WHITEHAVEN COAL

Whitehaven Coal Mining Pty Ltd

ABN: 65 086 426 253

Annual Environmental Management Report

for the

Rocglen Coal Mine (ML 1620)

1 August 2009 – 31 July 2010

Whitehaven Coal Mining Pty Ltd

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MOP Commencement Date ***12-06-2008*** – MOP Completion Date ***31-05-2014***

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Gunnedah Shire Council
Rocglen Coal Mine Community Consultative Committee

TABLE OF CONTENTS

TABLES

FIGURES

PLANS After

PLATES

APPENDICES

1 INTRODUCTION AND OBJECTIVES

1.1 Scope

1.1.1 Introduction and Period of Reporting

This is the second Annual Environmental Management Report (AEMR) produced for the Rocglen Coal Mine, and it has been prepared in accordance with Conditions 4 and 5 of Mining Lease (ML 1620) (Mining Act 1992) and Condition 5 (Schedule 5) of PA 06_0198. The AEMR generally follows the format identified in the Department of Primary Industries Mineral Resources (DPI-MR) document entitled *"Guidelines to the Mining, Rehabilitation and Environmental Management Process"* Version 3, dated January 2006.

Though primarily covering the period from 01 August 2009 to 31 July 2010 (the reporting period), where relevant the AEMR provides information on historical aspects of the operations, longer term trends in environmental monitoring results and provides relevant information on activities to be undertaken during the ensuing period (i.e. from 01 August 2010 to 31 July 2011) or beyond.

The Rocglen Coal Mine is located within the Gunnedah Shire, approximately 28 km north of Gunnedah (Figure 1) and 10 km west of the Canyon Coal Mine (formerly Whitehaven Coal Mine).

1.1.2 The Company

Rocglen Coal Mine is owned by Whitehaven Coal Limited (WCL) and operated by Whitehaven Coal Mining Pty Ltd (WCMPL). WCMPL is a wholly owned subsidiary of WCL, a publicly listed company which has several coal mining interests in the Gunnedah region of NSW.

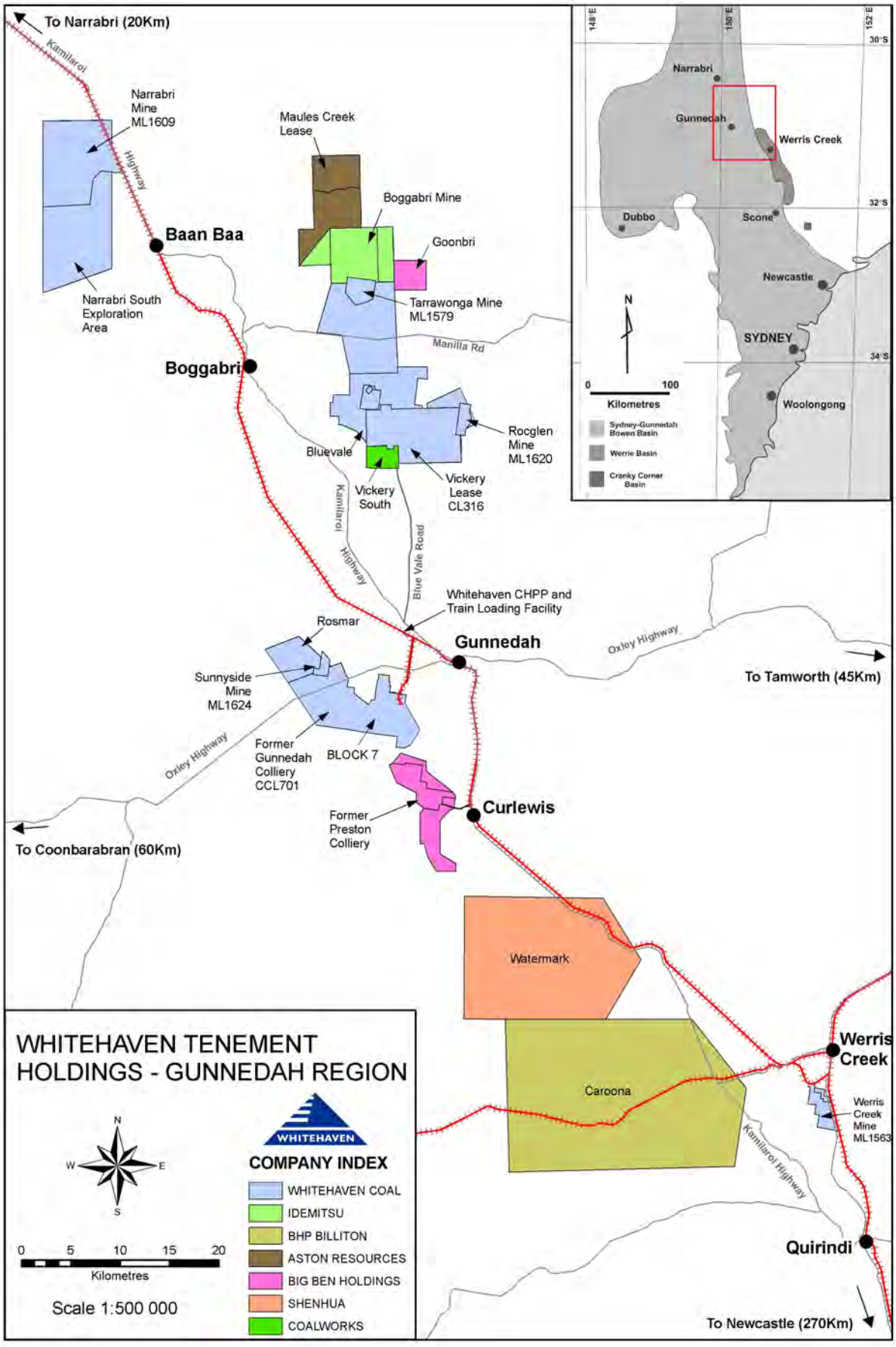


Figure 1 - Locality Plan

WCL's coal mining assets are as follows:

- Canyon Coal Mine (formerly Whitehaven Coal Mine), 10km south of Tarrawonga, 100% owned by WCL, which ceased production in July 2009, and is currently under final rehabilitation;
- Whitehaven Rail Siding and CHPP, 6km north-west of Gunnedah, 100% owned by WCL;
- Werris Creek Coal Mine, 4km south of Werris Creek, 100% owned by WCL;
- Narrabri Underground Coal Mine, 30km south-southeast of Narrabri, 70% owned by subsidiary company Narrabri Coal Pty Ltd. Production commenced second quarter 2010;
- Tarrawonga Coal Mine, 42km north-west of Gunnedah, owned by Tarrawonga Coal Pty Ltd which is a joint venture between WCMPL (70%) and Idemitsu Boggabri Coal (30%);
- Sunnyside Coal Mine, 15km south west of Gunnedah, 100% owned by subsidiary company Namoi Mining Pty Ltd, which commenced production in 2008;
- 100% ownership of the Bonshaw project near Ashford;
- 100% ownership of the former Gunnedah Colliery through Namoi Mining Pty Ltd; and
- 100% ownership of the former Vickery site, with development assessment work underway with a view to re-opening the former Blue-Vale and adjacent deposits.

