1	<1	22	22	1.27	-	<0.01				95
		24-Feb-10	1105	63.04	63.98																																					
		24-Jun-10	1110	62.99	63.93	7.96	222	20	0.02	<0.001				0.001		0.011	<0.05	0.021	0.016	0.008		0.114	<0.0001	6.6	169	3	3	36	4	2.07	33.5	4.28	<1	<1	45	45	1.93			<0.01	0.19	0.19	
		2-Sep-10	1350	62.86	63.80	6.81	202	23.9																																			
		9-Feb-11	10:10	63.5	64.44	6.88	356	24.3	<0.01	<0.001				<0.005		0.03	<0.05	0.001	0.022	0.002		0.322	<0.0001	6.12	477	28	3	66	4	4.63	92	12	<1	<1	90	90	39.1			<0.01	0.26	0.26	
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																																					
		2-Jun-08	1608	62.23	63.00																																					
		1-Jul-08	1558	50.57	51.34																																					
		12-Aug-08	1230	50.62	51.39																																					
		19-Aug-08	1515	50.63	51.40																																					
		12-Sep-08	0830	50.53	51.30	7.85	1120	21.2		<0.001	0.057	<0.001	<0.0001	<0.001	<0.001	0.001	0.09	0.004	0.037	<0.001	<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				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																																					
		09-Jun-09	1445			SWL >50				0.003	0.192	<0.001	0.0002	0.004	0.004	0.382	3.62	0.374	0.364	0.016	<0.01	0.967	<0.0001		490	29	8	59	7	4.85	44	<10	<1	<1	171	171	4.66	1.99	<0.01				360
		24-Aug-09	1500	50.20	51.24	SWL only																																				
		17-Nov-09	1330	50.32	51.36	7.45	414	25.2		<0.001	0.121	<0.001	0.0001	<0.001	<0.001	0.014	0.52	0.019	0.117	0.005	<0.01	0.07	<0.0001		423	12	4	57	6	3.59	27.2	10.3	<1	<1	137	137	3.72	1.81	0.06				240
		24-Feb-10	1130	50.36	51.40																																					
		24-Jun-10	1200	50.29	51.33	7.85	390	19	<0.01	<0.001				<0.001		0.002	<0.05	<0.001	0.006	0.003		0.04	<0.0001	7.05	358	14	4	55	7	3.56	27.7	8.75	<1	<1	131	131	3.58	0.33		<0.01	0.03	0.03	
		2-Sep-10	1425	50.19	51.23	6.93	360	24																																		
		9-Feb-11	1120	50.44	51.48	7.1	355	23.6	<0.01	<0.001				<0.001		0.012	<0.05	0.001	0.029	0.001		0.096	<0.0001	6.65	387	22	5	55	6	4.06	28	12	<1	<1	151	151	4.06	0.08		<0.01	0.63	0.63	
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	1.32	0.036	0.037	0.012	<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				295
		14-Nov-08	1103	19.80	20.44																																					
		01-Dec-08	1219	19.77	20.41																																					
		12-Jan-09	0930	19.79	20.43																																					
		23-Feb-09	0938	19.80	20.45																																					
		17-Aug-09	1430	19.70	20.51	6.7	22500	24		<0.001	0.077	<0.001	<0.0001	0.003	0.002	0.01	6.94	0.001	0.122	<0.005	<0.01	0.009	<0.0001		23000	402	635	3560	62	229	7150	1830	<1	<1	641	641	253	4.96	1.6				16000
		18-Nov-09	1120	19.64	20.45	6.61	22870	28.1	0.04	<0.001				<0.005		0.005	0.38	<0.001	0.127	0.004		<0.005	<0.0001	6.63	21200	249	535	3830	74	225	7260	1720	<1	<1	392	392	248	5.02		<0.01	<0.01	<0.01	
		17-Feb-10	1120	19.72	20.53																																					
		22-Jun-10	1150	19.80	20.61	6.58	23010	23	<0.01	<0.001				<0.005		0.004	4.86	<0.001	0.098	0.002		0.008	<0.0001	6.69	22000	329	493	4020	59	233	7240	1570	<1	<1	599	599	249	3.22		<0.01	<0.01	<0.01	
		2-Sep-10	1050	19.72	20.53	7.07	17050	23.7																																		
		7-Feb-11	1215	19.98	20.79	6.5	17180	25.7	0.02	0.003				<0.001		0.004	2.96	<0.001	0.102	0.002		0.006	<0.0001	6.4	22500	348	547	3830	61	230	7410	1590	<1	<1	604	604	254	4.86		<0.01	0.02	0.02	
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	0.92	0.024	2.13	0.005	<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				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																																					
		11-Jun-09	1540	31.95	32.93					<0.001	1.4	<0.001	<0.0001	0.002	0.003	0.034	0.15	0.027	1.57	0.015	<0.01	0.249	<0.0001		7610	134	74	1490	31	78.6	2160	40	<1	<1	774	774	77.1	0.9	<0.01				4370
		24-Aug-09	1530	44.98	45.96	SWL only																																				
		17-Nov-09	1400	41.83	42.81	7.4	8350	25.2		0.001	1.34	<0.001	<0.0001	0.002	<0.001	0.014	0.31	0.035	1.35	0.018	<0.01	0.12	<0.0001		3200	41	78	1550	30	76.8	2250	64.8	<1	<1	760	760	30.9	2.11	1.27				4610
		24-Feb-10	1150	39.10	40.08																																					
		24-Jun-10	1250	35.79	36.77	7.28	8160	23	<0.01	0.002				<0.005		<0.001	<0.05	0.013	1.46	0.005		0.021	<0.0001	7.39	7010	83	83	1560	32	79.7	2140	76.5	<1	<1	757	757	77.1	1.64		<0.01	0.02	0.02	
		3-Sep-10	0955	38.70	39.63	7.61	7750	21.2																																		
		9-Feb-11	1215	22.88	23.86	7.25	7020	27.2	<0.01	0.004				<0.005		0.002	<0.05	<0.001	3.29	0.004		0.01	<0.0001	6.91	9430	143	124	1790	29	95.9	2920	308	<1	<1	793	793	105	4.35		<0.01	0.26	0.26	
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	0730	22.91	23.90	8.23	980	17.6		0.004	0.162	<0.001	<0.0001	<0.001	0.089	0.004	0.81	0.006	2.98	0.159	<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				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																																					
		11-Jun-09	1525	22.88	23.98					0.007	0.303	<0.001	0.0014	0.003	0.082	0.069	3.6	0.092	3.22	0.194	0.02	0.46	<0.0001		3230	122	54	495	6	32.2	878	<1	<1	<1	335	335	31.5	1.15	<0.01				1890
		24-Aug-09	1530	24.19	25.18	SWL only																																				

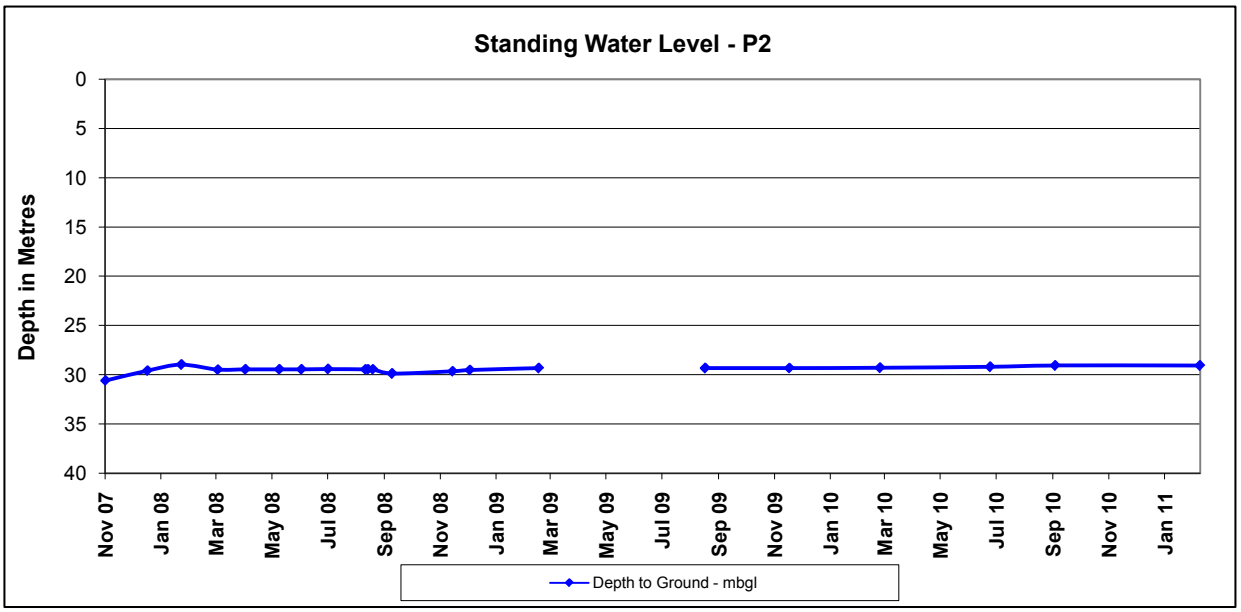
Site ID	Piezometer / Water Bore	Date	Time	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals																Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions					Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	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	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Mangan ese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadiu m (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesi um (Mg) - mg/L	Sodium (Na) - mg/L	Potassi um (K) - mg/L		Chloride (Cl) - mg/L	Sulfate (SO4) - mg/L	Hydroxide Alkalinity as CaCO3 - mg/L	Carbonate Alkalinity as CaCO3 - mg/L	Bicarbona te Alkalinity as CaCO3 - mg/L	Alkalinity - mg/L							
		17-Nov-09	1420	24.79	25.78	7.34	34900	25		0.005	0.303	<0.001	0.0004	0.001	0.09	0.048	0.57	0.056	2.43	0.215	<0.01	0.294	<0.0001		3200	64	48	493	6	28.7	863	10.2	<1	<1	320	320	30.9	3.68	<0.1				1870
		24-Feb-10	1150	24.30	25.29																																					
		24-Jun-10	1330	23.82	24.81	7.4	4360	20	<0.01	0.001				<0.005		0.001	0.14	0.011	3.16	0.256		0.033	<0.0001	7.34	3590	152	69	621	8	40.4	1130	7.32	<1	<1	382	382	39.6	1		<0.01	0.02	0.02	
		3-Sep-10	1005	28.06	29.05	7.61	3650	21.1																																		
		9-Feb-11	1240	27.40	28.39	7.05	3280	28.1	<0.01	0.002				<0.005		<0.001	0.33	0.006	5.17	0.3		0.025	<0.0001	6.82	4360	1320	77	652	6	41.4	1250	7	<1	<1	329	329	41.9	0.54		<0.01	0.37	0.37	
P12	NC-098D	3-Mar-08	1135	36.70	37.51																																					
		2-Apr-08	1145	37.72	38.53																																					
		9-May-08	0937	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	0.67	0.132	0.053	0.002	<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				226
		14-Nov-08	1047	36.72	37.61																																					
		01-Dec-08	1200	36.67	37.56																																					
		12-Jan-09	0915	36.66	37.57																																					
		18-Feb-09	1233	36.72	37.52																																					
		17-Aug-09	1245	37.18	37.99	7.3	2540	23.8		0.006	0.163	<0.001	0.0004	0.005	0.211	0.008	3	0.009	3.37	0.218	<0.01	0.04	<0.0001		2530	82	49	453	6	28	370	8.67	<1	<1	864	864	27.9	0.1	0.09				1540
		11-Nov-09	1035	37.13	37.94	7.5	2790	33.8		0.013	0.12	<0.001	<0.0001	0.009	0.051	0.004	1.42	0.014	1.41	0.078	<0.01	0.044	<0.0001		2470	51	28	555	7	29.2	394	4.15	<1	<1	931	931	29.8	0.98	0.3				1660
		17-Feb-10	0945	37.13	37.94																																					
		22-Jun-10	1030	36.30	37.11	7.38	2150	23.6	<0.01	0.009				<0.005		<0.001	0.25	<0.001	1.02	0.027		<0.005	<0.0001	7.5	2970	47	25	774	8	38.3	426	1.72	<1	<1	1180	1180	35.6	3.55		<0.01	0.04	0.04	
		2-Sep-10	1035	36.33	37.14	7.56	2700	21.9																																		
		7-Feb-11	1030	36.43	37.24	7.32	2560	25.8	0.03	0.011				<0.001			<0.001	0.002	0.943	0.024		0.009	<0.0001	7.46	2880	48	29	703	10	35.6	431	1	<1	<1	1040	1040	33.1	3.66		<0.01	0.01	0.02	
P13	NC-098S	3-Mar-08	1140	8.51	9.38																																					
		2-Apr-08	1147	8.62	9.49																																					
		9-May-08	0939	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	0.11	0.007	0.134	0.002	<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				1040
		14-Nov-08	1045	8.35	9.21																																					
		01-Dec-08	1202	8.48	9.34																																					
		12-Jan-09	0920	7.53	8.39																																					
		18-Feb-09	1241	7.35	8.23																																					
		17-Aug-09	1330	8.03	8.90	7.6	1540	24.3		<0.001	0.103	<0.001	<0.0001	0.003	0.002	0.002	1.51	0.002	0.064	0.004	<0.01	0.009	<0.0001		1760	50	100	204	3	19.6	272	50.7	<1	<1	551	551	19.7	0.34	<0.01				978
		11-Nov-09	1120	8.92	9.79	7.2	1310	27.5		0.001	0.125	<0.001	<0.0001	0.003	0.005	0.006	2.57	0.005	0.625	0.016	<0.01	0.015	<0.0001		1820	54	105	218	3	20.9	362	45.8	<1	<1	520	520	21.6	1.66	14.9				1110
		17-Feb-10	0950	8.06	8.93																																					
		22-Jun-10	0930	8.80	9.67	7.69	1923	21	<0.01	<0.001				<0.005		<0.001	<0.05	<0.001	<0.001	0.003		<0.005	<0.0001	7.47	1820	56	106	222	3	21.2	301	41.4	<1	<1	544	544	20.2	2.37		<0.01	2.77	2.77	
		2-Sep-10	1025	8.30	9.17	7.38	1668	22.4																																		
		7-Feb-11	1100	6.28	7.15	7.21	1615	24.5	0.03	<0.001				<0.001		<0.001	<0.05	<0.001	<0.001	0.001		<0.005	<0.0001	7.24	1480	70	86	191	2	19	283	54	<1	<1	512	512	19.3	0.97		0.02	1.95	1.97	
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	0945	58.42	58.77																																					
		24-Aug-09	1240	57.32	57.68	12.6	9300	23.3		0.002	2.04	<0.001	<0.0001	0.04	0.003	0.06	2.04	0.018	0.051	0.027	<0.01	0.158	<0.0001		5430	656	<1	205	112	44.5	5.71	2.58	<1	<1	<1	<1	0.21	99	3.03				2480
		18-Nov-09	1200	59.48	59.84	12.35	9320	28.5	0.02	0.002				0.018		0.016	<0.5	<0.001	<0.001	0.011		<0.005	<0.0001	9.98	2520	574	<1	202	118	40.5	7.84	31.8	2140	50	<1	2190	44.6	4.88		0.06	0.06	0.13	
		24-Feb-10	0955	60.31	60.67																																					
		22-Jun-10	1325	60.18	60.54	11.95	8980	21	0.01	0.002				0.018		0.027	<0.05	<0.001	<0.001	0.018		<0.005	<0.0001	12.5	9070	562	<1	341	126	46.1	129	12.7	1960	78	<1	2040	44.6	1.64		0.06	0.06	0.12	
		2-Sep-10	1210	60.73	61.09	Insufficient to sample																																				
		7-Feb-11	1300	60.37	60.73	Insufficient to sample																																				
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	0950	16.21	16.56																																					
		24-Aug-09	1215	16.16	16.47	6.8	16000	26.8		0.004	0.522	<0.001	0.0005	0.036	0.024	0.091	12.9	0.011	3.54	0.058	0.04	0.108	<0.0001		15300	193	286	2830	60	158	4340	928	<1	<1	1220	1220	166	2.56	3.34				10400
		18-Nov-09	1230	16.18	16.49	6.68	16320	29.3	<0.01	<0.001				<0.005		0.008	<0.05	<0.001	3.12	0.019		0.02	<0.0001	7.25	15200	87	284	3090	70	164	4490	971	<1	<1	788	788	162	0.39		<0.01	<0.01	<0.01	
		24-Feb-10	0955	16.23	16.54																																					
		22-Jun-10	1250	16.18	16.49	6.73	13990	22	<0.01	<0.001				<0.005		0.005	<0.05	<0.001	1.9	0.016		0.02	<0.0001	7.36	11500	182	234	2690	47	146	4110	1020	<1	<1	1080	1080	159	3.99		<0.01	0.04	0.04	
		2-Sep-10	1215	16.16	16.47	6.98	13550	23.8																																		
		7-Feb-11	1350	16.13	16.44	6.47	12520	27.1	0.01	0.002				<0.001		0.006	<0.05	<0.001	3.3	0.013		0.019	<0.0001	6.69	15800	214	300	2900	59	163	4860	910	<1	<1	1050	1050	177	4.13		<0.01	0.02	0.02	
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	0930	50.52	51.30	7.45	1085	20.5		0.001	0.029	<0.001	<0.0001	0.002	<0.001	0.002	4.43	0.394	0.070	0.036	<0.01	0.204	<0.0001		132	5	1	14	3	1.05	22	<1	<1	<1	25	25	1.12		2.00				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																																					
		9-Jun-09	1330	48.45	49.30	Bore pumped dry																																				
		24-Aug-09	1445	47.53	48.37	SWL only																																				
		17-Nov-09	1300	48.16	49.00	6.84	1605	24.1		<0.001	0.135	<0.001	<0.0001	0.001	<0.001	0.023	4.79	0.119	0.299	0.043	<0.01	1.21	<0.0001		1530	23	13	208	14	13.3	324	1.36	<1	<1	235	235	13.9	2.11	23.4				682
		24-Feb-10	1045	47.00	47.84																																					
		24-Jun-10	1015	47.46	48.30	7.53	1947	18	<0.01	<0.001				<0.005		0.003	0.33	0.002	0.389	0.016		0.085	<0.0001	7.01	1740	32	16	265	23	15	371	2.78	<1	<1	298	298	16.5	4.61		0.02	0.33	0.35	
		2-Sep-10	1345	46.77	47.61	6.78	2370	24.5																																		
		9-Feb-11	1040	47.50	48.34	6.73	2169	24	0.16	0.002				<0.005		0.01	0.5	0.031	0.515	0.006		0.063	<0.0001	6.67	2460	38	14	297	32	16.8	478	6	<1	<1	497	497	23.5	16.6		0.23	0.38	0.61	
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																																					
		09-Jun-09	1345			Dry																																				
		24-Aug-09	1450			Dry																																				
		17-Nov-09	1320			Dry																																				
		24-Feb-10	1115			Dry																																				
		24-Jun-10	1025			Dry																																				
		2-Sep-10	1325			Dry																																				