WCL is also actively pursuing other prospective tenements with a view of maintaining a long-term presence in the Gunnedah Basin.

1.1.3 Background and History of the Rocglen Coal Mine

The Rocglen Coal Mine was developed after substantial investigations were undertaken under Exploration Licence 5831, granted in April 2001 and renewed in August 2003 and November 2008. Following completion of relevant assessments and studies, the Department of Planning (DoP) provided approval to the development via Project Approval (PA) 06_0198 on the 15th April 2008. Environment Protection Licence (EPL) 12870 was granted on the 22nd July 2008.

The Project Approval provided for the extraction of approximately 18 million tonnes of ROM coal, at a maximum rate of 1.5 million tonnes per year. The consent allowed for the crushing and screening of ROM coal at the mine site prior to transport to the Whitehaven Siding Coal Handling and Preparation Plant (CHPP) near Gunnedah.

Over the life of the approved mine, a total area of approximately 115 ha will be disturbed for mining and associated activities within ML 1620.

The external boundary of ML 1620 corresponds to the area referred to in PA 06_0198 and covers an area of approximately 365 ha.

1.1.4 Products and Markets

Coal within the Rocglen coal deposit can be described as a high volatility coal which will produce a medium sulphur thermal/PCI coal with ash percentages currently ranging from <10% (low ash PCI) up to 25% (high ash thermal).

All coal produced at Rocglen (0-50mm, raw and washed) is exported for use in heating or power generation.

1.1.5 Operational and Environmental Management

1.1.5.1 Contacts

The management personnel responsible for operational and environmental performance at the Rocglen Coal Mine and their relevant contacts are as follows:

- Mr Chris Stephens, Manager Mining Engineering - retains statutory responsibility for mining activities at the site. Contact: (02) 6740 7000.
- Mr Casper Dieben, General Manager, Operations - oversees open cut operations for the Whitehaven Group. Contact: 0407 123 958.
- Mr Danny Young, Environmental Manager – oversees day to day environmental and rehabilitation performance across the site. Contact: (02) 6741 9316, 0427 497 710.

Mining operations are undertaken by Whitehaven Coal Mining Pty Ltd personnel. The day-to-day operational responsibilities are allocated to the Project Manager, Mr Tony Heinrich. Contact: (02) 6740 7000.

1.1.5.2 Support Personnel

In addition to the personnel identified in Section 1.1.5.1, Whitehaven utilises specialist assistance as and when required. Specialist environmentally-based or related companies or consultants involved in activities at the mine during the reporting period included:

- Geoff Cunningham Natural Resource Consultants Pty Ltd;
- Countrywide Ecological Services;
- GSS Environmental Pty Ltd;
- EA Systems Pty Ltd;
- Boztek Solutions Pty Ltd;
- Orica Blasting Limited; and
- Soil Services.

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

1.1.6 Corporate Occupational Health, Safety and Environmental Policy

WCL has a documented Health, Safety and Environmental policy which states:

"Whitehaven is committed to supplying coal in a safe, efficient and environmentally responsible manner. Whitehaven will conduct business in a way that maintains a safe and healthy workplace for our employees, contractors, visitors and the surrounding community and will protect the environment in all stages of mining and processing.

Whitehaven's Goals are:

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

Whitehaven will achieve these goals by:

- *Ensuring health, safety and environment is considered in all planning and work activities.*
- *Involving our 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.*
- *Providing details of legislative and other requirements and necessary training and resources to meet these requirements.*

Responsibilities:

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

Whitehaven employees shall share the responsibility to:

- *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 and 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 Rocglen 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 06_0198 MOD 1 (Appendix 1), EPL 12870 (Appendix 2), and ML 1620, are presented in Appendix 3, Tables A3-1, A3-2 and A3-3 respectively.

Table 1 - Tenements, Licences and Approvals

Issuing / Responsible Authority	Type of Lease, Licence, Approval	Date of Issue	Expiry	Comments
Department of Mineral Resources*[1]	Exploration Licence (EL 5831)	6th April 2001 (Renewed 15th August 2003 and 11th November 2008)	5th April 2013	Approval for exploration
Minister for Planning	Project Approval (PA) 06_0198	15th April 2008	10th June 2020	Approval for the mine
Department of Environment and Climate Change*[3]	Environment Protection Licence No. 12870 (Appendix 2)	31st July 2008	Nil Anniversary date: 31st July Next review: 18th August 2014	Approval granted for Mining for Coal and Coal Works to 2 Mtpa.
Department of Primary Industries*[1]	ML 1620	10th June 2008	9th June 2029	Approval of open cut
Department of Water and Energy (DWE)*[3]	Water Licence 90BL254855 90BL254856 90BL254857 90BL254858 90BL254859 90BL110883 90BL104367 90BL102845	Various	Nil	Used for groundwater monitoring purposes
	90BL254684	12th May 2009	11th May 2014	700ML aquifer interference
	90BL254758 90BL255249	18th Jan 2010 18th Jan 2010	17th Jan 2015 17th Jan 2015	120ML total allocation - mining (low security)
Minister for Planning	Project Approval (PA) 06_0198 - MOD 1 (Appendix 1)	27th May 2010	10th June 2020	Notice of Modification for highwall stability works

*[1] Now, Industry and Investment NSW (I&I NSW)
*[2] Now, Department of Environment, Climate Change and Water (DECCW)
*[3] Now, NSW Office of Water (NOW)

1.2.2 Amendments to Leases, Licences and Approvals

Amendments to leases, licences and approvals for the mine are as follows:

- Exploration Licence (EL 5831) – no changes were made during the reporting period as renewal is not required until 5th April 2013.
- Development Approval (PA 06_0198) – In early May 2010, Whitehaven submitted a modification application under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to DoP to address issues associated with highwall stability. At the end of April 2010, it became apparent that the operation could not continue in a northerly direction along the eastern highwall without appropriate stabilisation works. GSS Environmental Pty Ltd was engaged to prepare the Environmental Assessment to accompany the Section 75W modification. Project Approval (PA) 06_0198 – MOD 1 was granted by the Minister for Planning on the 27th May 2010 (Appendix 1).
- In addition to the minor modification outlined above, Whitehaven has prepared a separate application for a new Project Approval under Part 3A of the EP&A Act to expand operations in order to maximise resource recovery and allow for improved mine progression. A Preliminary Environmental Assessment (PEA) for the Rocglen Extension Project was submitted to DoP in December 2009, with the Director-General's Requirements (DGRs) issued in March 2010. The Environmental Assessment (EA) was submitted to DoP on the 19th July 2010. The DoP has recently provided its adequacy assessment which identified several issues requiring resolution prior to the EA being made available for public exhibition.
- Environment Protection Licence (EPL No. 12870) – DECCW conducted a review of the licence (as part of a general review of all licences) and issued the current licence on the 18th August 2009 via notice 1103283. Refer to Appendix 2 for the current EPL.
- Mining Lease (ML 1620) – no changes were made during the reporting period.
- Water Licences – the former production bore on the "Glenroc" property (Bore Licence No: 90BL254758) was mined through mid 2010. Licence No: 90BL255249 was issued by NOW on the 18th January 2010 for a new production bore on the Whitehaven-owned section of the "Roseberry" property. The licence has an annual allocation of 120ML.

- Following the grant of the Section 75W modification approval, a MOP amendment was prepared in draft format and issued to I&I NSW for review and comment. Following advice from I&I NSW that the draft document was satisfactory, a final document and associated MOP plans were delivered and is currently awaiting formal approval.

1.3 Actions Requested at Previous AEMR Review

A site inspection incorporating representatives from I&I NSW – Mineral Resources, I&I NSW – Agriculture, DECCW and GSC was conducted on the 14th July 2010 following submission of the 2008-2009 AEMR in mid-September 2009.

Advice from I&I NSW following that review identified satisfaction with the form and content of the report, and the reporting of the environmental management of the mine's activities. I&I NSW commended Rocglen on the following items:

- Extension of the hardstand area associated with the workshop refuelling station (discussed in Section 3.17.2);
- Tidy and organised state of the laydown area; and
- Improved mixed waste segregation originating from the workshop.

As it was raining during the inspection, I&I NSW were able to observe the ability of the water control network to manage water movement across site. It was noted that the placement of floc blocks within the culvert upstream of Storage Dam 3 (SD3) had reduced effectiveness due to water volume and placement of the blocks on the high side of the non-level culvert. Floc blocks are now located in all five pipes within the culvert (rather than the three centre pipes) with two blocks on the low side that receives a greater volume of water.

2 SUMMARY OF OPERATIONS

2.1 Exploration, Resources / Reserves and Mine Life

2.1.1 Exploration

Exploration activities during the reporting period comprised 25 exploration open holes in the northern end of the proposed pit and 13 exploration blast holes to confirm the structure of the seams and further delineate the eastern boundary of the open cut.

A program of 14 exploration open holes were drilled along the eastern margin to assess a possible extension to the east and southeast of the current open cut mine plan. Two exploration open holes were drilled on the western margin to confirm seam thickness to the west. Two 4-inch core holes were drilled to provide washability data for the CHPP and five HQ fully cored holes were drilled within the open pit design limits for geotechnical assessment.

2.1.2 Resources and Reserves

The mineable coal seams present within the open cut are listed below in increasing depth from the surface. Average thicknesses and thickness ranges have also been listed.

- Upper Glenroc: 0.8 – 5.95m, average 2.65m
- Lower Glenroc: 0.85 -5.3m, average 2.0m
- Belmont: 4.22 – 12.0m, average 7.0m

All three seams tend to thicken on the eastern limb of the anticline, although many of the thicker intersections are artificially inflated by steeper dips.

The total thickness of the coal to be mined is approximately 11.5 metres, with the depth below the natural land surface varying between 20 and 100 metres.

The most recent resource estimate shows there are 20 million tonnes of open cut coal within ML1620, with a mineable reserve of approximately 13.7 million tonnes of recoverable coal and 12 million tonnes of marketable coal.

2.1.3 Estimated Mine Life

Based on an average production rate of 1.5Mta, the mine life is approximately 8 to 10 years, as specified in the MOP (approved June 2008).

If the proposed Rocglen Extension is approved, the mine life will be extended by a further 4 years.

2.2 Land Preparation

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

- Vegetation removal in three different vegetation communities for mining, waste emplacement and infrastructure areas. These communities are Pilliga Grey Box – White Cypress Pine (Community 2), Pilliga Grey Box – Whitebox – Yellowbox – White Cypress Pine (Community 3) and Cleared lands – used for grazing and/or cultivation (Community 8). All clearing works were undertaken following a pre-start clearing check by Countrywide Ecological Services.
- Stripping of topsoil, subsoil and friable overburden over an area of approximately 30.5ha. Soil stripped during the reporting period comprised SMU2 and SMU4.
- During the reporting period, a total of 61,230 m^3 topsoil and subsoil was stripped and stockpiled. Existing stockpile locations are shown on Plan 3.

Table 2, the "Production and Waste Summary", shows that at the end of the reporting period, 10,510 m^3 topsoil and subsoil had been replaced for rehabilitation purposes.

Table 2 - Production and Waste Summary

	Cumulative Production			
	Start of Reporting Period (up to 31/7/09)	**During Reporting Period (1/8/09 to 31/7/10)**	**Cumulative Total at End of Reporting Period**	**Cumulative Total at End of next Reporting Period (estimated)**
Soil Stripped (m^3)	574,345	61,230	635,575	662,845
Soil Used/Spread (m^3)	0	10,510	10,510	53,310
Waste Rock (m^3)	7,223,754	6,309,167	13,532,921	22,000,112
ROM Coal (t)*	631,113	956,535	1,587,648	2,937,036
Processing Waste (t)**	52,997	138,681	191,678	529,025
Product (t)	448,265	879,676	1,327,941	2,339,982

* ROM Coal is total production at the mine site. The difference between ROM Coal and final product is related to changes in stockpile volumes both at the mine and the CHPP during the reporting period.

** Rocglen waste produced at Whitehaven CHPP.

Soil removal activities are undertaken in 100m wide strips in advance of competent overburden and coal extraction activities.

Approximately 63,835 tonnes of course reject was backloaded from the Whitehaven CHPP to the mine and disposed of within the footprint of the advancing waste emplacement. This process ensures that the reject is sufficiently capped. On opening up of the void, reject will be placed in pit (subject to appropriate Section 100 approval).

2.3 Construction

No construction occurred during the reporting period.

2.4 Mining

2.4.1 Mining Method

All mining during the reporting period was undertaken by open cut methods using the techniques identified in the MOP, namely:

- Separate topsoil and subsoil removal by open bowl scraper;
- Friable overburden removal by scraper;
- Drilling and blasting the underlying competent overburden;
- Overburden (and interburden) removal by bulldozers and/or excavator and dump trucks, with the overburden placed in waste emplacements.
- Coal extraction by excavator loading into haul trucks for transport to the ROM stockpile.

All coal was assessed in pit and depending on the quality was classified into “high ash” and “low ash” for stockpiling.

The in-pit classification determines the form of subsequent processing undertaken on-site or off-site.

During the reporting period, a total of 6,309,167 bcm (or 8,201,917 m^3, assuming a swell factor of 1.3) friable and competent overburden was removed to produce 956,535 tonnes of ROM coal at an average overburden:coal stripping ratio of 8.6:1 (See Table 2).

Plan 4 presents the status of mine and infrastructure development as of 31st July 2010. The plan also identifies the limit of mining at the commencement of the reporting period.