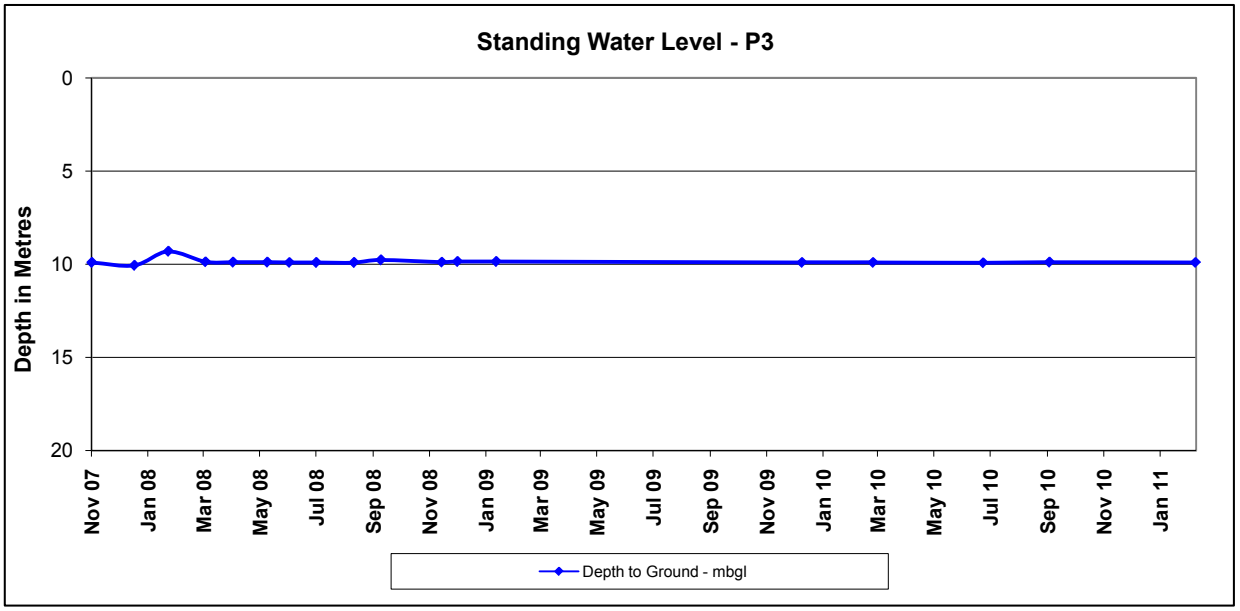
Site ID	Piezometer / Water Bore	Date	Time	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals																		Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations					Major Anions								Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	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	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				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					
		9-Feb-11	1050			Dry																																						
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	3.75	0.046	0.137	0.059	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				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																																						
		23-Feb-09	1003	13.00	13.80																																						
		09-Jun-09	0900	13.60	14.35	6.1	8750	20.7		0.002	1.98	<0.001	<0.0001	0.009	0.019	0.007	4.6	0.04	0.14	0.038	0.03	0.03	<0.0001		8250	66	70	1960	79	96.4	134	<1	<1	<1	5100	5100	106	4.62	4.74				6720
		24-Aug-09	1320	17.87	18.68	SWL only																																					
		18-Nov-09	1400	23.90	24.71	6.66	6180	27.5	0.2	0.009				0.009		0.03	3.44	0.042	0.306	0.091		0.694	<0.0001	7.03	6100	58	48	1450	63	71.7	110	18	<1	<1	3710	3710	77.6	3.99		0.02	0.06	0.08	
		17-Feb-10	1200	31.91	32.72																																						
		16-Mar-10	1610	33.34	34.15	SWL only																																					
		7-May-10	1500	33.89	34.70																																						
		23-Jun-10	0950	40.03	40.84	6.54	7490	18	0.04	0.003				0.004		0.002	0.08	0.002	0.784	0.06		0.13	<0.0001	6.75	6210	80	137	1370	37	75.8	861	91.2	<1	<1	2880	2880	83.7	4.99		<0.01	0.1	0.1	
		2-Sep-10	1130	41.38	42.19	6.65	4070	23.2																																			
		10-Feb-11	1200			Dry																																					
P19	NC-123R	3-Mar-08	1535	16.11	17.05																																						
		2-Apr-08	1230	16.10	17.05																																						
		9-May-08	1033	16.11	17.05																																						
		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	3.19	0.015	0.728	0.320	<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				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																																						
		09-Jun-09	0930	23.50	23.90	7	5600	21.2		<0.001	0.275	<0.001	<0.0001	0.029	0.003	0.002	3.14	0.003	1.24	0.014	<0.01	0.039	<0.0001		5230	40	82	1030	18	54	1170	<20	<1	<1	1060	1060	54.2	0.16	3.83				2910
		24-Aug-09	1322	24.82	25.30	SWL only																																					
		18-Nov-09	1410	24.11	24.59	7.34	3690	23.8	<0.01	0.003				<0.005		0.002	0.12	<0.001	0.93	0.005		0.011	<0.0001	7.71	3050	28	45	551	19	29.6	624	22.1	<1	<1	663	663	31.3	2.9		<0.01	0.04	0.04	
		17-Feb-10	1210	23.75	24.23																																						
		23-Jun-10	1100	22.95	23.43	7.3	3970	20	0.01	0.003				0.002		<0.001	0.13	<0.001	1.09	0.007		0.008	<0.0001	7.28	3330	32	57	672	24	36.1	708	29.4	<1	<1	838	838	37.3	1.67		<0.01	<0.01	<0.01	
		2-Sep-10	1140	22.86	23.34	7.24	3120	22.9																																			
		10-Feb-11	1230	21.87	22.36	7.1	1714	26.4	0.01	0.003				0.006		0.003	0.09	<0.001	0.701	0.005		0.018	<0.0001	7.45	2900	25	39	501	22	26.9	581	26	<1	<1	587	587	28.6	3.23		0.06	9.43	<0.01	
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	1.57	0.004	0.035	0.014	<0.01	0.009	<0.0001		10500	62	68	2860	118	136	425	<1	<1	<1	5970	5970	131	1.83	10.3				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	0920	14.06	14.95																																						
		09-Jun-09	1000	14.83	15.68	7.1	13600	21		<0.001	4.12	<0.001	0.0002	0.002	<0.001	0.004	0.4	0.001	0.014	0.003	<0.01	0.036	<0.0001		12500	74	80	3290	114	156	174	<10	<1	<1	8420	8420	173	5	9.14				9910
		24-Aug-09	1330	20.77	21.68	SWL only																																					
		18-Nov-09	1430	17.20	18.11	7.26	10210	26.1	<0.01	<0.001				<0.005		0.002	0.13	0.002	0.046	0.016		0.1	<0.0001	7.52	10300	8	120	2510	96	122	599	26.9	<1	<1	5960	5960	136	4.97		<0.01	0.01	0.01	
		17-Feb-10	1215	30.15	31.06																																						
		16-Mar-10	1555	37.69	38.60	SWL only																																					
		7-May-10	1515	41.79	42.70																																						
		23-Jun-10	1030	49.45	50.36	6.95	5830	20	<0.01	<0.001				0.003		0.001	<0.05	<0.001	0.185	0.043		0.226	<0.0001	6.73	4840	169	219	826	21	62.9	1400	107	<1	<1	799	799	57.7	4.29		<0.01	0.1	0.1	
		Cemented up - No longer monitored																																									
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	0.64	0.002	0.015	<0.001	<0.01	0.091	<0.0001		14200	102	209	3740	204	190	53	3	<1	<1	8700	8700	175	4.06	11.9				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	0930	8.81	9.00	7.2	1010	20.7		<0.001	0.033	<0.001	<0.0001	<0.001	<0.001	0.001	<0.05	<0.001	0.003	0.002	<0.01	<0.005	<0.0001		239	12	6	32	1	2.53	16	6	<1	<1	101	101	2.61		0.06				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																																						
		11-Jun-09	1500							<0.001	0.087	<0.001	<0.0001	<0.001	<0.001	0.106	0.3	0.002	0.02	0.001	<0.01	0.067	<0.0001		1130	64	57	83	2	11.6	156	17	<1	<1	340	340	11.5	0.21	<0.01				628
		17-Aug-09	1345	6.34	6.72	7.4	1150	18.5		<0.001	0.093	<0.001	<0.0001	<0.001	<0.001	0.003	0.06	<0.001	0.002	<0.001	<0.01	<0.005	<0.0001		1210	71	60	74	4	11.8	227	34.3	<1	<1	248	248	12.1	1.27	<0.01				744
		11-Nov-09	1200	8.18	8.56	7.3	1200	28.1		0.002	0.202	0.003	0.0007	0.021	0.008	0.064	16.8	0.012	0.203	0.02	0.03	0.058	<0.0001		1130	62	53	63	6	10.4	217	29.5	<1	<1	194	194	10.6	1.11	<0.01				1200
		17-Feb-10	1000	5.72	6.10																																						
		22-Jun-10	1105	7.02	7.40	7.83	1158	17	0.01	<0.001				<0.001		0.009	<0.05	<0.001	0.001	<0.001		<0.05	<0.0001	7.5	1080	61	53	60	6	10.2	197	27.6	<1	<1	215	215	10.4	1.24		<0.01	3.04	3.04	
		02-Sep-10	1045	5.41	5.79	7.53	1304	22.4																																			
		07-Feb-11	1120	3.22	3.60	7.2	855	24.5	0.11	<0.001				<0.001		0.012	0.06	<0.001	0.084	0.002		0.025	<0.0001	7.46	500	28	22	46	7	5.39	57	13	<1	<1	182	182	5.5	1.08		0.02	0.7	0.72	
WB3a		11-Sep-08	1210	8.09	8.60	7.7	1050	20.1		<0.001	0.179	<0.001	<0.0001	<0.001	<0.001	0.002	0.34	0.002	0.259	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				431
		14-Nov-08	0856	8.14	8.65																																						
		01-Dec-08	1055	8.14	8.65																																						
		12-Jan-09	1301	7.94	8.45																																						
		01-Dec-09	1310	8.21	8.72																																						
		18-Feb-10	1205	8.11	8.62																																						
		23-Jun-10	1315	8.19	8.70																																						
		03-Sep-10	1210	8.03	8.54	7.29	919	22.5																																			
		09-Feb-11	1300	7.55	8.06																																						
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	0.31	0.001	0.255	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				415
		14-Nov-08	0854	8.05	8.56																																						
		01-Dec-08	1057	7.99	8.50																																						
		12-Jan-09	1303	7.84	8.33																																						
		01-Dec-09	1310	8.20	8.71																																						
		18-Feb-10	1210	8.05	8.56																																						
		23-Jun-10	1320	8.10	8.61																																						
		03-Sep-10	1215	7.88	8.39	7.38	693	22.7																																			
		09-Feb-11	1310	7.20	7.71																																						
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	<0.05	<0.001	0.003	0.002	<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				461
		14-Nov-08	0902	8.30	8.85																																						
		12-Jan-09	1258	8.25	8.80																																						
		01-Dec-09	1305	8.38	8.93																																						
		18-Feb-10	1220	8.41	8.96																																						
		23-Jun-10	1310	8.41	8.96																																						
		03-Sep-10	1155	9.40	9.95	7.35	2174	21.8																																			
		09-Feb-11	1245	8.20	8.75																																						
WBSa		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	0.1	0.006	0.033	<0.001	<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				281
		14-Nov-08	0832	10.29	11.41																																						
		01-Dec-08	1035	10.15	11.27																																						
		12-Jan-09	1319	9.89	11.01																																						
		01-Dec-09	1345	10.38	11.50																																						
		18-Feb-10	1245	10.35	11.47																																						

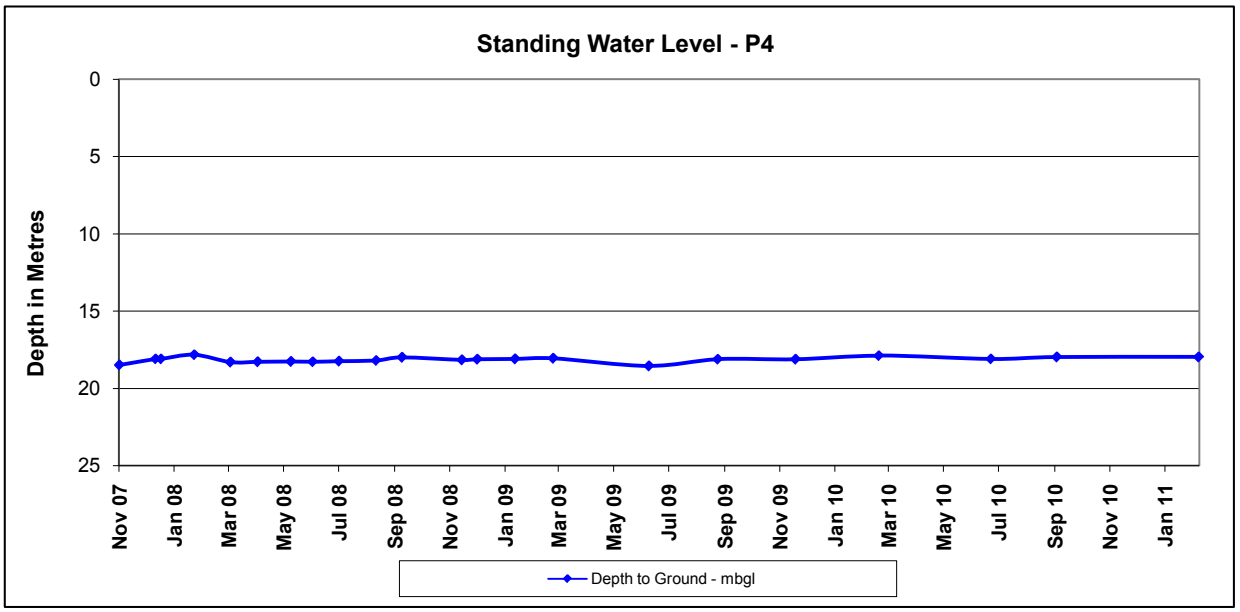
Site ID	Piezometer / Water Bore	Date	Time	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals																Mercury (Hg) - mg/L	pH Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N - mg/L	Nitrate as N - mg/L	NOX as N - mg/L	Total Dissolved Solids
						pH - Field	EC - Field - µs/cm	Temp - Field - °C	Aluminium (Al) - mg/L	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	Iron (Fe) - mg/L	Lead (Pb) - mg/L	Manganese (Mn) - mg/L	Nickel (Ni) - mg/L	Vanadium (V) - mg/L	Zinc (Zn) - mg/L				Calcium (Ca) - mg/L	Magnesium (Mg) - mg/L	Sodium (Na) - mg/L	Potassium (K) - mg/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							
		23-Jun-10	1350	10.38	11.50																																					
		03-Sep-10	1330	9.71	10.83																																					
		09-Feb-11	1034																																							
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	<0.05	0.006	0.031	0.001	<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				278
		14-Nov-08	0833	10.43	11.55																																					
		01-Dec-08	1037	10.15	11.27																																					
		12-Jan-09	1321	10.21	11.33																																					
		01-Dec-09	1345	10.78	11.90																																					
		18-Feb-10	1250	10.69	11.81																																					
		23-Jun-10	1355	10.36	11.48																																					
		09-Feb-11	1350																																							
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	0.22	0.029	0.302	0.002	<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				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	0.29	0.014	0.419	0.004	<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				525
		14-Nov-08	0823	14.31	15.19																																					
		01-Dec-08	1030	14.29	15.17																																					
		12-Jan-09	1326	14.24	15.12																																					
		01-Dec-09	1400	14.38	15.22																																					
		18-Feb-10	1310	14.31	15.15																																					
		03-Sep-10	1345	14.31	15.15																																					
		09-Feb-11	1400	11.68	12.52																																					
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	0.28	0.028	0.297	0.006	<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				405
		14-Nov-08	0825	12.21	13.09																																					
		01-Dec-08	1032	11.21	12.09																																					
		12-Jan-09	1328	17.89	18.77																																					
		01-Dec-09	1400	19.70	20.54																																					
		18-Feb-10	1315	13.94	14.78																																					
		03-Sep-10	1350	11.09	11.93																																					
		09-Feb-11	1410	20.34	21.18																																					
WB7		11-Sep-08	1330			6.9	1175	20.5		<0.001	0.006	<0.001	<0.0001	<0.001	<0.001	0.013	<0.05	<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				410
		14-Nov-08	0841	4.11	4.99																																					
		01-Dec-08	1045	2.27	3.15																																					
		12-Jan-09	1315	4.30	5.18																																					
		25-Aug-09	1500							<0.001	0.006	<0.001	<0.0001	<0.001	<0.001	0.049	<0.05	0.006	0.002	<0.001	<0.01	0.044	<0.0001		633	26	14	80	2		47.4	23	<1	<1	224	224			<0.01				348
		01-Dec-09	1330	4.79		8.18	1002	23.3	0.05	0.005				<0.001		0.013	0.32	<0.001	0.038	0.004		<0.005	<0.0001	7.91	848	12	7	164	1	8.35	65.2	32	<1	<1	272	272	8.05	1.82		0.02	1.45	1.48	
		18-Feb-10	1240	4.64																																							
		23-Jun-10	1340		4.81	8.2	796	21	<0.01	<0.001				<0.001		0.01	<0.05	<0.001	<0.001	<0.001		0.007	<0.0001	7.22	621	29	16	93	2	6.89	51	17.8	<1	<1	250	250	6.81	0.59		<0.01	0.31	0.31	
		03-Sep-10	1305		1.93	7.39	625	22.3																																			
		08-Feb-11	1330		2.12	7.36	964	27.3	0.02	<0.001				<0.005		0.023	<0.05	<0.001	<0.001	<0.001		0.012	<0.001	7.2	766	41	24	125	2	9.52	65	33	<1	<1	345	345	9.41	0.52		<0.01	0.43	0.43	
WB8		12-Sep-08																																									
		14-Nov-08																																									
WB9	NC-008	1-Dec-08	1235	19.2	19.67																																					

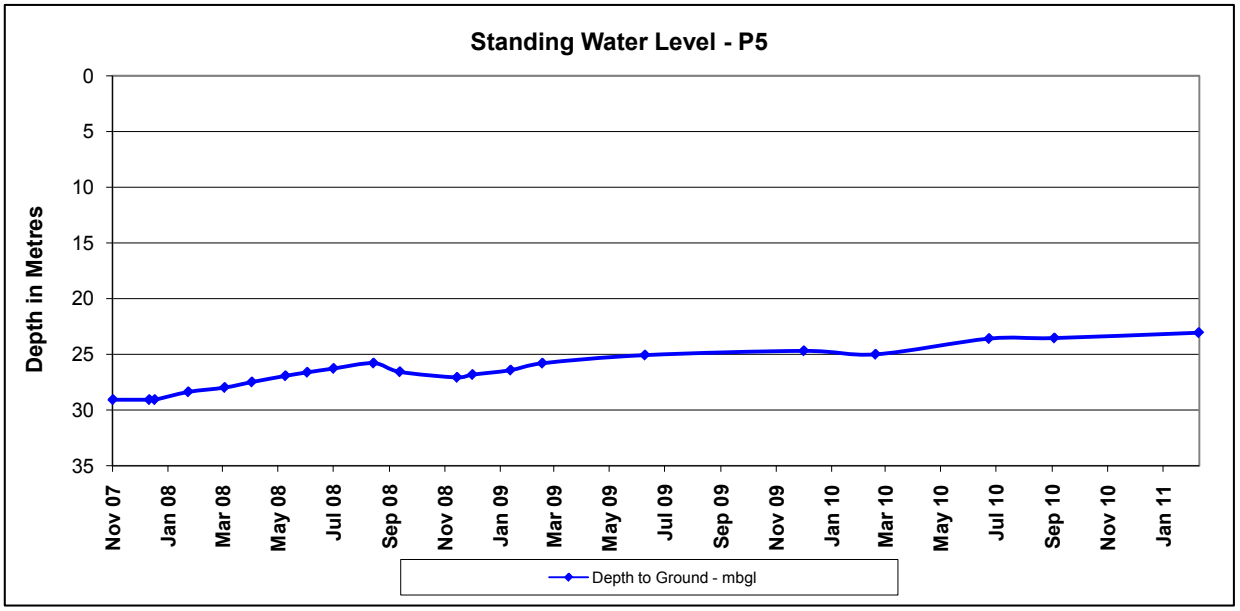
Denotes dissolved metals


Standing Water Level - P1
Depth in Metres
0
10
20
30
40
50
60
70
80
90
100
Nov 07
Jan 08
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
Sep 09
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P2
Depth in Metres
0
5
10
15
20
25
30
35
40
Nov 07
Jan 08
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
Sep 09
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P3
Depth in Metres
0
5
10
15
20
Nov 07
Jan 08
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
Sep 09
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P4
Depth in Metres
0
5
10
15
20
25
Nov 07
Jan 08
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
Sep 09
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P5
Depth in Metres
0
5
10
15
20
25
30
35
Nov 07
Jan 08
Mar 08
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Jul 08
Sep 08
Nov 08
Jan 09
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Jan 10
Mar 10
May 10
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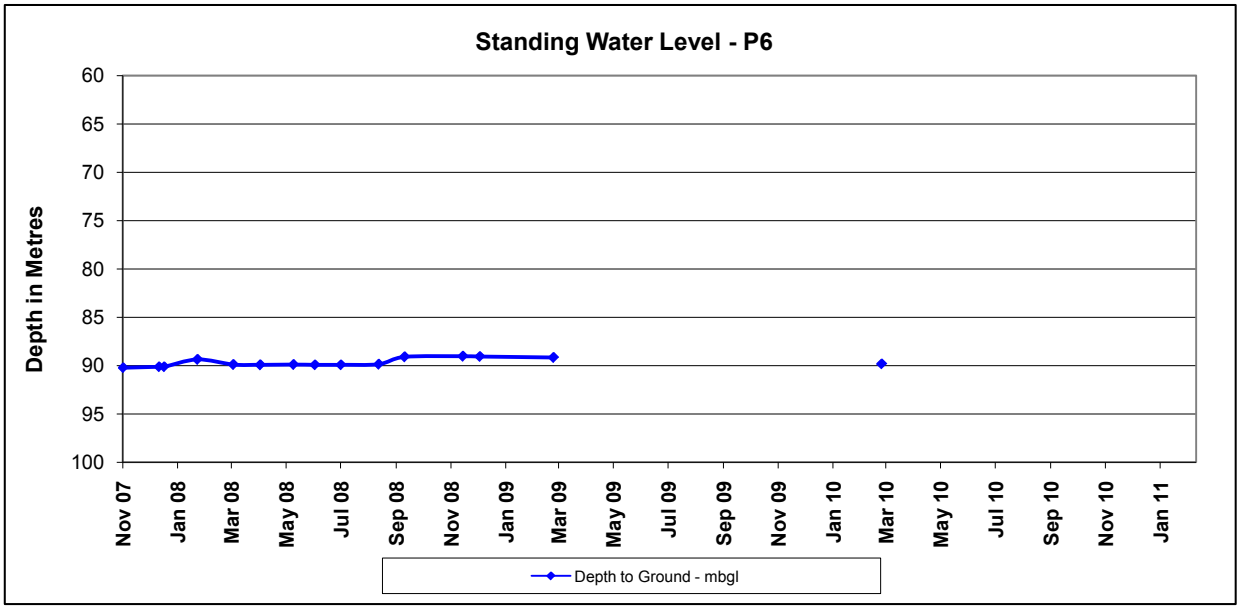
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P6
Depth in Metres
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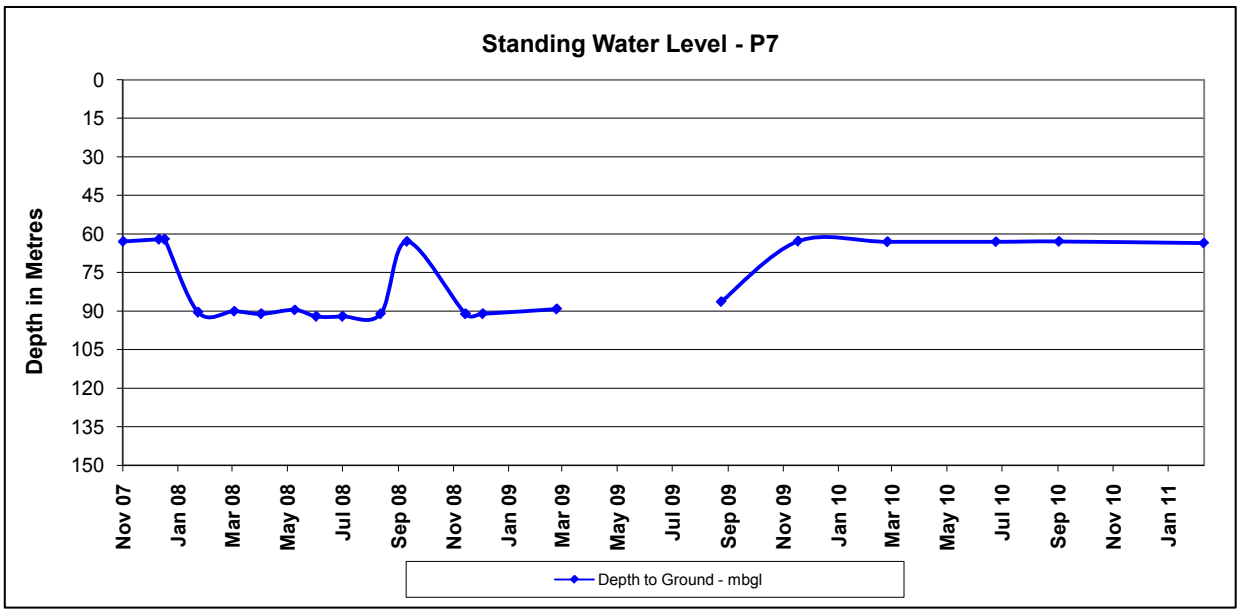
70
75
80
85
90
95
100
Nov 07
Jan 08
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
Sep 09
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl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Depth in Metres
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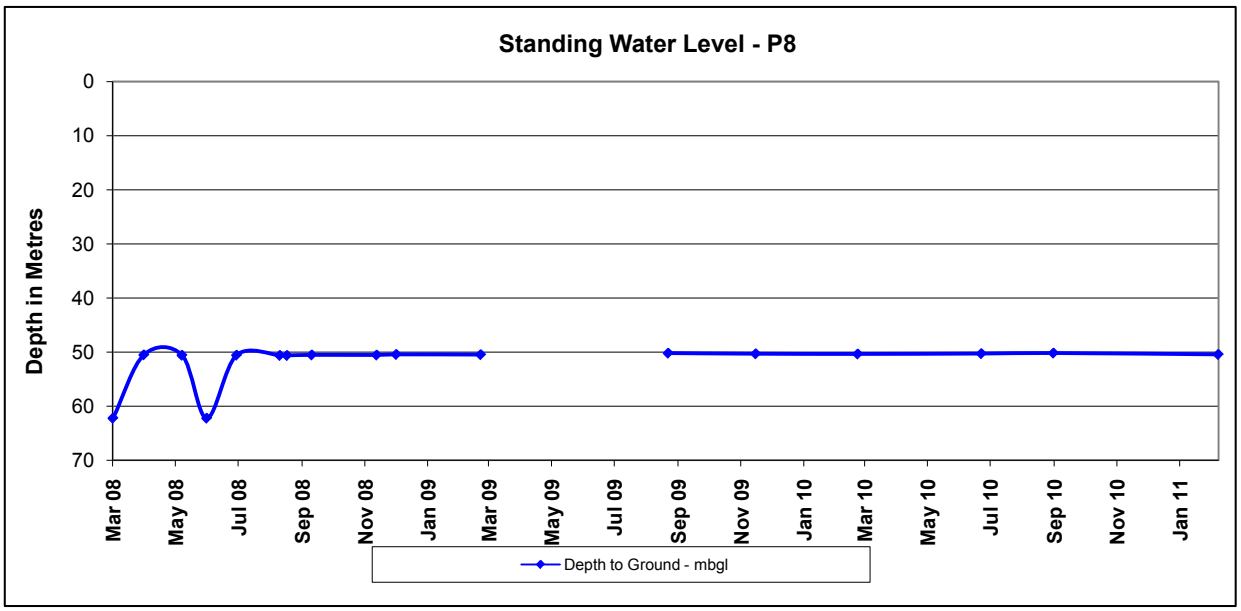
15
30
45
60
75
90
105
120
135
150
Nov 07
Jan 08
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
Sep 09
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl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Depth in Metres
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20
30
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50
60
70
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
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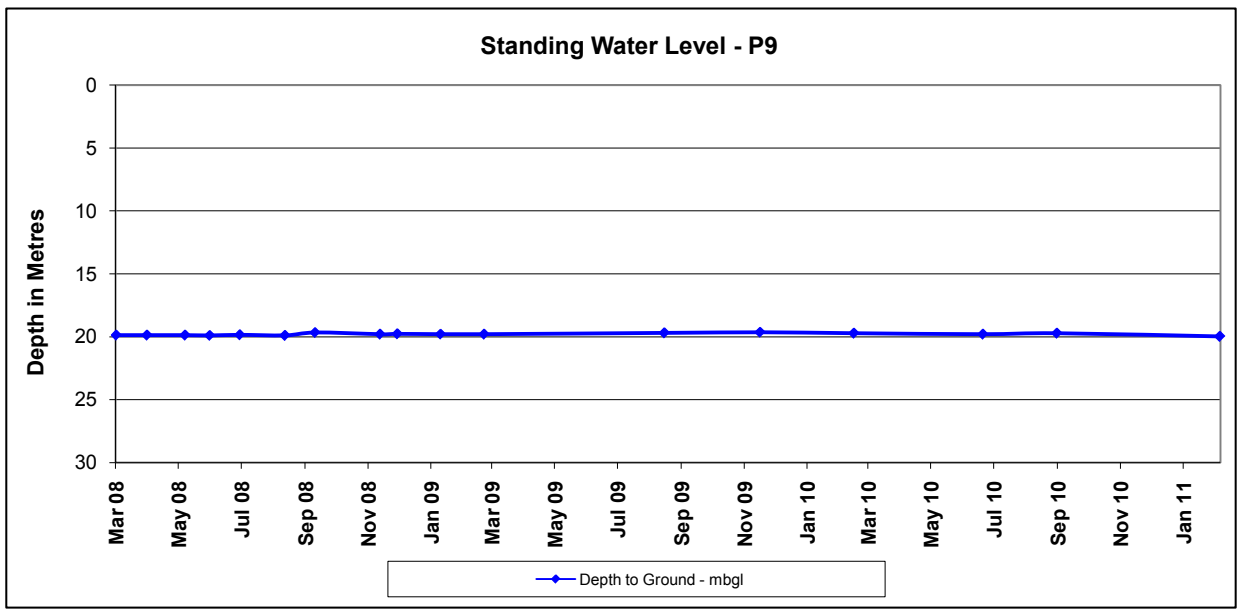
Jul 09
Sep 09
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl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Depth in Metres
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5
10
15
20
25
30
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
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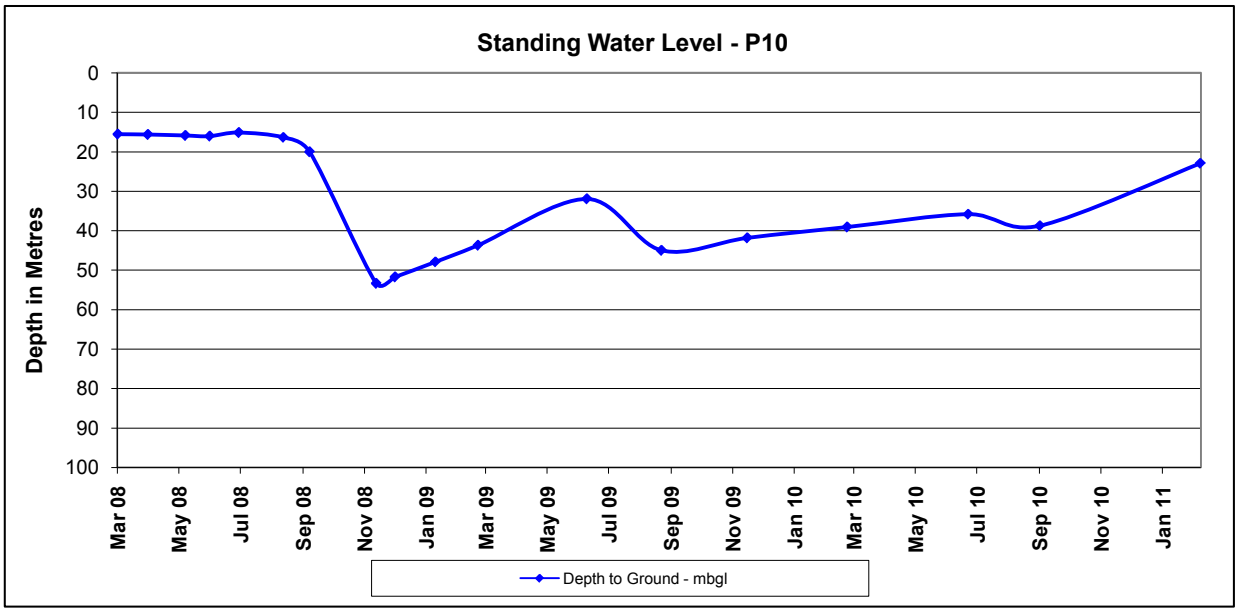
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl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Depth in Metres
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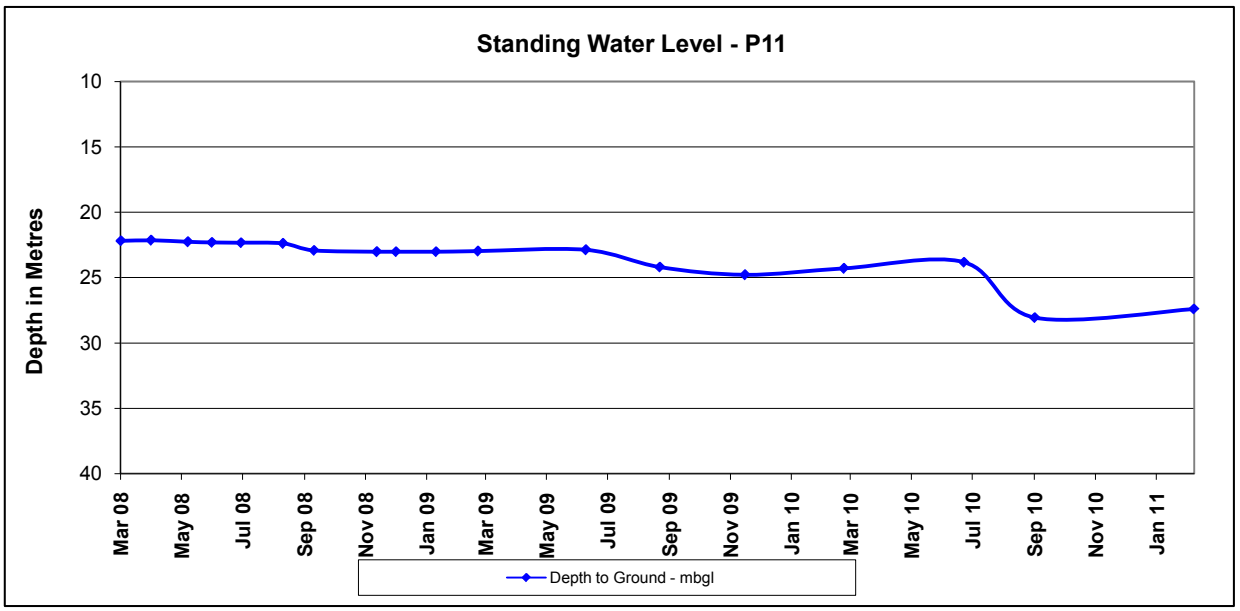
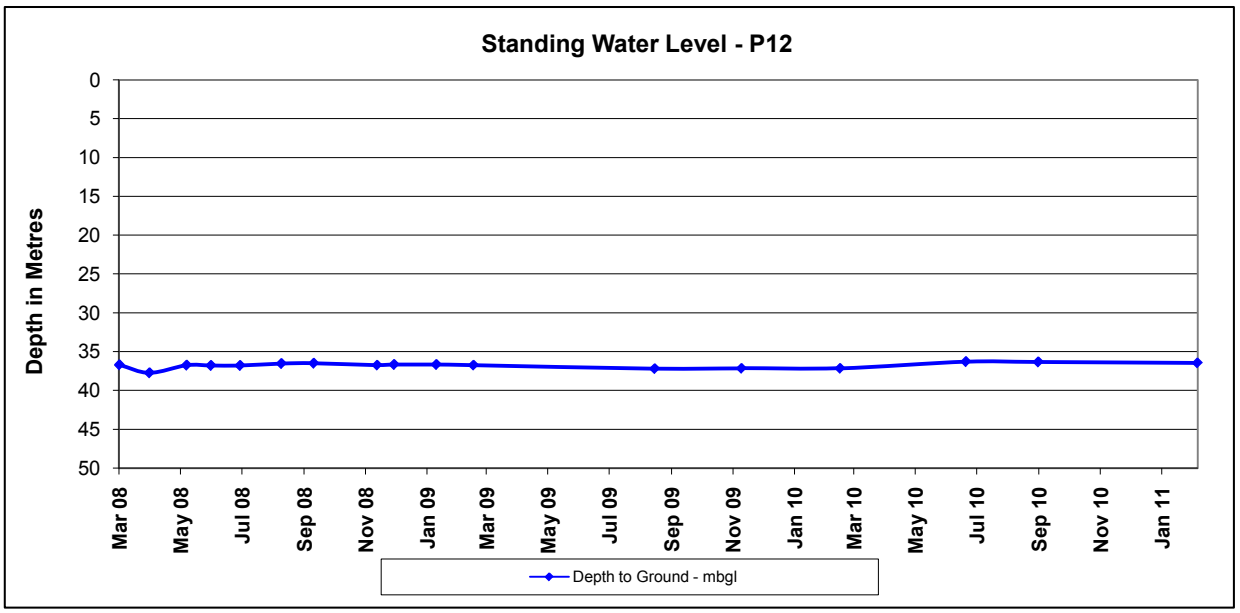
20
30
40
50
60
70
80
90
100
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
Sep 09
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P11
Depth in Metres
10
15
20
25
30
35
40
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
Sep 09
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl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Depth in Metres
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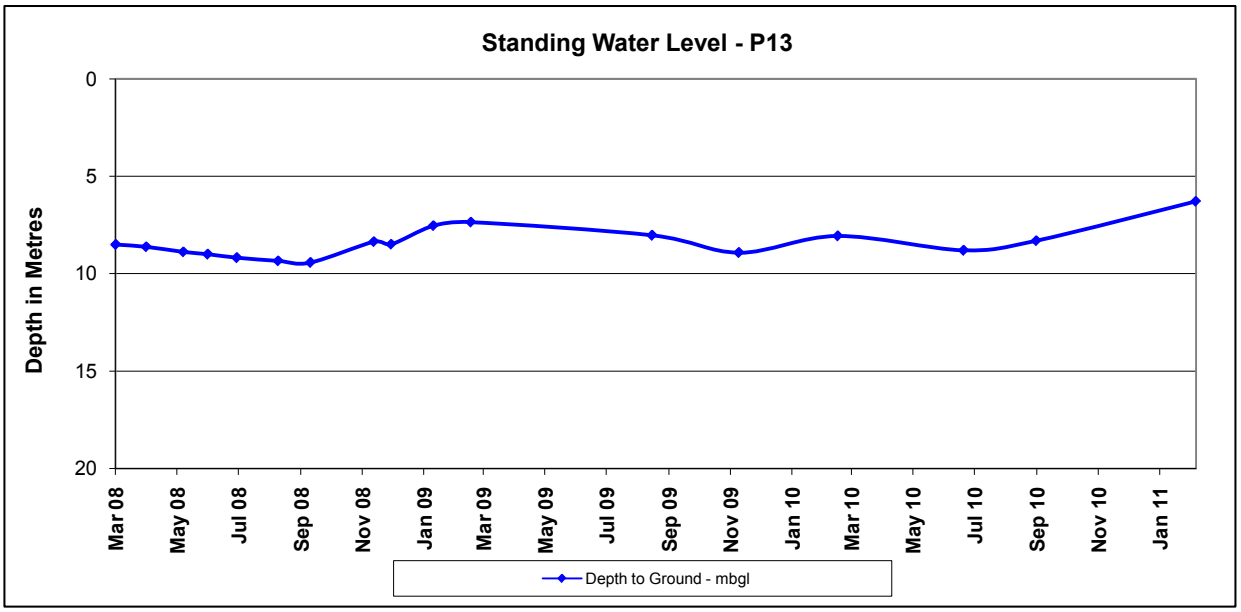
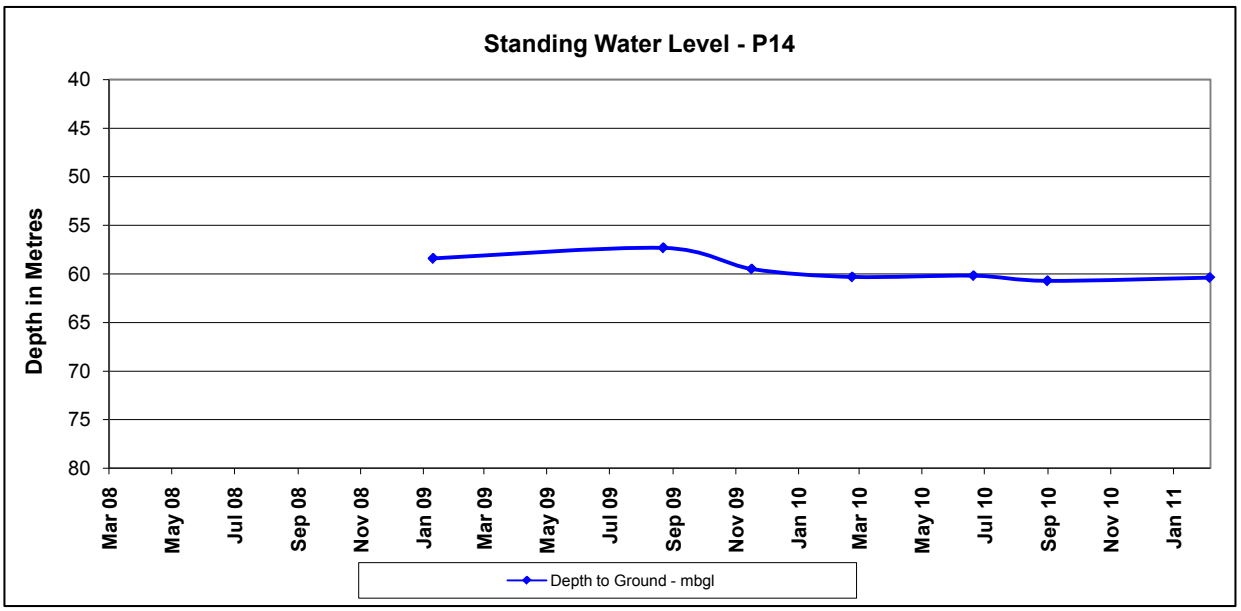
15
20
25
30
35
40
45
50
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
Sep 09
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P13
Depth in Metres
0
5
10
15
20
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
Sep 09
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P14
Depth in Metres
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45
50
55
60
65
70
75
80
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
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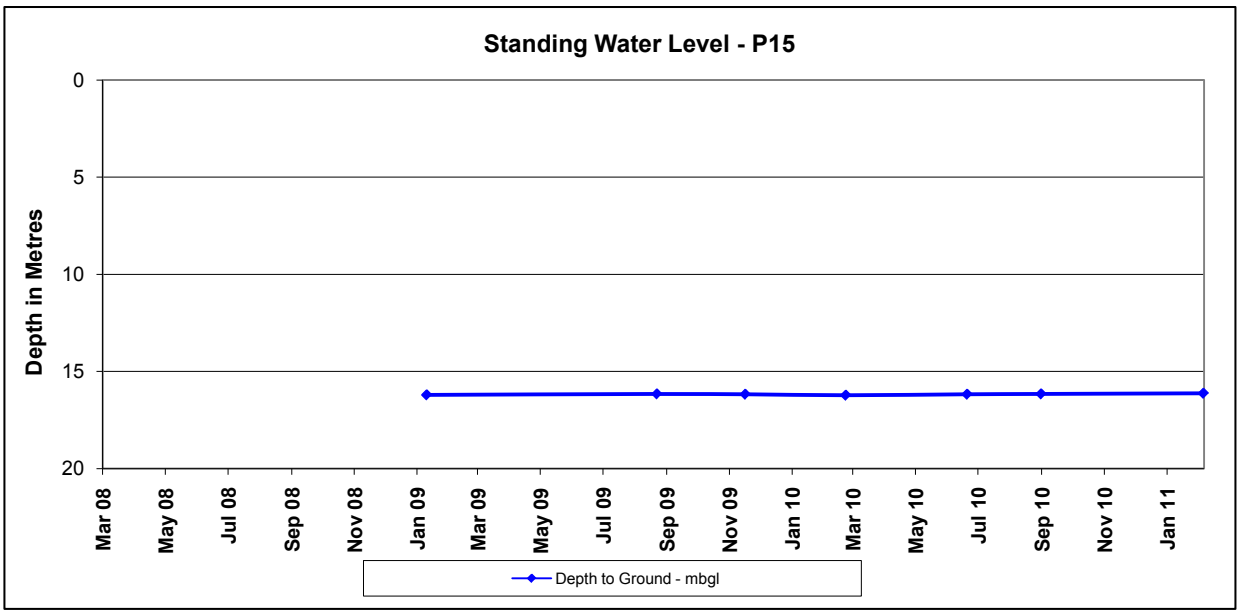
Nov 09
Jan 10
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P15
Depth in Metres
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10
15
20
Mar 08
May 08
Jul 08
Sep 08
Nov 08
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May 09
Jul 09
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Nov 09
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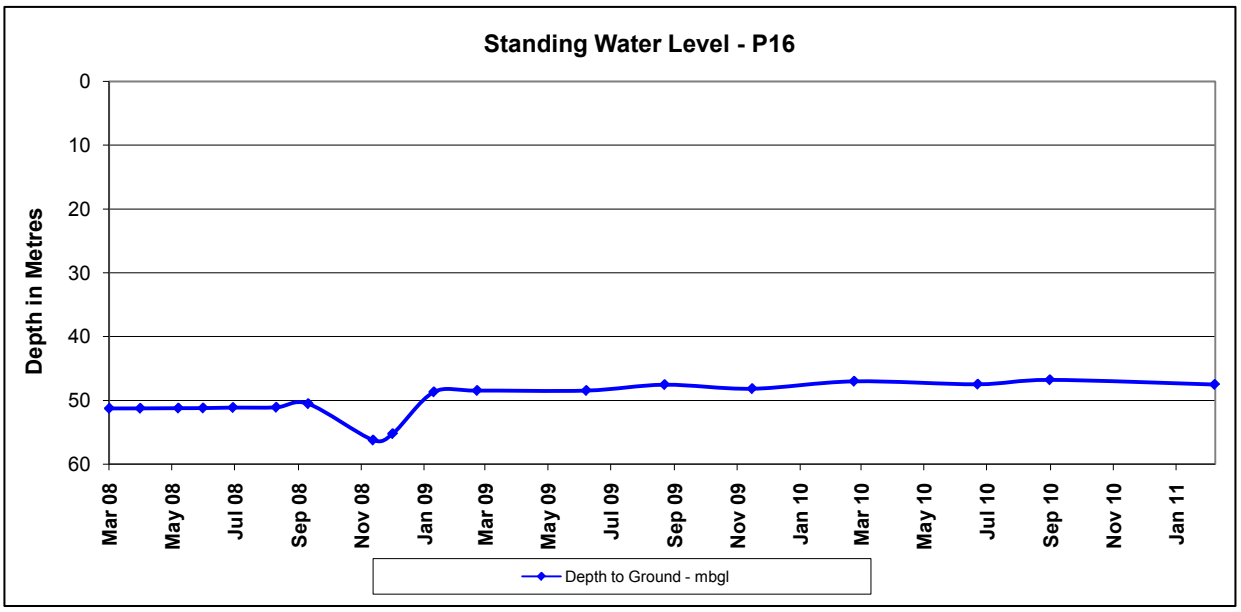
Mar 10
May 10
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P16
Depth in Metres
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10
20
30
40
50
60
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
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Mar 10
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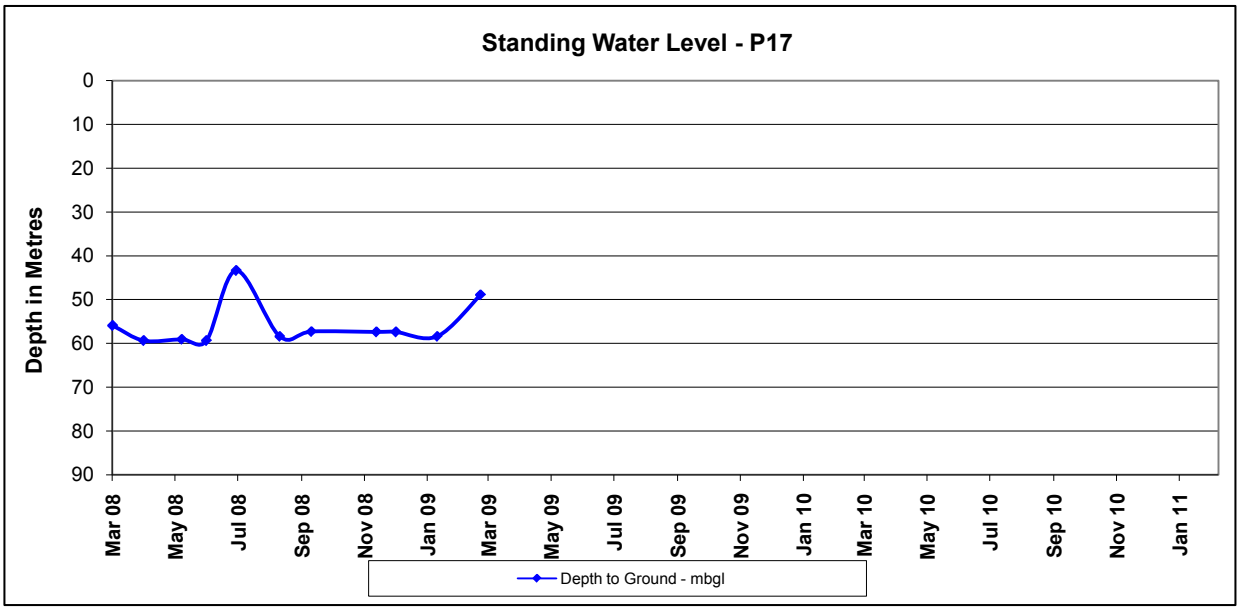
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P17
Depth in Metres
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20
30
40
50
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70
80
90
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
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Mar 10
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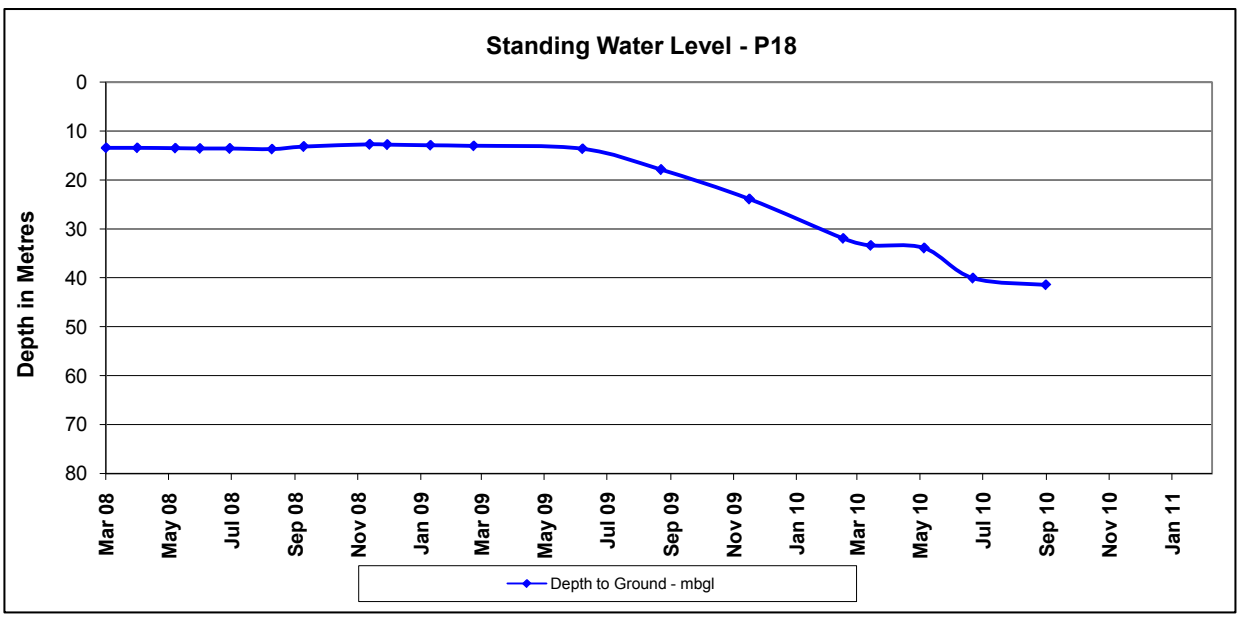
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P18
Depth in Metres
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10
20
30
40
50
60
70
80
Mar 08
May 08
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Nov 08
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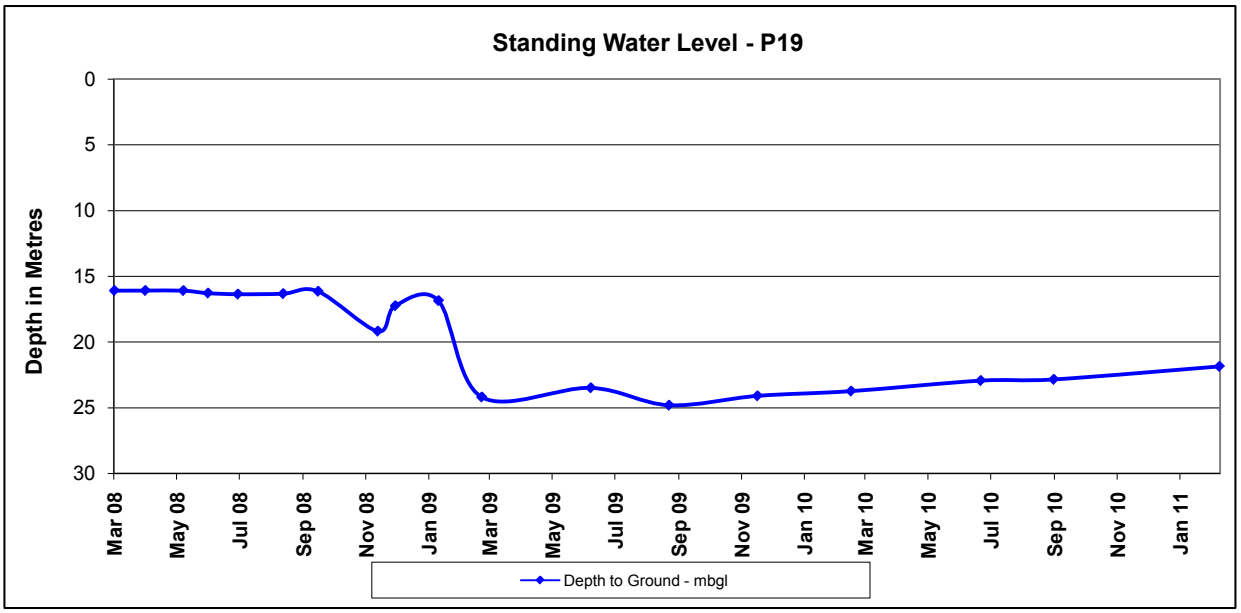
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P19
Depth in Metres
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5
10
15
20
25
30
Mar 08
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Jul 08
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Nov 08
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Jan 10
Mar 10
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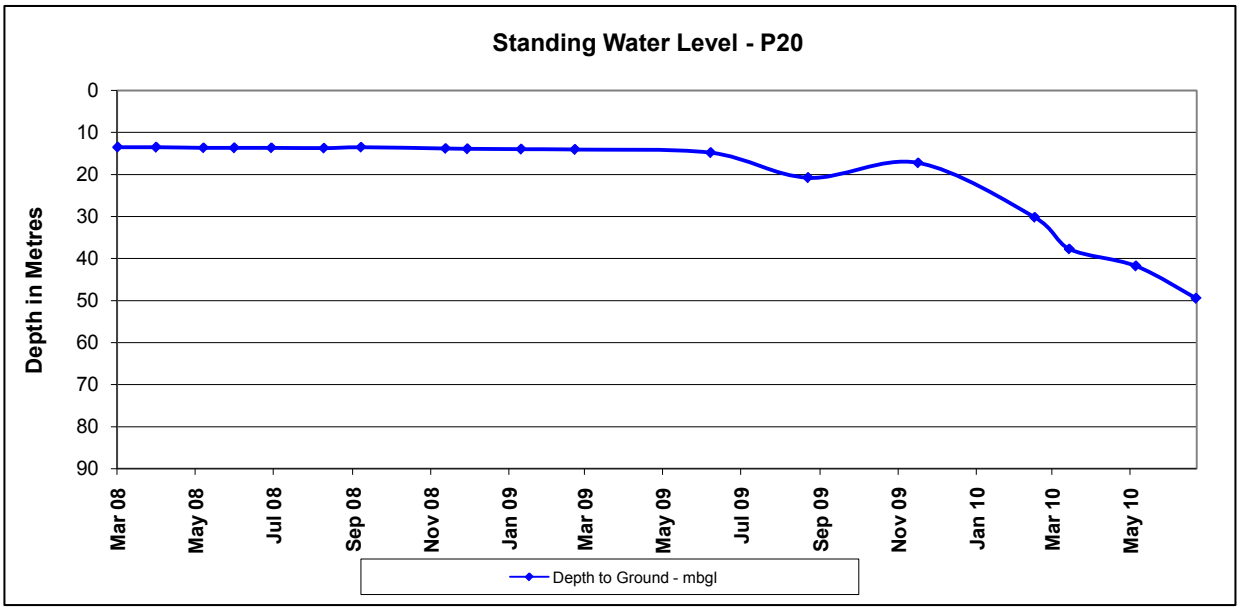
Jul 10
Sep 10
Nov 10
Jan 11
Depth to Ground - mbgl