During the reporting period, the mine, which was developed as a series of approximately 100 m wide strips, advanced approximately 400m in a northerly direction. The pit is currently approximately 400m wide and 1,370m in length. Mining activities were generally undertaken in areas formerly identified as Community 2 (Pilliga Grey Box – White Cypress Pine Community), Community 3 (Pilliga Grey Box – Whitebox – Yellowbox – White Cypress Pine Community) and Community 8 (Cleared lands – used for grazing and/or cultivation).

2.4.2 Mining Constraints

Day to day mining activities at the mine are primarily constrained by economic considerations which, in turn, are determined to a large extent by factors beyond Whitehaven's control (i.e. coal price and demand). Economic factors determine the overburden:coal stripping ratio and hence the lateral extent of mining undertaken.

Other constraints to mining operations at the mine have included or continue to include:

- Stability issues associated with highwall in the north-eastern section of the pit;
- The depth of weathering of the coal seams which influences the volume of overburden requiring removal to access the coal;
- The potential presence of faulting within the seam structure which may influence the sequence and possibly the method of mining;
- The potential for an uneven coal seam floor which could potentially complicate vehicular access to the coal;
- The potential for thickening of stone bands within the coal seams;
- Final landform design to allow for re-establishment of class III capability land, with final slopes of the open cut area to be 18 degrees or less and slopes on the reshaped waste emplacement to be 10 degrees or less;
- Existence of the threatened ecological community (Brigalow community) to the north-east of the pit;

- Existence of the timbered area to the north-west of the pit as well as the stand of trees along the former Jaeger Lane, which both form part of the biodiversity offset; and
- Existence of Aboriginal sites within the Mining Lease.

The most significant constraint during the reporting period was the stability issues associated with the eastern highwall section in the north-eastern corner of the existing open cut pit. As discussed in Section 1.2.2, Whitehaven submitted a modification application under Section 75W of the EP&A Act to conduct emergency operations to address the stability issues. The Minister for Planning granted Project Approval (PA) 06_0198 – MOD 1 on the 27th May 2010 and works have commenced to stabilise the highwall.

2.4.3 Mining Equipment

Table 3 presents a list of mining equipment in use at the mine at the end of the reporting period, together with its principal function(s).

Table 3 - Mining Equipment

Item (or equivalent)	No. on site	Function
Excavator (Hitachi EX1900)	1	Overburden and coal loading
Excavator (Hitachi EX 3600-6)	1	Overburden excavation and loading
Excavator (CAT 330B)	1 (p/t)	Drainage, windrows etc
Rear Dump Truck (CAT 785C)	6	Overburden/coal haulage
Wheel Loader (CAT IT38)	1 (p/t)	Lifting, stemming etc
Dozer (CAT D10T)	2	Clearing; pit activities; dump maintenance
Dozer (CAT D9N)	1	Ripping and pushing for scrapers
Dozer (CAT D11R)	1	Overburden/rip/push
Grader (CAT 14H)	1 (f/t), 1 (p/t)	Road maintenance
Scraper (CAT 637D)	2	Campaign topsoil/subsoil removal and replacement
Scraper (CAT 631)	2	Campaign topsoil/subsoil removal and replacement
Drill Rig Terex SKF50	1	Campaign blasthole drilling
Water Cart (International 2350G)	2	Dust suppression
Crushing Plant	1	Coal size reduction
Wheel Loader (CAT 988H)	1	Feeding/processing plant/product truck loading
Lighting Plant	8	Light for evening, night operations
Fuel/Service Truck	1	Equipment refuelling/servicing
125 kVA diesel generator	1	Electricity generation for site services
820 kVA diesel generator	1	Coal processing

2.4.4 Hours of Operations

Rocglen is permitted to undertake mining operations 24 hours a day, Monday to Saturday, with the exception of public holidays. Rocglen has two production shifts on weekdays which are day shift (7:00am to 5:00pm) and afternoon shift (4:30pm to 2:30am), and generally an 8 hour overtime production shift on Saturday.

Maintenance crews work 24 hours per day Monday to Friday and 6:30 am to 6:30 pm on Saturday and Sunday.

Coal transportation from the mine site is undertaken between the hours of 7:00am to 9:15pm Monday to Friday and 7:00am to 5:15pm on Saturdays. These times ensure that all coal trucks are off the public road network by 10:00pm Monday to Friday and 6:00pm Saturdays. Coal transportation is not permitted on Sundays and public holidays.

Blasting activities were carried out between 9:00am and 5:00pm Monday to Saturday.

The above hours of operation are consistent with the permitted hours of operation identified in PA 06_0198 – MOD 1.

2.5 Processing

2.5.1 Outline of Processing Activities

With the exception of coal crushing to <200 mm, no coal processing was undertaken within the DA Area.

During the reporting period, all Rocglen coal was transported to the Whitehaven Siding CHPP with 54% washed and 49% bypassed (unwashed) for despatch to domestic and export markets.

Figure 2 presents a schematic of coal movements and washery inputs, outputs and yields for the reporting period.

Figure 2 shows that during the reporting period 956,535 tonnes of coal was mined and 1,031,775 tonnes of coal was transported to the Whitehaven CHPP, producing 464,236 tonnes bypass coal (i.e. crushed product coal not requiring washing) and 412,294 tonnes of washed product (at an average yield of 75% from the plant).

2.5.2 Changes or Additions to the Process or Facilities

No changes or additions to the process or facilities occurred during the reporting period. The coal movement and production summary is shown in Figure 2.

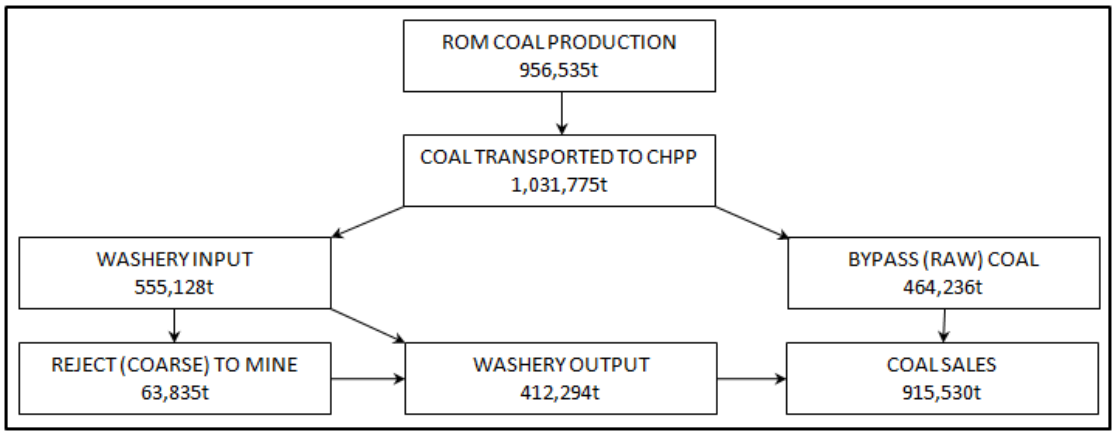


Figure 2 - Coal Movement and Production Summary
(2009/2010 Reporting Period)

2.6 Waste Management

2.6.1 Introduction

Wastes produced at the mine during the reporting period remain unchanged from those identified in the original EIS and are comprised of:

- General domestic-type wastes from on-site buildings and routine maintenance consumables;
- Oils and other hydrocarbons;
- Sewage;
- Overburden and interburden;
- Mine equipment tyres; and
- Coarse and fine coal rejects from any coal preparation undertaken.