Standing Water Level - P20
Depth in Metres
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10
20
30
40
50
60
70
80
90
Mar 08
May 08
Jul 08
Sep 08
Nov 08
Jan 09
Mar 09
May 09
Jul 09
Sep 09
Nov 09
Jan 10
Mar 10
May 10
Depth to Ground - mbgl

Appendix 7

NOISE MONITORING RESULTS

ATTENDED NOISE MONITORING

June 2010

September 2010

December 2010

March 2011

19 July 2010

Ref: 05168/3612

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

RE: JUNE 2010 ATTENDED NOISE MONITORING RESULTS – NARRABRI MINE

This letter report presents the results of attended noise compliance monitoring conducted for the Narrabri Coal Mine (NCM) commencing Wednesday 23rd June 2010. 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:

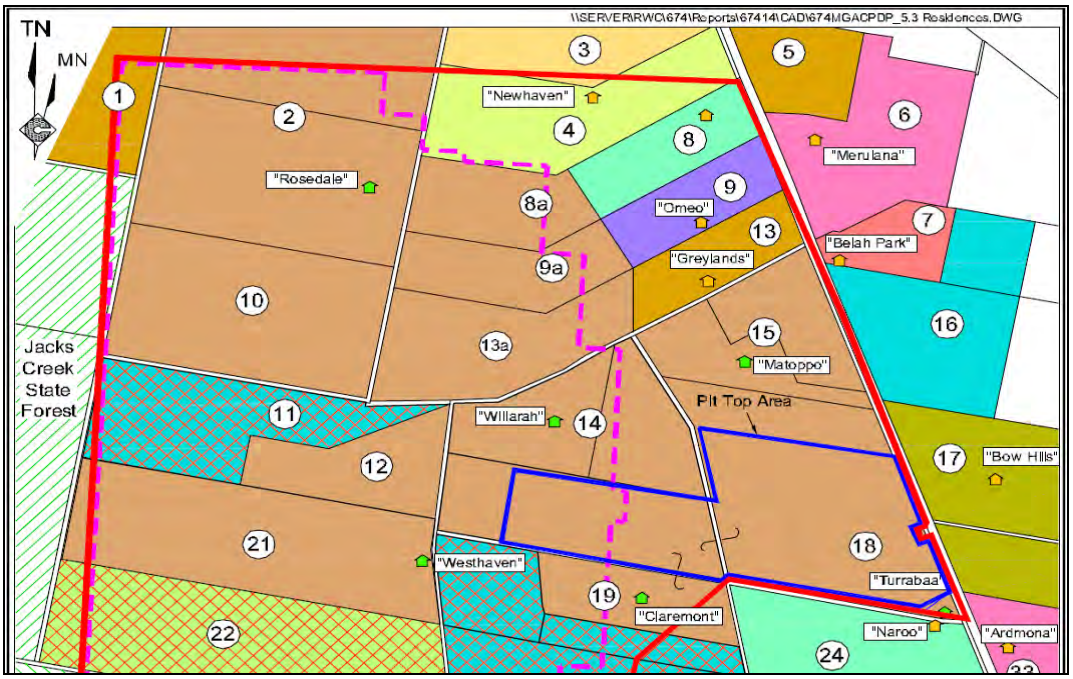
- *To determine compliance with the $LA_{eq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. 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 shown in the accompanying figure:

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. An indeterminate correction factor between 4 and 8 dB should be subtracted from these results 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 throughout the survey was generally mild with clear skies. Winds were moderate from the south to southeast at 1.0-1.5 m/s during the day and evening of June 23 then decreasing in speed during the night.

RESULTS

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the mine and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for the operational phase of the NCM project is **35 dB(A) $L_{eq\ (15\ min)}$** for all operating times.

The results shown in **Tables 1**, **2** and **3**, below, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. This is the compliance criterion for the operation of the mine. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

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 – 23 June 2010 (Day)

Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
Bow Hills	12:41 pm	44.0	1.0-1.5 m/s SE	Traffic (43), Birds (35), NCM inaudible
Naroo	11:03 am	50.0	1.0-1.5 m/s SE	Traffic (47), Birds (45), Wind (40), NCM (35)
Claremont*	11:23 am	45.0	1.0-1.5 m/s SE	Wind (41),Birds (40), Tractor (38), NCM (25)
Westhaven	11:49 am	45.0	1.0-1.5 m/s SE	Birds (42), Wind (38), NCM (34)
Greylands	12:16 pm	43.0	1.0-1.5 m/s SE	Traffic (42), Birds (35), Wind (35), NCM (33)

* Correction of 4-8dB to be subtracted from the *mine noise component only* measured at "Claremont" boundary to estimate levels at "Kurrajong".

Table 2 NCM Noise Monitoring Results – 23 June 2010 (Evening)				
Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
Bow Hills	8:35 pm	43.0	1.0-1.5 m/s SE	Traffic (42), Insects (35), NCM inaudible
Naroo	8:16 pm	38.0	1.0-1.5 m/s SE	Traffic (36), Insects (31), NCM inaudible
Claremont*	7:52 pm	37.3	1.0-1.5 m/s SE	Wind (36), Pump (32), NCM inaudible
Westhaven	7:28 pm	36.0	1.0-1.5 m/s SE	NCM (34), Insects (31), Sheep (26)
Greylands	7:06 pm	41.0	1.0-1.5 m/s SE	Traffic (38), Insects (34), NCM (33)

* Correction of 4-8dB to be subtracted from the *mine noise component only* measured at "Claremont" boundary to estimate levels at "Kurrajong".

Table 3 NCM Noise Monitoring Results – 23 June 2010 (Night)				
Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
Bow Hills	10:05 pm	44.0	0.5 m/s SE	Traffic (43), Insects (36), NCM inaudible
Naroo	10:23 pm	37.5	0.5 m/s SE	Traffic (35), Insects (34), NCM inaudible
Claremont*	10:46 pm	34.0	0.5 m/s SE	NCM (32), Insects (30)
Westhaven	11:18 pm	34.1	0.5 m/s SE	NCM (33), Insects (28)
Greylands	11:41 pm	38.0	0.5 m/s SE	Insects (35), Traffic (34), NCM (30)

* Correction of 4-8dB to be subtracted from the *mine noise component only* measured at "Claremont" boundary to estimate levels at "Kurrajong".

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.

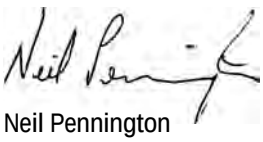
Data for the 15 minute Leq noise levels were analysed using the *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

In addition to the operational noise, the noise from NCM must not exceed 45 dB(A) L1 (1 min) between the hours of 10 pm and 7 am. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the mine. During the night time measurement circuit the L1 (1 min) noise from NCM did not exceed 45 dB(A) at any monitoring location.

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.

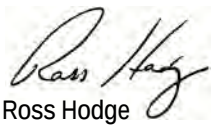
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:



Neil Pennington
Acoustical Consultant

Review:



Ross Hodge
Acoustical Consultant

5 October 2010

Ref: 05168/3705

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

RE: SEPTEMBER 2010 ATTENDED NOISE MONITORING RESULTS – NARRABRI MINE

This letter report presents the results of attended noise compliance monitoring conducted for the Narrabri Coal Mine (NCM) commencing Tuesday 28th September 2010. 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:

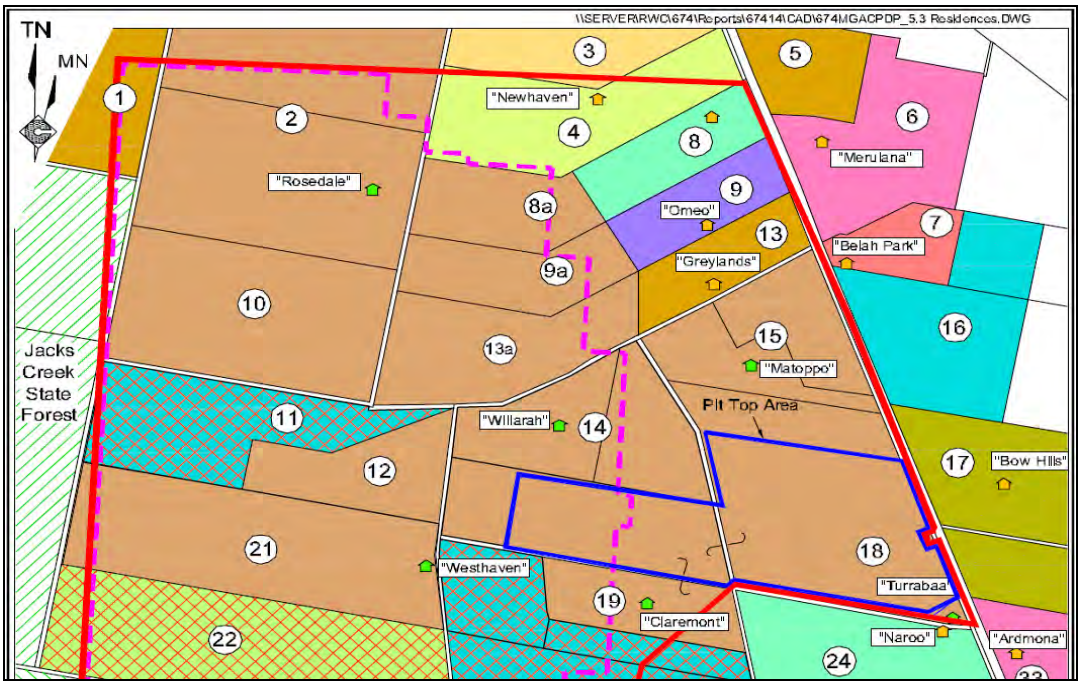
- *To determine compliance with the $LA_{eq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. 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 shown in the accompanying figure:

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 box cut and the "Kurrajong" residence. An indeterminate correction factor between 4 and 8 dB should be subtracted from these results 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 throughout the survey was generally warm with clear skies. Winds were light from the north west during the day time survey but swung around to the south during the evening and night. Wind speeds abated as the survey progressed.

RESULTS

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the mine and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for the operational phase of the NCM project is **35 dB(A) $L_{eq\ (15\ min)}$** for all operating times.

The results shown in **Tables 1**, **2** and **3**, below, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. This is the compliance criterion for the operation of the mine. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

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 – 28 September 2010 (Day)

Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
Bow Hills	2:30 pm	40	1.5 m/s NW	Traffic (40), birds (30), NCM inaudible
Naroo	2:48 pm	40	1.5 m/s NW	Birds & insects (39), NCM (31), traffic (30)
Claremont*	3:07 pm	33	1.5 m/s NW	Birds & insects (29), NCM (29), sheep (25)
Westhaven	See text			
Greylands	3:52 pm	41	1.5 m/s NW	Birds & insects (40), NCM (35)

* Correction of 4-8dB to be subtracted from the *mine noise component only* to estimate levels at "Kurrajong".

Table 2 NCM Noise Monitoring Results – 28 September 2010 (Evening)				
Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
Bow Hills	8:32 pm	50	<1 m/s S	Traffic (49), birds & insects (41), NCM (27)
Naroo	8:12 pm	44	<1 m/s S	Frogs & insects (44), NCM inaudible
Claremont	7:50 pm	34	<1 m/s S	Insects & frogs (34), NCM inaudible
Westhaven	9:02 pm	29	<0.5 m/s S	Insects & frogs (29), NCM (<20)
Greylands	9:25 pm	40	<0.5 m/s S	Insects (40), NCM (30)

Table 3 NCM Noise Monitoring Results – 28 September 2010 (Night)				
Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
Bow Hills	10:01 pm	49	<0.5 m/s S	Traffic (48), birds & insects (42), NCM (28)
Naroo	10:20 pm	39	<0.5 m/s S	Frogs & insects (39), NCM inaudible
Claremont	10:41 pm	30	<0.5 m/s S	Insects (30), NCM barely audible
Westhaven	11:03 pm	33	<0.5 m/s S	Frogs & insects (32), NCM (27)
Greylands	11:25 pm	38	<0.5 m/s S	Birds & insects (37), traffic (30), NCM (27)

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. During the day time survey construction activity in the vicinity of the Westhaven monitoring location meant that safe access to the site was not possible. The day time monitoring was, therefore, not carried out. Westhaven is a project related residence.

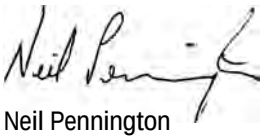
Data for the 15 minute Leq noise levels were analysed using the *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

In addition to the operational noise, the noise from NCM must not exceed 45 dB(A) L1 (1 min) between the hours of 10 pm and 7 am. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the mine. During the night time measurement circuit the L1 (1 min) noise from NCM did not exceed 45 dB(A) at any monitoring location.

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.

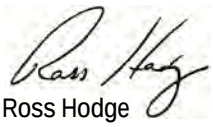
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:



Neil Pennington
Acoustical Consultant

Review:



Ross Hodge
Acoustical Consultant

21 December 2010

Ref: 05168/3810

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

RE: DECEMBER 2010 ATTENDED NOISE MONITORING RESULTS – NARRABRI MINE

This letter report presents the results of attended noise compliance monitoring conducted for the Narrabri Coal Mine (NCM) commencing Monday 13th December 2010. 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:

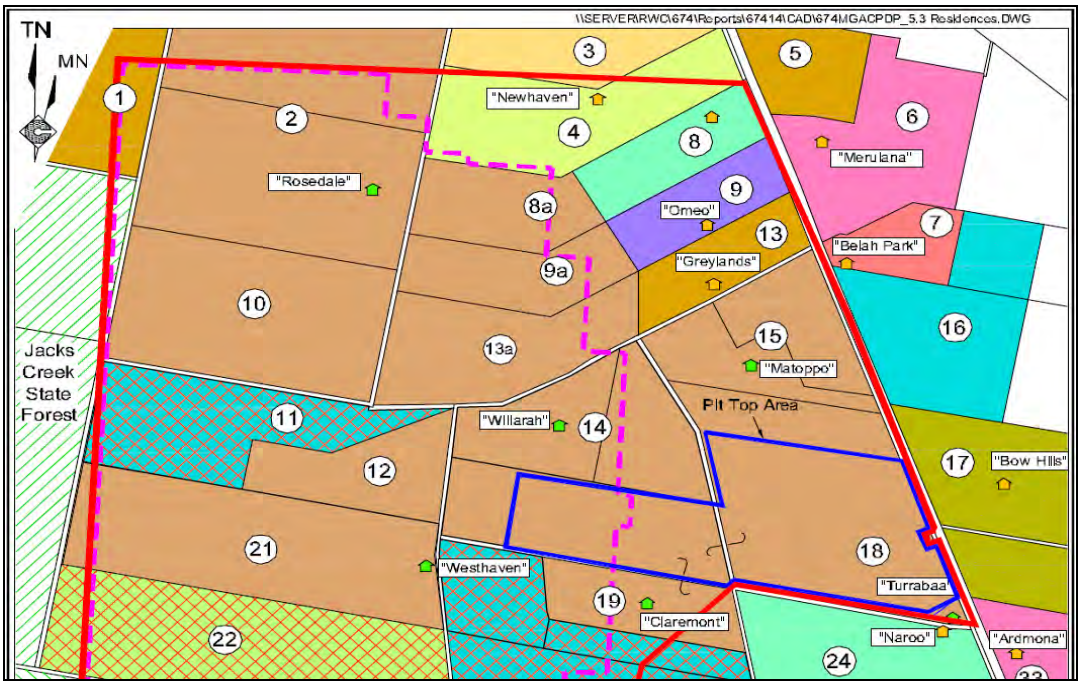
- *To determine compliance with the $LA_{eq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. 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 shown in the accompanying figure:

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 box cut and the "Kurrajong" residence. An indeterminate correction factor between 4 and 8 dB should be subtracted from these results 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 throughout the survey was generally warm with clear skies. Winds were light from the south east during the day time survey and dropped to be almost calm during the evening and night.

RESULTS

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the mine and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for the operational phase of the NCM project is **35 dB(A) $L_{eq\ (15\ min)}$** for all operating times.

The results shown in **Tables 1**, **2** and **3**, below, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. This is the compliance criterion for the operation of the mine. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

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 – 13 December 2010 (Day)

Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
Bow Hills	5:27 pm	42	1.5 m/s SE	Tractor (39), traffic (38), insects (33), NCM inaudible
Naroo	3:30 pm	46	1.5 m/s SE	Birds & insects (44), traffic (40), NCM inaudible
Claremont*	3:50 pm	37	1.5 m/s SE	Birds & insects (36), traffic (30), NCM inaudible
Westhaven	4:28 pm	41	1.5 m/s SE	NCM** (38), insects (37), birds (32)
Greylands	5:00 pm	40	1.5 m/s SE	Birds & insects (39), traffic (32), NCM faintly audible

* Correction of 4-8dB to be subtracted from the *mine noise component only* to estimate levels at "Kurrajong".
** Road construction associated with NCM

Table 2 NCM Noise Monitoring Results – 13 December 2010 (Evening)				
Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
Bow Hills	9:26 pm	49	<0.5 m/s SE	Traffic (49), insects (36), NCM inaudible
Naroo	9:05 pm	50	<0.5 m/s SE	Frogs & insects (50), traffic (35), NCM inaudible
Claremont	8:46 pm	42	<1 m/s SE	Birds & insects (41), NCM (35)
Westhaven	8:20 pm	43	<1 m/s SE	Birds & insects (41), NCM (38)
Greylands	8:00 pm	44	<1 m/s SE	Birds & insects (44), traffic (34), NCM (32)

Table 3 NCM Noise Monitoring Results – 13 December 2010 (Night)				
Location	Time	dB(A),L_{eq}	Wind speed/ direction	Identified Noise Sources
Bow Hills	10:30 pm	42	Calm	Insects (42), NCM inaudible
Naroo	10:49 pm	52	Calm	Frogs & insects (52), NCM (30)
Claremont	11:10 pm	49	Calm	Insects (49), NCM barely audible (<25)
Westhaven	11:35 pm	44	Calm	Frogs & insects (44), NCM (28)
Greylands	12:01 pm	45	Calm	Insects (45), NCM (34)

The results shown in Tables 1-3 indicate that noise emissions from the NCM exceeded the criterion of 35 dB(A),$L_{eq(15min)}$ at the Westhaven monitoring location during the day and evening time surveys. During the day road construction activity near the monitoring point dominated the noise measurement. In the evening the noise was related to drilling activities at the site of the vent fan construction. Westhaven is a project related residence.

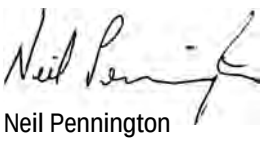
Data for the 15 minute Leq noise levels were analysed using the *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

In addition to the operational noise, emissions from NCM must not exceed 45 dB(A) L1 (1 min) between the hours of 10 pm and 7 am. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the mine. During the night time measurement circuit the L1 (1 min) noise from NCM did not exceed 45 dB(A) at any monitoring location.

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.

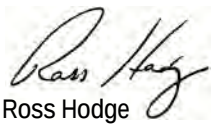
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:



Neil Pennington
Acoustical Consultant

Review:



Ross Hodge
Acoustical Consultant

8 April 2011

Ref: 05168/3936

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

RE: MARCH 2011 ATTENDED NOISE MONITORING RESULTS – NARRABRI MINE

This letter report presents the results of attended noise compliance monitoring conducted for the Narrabri Coal Mine (NCM) on Thursday 24th, Friday 25th Monday 28th March 2011. Excessive wind speeds precluded measurements being taken on the evening of 24 March, so the evening survey was conducted on 28 March. 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 $LA_{eq(15\ minute)}$ 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 shown in Figure 1:

Location R17: Bow Hills
Location R21: Westhaven
Location R24: Naroo
Location R13: Greylands
Location R22: Kurrajong*

*Measurements were taken near the boundary fence with R19 "Claremont", which is approximately half way between the box cut and the "Kurrajong" residence. An indeterminate correction factor between 4 and 8 dB should be subtracted from these results to estimate the noise level at "Kurrajong".

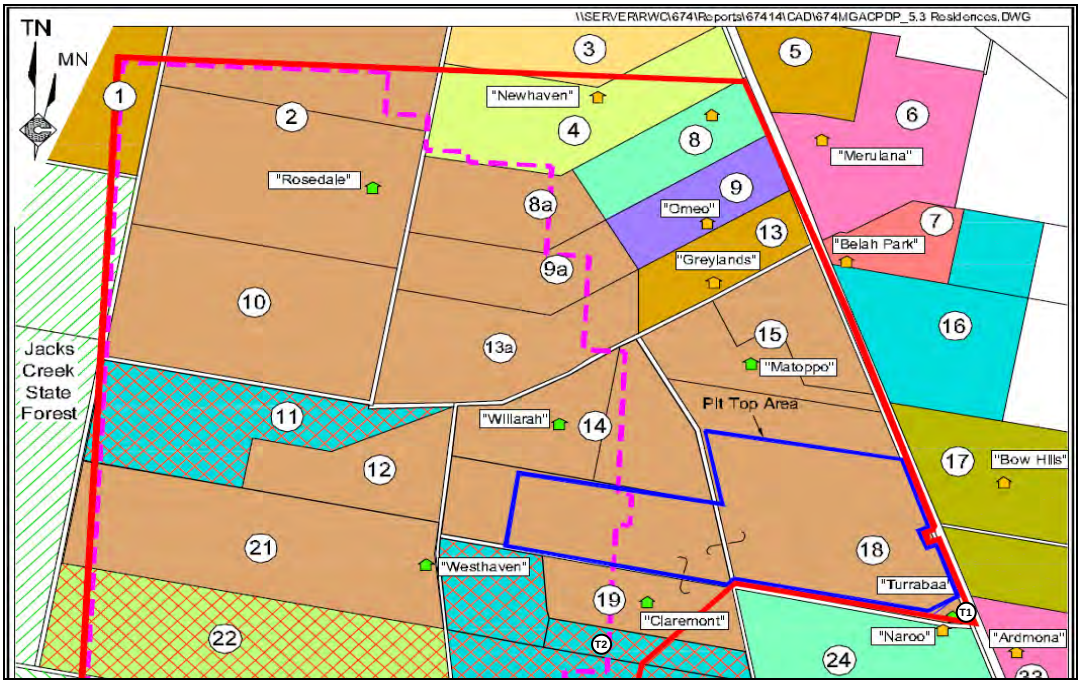


FIGURE 1. Noise monitoring locations.

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 throughout the survey was generally warm with clear skies. Winds were strong from the west during the day and evening of 24 March but dropped off to allow the night time survey to be conducted. The daytime survey was conducted the following morning and the evening survey was conducted on 28 March.

INVERSION MONITORING

Gemini Tiny Tag temperature loggers were attached to star pickets at a height of approximately 2m above ground level at locations marked T1 and T2 in Figure 1 for the period 24-28 March to coincide with the attended noise surveys. Location T1 is at 246m AHD and Location T2 is at 296m AHD to give the required 50m vertical separation for calculation of temperature gradients in accordance with the INP. Temperature gradients (normalised to ^{0}C/100m) during noise monitoring events are included in the following Tables of results. Positive gradients indicate inversion conditions and negative gradients indicate a temperature lapse.

RESULTS

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the mine and other significant noise sources to the overall to be quantified.

Noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for the operational phase of the NCM project is **35 dB(A) $L_{eq\ (15\ min)}$** for all operating times.

The results shown in **Tables 1**, **2** and **3**, below, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. This is the compliance criterion for the operation of the mine. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. The exception is the L1 (1 min) noise level (which is the standard measure of sleep disturbance) which is applicable to noise emissions at night (i.e. between 10 pm and 7 am).

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 2011 (Night)					
Location	Time	dB(A), $L_{eq(15min)}$	Wind speed/ direction	Temp Grad (^{0}C/100m)	Identified Noise Sources
Bow Hills	10:07 pm	43	0.5-1 m/s, W	0	Traffic (41), insects (38), NCM inaudible
Naroo	10:29 pm	49	0.5-1 m/s, W	-0.3	Birds & insects (47), traffic (43), NCM inaudible
Claremont*	10:51 pm	41	0.5-1 m/s, W	-0.3	Birds & insects (40), traffic (28), NCM inaudible
Westhaven	11:15 pm	37	0.5-1 m/s, W	-0.3	NCM# (35), insects (33), birds (28)
Greylands	11:41 pm	38	0.5-1 m/s, W	0	Birds & insects (35), NCM^ (33), traffic (30)

* Correction of 4-8dB to be subtracted from the *mine noise component only* to estimate levels at "Kurrajong".
# Vent shaft construction associated with NCM.
^ Drilling associated with NCM.

Table 2 NCM Noise Monitoring Results – 25 March 2011 (Day)					
Location	Time	dB(A), $L_{eq(15min)}$	Wind speed/ direction	Temp Grad (^{o}C/100m)	Identified Noise Sources
Bow Hills	9:22 am	50	1-2 m/s, SW	+0.8	Traffic (49), Birds & insects (42), NCM inaudible
Naroo	9:01 am	43	1-2 m/s, SW	+1.2	Traffic (41), Birds & insects (39), NCM inaudible
Claremont	8:38 am	26	Calm	+0.4	Birds & insects (26), NCM inaudible
Westhaven	8:17 am	41	Calm	+0.4	Birds & insects (40), NCM (34)
Greylands	7:53 am	39	Calm	0	Birds & insects (35), traffic (34), NCM (33)

Table 3 NCM Noise Monitoring Results – 28 March 2011 (Evening)					
Location	Time	dB(A), $L_{eq(15min)}$	Wind speed/ direction	Temp Grad (^{o}C/100m)	Identified Noise Sources
Bow Hills	7:37 pm	49	Calm	+1.1	Traffic (49), Insects (36), NCM inaudible
Naroo	6:04 pm	48	0.5-1 m/s, S	+0.3	Car (47), Traffic (32), NCM (<25)
Claremont	6:23 pm	36	0.5-1 m/s, S	+0.3	Insects (34), Birds (31), NCM barely audible (<20)
Westhaven	6:48 pm	36	Calm	+2.1	Birds (35), cattle (30), NCM (<25)
Greylands	7:14 pm	36	Calm	+1.1	Traffic (35), Birds (31), NCM inaudible

The results shown in Tables 1-3 indicate that noise emissions from the NCM did not exceed the criterion of 35 dB(A),$L_{eq(15min)}$ at any location.

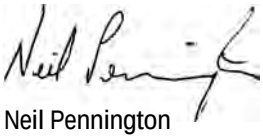
Data for the 15 minute Leq noise levels were analysed using the *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

In addition to the operational noise, emissions from NCM must not exceed 45 dB(A) L1 (1 min) between the hours of 10 pm and 7 am. This is to minimise the potential for sleep disturbance as a result of individual loud noises from the mine. During the night time measurement circuit the L1 (1 min) noise from NCM did not exceed 45 dB(A) at any monitoring location.

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.

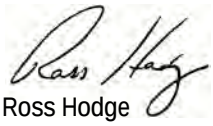
Yours faithfully,
SPECTRUM ACOUSTICS PTY LIMITED

Author:



Neil Pennington
Acoustical Consultant

Review:



Ross Hodge
Acoustical Consultant

UNATTENDED NOISE MONITORING

June 2010

30 July 2010

Ref: 05168/3632

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

RE: JUNE 2010 UNATTENDED NOISE MONITORING RESULTS

This letter report presents the results of unattended operational noise monitoring conducted for the Narrabri Coal Mine (NCM) in June 2010.

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 unattended 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)

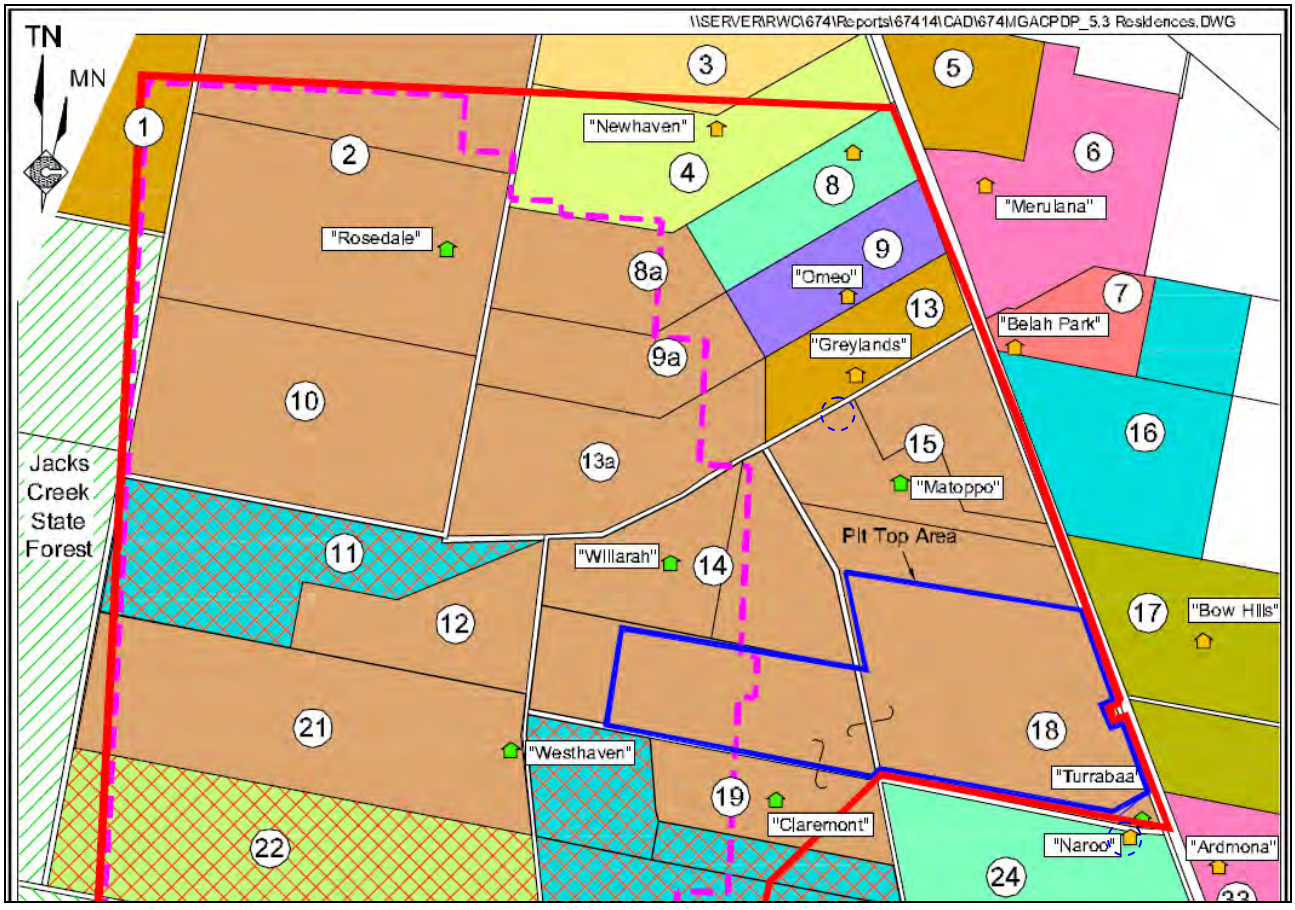


Figure 1. Unattended noise monitoring locations.

NOISE MONITORING PROGRAM

Noise levels were measured at each location for a period of at least three 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 DECCW 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".

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 NSW Industrial Noise Policy. Graphs showing full data sets are shown in **Appendix A**.

Matoppo

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
24-Jun-10	46.1	40.4	41.3	27.6	23.5	20.1
25-Jun-10	46.3	39.5	40.0	30.5	21.0	19.3
26-Jun-10	49.7	36.1	40.1	27.3	25.7	25.5
LAeq	48	39	41	--	--	--
L90	--	--	--	28	23	20

Naroo

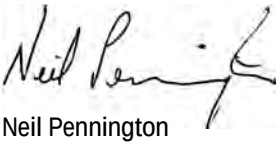
Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
24-Jun-10	45.9	36.2	41.1	29.5	27.0	25.8
25-Jun-10	48.3	43.4	43.0	33.5	30.5	26.0
26-Jun-10	50.8	51.9	48.4	31.0	35.8	26.3
LAeq	49	48	45	--	--	--
L90	--	--	--	31	31	26

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 0409 181888.

Yours faithfully,

SPECTRUM ACOUSTICS PTY LIMITED

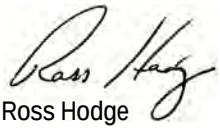
Author:



Neil Pennington

Acoustical Consultant

Review:

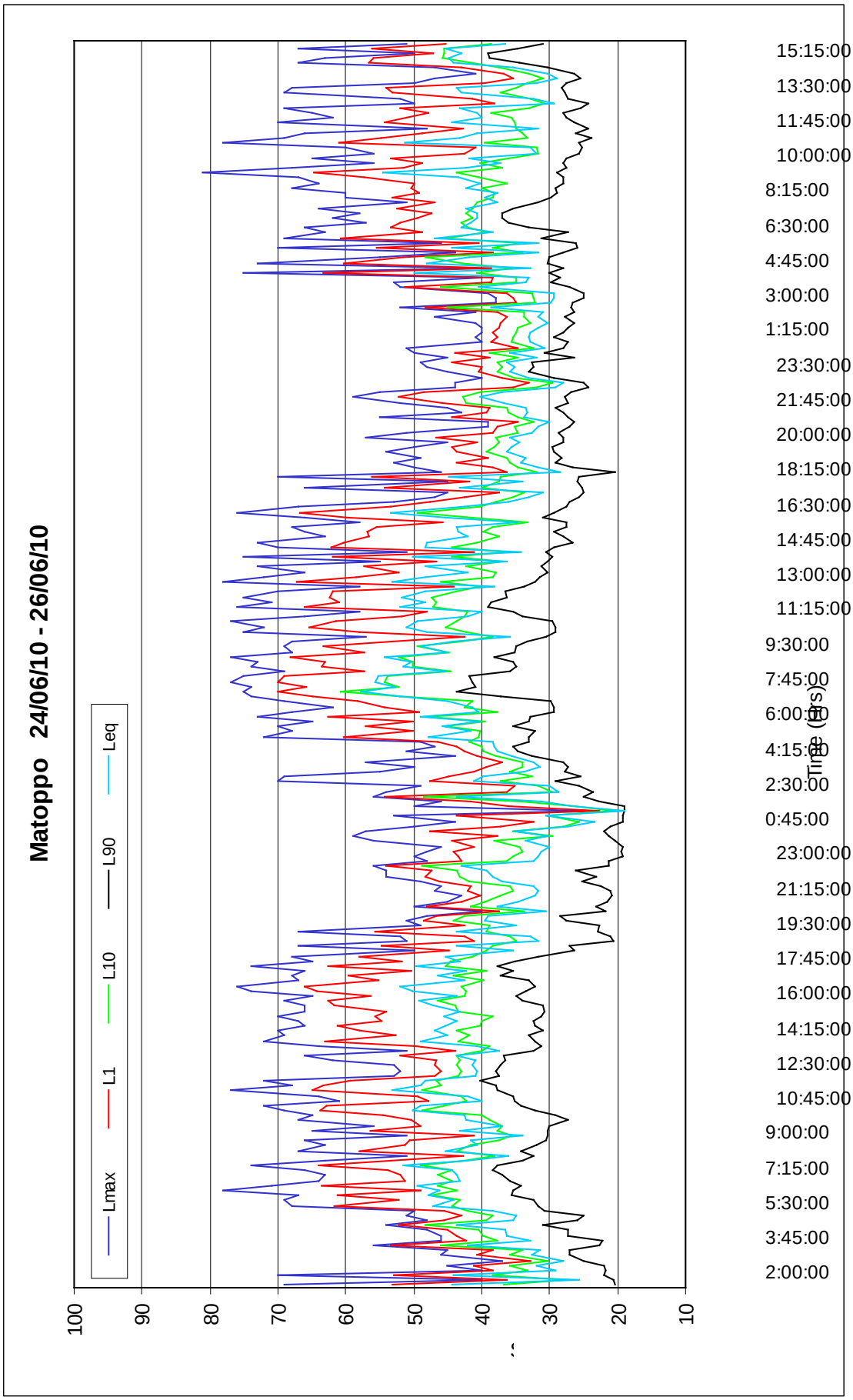


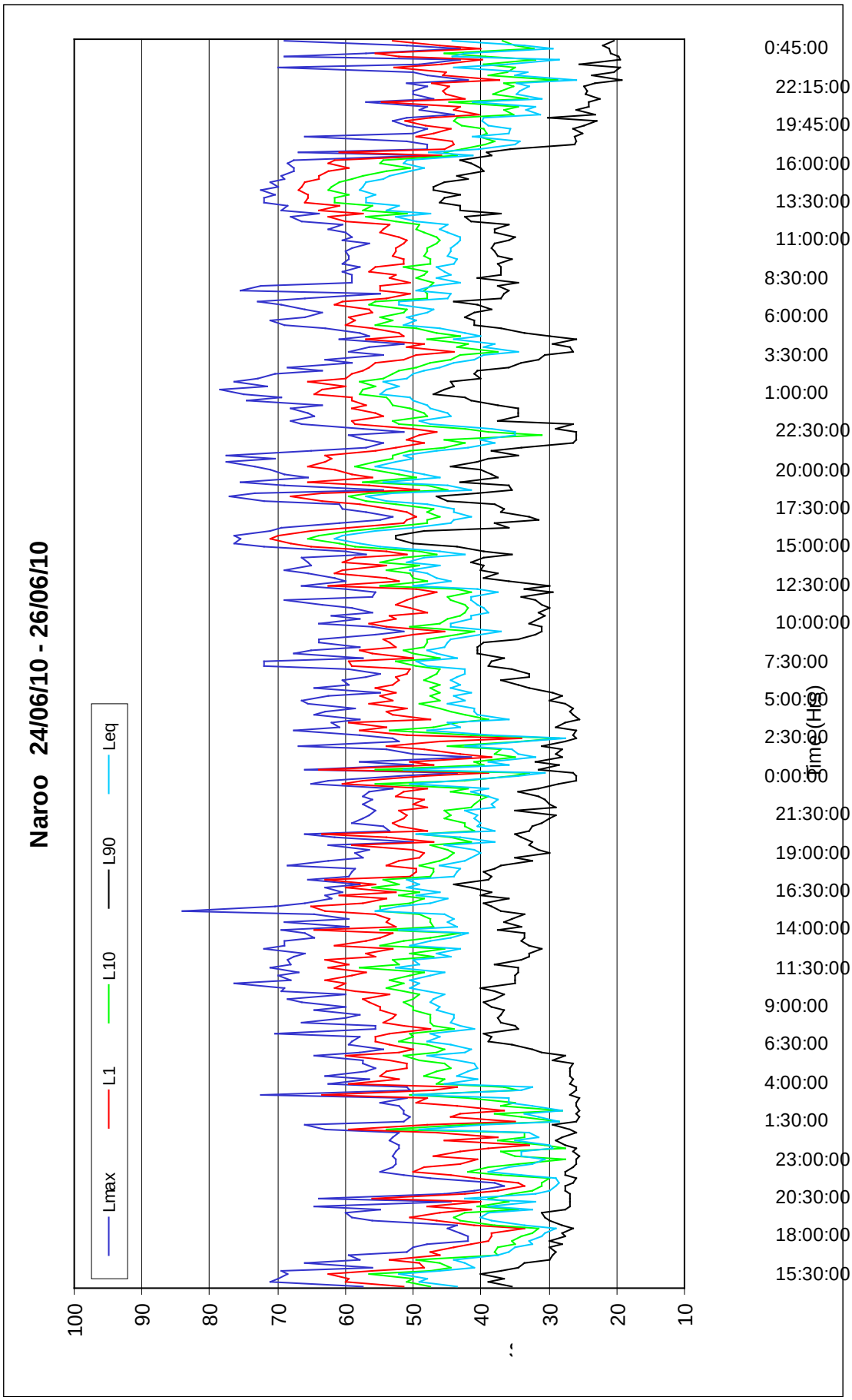
Ross Hodge

Acoustical Consultant

APPENDIX A

NOISE DATA CHARTS


Matoppo 24/06/10 - 26/06/10
Lmax
L1
L10
L90
Leq
100
90
80
70
60
50
40
30
20
10
15:15:00
13:30:00
11:45:00
10:00:00
8:15:00
6:30:00
4:45:00
3:00:00
1:15:00
23:30:00
21:45:00
20:00:00
18:15:00
16:30:00
14:45:00
13:00:00
11:15:00
9:30:00
7:45:00
6:00:00
4:15:00
2:30:00
0:45:00
23:00:00
21:15:00
19:30:00
17:45:00
16:00:00
14:15:00
12:30:00
10:45:00
9:00:00
7:15:00
5:30:00
3:45:00
2:00:00
Time (hrs)