The following sub-sections identify the management procedures adopted for each of these wastes throughout the reporting period.

As discussed in Section 1.3, Whitehaven received commendation from I&I NSW for the improved waste segregation activities that have occurred at the site since July 2009.

2.6.2 Domestic Type Wastes

All general wastes were collected on-site and placed into large storage receptacles on a daily basis. An industrial waste collector generally collected this waste on a fortnightly basis. During the previous reporting period, Rocglen established a recycling program for office and general recyclables (paper, cardboard, bottles, cans etc) at the site office and crib room. The program has continued to work effectively with collections occurring once a week.

2.6.3 Oil Containment and Disposal

Waste oils from maintenance activities were pumped from equipment to bulk storage tanks bunded in accordance with EPA requirements (also see Section 2.8.2). When breakdown maintenance was undertaken away from the workshop, oil was pumped from the equipment to a tank on the service truck from which it was subsequently transferred to the bulk storage tank.

Waste oil stored at the maintenance workshop was collected and disposed of by a licensed contractor approximately once every three months.

Runoff from the concrete vehicle and equipment wash pad was directed to an oil separator and containment system for subsequent pump out and disposal.

2.6.4 Sewage Treatment and Disposal

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

2.6.5 Mine Equipment Tyres

Mine equipment tyres are retained (stored) on site until disposal within the open cut void. To date, no tyres have been disposed of in pit. Approximately 20 tyres are currently stockpiled for future disposal. During an inspection by I&I NSW in July 2009, it was noted that improvements could be made in relation to waste segregation. During the reporting period, Rocglen developed a designated tyre storage area with signage to separate different tyres (Plate 1).

Plate 1 - Tyre Storage Area

2.6.6 Overburden and Interburden

Overburden materials at the mine comprise weathered conglomerates with some fracturing. The overburden is cast into the mined-out areas by blasting or removed from above the coal seam by a combination of dozer pushing and excavator loading and hauling using dump trucks. Interburden removal to enable lower coal ply excavation is undertaken by excavator and dump truck.

During the reporting period, all overburden and interburden was blasted / pushed / dumped within areas nominated in the MOP.

2.6.7 Processing Plant Residues

2.6.7.1 Physical and Chemical Characteristics

The coarse and fine rejects produced from washing Rocglen coal comprise a mixture of coal and non-coal materials, e.g. sedimentary rocks such as shale, mudstone or claystone, and sand, silts and clays which either occur naturally within the coal seam or represent overburden or interburden materials which dilute the coal during its extraction.

Analysis of the leachate emanating from the Whitehaven Siding CHPP fine reject ponds is presented in Table 4. The leachate analysis from the finishing pond indicates that the water is of a quality suitable for general agricultural uses.

Table 4 - Whitehaven CHPP Fine Reject Leachate Analysis

Parameter	Unit	Analysis
pH		8.05
EC	µS/cm	2770
TSS	mg/L	4
Alkalinity – Bicarbonate	mg/L	218
Chloride	mg/L	342
Sulphates	mg/L	778
Calcium (tot)	mg/L	108
Magnesium (tot)	mg/L	88
Sodium	mg/L	399
Potassium	mg/L	22
Oil & Grease	mg/L	<5

2.6.7.2 Reject Handling and Disposal Procedures

Coarse Reject – As rehabilitation progresses at the mine, coarse reject produced from the Whitehaven CHPP is expected to be backloaded to the mine for placement in the open cut prior to reshaping and rehabilitation. As discussed in Section 2.2, approximately 63,835 tonnes of coarse reject was backloaded to the mine during the reporting period for disposal within the advancing waste dump. The locations of coarse reject disposal are shown on Plan 3.

Disposal of coarse reject at the mine ceased on the 1st November 2009 following implementation of DECCW's Coal Washery Rejects Levy. Whitehaven made application to DECCW in late 2009 to receive exemption from the Levy but is yet to receive a determination from this application. Coarse reject will not be disposed of within waste emplacements at Rocglen until an exemption has been granted. In-pit emplacement will only take place once appropriate approval is obtained under Section 100 of the *Coal Mines Health and Safety Regulation*.

Fine Reject – Pumped to a series of five fine reject ponds within the Whitehaven CHPP balloon loop for consolidation. The ponds are encircled by bunding and drains to contain fine reject in the event of a pond failure. Following consolidation, the fine

rejects are excavated and transported to the former Gunnedah Colliery CHPP for use in final landform development and emplacement in the Melville and North Cut Void.

2.6.7.3 Monitoring and Management of Containment Facilities

Routine management and monitoring of reject material at the Whitehaven Siding is undertaken by Whitehaven Coal personnel under the direction of the Plant Manager. Inspections of the reject ponds at the Whitehaven CHPP are undertaken by officers from I&I NSW, the statutorily responsible Authority.

2.7 Stockpile Capacity

All ROM coal produced at the mine is delivered to high ash or low ash ROM stockpiles. ROM stockpile capacity at the mine totals 150,000t. Average stockpile volume during the reporting period was 24,773 tonnes (18,350m^3) with volumes ranging from 13,082 tonnes (9,690m^3) and 142,290 tonnes (105,400m^3).

2.8 Water Management

2.8.1 Objectives

The mine lies within the catchment of the Namoi River. Locally, and within proximity of the mine site, Driggle Draggle Creek and the un-named drainage channel to the south of the mine site provide flows to the Namoi River during runoff events. The sediment detention basins within the disturbed area of the mine are designed to limit the opportunity for discharge of runoff from mine-disturbed area (i.e. after appropriate detention time to satisfy licensed discharge criteria). Two wet weather discharge points are nominated in the current EPL 12870. These are SD-3 (EPL ID No. 11) and Northern Boundary Site Exit (EPL ID No. 12) (Plan 4). Three ambient monitoring points are also nominated on the EPL for water quality monitoring during discharge events. These are Driggle Draggle Creek (DDCK – EPL ID No. 13), Un-named Drainage Channel (UNDC – EPL ID No. 14) and Storage Dam 7 (EPL ID No. 15).