Naroo 24/06/10 - 26/06/10
Lmax
L1
L10
L90
Leq
100
90
80
70
60
50
40
30
20
10
0:45:00
22:15:00
19:45:00
16:00:00
13:30:00
11:00:00
8:30:00
6:00:00
3:30:00
1:00:00
22:30:00
20:00:00
17:30:00
15:00:00
12:30:00
10:00:00
7:30:00
5:00:00
2:30:00
0:00:00
21:30:00
19:00:00
16:30:00
14:00:00
11:30:00
9:00:00
6:30:00
4:00:00
1:30:00
23:00:00
20:30:00
18:00:00
15:30:00
Time (Hrs)

Appendix 8

METEOROLOGICAL DATA

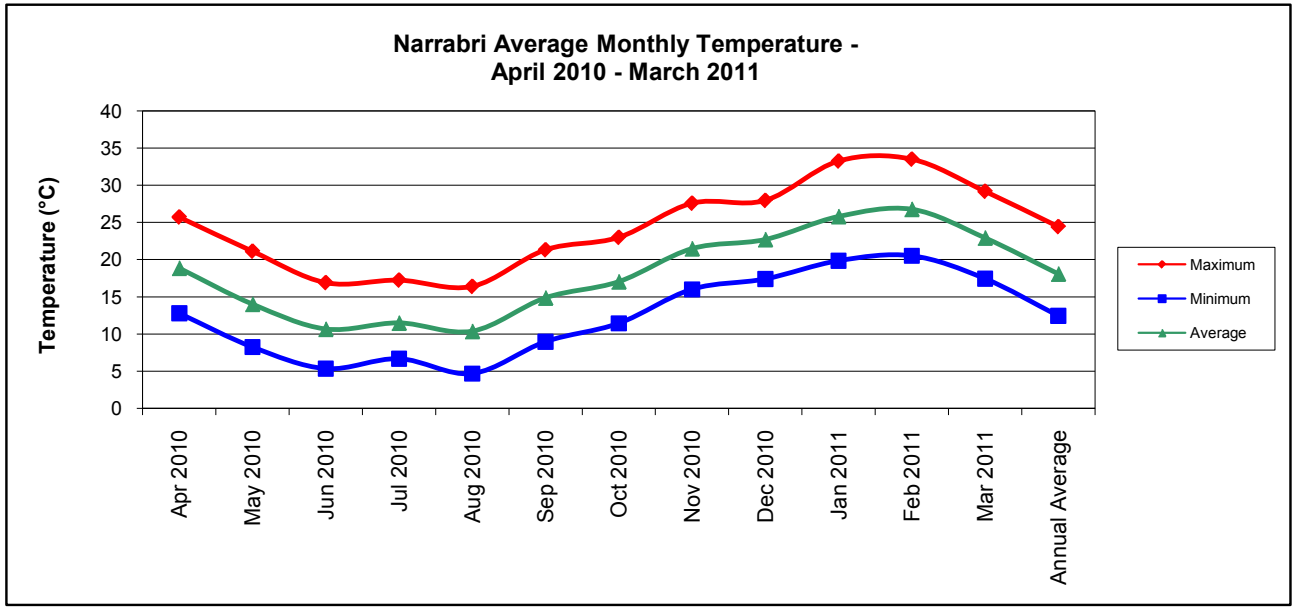
Narrabri Coal Mine Average Monthly Results

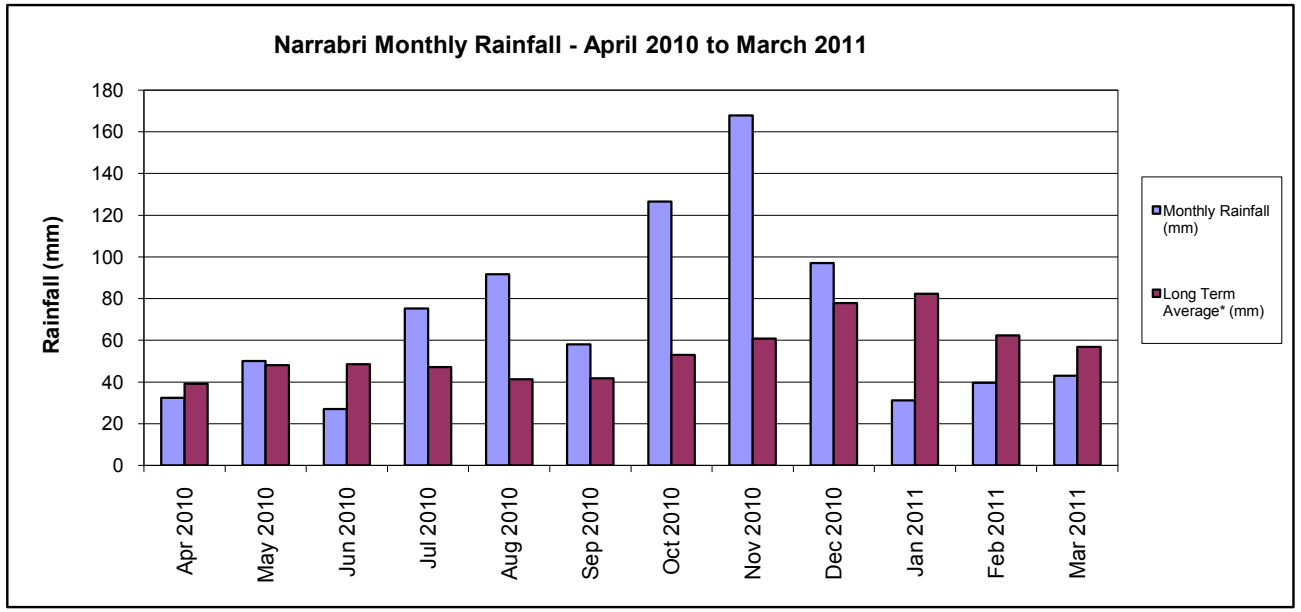
Month	Minimum Air Temp (°C)	Average Air Temp(°C)	Maximum Air Temp (°C)	Minimum Relative Humidity (%)	Average Relative Humidity(%)	Maximum Relative Humidity (%)	Minimum Wind Speed (m/s)	Average Wind Speed (m/s)	Maximum Wind Speed (m/s)
Apr 2010	12.8	18.9	25.7	34	60	83	1.5	9.6	19.6
May 2010	8.2	14.0	21.2	38	64	84	0.5	8.9	20.0
Jun 2010	5.3	10.7	16.9	46	72	89	1.1	9.3	20.7
Jul 2010	6.7	11.5	17.3	50	74	89	0.6	3.2	6.4
Aug 2010	4.7	10.4	16.4	45	70	88	0.4	2.9	6.6
Sep 2010	9.0	14.9	21.3	43	68	88	0.2	2.7	6.3
Oct 2010	11.4	17.0	23.0	46	68	87	0.5	3.2	6.2
Nov 2010	16.0	21.5	27.6	37	61	84	0.5	3.4	7.1
Dec 2010	17.4	22.7	28.0	48	67	86	0.1	1.7	4.5
Jan 2011	19.9	25.8	33.3	35	59	79	0.1	1.8	5.4
Feb 2011	20.5	26.8	33.5	34	55	76	0.1	2.2	5.5
Mar 2011	17.4	22.9	29.2	41	64	84	0.0	1.5	5.0
Annual Average	**12.4**	**18.1**	**24.5**	**41**	**65**	**85**	**0.5**	**4.2**	**9.4**
Minimum	**4.7**	**10.4**	**16.4**	**34**	**55**	**76**	**0.0**	**1.5**	**4.5**
Maximum	**20.5**	**26.8**	**33.5**	**50**	**74**	**89**	**1.5**	**9.6**	**20.7**
Total									

Month	Monthly Rainfall (mm)	Cumulative Rainfall (mm)	Long Term Average* (mm)	Number of Rain Days**	Long Term Average Rain Days
Apr 2010	32.4	32.4	39.1	3	2.3
May 2010	50.0	82.4	48.0	6	2.6
Jun 2010	27.0	109.4	48.5	4	3.3
Jul 2010	75.2	184.6	47.1	5	3.2
Aug 2010	91.7	276.3	41.3	8	3
Sep 2010	58.0	334.3	41.7	8	3
Oct 2010	126.6	460.9	53.0	5	3.5
Nov 2010	167.8	628.7	60.8	9	3.9
Dec 2010	97.0	725.7	77.8	9	4.1
Jan 2011	31.2	756.9	82.3	5	3.6
Feb 2011	39.6	796.5	62.3	7	3.1
Mar 2011	43.0	839.5	56.9	8	2.8
Total	**839.5**	**839.5**	**658.8**	**77**	**38.4**

* Long term average is from Narrabri West Post Office (053030) 1891 - 2011

** ≥1mm


Narrabri Average Monthly Temperature -
April 2010 - March 2011
Temperature (°C)
40
35
30
25
20
15
10
5
0
Apr 2010
May 2010
Jun 2010
Jul 2010
Aug 2010
Sep 2010
Oct 2010
Nov 2010
Dec 2010
Jan 2011
Feb 2011
Mar 2011
Annual Average
Maximum
Minimum
Average


Narrabri Monthly Rainfall - April 2010 to March 2011
Rainfall (mm)
180
160
140
120
100
80
60
40
20
0
Apr 2010
May 2010
Jun 2010
Jul 2010
Aug 2010
Sep 2010
Oct 2010
Nov 2010
Dec 2010
Jan 2011
Feb 2011
Mar 2011
Monthly Rainfall (mm)
Long Term Average* (mm)

Daily Summary **April 2010** **Narrabri Weather Station**

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/10	14.1	19.2	25.4	34	67	92	0.2	0.0	12.1	20.9
02/Apr/10	13.9	19.5	26.3	30	61	80	0.0	3.2	11.4	17.7
03/Apr/10	13.9	19.4	26.2	33	61	84	0.0	6.4	15.3	24.1
04/Apr/10	14.5	19.0	25.3	38	60	81	0.0	6.4	17.6	27.4
05/Apr/10	14.2	19.6	26.8	43	63	79	0.0	1.6	10.5	24.1
06/Apr/10	16.2	19.0	24.3	49	76	92	6.0	3.2	9.7	16.1
07/Apr/10	17.3	20.0	22.3	63	76	91	10.6	0.0	17.2	30.6
08/Apr/10	17.8	22.2	26.4	51	66	76	0.0	3.2	14.9	24.1
09/Apr/10	11.6	19.3	26.7	34	64	90	0.0	0.0	3.3	12.9
10/Apr/10	16.7	21.1	27.3	43	66	85	0.0	0.0	4.9	19.3
11/Apr/10	14.9	20.5	27.6	47	71	90	0.0	0.0	6.9	17.7
12/Apr/10	12.2	16.9	22.1	30	54	84	0.0	0.0	9.6	17.7
13/Apr/10	7.1	15.3	24.6	19	51	81	0.0	0.0	9.0	19.3
14/Apr/10	11.6	17.9	26.6	29	56	74	0.0	0.0	7.4	17.7
15/Apr/10	11.2	18.6	27.2	27	55	80	0.0	0.0	4.9	12.9
16/Apr/10	13.7	19.4	26.4	18	49	76	0.0	6.4	12.4	20.9
17/Apr/10	12.8	19.7	26.9	27	56	84	0.0	6.4	12.0	19.3
18/Apr/10	14.2	20.5	27.2	32	56	80	0.0	1.6	9.3	17.7
19/Apr/10	15.6	21.4	27.7	32	57	79	0.0	0.0	7.9	16.1
20/Apr/10	14.8	20.8	27.2	27	53	81	0.0	4.8	10.2	19.3
21/Apr/10	16.4	21.1	27.8	27	52	70	0.0	1.6	9.3	16.1
22/Apr/10	14.1	20.8	28.4	31	56	80	0.0	0.0	5.4	12.9
23/Apr/10	12.6	20.4	28.9	27	58	85	0.0	0.0	3.9	17.7
24/Apr/10	13.2	21.8	28.9	29	53	79	0.0	0.0	13.4	27.4
25/Apr/10	11.6	17.6	22.3	48	70	91	15.0	0.0	12.3	27.4
26/Apr/10	7.8	13.8	20.5	34	64	88	0.4	1.6	9.9	20.9
27/Apr/10	5.9	15.1	22.8	32	62	87	0.2	0.0	6.5	20.9
28/Apr/10	9.7	16.1	24.9	22	57	85	0.0	0.0	7.1	16.1
29/Apr/10	6.6	15.4	24.1	30	60	87	0.0	0.0	4.4	14.5
30/Apr/10	7.5	14.9	23.3	34	63	87	0.0	0.0	8.8	19.3
Average	**12.8**	**18.9**	**25.7**	**34**	**60**	**83**		**1.5**	**9.6**	**19.6**
Maximum	**17.8**	**22.2**	**28.9**	**63**	**76**	**92**	**15.0**	**6.4**	**17.6**	**30.6**
Minimum	**5.9**	**13.8**	**20.5**	**18**	**49**	**70**	**0.0**	**0.0**	**3.3**	**12.9**
Total							**32.4**			

Daily Summary **May 2010** **Narrabri Weather Station**

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/10	11.4	17.3	26.6	27	61	83	0.0	0.0	8.6	17.7
02/May/10	9.9	17.7	26.9	28	60	83	0.0	0.0	5.2	19.3
03/May/10	14.6	19.3	25.8	36	57	73	0.0	0.0	5.9	14.5
04/May/10	11.6	17.9	25.1	32	62	82	0.0	0.0	6.0	19.3
05/May/10	8.4	15.5	24.6	34	62	91	0.0	0.0	12.9	27.4
06/May/10	4.3	11.9	19.8	22	53	79	0.2	0.0	9.3	24.1
07/May/10	5.3	12.7	22.0	21	54	83	0.0	0.0	8.8	17.7
08/May/10	6.6	13.8	23.3	20	51	83	0.0	0.0	8.3	17.7
09/May/10	7.6	15.2	25.3	25	51	73	0.0	0.0	5.6	16.1
10/May/10	8.1	15.4	26.3	27	54	74	0.0	0.0	5.3	14.5
11/May/10	7.8	16.5	26.0	25	52	79	0.0	0.0	9.7	27.4
12/May/10	4.4	12.0	17.9	20	42	67	0.0	1.6	13.2	24.1
13/May/10	1.3	9.9	19.5	21	50	79	0.0	0.0	4.8	12.9
14/May/10	3.1	11.3	20.7	31	56	85	0.0	0.0	3.6	11.3
15/May/10	3.9	12.4	21.1	26	55	81	0.0	0.0	6.5	14.5
16/May/10	7.3	14.6	23.1	27	49	70	0.0	0.0	9.2	19.3
17/May/10	7.9	12.5	17.5	44	71	89	4.0	0.0	3.8	14.5
18/May/10	4.9	11.8	19.6	35	70	91	0.4	0.0	7.6	20.9
19/May/10	6.1	12.8	20.4	41	68	89	0.0	0.0	9.9	22.5
20/May/10	9.4	14.0	21.6	41	67	81	0.0	0.0	7.3	19.3
21/May/10	10.6	14.5	21.6	35	63	78	0.0	1.6	7.2	19.3
22/May/10	7.2	12.5	19.7	40	67	88	0.0	0.0	13.0	24.1
23/May/10	6.7	13.3	21.3	33	62	88	0.0	0.0	9.3	20.9
24/May/10	11.7	14.8	18.9	54	69	81	0.0	0.0	5.5	14.5
25/May/10	12.4	16.3	19.8	66	79	92	27.6	0.0	16.6	30.6
26/May/10	11.6	13.2	16.1	65	85	93	0.2	1.6	14.9	25.7
27/May/10	10.9	14.4	20.1	51	78	93	0.2	0.0	10.0	22.5
28/May/10	10.2	14.3	20.2	51	77	89	2.4	0.0	7.8	17.7
29/May/10	10.8	13.8	16.1	71	84	92	12.4	0.0	19.1	33.8
30/May/10	8.3	10.8	12.4	75	87	93	1.4	9.7	16.5	24.1
31/May/10	11.4	12.8	16.4	68	86	92	1.2	0.0	5.3	12.9
Average	**8.2**	**14.0**	**21.2**	**38**	**64**	**84**		**0.5**	**8.9**	**20.0**
Maximum	**14.6**	**19.3**	**26.9**	**75**	**87**	**93**	**27.6**	**9.7**	**19.1**	**33.8**
Minimum	**1.3**	**9.9**	**12.4**	**20**	**42**	**67**	**0.0**	**0.0**	**3.6**	**11.3**
Total							**50.0**			

Daily Summary **June 2010** **Narrabri Weather Station**

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/10	9.4	14.1	19.2	53	76	93	0.2	0.0	5.7	19.3
02/Jun/10	10.9	12.8	15.1	80	88	92	2.4	1.6	11.5	22.5
03/Jun/10	11.4	12.9	15.4	79	87	92	2.4	0.0	12.5	24.1
04/Jun/10	8.5	13.6	18.3	65	80	93	0.2	0.0	10.0	27.4
05/Jun/10	9.6	13.7	19.1	45	69	88	0.0	3.2	12.2	19.3
06/Jun/10	4.1	9.3	14.6	50	74	91	0.0	0.0	7.3	14.5
07/Jun/10	4.0	9.6	16.6	36	71	92	0.2	0.0	8.0	24.1
08/Jun/10	4.2	10.2	18.3	33	67	85	0.0	0.0	8.1	16.1
09/Jun/10	1.9	8.9	16.1	35	69	90	0.0	0.0	11.1	30.6
10/Jun/10	3.8	8.5	15.1	34	65	86	0.0	0.0	11.4	22.5
11/Jun/10	-0.1	7.4	14.4	46	70	91	0.0	0.0	5.6	14.5
12/Jun/10	3.3	9.3	14.7	39	60	81	0.0	0.0	9.8	19.3
13/Jun/10	2.0	8.6	17.0	35	66	85	0.0	1.6	9.3	17.7
14/Jun/10	6.2	11.6	19.1	46	70	86	0.0	6.4	14.7	25.7
15/Jun/10	7.5	12.8	20.2	30	61	82	0.0	1.6	12.2	19.3
16/Jun/10	5.7	11.7	20.2	30	63	82	0.0	0.0	6.3	16.1
17/Jun/10	5.7	12.2	15.6	63	82	93	8.0	0.0	14.1	30.6
18/Jun/10	6.6	12.6	18.5	41	75	95	0.2	0.0	4.9	19.3
19/Jun/10	2.4	9.4	16.7	45	71	92	0.0	0.0	5.3	20.9
20/Jun/10	4.6	11.2	18.2	50	73	90	0.0	0.0	6.2	20.9
21/Jun/10	5.6	11.3	19.9	43	75	93	0.2	0.0	8.4	19.3
22/Jun/10	8.2	12.9	19.4	47	73	90	0.2	8.0	16.8	24.1
23/Jun/10	6.9	12.7	19.3	44	68	89	0.0	4.8	16.1	25.7
24/Jun/10	10.3	13.6	18.6	47	66	80	0.2	1.6	9.0	16.1
25/Jun/10	9.7	14.4	20.7	41	67	86	0.0	0.0	9.7	25.7
26/Jun/10	10.4	13.6	15.4	69	83	92	12.2	3.2	14.9	25.7
27/Jun/10	2.0	7.9	14.2	35	68	87	0.0	0.0	7.4	16.1
28/Jun/10	-0.3	4.9	12.3	46	78	94	0.2	0.0	5.9	16.1
29/Jun/10	-1.6	4.5	13.3	42	75	92	0.2	0.0	2.0	8.0
30/Jun/10	-2.9	4.1	12.3	43	74	91	0.2	0.0	3.6	19.3
Average	**5.3**	**10.7**	**16.9**	**46**	**72**	**89**		**1.1**	**9.3**	**20.7**
Maximum	**11.4**	**14.4**	**20.7**	**80**	**88**	**95**	**12.2**	**8.0**	**16.8**	**30.6**
Minimum	**-2.9**	**4.1**	**12.3**	**30**	**60**	**80**	**0.0**	**0.0**	**2.0**	**8.0**
Total							**27.0**			