The management of water at the mine is undertaken with the following objectives:

- To ensure sufficient quantities of water can be obtained through the capture of “dirty” water, harvesting of “clean” water, and extraction/harvesting of groundwater to meet the requirements of dust suppression on the mine site;

- To ensure the segregation of “dirty” water from “clean” water, with “dirty” water directed to and detained in sediment basins which, on discharge, flow to storage dams. “Clean” water, comprising clarified water originating from the sediment basins and run-on water collected in accordance with the Company’s harvestable right, will be directed to and/or collected in storage dams;
- To ensure the treatment and separation of “contaminated” water from the workshop and wash bay area by diversion to an oil separating unit, with clarified water reporting to sediment basins;
- To ensure segregation of “pit” water from surface flows by collection in isolated pit dewatering dams;
- To maximise the use of “dirty” and “pit” water for dust suppression purposes and minimise the necessity to harvest “clean” run-on water;
- To minimise the volume of water discharged from the mine site, but, should the discharge of water prove necessary, ensure sufficient settlement time is provided prior to discharge such that suspended sediment within the water meets the water quality criteria as specified in the EPL 12870;
- To minimise erosion and sedimentation from all active and rehabilitated areas of the mine site;
- To monitor the effectiveness of surface water controls and ensure all relevant surface and groundwater quality criteria are met;
- To monitor the impact on groundwater level, quality and availability;
- To minimise any impacts on the availability of surface water or groundwater to surrounding residents and landholders; and
- To establish a method of assessing the level of impact on groundwater supply attributable to the mine.

Water management is undertaken in accordance with the Site Water Management Plan (SWMP), which was initially approved by the Director-General on the 16th June 2008. A subsequent amendment to the SWMP, incorporating additional water management structures and the wet weather discharge locations nominated in EPL 12870, was approved by the Director-General on the 6th October 2009.

2.8.2 Surface Water Management

Water within the Project Approval area is nominally classified either as “clean”, “dirty”, or “contaminated” depending on the source of the flow and its potential for physical or chemical contamination.

All sediment basins, storage dams and associated banks and drains within the DA Area have been designed and constructed by Department of Lands – Soil Services personnel.

*“**Clean water**”* comprises surface runoff from catchments undisturbed or relatively undisturbed by mining or related activities and rehabilitated catchments. Within the Project Approval area, clean surface water flows either flow 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 to provide a final “polishing” storage prior to potential off-site discharge.

*“**Dirty water**”* comprises surface runoff from disturbed catchments such as the active mine area and overburden emplacement, ROM and product coal stockpiles, soil and subsoil stockpiles and rehabilitated areas (until stabilised), all of which could contain sediments.

Dirty water originating from surface runoff is collected by catch banks located down slope of the potential sources of pollution and directed to the sediment basins while water pumped from the open cut is piped to the Void Water Dam or retained in pit within managed sumps. Water collecting within the sediment basins and the Void Water Dam is used for dust suppression in addition to waters in the storage dams to avoid potential for off-site water discharge.

The sediment basins are either cleaned out once their capacity is reduced by 25% or supplementary structures are installed to provide the required storage volume. In the event of structure replacement, the contents of the former structure will be allowed to dry prior to being capped and rehabilitated.

Sediment levels were assessed in all sediment basins at the end of the previous reporting period, with maximum sediment levels recorded at 2% in two sediment basins. All other sediment basins had a negligible amount of sediment. An assessment of sediment levels was not conducted during this reporting period due to

the volume of water being stored in most sediment basins. The next sediment level check will be conducted when water levels are low in order to enable easy cleanout of sediment, if required.

The principal components of the "clean" and "dirty" water management systems in place at the end of the reporting period are shown on Plan 4.

"***Contaminated Water Management***". Two 68,000 L (62,000 L safe fill) self bunded diesel fuel tanks are maintained adjacent to the Rocglen workshop area. This ensures that in the event of a leak from the tanks, there is sufficient capacity to adequately store the full complement of diesel from those tanks. An additional concrete bund has been installed adjacent to the fuel tanks 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. Water potentially contaminated with hydrocarbons from the workshop area is also diverted to the oil separator, with clean water used for dust suppression purposes. Spill kits are also maintained on the mine site.

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

2.8.3 Discharges

No discharge events occurred from the site during the first half of the reporting period (August – December 2009), when most water storages were dry and Whitehaven was investigating options to truck water to site. There have since been 8 discharges between 29th December 2009 and 31st July 2010. The storage structures onsite have been built to the 90%ile 5 day event design criteria, with the design specification incorporated in the existing EPL 12870. Nevertheless, sampling has been undertaken during each discharge event to monitor the water quality parameters.

Water analysis results from each discharge, as well as any ambient monitoring upstream and downstream of the site are included in Appendix 4 and a discussion of the results is provided below.

29th December 2009 – SD3

The discharge from SD3 on the 29th December 2009 followed receipt of 72mm of rain during the preceding 3 days and at a time when the site was not operating. As a result, the water in SD3 was not utilised or pumped back through the sediment chain. In the weeks prior to the discharge the site had completed construction of an additional sediment basin and an extension to the existing SB19, both of which feed SD3. This created bare earth surfaces in the new storage dams which were immediately filled during the rain event, thereby exacerbating the sediment load which reported to SD3. The Total Suspended Solids (TSS) in the discharge water was recorded at 552 mg/L, which exceeds the EPL threshold of 50 mg/L. The discharge, however, satisfies the 90%ile 5 day event design criteria. Therefore the EPL concentration criterion does not apply.

During the discharge event, sampling was also conducted in the unnamed drainage channel (UNDC) downstream of the site. There were no flows in Driggle Draggle Creek to enable sampling at the sample point. The results from UNDC indicated elevated sediment levels. It should be noted that the land on which the discharge occurs is owned by Whitehaven, and the discharge enters another dam prior to dispersion across an ill-defined drainage plan. The discharge waters from this event did not extend beyond the boundary of the property.

4th January 2010 – SD3

The discharge from SD3 on the 4th January 2010 followed receipt of 25.2mm over the preceding 5 day period as evidenced from the weather station data shown in Appendix 10. This rainfall total is less than actual rainfall when compared with rainfall volumes at other weather stations (ie. 54.4mm at Canyon Mine and 56.4m at Tarrawonga Mine) and advice from adjoining landholders. Again, the site was not operational at the time and water in SD3 was therefore not utilised or pumped back up the sediment chain in order to avoid discharge. The discharge water quality exceeded the EPL TSS criteria threshold of 50mg/L with a result of 1490mg/L.

As with the discharge that occurred on the 29th December 2009, the discharge water flowed onto a Whitehaven owned property, through an additional water storage, prior to release to a poorly defined drainage channel (UNDC). Sampling was undertaken from UNDC with results indicating that the additional offsite water storage to which the discharge flowed had effectively captured the majority of the surface flows resulting in the a TSS level below the 50mg/L concentration threshold (34mg/L).

There were insufficient flows from Driggle Draggle Creek north of the site to allow for sampling.

15th January 2010 – SB18

The discharge from SB18 at the northern end of the site followed receipt of a further 21.6mm on the preceding day. Discharge was avoided from SD3 on this occasion by active pumping from the storage for dust suppression purposes. Focus on reducing the volume of water in SD3, however, meant that the volume in SB18 could not be reduced thereby allowing it to discharge. Analysis of the discharge water returned a TSS level of 1490mg/L.