Daily Summary July 2010 Narrabri Weather Station

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/10	-	-	-	-	-	-	-	-	-	-
02/Jul/10	-	-	-	-	-	-	-	-	-	-
03/Jul/10	-	-	-	-	-	-	-	-	-	-
04/Jul/10	-	-	-	-	-	-	-	-	-	-
05/Jul/10	-	-	-	-	-	-	-	-	-	-
06/Jul/10	-	-	-	-	-	-	-	-	-	-
07/Jul/10	-	-	-	-	-	-	-	-	-	-
08/Jul/10	8.8	9.4	9.9	80	82	84	0.0	3.6	4.1	4.9
09/Jul/10	5.7	11.1	17.6	47	74	92	0.0	2.7	4.9	7.6
10/Jul/10	6.4	12.3	20.8	36	68	87	0.0	0.0	2.7	5.4
11/Jul/10	11.6	15.0	17.6	49	69	89	0.2	0.0	4.1	8.9
12/Jul/10	11.6	14.9	20.2	57	80	91	0.2	0.0	2.5	5.8
13/Jul/10	10.8	16.8	22.0	48	72	94	0.6	0.0	4.4	10.3
14/Jul/10	6.6	13.1	18.2	46	73	92	16.0	1.8	6.5	12.5
15/Jul/10	4.2	10.0	15.0	45	67	84	0.0	0.4	3.3	5.8
16/Jul/10	1.4	7.3	14.3	42	71	90	0.0	0.0	2.6	5.8
17/Jul/10	3.1	8.4	18.2	30	67	85	0.0	0.0	1.6	4.5
18/Jul/10	3.1	10.6	20.2	43	70	89	0.0	0.0	2.6	6.3
19/Jul/10	7.5	10.9	14.6	68	83	93	2.4	0.0	1.2	4.0
20/Jul/10	4.0	8.6	14.2	58	80	94	0.2	0.0	1.6	4.5
21/Jul/10	1.9	7.7	14.8	43	72	88	0.2	0.4	2.9	5.8
22/Jul/10	3.6	8.6	15.6	24	61	86	0.0	0.0	3.1	5.8
23/Jul/10	2.7	9.3	16.7	44	68	87	0.0	1.3	3.2	5.8
24/Jul/10	6.1	11.1	17.6	41	67	84	0.0	0.0	2.7	4.9
25/Jul/10	6.8	12.2	18.8	32	64	85	0.0	0.0	2.0	3.6
26/Jul/10	5.3	10.9	18.7	34	70	91	0.0	1.8	4.1	6.7
27/Jul/10	6.6	12.2	19.9	41	64	82	0.0	1.3	4.5	6.3
28/Jul/10	10.6	12.2	15.6	72	89	94	24.4	0.0	2.9	5.8
29/Jul/10	9.8	13.2	16.7	81	92	95	0.8	0.0	2.3	7.6
30/Jul/10	11.9	15.6	19.3	68	85	94	14.0	0.0	2.6	7.2
31/Jul/10	9.9	14.7	17.9	64	84	93	16.2	0.0	4.0	8.5
Average	**6.7**	**11.5**	**17.3**	**50**	**74**	**89**		**0.6**	**3.2**	**6.4**
Maximum	**11.9**	**16.8**	**22.0**	**81**	**92**	**95**	**24.4**	**3.6**	**6.5**	**12.5**
Minimum	**1.4**	**7.3**	**9.9**	**24**	**61**	**82**	**0.0**	**0.0**	**1.2**	**3.6**
Total							**75.2**			

No data 1 - 7 July due to loss of power to station

Daily Summary **August 2009** **Narrabri Weather Station**

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/10	4.2	10.8	16.4	49	74	94	0.2	0.0	2.6	7.6
02/Aug/10	2.7	8.2	13.5	36	69	89	0.2	1.3	4.0	8.0
03/Aug/10	4.6	10.7	16.8	48	70	92	0.0	0.0	3.4	6.3
04/Aug/10	2.9	10.0	17.6	39	70	92	0.0	0.0	1.9	4.5
05/Aug/10	4.5	9.8	16.3	42	68	89	0.0	0.0	1.9	5.8
06/Aug/10	1.3	8.1	14.7	37	66	91	0.0	0.0	2.6	6.3
07/Aug/10	0.9	7.1	14.8	37	70	88	0.0	0.0	1.8	4.5
08/Aug/10	1.0	7.4	16.3	30	66	86	0.2	0.0	2.0	5.4
09/Aug/10	1.0	11.3	20.6	36	63	86	1.2	0.0	2.7	8.5
10/Aug/10	13.3	14.8	17.0	68	85	94	51.2	0.0	4.5	9.4
11/Aug/10	7.3	10.7	14.8	57	77	86	2.8	1.3	4.9	8.5
12/Aug/10	6.6	8.9	10.9	73	82	88	1.6	1.8	5.3	7.6
13/Aug/10	4.4	10.2	16.2	46	74	90	0.0	0.0	2.8	6.3
14/Aug/10	1.6	9.6	17.6	36	72	93	0.2	0.0	2.7	8.0
15/Aug/10	7.4	13.4	17.9	34	55	81	0.6	0.0	5.8	12.5
16/Aug/10	7.5	9.2	9.8	72	76	81	0.0	1.8	2.4	3.1
17/Aug/10	-	-	-	-	-	-	-	-	-	-
18/Aug/10	-	-	-	-	-	-	-	-	-	-
19/Aug/10	-	-	-	-	-	-	5.5	-	-	-
20/Aug/10	-	-	-	-	-	-	3.5	-	-	-
21/Aug/10	-	-	-	-	-	-	-	-	-	-
22/Aug/10	-	-	-	-	-	-	-	-	-	-
23/Aug/10	-	-	-	-	-	-	11.5	-	-	-
24/Aug/10	-	-	-	-	-	-	13.0	-	-	-
25/Aug/10	-	-	-	-	-	-	-	-	-	-
26/Aug/10	-	-	-	-	-	-	-	-	-	-
27/Aug/10	7.3	11.6	16.4	45	65	82	0.0	1.3	3.0	6.3
28/Aug/10	3.8	9.7	15.3	44	70	92	0.0	0.0	1.3	4.0
29/Aug/10	3.3	10.7	19.5	39	68	89	0.0	0.0	1.9	4.9
30/Aug/10	6.4	12.4	21.0	35	64	82	0.0	0.0	1.5	4.5
31/Aug/10	6.1	13.6	21.4	39	65	85	0.0	0.0	2.9	7.6
Average	**4.7**	**10.4**	**16.4**	**45**	**70**	**88**		**0.4**	**2.9**	**6.6**
Maximum	**13.3**	**14.8**	**21.4**	**73**	**85**	**94**	**51.2**	**1.8**	**5.8**	**12.5**
Minimum	**0.9**	**7.1**	**9.8**	**30**	**55**	**81**	**0.0**	**0.0**	**1.3**	**3.1**
Total							**91.7**			

No data 17 - 26 August due to loss of power to station

Denotes data from site rain gauge

Daily Summary **September 2010** **Narrabri Weather Station**

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/10	10.6	17.1	23.2	40	58	74	0.0	0.9	4.7	8.9
02/Sep/10	16.1	20.7	25.0	49	56	67	0.0	2.2	5.9	8.9
03/Sep/10	14.8	18.3	21.0	64	78	93	8.6	0.0	3.4	6.7
04/Sep/10	15.5	18.3	22.0	62	80	94	13.8	0.0	7.1	12.1
05/Sep/10	9.1	14.5	18.2	48	72	89	0.0	0.9	4.5	7.6
06/Sep/10	5.8	12.4	19.3	34	67	91	0.0	0.0	1.9	5.4
07/Sep/10	3.3	11.3	19.1	35	63	92	0.0	0.0	1.9	4.9
08/Sep/10	5.1	11.5	20.6	26	63	84	0.0	0.0	2.3	5.4
09/Sep/10	5.2	12.5	16.9	65	81	91	3.0	0.0	2.9	8.0
10/Sep/10	8.3	16.7	22.3	40	74	94	20.4	0.0	4.4	9.4
11/Sep/10	4.5	12.1	19.9	36	67	89	0.0	0.0	1.0	4.5
12/Sep/10	6.2	13.9	21.1	26	64	88	0.2	0.0	2.2	4.9
13/Sep/10	12.5	15.5	21.2	51	74	88	1.0	0.0	1.6	4.0
14/Sep/10	12.1	17.2	25.2	44	74	91	0.8	0.0	3.3	7.6
15/Sep/10	8.8	13.3	19.4	45	67	87	0.0	0.0	3.7	6.3
16/Sep/10	7.3	11.6	17.8	39	65	86	0.0	0.0	2.0	5.8
17/Sep/10	4.9	10.1	16.1	35	65	84	0.0	0.0	2.2	6.7
18/Sep/10	1.3	9.9	17.3	31	68	92	0.0	0.0	1.4	5.8
19/Sep/10	8.1	10.5	14.1	65	82	92	4.2	0.0	1.5	4.9
20/Sep/10	10.2	14.9	20.6	56	77	92	0.0	0.4	2.6	5.4
21/Sep/10	12.5	17.7	24.9	44	70	84	0.0	0.0	1.6	4.5
22/Sep/10	11.1	17.1	24.9	45	71	89	0.0	0.0	3.5	7.2
23/Sep/10	12.1	16.7	24.1	54	80	93	2.4	0.0	2.0	8.9
24/Sep/10	10.6	17.4	25.1	41	70	94	0.2	0.0	0.8	2.7
25/Sep/10	7.9	17.2	25.6	33	60	91	0.0	0.0	1.6	4.9
26/Sep/10	10.9	17.0	25.1	27	60	84	0.0	0.0	0.9	3.6
27/Sep/10	11.3	17.7	26.0	53	72	88	3.2	0.0	2.6	8.0
28/Sep/10	12.3	18.0	24.9	37	65	94	0.2	0.0	1.4	4.0
29/Sep/10	7.0	13.3	19.1	33	52	81	0.0	0.9	4.1	7.6
30/Sep/10	3.3	11.8	20.2	26	55	82	0.0	0.0	2.7	5.4
Average	**9.0**	**14.9**	**21.3**	**43**	**68**	**88**		**0.2**	**2.7**	**6.3**
Maximum	16.1	20.7	26.0	65	82	94	20.4	2.2	7.1	12.1
Minimum	1.3	9.9	14.1	26	52	67	0.0	0.0	0.8	2.7
Total							**58.0**			

Daily Summary October 2010 Narrabri Weather Station

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/10	8.8	15.6	22.2	35	57	74	0.0	0.0	1.6	4
02/Oct/10	13.3	16.0	20.1	47	65	81	0.0	0.0	2.5	4.9
03/Oct/10	13.1	15.0	18.1	75	86	92	14.2	2.7	4.9	7.6
04/Oct/10	12.2	18.1	25	48	75	96	0.4	2.2	4.5	6.7
05/Oct/10	12.6	19.1	26	43	71	92	0.0	2.2	4.5	5.8
06/Oct/10	13.7	19.5	26.9	42	68	88	0.0	0.0	2.5	5.4
07/Oct/10	13	18.5	23.4	55	69	89	0.0	0.0	2.1	4.9
08/Oct/10	9.4	16.7	23.8	56	72	85	0.0	0.0	3.0	6.3
09/Oct/10	13.5	17.4	21.3	55	73	88	0.0	0.0	1.9	5.4
10/Oct/10	10.8	17.1	23.7	36	61	87	0.0	2.2	6.0	8
11/Oct/10	13.9	17.9	22.5	48	63	76	0.8	1.8	4.7	6.7
12/Oct/10	11.9	20.1	27.6	34	58	84	0.2	0.4	2.5	5.4
13/Oct/10	14.3	19.8	23.6	43	56	75	0.0	0.0	3.7	7.2
14/Oct/10	17.4	19.9	23.3	58	70	78	0.0	0.0	5.5	9.4
15/Oct/10	12.1	18.2	21.3	65	81	95	66.8	0.0	8.9	13
16/Oct/10	5.3	10.1	14.3	34	62	87	2.8	0.9	5.8	11.6
17/Oct/10	3.1	11.6	20.1	38	59	85	0.0	0.0	2.1	4.5
18/Oct/10	5.1	14.7	23.7	32	62	90	0.0	0.0	1.3	4
19/Oct/10	8.1	16.0	24.1	30	60	86	0.0	0.0	2.8	5.4
20/Oct/10	10.9	18.3	26.8	27	62	86	0.0	0.0	2.6	5.4
21/Oct/10	12.7	18.7	24.8	43	67	90	0.0	0.0	2.1	5.4
22/Oct/10	11.6	17.1	26	43	76	92	9.8	0.0	2.1	8.5
23/Oct/10	11.3	19.5	28.7	29	67	94	0.2	0.0	1.8	4.9
24/Oct/10	12.8	16.1	19.1	62	85	95	31.2	0.4	2.6	5.8
25/Oct/10	10.8	16.7	23.3	45	73	92	0.0	0.0	2.8	5.4
26/Oct/10	13.5	18.9	26.8	29	66	89	0.2	0.0	1.5	4.5
27/Oct/10	13.3	13.7	14.8	77	83	85	0.0	0.0	0.0	0
28/Oct/10	-	-	-	-	-	-	-	-	-	-
29/Oct/10	-	-	-	-	-	-	-	-	-	-
30/Oct/10	-	-	-	-	-	-	-	-	-	-
31/Oct/10	-	-	-	-	-	-	-	-	-	-
Average	**11.4**	**17.0**	**23.0**	**46**	**68**	**87**		**0.5**	**3.2**	**6.2**
Maximum	**17.4**	**20.1**	**28.7**	**77**	**86**	**96**	**66.8**	**2.7**	**8.9**	**13.0**
Minimum	**3.1**	**10.1**	**14.3**	**27**	**56**	**74**	**0.0**	**0.0**	**0.0**	**0.0**
Total							**126.6**			

No data 28 -31 October due to loss of power to station

Daily Summary **November 2010** **Narrabri Weather Station**

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/10	-	-	-	-	-	-	-	-	-	-
02/Nov/10	-	-	-	-	-	-	-	-	-	-
03/Nov/10	-	-	-	-	-	-	-	-	-	-
04/Nov/10	15.3	21.7	26.4	23	41	71	0.0	0.0	3.3	7.6
05/Nov/10	12.6	16.4	22	45	66	78	0.0	4.9	7.3	10.7
06/Nov/10	10.8	17.9	25.1	35	61	87	0.0	2.2	5.3	8
07/Nov/10	11.8	19.9	30.2	28	59	89	23.4	0.0	4.2	8.9
08/Nov/10	15.2	22.1	28.7	35	61	88	1.6	0.4	4.4	8.5
09/Nov/10	16.7	21.9	29.4	39	67	91	4.4	0.0	1.8	5.8
10/Nov/10	17.8	23.4	29.4	35	59	83	0.0	0.0	2.4	6.7
11/Nov/10	16.9	20.0	24.5	54	80	92	12.6	0.0	2.1	5.4
12/Nov/10	14.5	23.0	31.6	30	64	90	0.0	0.4	2.2	4.5
13/Nov/10	22.6	26.3	31.4	31	51	67	0.0	1.3	5.6	9.4
14/Nov/10	21.3	25.2	30.2	39	52	70	0.0	0.0	4.1	8.5
15/Nov/10	19.5	21.6	25.4	51	78	92	21.8	2.7	5.7	9.4
16/Nov/10	17.2	21.1	26.8	51	77	93	5.2	0.0	1.1	4.9
17/Nov/10	15.3	19.6	25.7	46	76	91	0.8	0.0	3.5	10.3
18/Nov/10	15.8	19.4	24.3	55	76	89	0.4	0.4	2.8	5.4
19/Nov/10	13.3	19.9	27.6	40	70	94	0.4	0.0	4.5	8.9
20/Nov/10	12.8	21.0	28.7	31	58	86	0.4	1.8	5.4	7.6
21/Nov/10	14.8	21.0	27.1	26	55	81	0.0	0.4	2.6	4.9
22/Nov/10	13.8	21.2	26.8	30	53	88	1.2	0.0	2.1	5.4
23/Nov/10	15.7	22.0	27.6	31	49	72	0.0	0.0	1.9	4.5
24/Nov/10	14.1	22.5	29.8	26	51	81	0.0	0.0	1.6	4
25/Nov/10	15.3	22.9	29.5	23	46	77	0.0	0.0	1.4	3.6
26/Nov/10	16.4	22.7	28.9	26	47	69	0.0	0.0	1.9	4.9
27/Nov/10	17.5	24.1	29.7	25	45	73	0.0	0.0	3.0	7.2
28/Nov/10	19.2	23.0	26.9	38	50	80	0.0	0.0	6.3	9.4
29/Nov/10	18.5	21.0	28.2	40	75	91	5.4	0.0	3.1	8.9
30/Nov/10	17.7	19.5	23.3	61	85	93	90.2	0.0	1.8	7.2
Average	**16.0**	**21.5**	**27.6**	**37**	**61**	**84**		**0.5**	**3.4**	**7.1**
Maximum	**22.6**	**26.3**	**31.6**	**61**	**85**	**94**	**90.2**	**4.9**	**7.3**	**10.7**
Minimum	**10.8**	**16.4**	**22.0**	**23**	**41**	**67**	**0.0**	**0.0**	**1.1**	**3.6**
Total							**167.8**			

No data 1 - 3 November due to loss of power to station

Daily Summary December 2010 Tarrawonga Weather Station

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/10	17.7	18.4	19.4	87	92.5	95	15.0	0.0	1.8	5.8
02/Dec/10	17.3	22.5	27.4	57	75.0	94	0.0	0.0	2.6	5.4
03/Dec/10	19.9	22.9	25.9	61	73.4	93	1.6	0.0	1.6	4.9
04/Dec/10	18.2	20.1	23.3	71	89.2	96	7.0	0.0	0.9	3.1
05/Dec/10	18.3	22.4	28.5	48	75.3	96	0.0	0.0	1.4	4.5
06/Dec/10	19.2	22.6	27.1	55	75.4	93	1.8	0.0	1.4	3.6
07/Dec/10	17.8	24.1	30.1	46	62.1	79	0.0	0.4	1.6	3.6
08/Dec/10	21.9	26.3	31.3	45	57.7	67	0.0	0.9	2.6	5.4
09/Dec/10	22.2	27.3	32.1	48	60.5	81	0.0	0.0	2.9	5.8
10/Dec/10	20.0	22.0	23.9	83	91.9	95	50.0	0.0	1.3	4.0
11/Dec/10	18.7	21.5	25.2	55	80.4	95	0.0	0.0	1.0	3.1
12/Dec/10	15.0	23.0	29.1	38	61.0	86	0.0	0.0	2.0	4.0
13/Dec/10	14.7	23.1	30.3	30	57.6	88	0.0	0.0	1.3	3.6
14/Dec/10	18.6	25.0	30.7	36	55.4	78	0.0	0.0	1.6	4.0
15/Dec/10	16.1	24.6	32.1	35	62.9	92	0.0	0.0	1.2	2.7
16/Dec/10	18.9	24.4	31.3	44	66.5	90	9.4	0.0	2.6	5.4
17/Dec/10	17.5	20.7	25.3	45	74.8	91	0.0	0.0	1.5	5.8
18/Dec/10	16.1	18.3	20.1	66	74.9	85	0.2	0.0	1.4	3.6
19/Dec/10	16.5	18.9	20.7	68	77.4	84	0.2	0.0	2.5	4.9
20/Dec/10	9.4	15.7	20.9	37	59.4	89	6.0	0.0	2.3	6.3
21/Dec/10	10.8	18.8	26.5	28	51.2	79	0.0	0.0	1.4	2.7
22/Dec/10	11.2	21.5	29.3	26	53.5	84	0.0	0.0	1.0	4.5
23/Dec/10	18.8	23.9	28.9	37	54.5	76	0.0	0.0	1.3	4.5
24/Dec/10	19.2	24.4	30.3	41	59.2	76	0.0	0.0	2.9	5.4
25/Dec/10	18.4	23.5	29.4	52	69.7	83	1.6	0.4	1.6	4.9
26/Dec/10	19.3	23.5	28.5	54	74.8	90	0.0	0.0	1.1	3.1
27/Dec/10	18.5	23.5	29.7	44	72.0	91	4.2	0.0	2.0	5.8
28/Dec/10	14.2	22.5	30.4	41	64.6	89	0.0	0.9	2.9	5.4
29/Dec/10	17.0	24.3	31.2	39	56.9	77	0.0	0.0	1.4	3.6
30/Dec/10	18.3	26.5	33.6	34	56.4	85	0.0	0.0	1.2	4.0
31/Dec/10	19.8	27.9	34.7	29	52.3	82	0.0	0.0	1.1	4.9
Average	**17.4**	**22.7**	**28.0**	**48**	**67**	**86**		**0.1**	**1.7**	**4.5**
Maximum	**22.2**	**27.9**	**34.7**	**87**	**92**	**96**	**50.0**	**0.9**	**2.9**	**6.3**
Minimum	**9.4**	**15.7**	**19.4**	**26**	**51**	**67**	**0.0**	**0.0**	**0.9**	**2.7**
Total							**97.0**			

Daily Summary **January 2011** **Tarrawonga Weather Station**

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/11	18.3	26.3	34.3	32	55.4	82	0.0	0.0	1.0	2.7
02/Jan/11	20.4	27.0	35.3	31	58.6	80	0.0	0.0	1.1	3.6
03/Jan/11	19.9	25.7	34.9	37	66.3	90	10.2	0.0	1.7	9.8
04/Jan/11	18.3	23.3	31.4	41	74.6	93	0.0	0.0	1.9	5.8
05/Jan/11	17.8	20.1	23.3	63	80.7	89	7.4	0.0	1.2	5.8
06/Jan/11	15.9	20.8	26.7	45	73.3	93	0.0	0.0	2.9	7.6
07/Jan/11	16.3	22.2	30.3	43	65.4	82	0.0	0.4	2.0	4.9
08/Jan/11	17.2	24.2	32.2	33	58.7	82	0.0	0.0	2.1	5.8
09/Jan/11	20.3	25.9	32.7	34	59.7	81	0.0	0.0	2.3	4.9
10/Jan/11	21.2	23.9	28.2	56	71.5	92	7.6	0.4	2.9	6.7
11/Jan/11	20.6	23.3	27.9	60	82.2	94	2.8	0.0	1.8	6.7
12/Jan/11	22.0	26.0	31.7	48	69.2	85	0.0	0.0	1.3	3.1
13/Jan/11	24.2	27.4	32.6	41	58.2	70	0.0	1.3	3.2	5.8
14/Jan/11	21.8	25.7	32.1	37	52.8	65	0.0	0.9	3.1	6.3
15/Jan/11	20.7	25.6	31.0	45	58.9	74	0.0	0.0	1.4	4.9
16/Jan/11	23.8	26.7	31.8	48	66.6	80	0.0	0.0	1.8	4.9
17/Jan/11	20.0	26.2	35.5	34	63.9	84	0.6	0.0	1.3	4.0
18/Jan/11	17.6	25.7	35.7	16	56.6	82	0.0	0.0	1.3	4.0
19/Jan/11	18.2	25.0	35.0	17	59.9	88	0.0	0.0	1.2	5.8
20/Jan/11	19.8	25.7	33.9	29	55.1	78	0.0	0.0	2.1	7.2
21/Jan/11	17.9	25.1	32.5	26	51.9	78	0.0	0.0	1.4	4.9
22/Jan/11	17.6	25.2	32.9	19	50.5	78	0.0	0.0	1.6	5.8
23/Jan/11	17.1	24.1	32.8	31	53.7	78	2.6	0.0	1.3	7.6
24/Jan/11	18.5	25.6	34.3	33	56.0	81	0.0	0.0	1.7	4.5
25/Jan/11	23.3	30.9	39.3	26	41.8	61	0.0	0.0	1.8	5.4
26/Jan/11	23.4	32.3	41.5	22	41.6	62	0.0	0.0	1.1	3.6
27/Jan/11	27.2	33.1	40.8	27	45.5	66	0.0	0.0	2.0	5.8
28/Jan/11	22.8	29.4	36.5	34	54.2	83	0.0	0.0	3.7	7.6
29/Jan/11	16.4	24.7	32.5	24	51.1	80	0.0	0.0	2.2	4.9
30/Jan/11	18.9	25.8	34.8	19	44.9	67	0.0	0.0	1.3	3.1
31/Jan/11	18.2	27.2	36.8	22	41.2	55	0.0	0.0	1.1	2.7
Average	**19.9**	**25.8**	**33.3**	**35**	**59**	**79**		**0.1**	**1.8**	**5.4**
Maximum	**27.2**	**33.1**	**41.5**	**63**	**82**	**94**	**10.2**	**1.3**	**3.7**	**9.8**
Minimum	**15.9**	**20.1**	**23.3**	**16**	**41**	**55**	**0.0**	**0.0**	**1.0**	**2.7**
Total							**31.2**			