It should be noted that at the time SB18 was capturing flows from largely undisturbed areas. The elevated TSS levels were unexpected and could have been attributed to it being the first flush from the storage since construction. Sampling undertaken from Driggle Draggle Creek also showed elevated TSS levels (157mg/L), albeit much less than that measured from the SB18 discharge waters. This is the first time there have been sufficient flows in this section of Driggle Draggle Creek to obtain a sample, and on this occasion water depth was only enough to submerse part of the sample jar.

8th February 2010 – SD3

This discharge followed a further 50mm of rainfall in the preceding 3 days as recorded at the Gunnedah Bureau of Meteorology (BOM) weather station. Data was unavailable for this period from the Rocglen weather station due to a power failure. This amount of rainfall again exceeded the storage design capacity and caused SD3 to discharge despite efforts to reduce volume through pumping direct from SB19 (immediately upstream of SD3) to create additional storage capacity. The TSS level had reduced since the last discharge (now 157mg/L) as a result of additional settling time since the previous discharge event.

Again, discharge from SD3 was directed through the dam on Whitehaven owned property to the south of the mine site. There were no flows associated with this discharge in the drainage channel downstream of this storage.

15th February 2010 – SD3 and SB18

Discharges from the southern (SD3) and northern (SB18) boundaries of the mine site resulted from a further 50.8mm of rain over the preceding two days, thereby

exceeding the design criteria. This followed 50mm of rainfall earlier in the month. Both discharge samples returned elevated TSS levels (SD3 – 406mg/L and SB18 – 556mg/L).

Samples were also collected in the unnamed drain channel (UNDC) south of the site and Driggle Draggle Creek to the north of the site. TSS levels in the UNDC remained elevated (186mg/L) but well below the TSS levels recorded at the discharge point which is indicative of further settling from the additional dam prior to flow into the drainage channel. Surface water flows were very shallow and of slow velocity. Flows in Driggle Draggle Creek were also shallow and of slow velocity with TSS levels well below the EPL concentration threshold (15mg/L).

31st March 2010 – SD3

Due to the ongoing issues with elevated TSS levels in discharge waters from SD3, Rocglen implemented the use of DamClear Flocculant Blocks (floc blocks) in March 2010. This involved the placement of blocks on the inflow of SD3 and the pumping/recirculation of water through the blocks to activate the flocculant within the dam (Plate 2). The blocks visibly reduced the sediment level at the surface of the water.

Plate 2 - Flocculant Blocks Used in SD3

A controlled discharge was planned in late March 2010 to increase the storage capacity in SD3. However, water quality analysis conducted on the 25th March 2010 indicated that the floc blocks had not sufficiently reduced to the TSS level to comply with the concentration threshold of 50mg/L (sample result – 58mg/L). As a result, a discharge was not able to be conducted and the dam subsequently discharged during a rainfall event, with a total amount of 16.8mm recorded at the Rocglen weather station. This total is approximately 10mm less than that recorded at the Canyon Mine (28.4mm), Tarrawonga Mine (29.0mm) and Gunnedah BOM weather station (29.8mm).

Analysis of the discharge water indicated TSS levels of 108mg/L. There were no flows associated with this discharge in the drainage channel downstream of this storage.

2nd June 2010 – SD3

Floc blocks were used in SD3 through May to reduce the TSS level to allow for a controlled discharge, however sample results did not allow for a discharge to occur. Results from a sample taken on the 12th May 2010 indicated acceptable TSS levels for discharge (19mg/L) however an anomalous oil and grease result of 56mg/L did not meet the concentration threshold. Following receipt of these results, an additional sample was collected on the 24th May 2010 to confirm the oil and grease levels. The analysis of this sample confirmed compliant oil and grease levels but indicated that TSS levels had increased to 92mg/L following subsequent flows into the dam. No controlled discharges were conducted and SD3 overflowed on the 2nd June 2010 following 13.8mm of rainfall on the day of the discharge and 23.4mm during the 8 days prior to the discharge. The discharge water quality was compliant with all EPL concentration thresholds with the exception of TSS (260mg/L).

There were no flows associated with this discharge in the drainage channel downstream of this storage.

28th July 2010 – SD3

The site continued to utilise floc blocks on the inflow to SD3 and within the dam in an effort to reduce to TSS levels to allow for a controlled discharge. A water sample was collected from SD3 on the 26th July 2010 with the intent to discharge as soon as possible due to impending rainfall. The analysis was prioritised and verbal confirmation from the laboratory of compliant water quality led to a controlled

discharge of approximately 4ML on the 27th and 28th July 2010. Rainfall commenced on the 28th July 2010 and the controlled discharge ceased when SD3 began to receive untreated water from SB19.

Despite the preceding controlled discharge, SD3 overflowed on the 28th July 2010 following approximately 23mm of rainfall. Analysis of the discharge water confirmed compliance with the EPL concentration thresholds.

Summary

Water management onsite has been problematic since the start of 2010 as a result of consistent rainfall and the level of disturbance immediately upstream of SD3 through the extension of SB19 and construction of the additional sediment basin SB21. Since March 2010, Whitehaven has made a concerted effort to both reduce the number of discharges (via preferential use of water from discharge dams) and reduce the TSS levels of any discharges that occur (via use of floc blocks). These efforts have been hampered by the volume of water requiring treatment in SD3, consistent rainfall, and the need to prioritise water sourcing from the Void Water Dam for dust suppression purposes.

Investigations into further measures for controlling future discharge events have included the option for an additional water storage structure downstream of SD3 and the possibility of further trapping of sediment by placing a polymer concrete liner on the inflow to SD3. Works on construction of an additional storage downstream of SD3 have not been able to commence due to ongoing wet conditions with machinery unable to access the proposed dam site. With regard to the installation of a polymer concrete liner on the inflow to SD3, the installation of this has had to be delayed on numerous occasions due to the water levels in the dam and inability to access the inflow drain to complete required shaping works in advance of placement of the liner. More recently, in an effort to provide a more immediate solution to sediment loads, water samples have been referred to a supplier to analyse the water quality to identify an appropriate liquid flocculant and appropriate dosage rate which could be used to provide a more efficient settlement process.

2.8.4 Water Sources, Demand and Use

Within the Project Approval area and immediate vicinity of the mine, surface water resources are limited to a number of ephemeral drainage lines which flow for a short

period after substantial rainfall, farm dams, water storage dams and a series of interlinked sediment basins as shown on Plans 3 and 4.

Water is required on the mine site primarily for dust suppression purposes, with minor quantities required for potable, toilet and 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 exposed coal seam, overburden and interburden, and groundwater extraction. Water for potable, toilet and ablutions purposes is trucked to the site from Gunnedah.