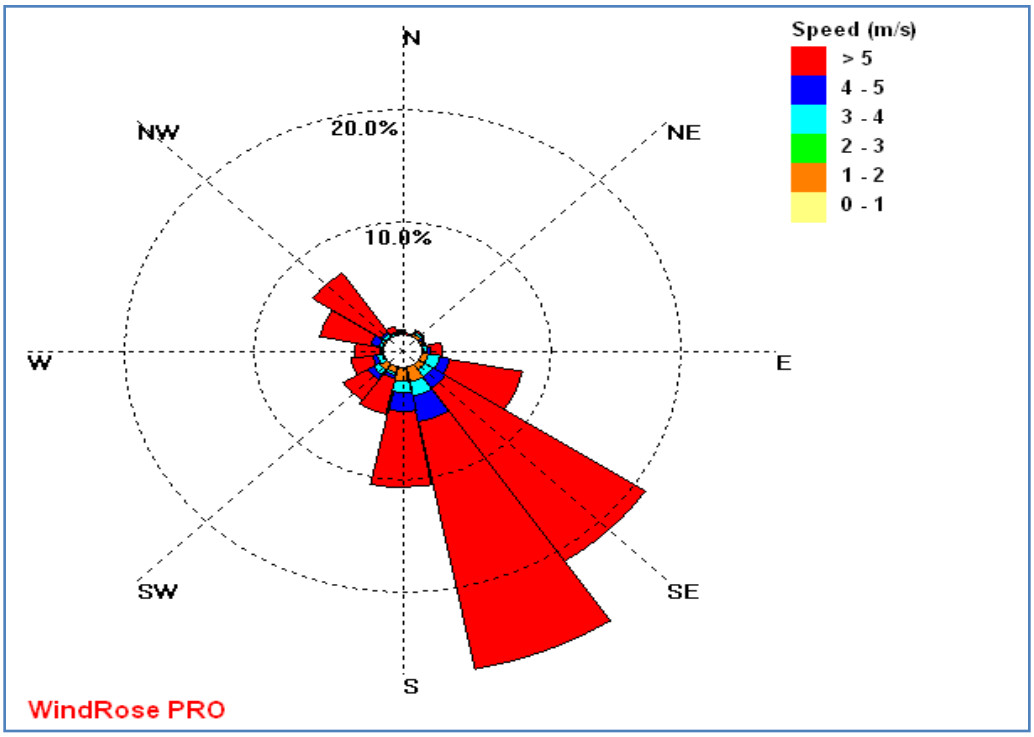
Daily Summary **February 2011** **Tarrawonga Weather Station**

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/11	22.6	31.0	37.5	27	42	62	0.0	0.0	1.9	4.0
02/Feb/11	27.2	32.4	38.6	30	47	65	0.0	0.4	2.2	3.6
03/Feb/11	28.2	32.2	37.4	28	44	63	0.0	0.0	2.5	4.9
04/Feb/11	25.7	32.0	38.4	32	44	59	0.0	0.0	1.6	4.0
05/Feb/11	25.2	32.2	37.7	24	42	65	0.0	0.0	2.4	5.4
06/Feb/11	26.3	31.2	36.0	39	52	67	0.0	0.0	2.6	7.2
07/Feb/11	19.9	23.6	30.3	49	74	91	3.6	0.0	3.8	6.3
08/Feb/11	18.8	23.4	30.3	47	74	91	1.4	0.0	1.9	6.7
09/Feb/11	18.3	24.8	31.8	29	52	73	0.0	0.9	2.4	4.5
10/Feb/11	19.1	25.2	31.9	30	50	70	0.0	0.0	1.3	3.6
11/Feb/11	18.2	26.7	33.2	31	50	77	0.0	0.0	1.7	4.0
12/Feb/11	20.1	28.6	36.0	30	46	66	0.0	0.0	1.7	7.6
13/Feb/11	21.5	25.4	33.7	42	70	90	10.0	0.0	1.7	8.9
14/Feb/11	19.1	22.4	28.6	51	76	90	0.2	0.0	4.1	9.8
15/Feb/11	18.4	21.6	27.6	51	72	93	5.8	0.0	2.8	5.4
16/Feb/11	20.2	23.8	30.8	44	70	84	16.2	0.0	0.9	3.1
17/Feb/11	19.2	25.4	32.4	43	70	89	1.2	0.0	1.0	4.5
18/Feb/11	20.2	27.3	34.5	39	65	90	0.0	0.0	1.0	3.6
19/Feb/11	21.8	29.2	35.6	36	53	82	0.0	0.0	2.2	5.4
20/Feb/11	24.5	29.7	35.5	38	53	73	0.2	0.0	2.0	7.2
21/Feb/11	21.0	26.7	33.3	23	54	83	0.0	0.0	2.4	5.8
22/Feb/11	16.8	22.9	29.5	34	56	82	0.0	2.2	4.6	7.6
23/Feb/11	14.3	21.7	29.3	30	50	69	0.0	0.0	3.1	8.0
24/Feb/11	13.8	23.0	31.0	20	45	80	0.0	0.0	1.7	4.5
25/Feb/11	15.0	24.2	32.3	27	46	71	0.0	0.0	1.1	3.6
26/Feb/11	19.7	26.6	32.6	31	43	60	0.0	0.0	1.4	3.6
27/Feb/11	18.7	27.9	35.4	29	45	71	0.0	0.0	1.8	4.9
28/Feb/11	20.9	29.0	37.3	27	44	66	1.0	0.0	2.6	7.2
Average	**20.5**	**26.8**	**33.5**	**34**	**55**	**76**		**0.1**	**2.2**	**5.5**
Maximum	**28.2**	**32.4**	**38.6**	**51**	**76**	**93**	**16.2**	**2.2**	**4.6**	**9.8**
Minimum	**13.8**	**21.6**	**27.6**	**20**	**42**	**59**	**0.0**	**0.0**	**0.9**	**3.1**
Total							**39.6**			

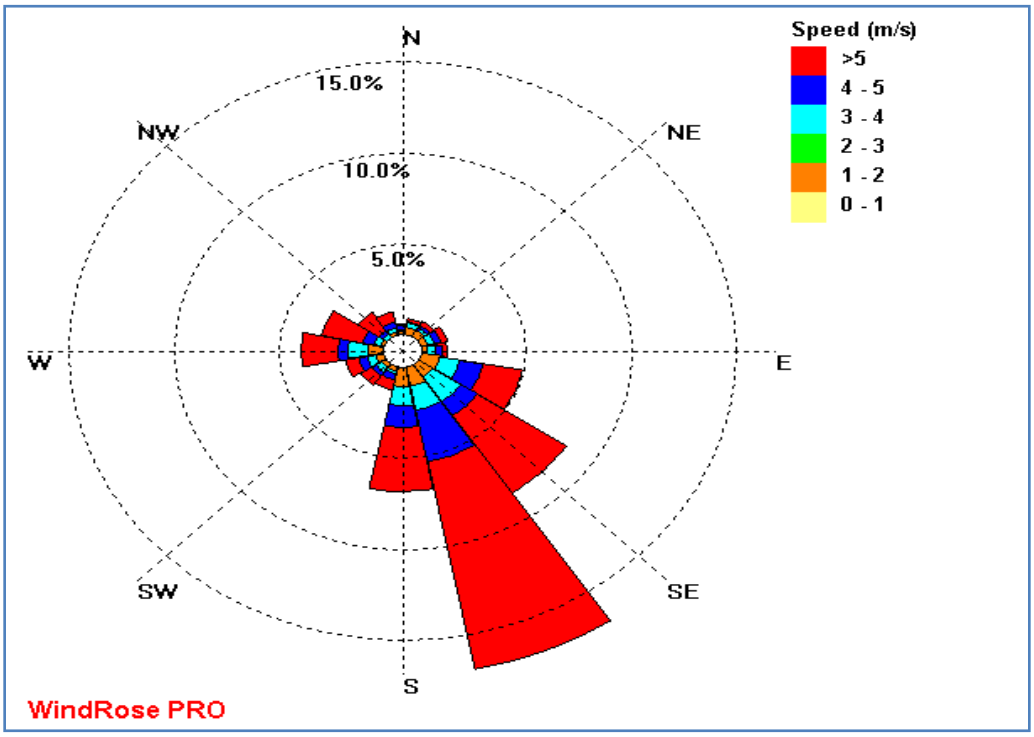
Daily Summary **March 2011** **Tarrawonga Weather Station**

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/11	22.3	27.8	37.3	27	57	83	5.2	0.4	3.1	8.9
02/Mar/11	19.3	23.6	32.1	44	75	90	0.0	0.0	1.4	12.1
03/Mar/11	19.7	23.9	29.3	46	74	91	0.6	0.0	1.3	5.4
04/Mar/11	20.0	23.9	28.7	48	68	86	0.0	0.0	0.8	2.7
05/Mar/11	18.4	23.5	29.9	38	61	88	0.0	0.0	2.9	6.3
06/Mar/11	14.7	21.0	28.0	33	51	70	0.0	0.9	2.5	4.5
07/Mar/11	14.4	21.4	27.4	36	54	77	0.0	0.0	2.2	4.5
08/Mar/11	15.9	23.7	30.1	32	49	72	0.0	0.0	1.4	4.0
09/Mar/11	20.2	23.6	26.6	47	56	68	0.0	0.0	1.3	4.0
10/Mar/11	19.5	23.4	27.3	45	59	76	1.0	0.0	1.0	2.2
11/Mar/11	20.1	24.1	28.8	43	63	79	0.0	0.0	0.6	2.2
12/Mar/11	18.2	24.8	32.0	35	62	89	0.0	0.0	0.7	4.0
13/Mar/11	17.6	25.8	32.9	31	56	85	0.0	0.0	0.9	3.6
14/Mar/11	19.3	25.5	33.2	34	59	78	5.2	0.0	1.6	5.8
15/Mar/11	18.1	25.0	32.3	39	66	92	0.0	0.0	1.6	7.2
16/Mar/11	19.3	24.2	32.1	43	70	88	0.6	0.0	1.2	4.9
17/Mar/11	19.3	23.1	30.6	51	77	89	19.2	0.0	0.9	6.3
18/Mar/11	19.8	22.3	25.9	68	85	94	0.0	0.0	1.0	4.0
19/Mar/11	18.8	21.5	25.3	66	84	93	4.0	0.0	0.8	4.0
20/Mar/11	17.1	23.1	28.3	51	71	90	0.0	0.0	1.0	4.0
21/Mar/11	20.2	23.8	28.8	57	75	94	3.2	0.0	0.8	3.6
22/Mar/11	19.8	23.7	29.7	36	73	94	2.4	0.0	1.8	4.9
23/Mar/11	18.6	22.8	27.8	44	65	88	0.0	0.0	1.6	4.5
24/Mar/11	14.4	20.9	26.7	35	54	79	0.0	0.0	2.0	4.5
25/Mar/11	12.9	18.3	25.6	35	60	84	0.0	0.0	1.6	5.4
26/Mar/11	10.7	18.8	27.4	34	61	85	0.0	0.0	2.2	8.0
27/Mar/11	12.8	20.2	27.2	33	58	85	0.0	0.0	2.3	7.2
28/Mar/11	14.5	21.4	28.6	31	55	76	0.0	0.0	1.9	4.0
29/Mar/11	15.4	21.2	26.1	47	66	80	1.6	0.0	1.2	3.6
30/Mar/11	14.9	22.5	29.3	34	58	88	0.0	0.0	0.8	3.1
31/Mar/11	14.5	22.3	30.0	31	57	82	0.0	0.0	1.7	5.8
Average	**17.4**	**22.9**	**29.2**	**41**	**64**	**84**		**0.0**	**1.5**	**5.0**
Maximum	**22.3**	**27.8**	**37.3**	**68**	**85**	**94**	**19.2**	**0.9**	**3.1**	**12.1**
Minimum	**10.7**	**18.3**	**25.3**	**27**	**49**	**68**	**0.0**	**0.0**	**0.6**	**2.2**
Total							**43.0**			

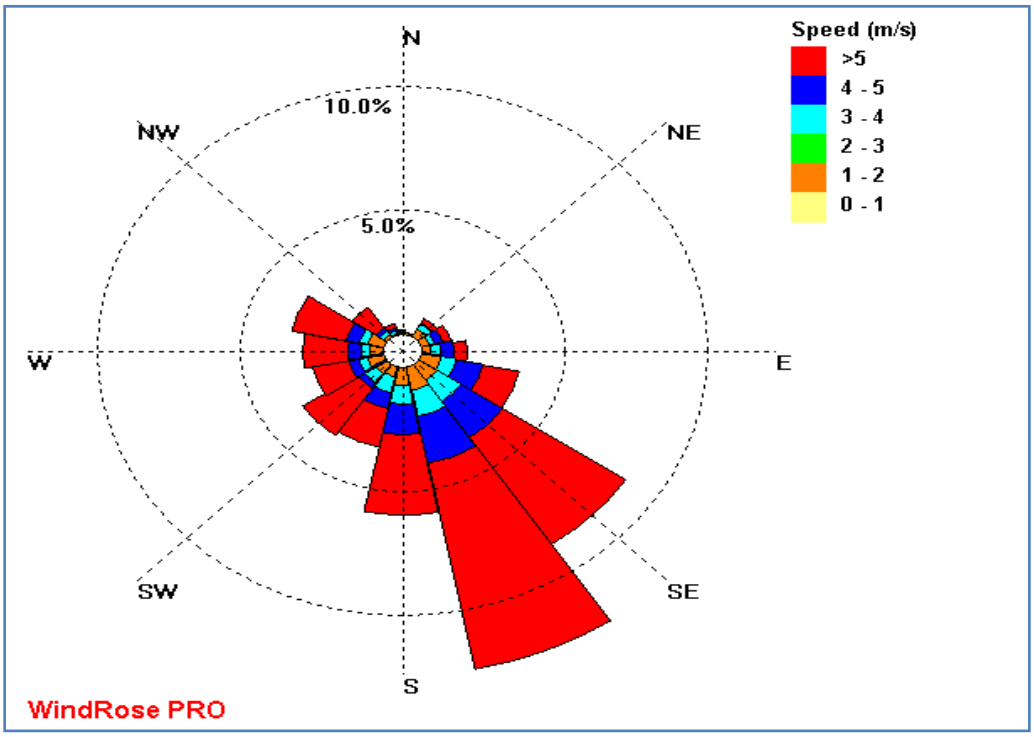
April 2010



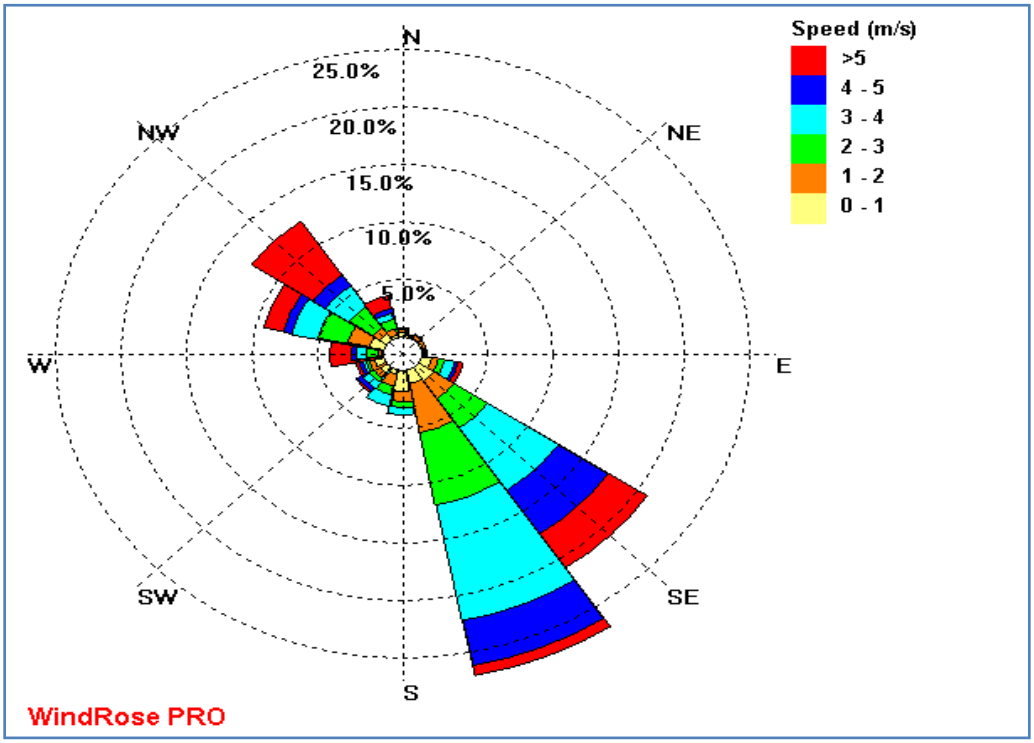
May 2010



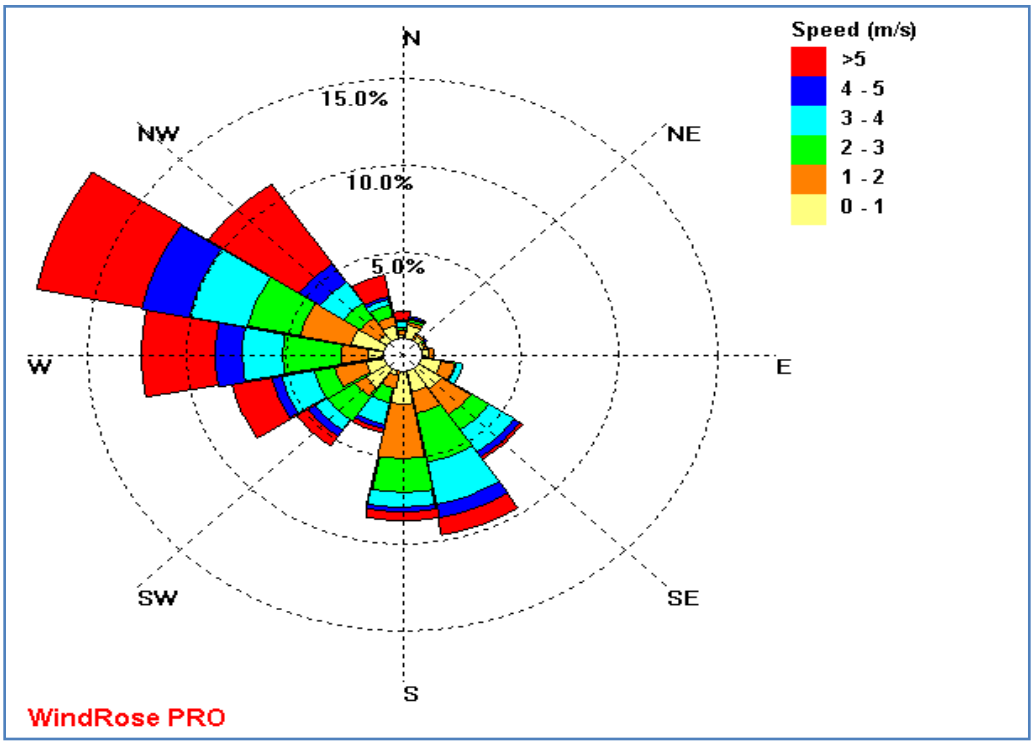
June 2010



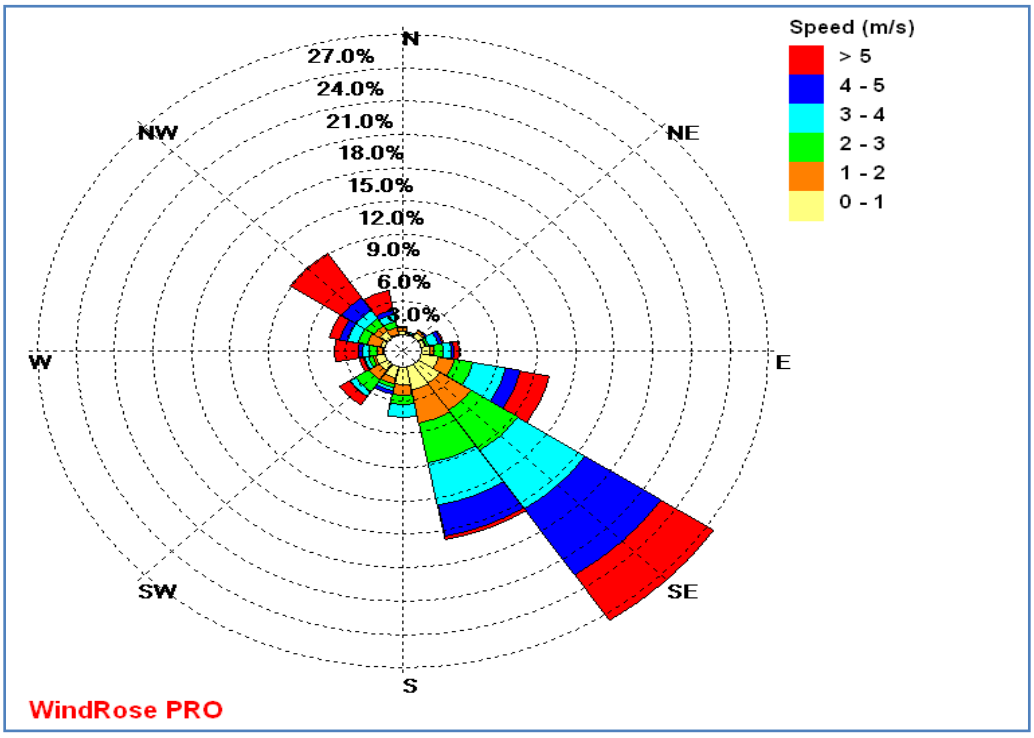
July 2010



August 2010



October 2010



November 2010