During the reporting period, a total of approximately 74ML was used for mine site and processing facility dust suppression purposes, the majority of which was sourced within the Project Approval Area. The approximate volumes obtained from the various sources are as follows:

- 23 ML from pit water (pumped to the void water dam)
- 3.9 ML from the bore located on the Whitehaven-owned section of the "Roseberry" property; and
- 47 ML from surface water storages.

Due to the prolonged dry period prior to December 2009/January 2010 and the lack of water in site storages, the "Roseberry" bore was commissioned in early December 2009 to supply water for dust suppression purposes. The bore was subsequently only used for a few weeks prior to the rainfall which commenced in December 2009 and has not been used since.

During the previous reporting period negligible water was generated from pit seepage. Increased pit water seepage has been experienced during this reporting period, mostly where the pit is at its deepest in the north-eastern limit.

The total water use is approximately 20 – 40ML less than the annual water use predicted in the Environmental Assessment, which indicated a water requirement of approximately 90-109ML per year for dust suppression and processing requirements. This can be attributed to the ongoing wet weather for the second half of the reporting period. The water use is approximately 17ML greater than the 2008-2009 reporting period, which is expected due to increased production.

In the first half of the reporting period, during the time of least available water, the Rocglen site also received waters from an agreement with Santos who supplied

water tankers from a pilot gas well site. Approximately 5ML was sourced through this process, all of which was pumped to the Void Water Dam.

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)	10,117	57,900	67,900
Dirty Water (in Sediment Basins)	10,063	43,200	44,900
Controlled Discharge Water (salinity trading schemes)	N/A*	N/A*	N/A*
Pit Water	3,372	9,000	13,300
* N/A = Not applicable for the Rocglen Coal Mine			

2.8.6 Groundwater Management

Inflows into the open cut result from a combination of:

- Direct rainfall runoff and infiltration through the emplaced overburden which flows down-dip to the open cut sump(s); and
- Inflows from the exposed coal seam.

Any water produced in pit was pumped to the void water dam and was subsequently prioritised for dust suppression purposes to avoid discharge from the dam.

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.

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

2.9 Hazardous and Explosive Material Management

No explosive materials are retained at the site. Orica Mining Services has a storage facility located between the Tarrawonga and Canyon sites, which removes the requirement for on-site storage.

Mixing of nitropril with distillate to produce an explosive is undertaken on the day of each blast using a purpose built explosives mixer and in a quantity adequate only for that particular blast.

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 (e.g. buildings, roads, generators and pumps) 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.

2.11 Product Transport

During the reporting period, all sized (<200 mm) ROM coal from the mine was delivered directly to the Whitehaven CHPP, with all product coal destined for the export market transported by train to the Port Waratah or Kooragang Island ship loaders at the Port of Newcastle. 1,031,775 tonnes of coal was transported from the mine during the reporting period. This equated to an approximate average of 86 truckloads of coal being transported per haulage day from the mine to the Whitehaven CHPP.

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 sites have not changed since the previous reporting period, and are shown in Figure 3 and Figure 4. Life of mine monitoring data is included in the relevant appendices, where relevant, to allow for discussion on longer-term trends. A risk identification matrix and the relevant environmental management procedures are identified in the Rocglen Coal Mine Mining Operations Plan (MOP).

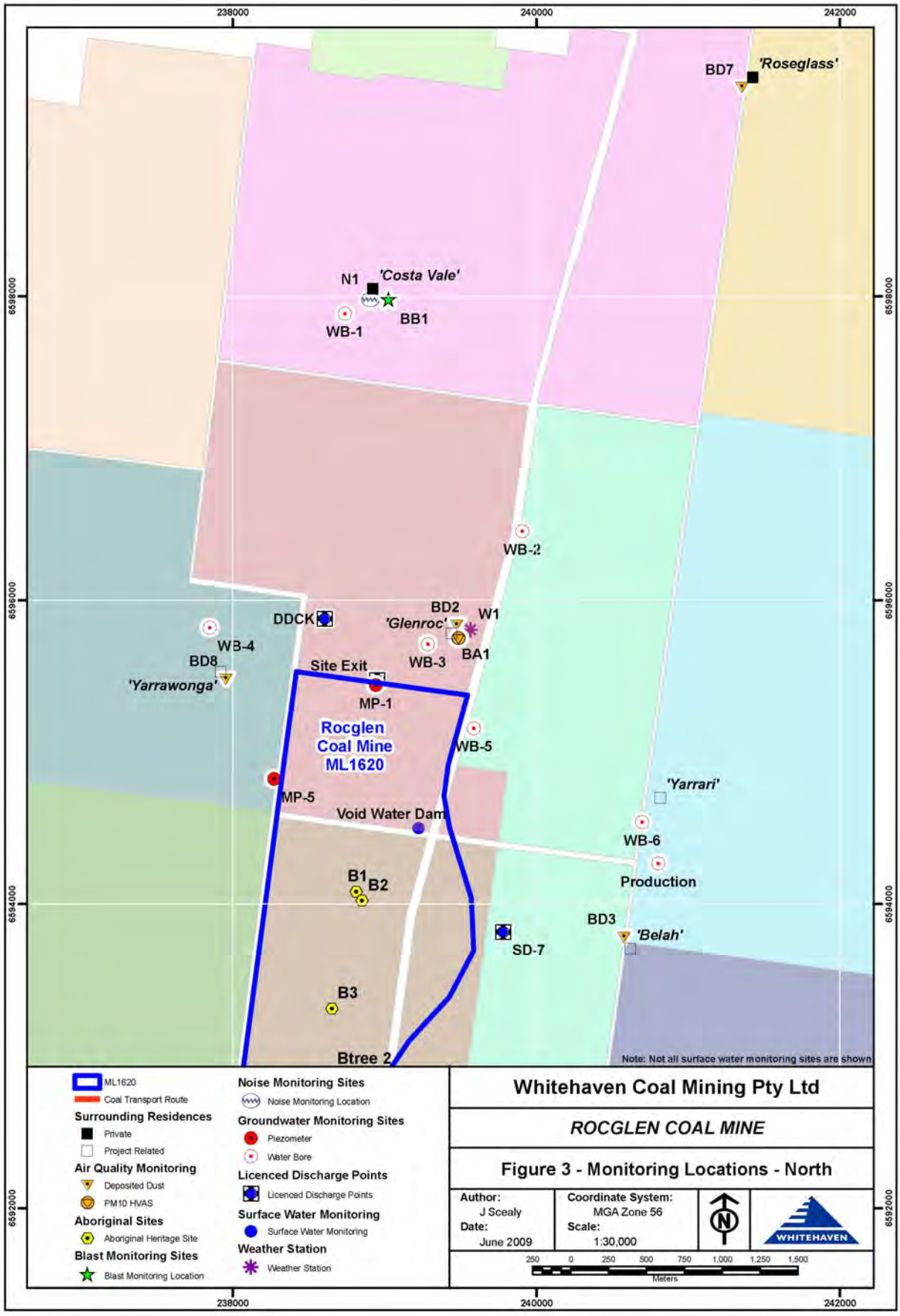


Figure 3 - Monitoring Locations - North

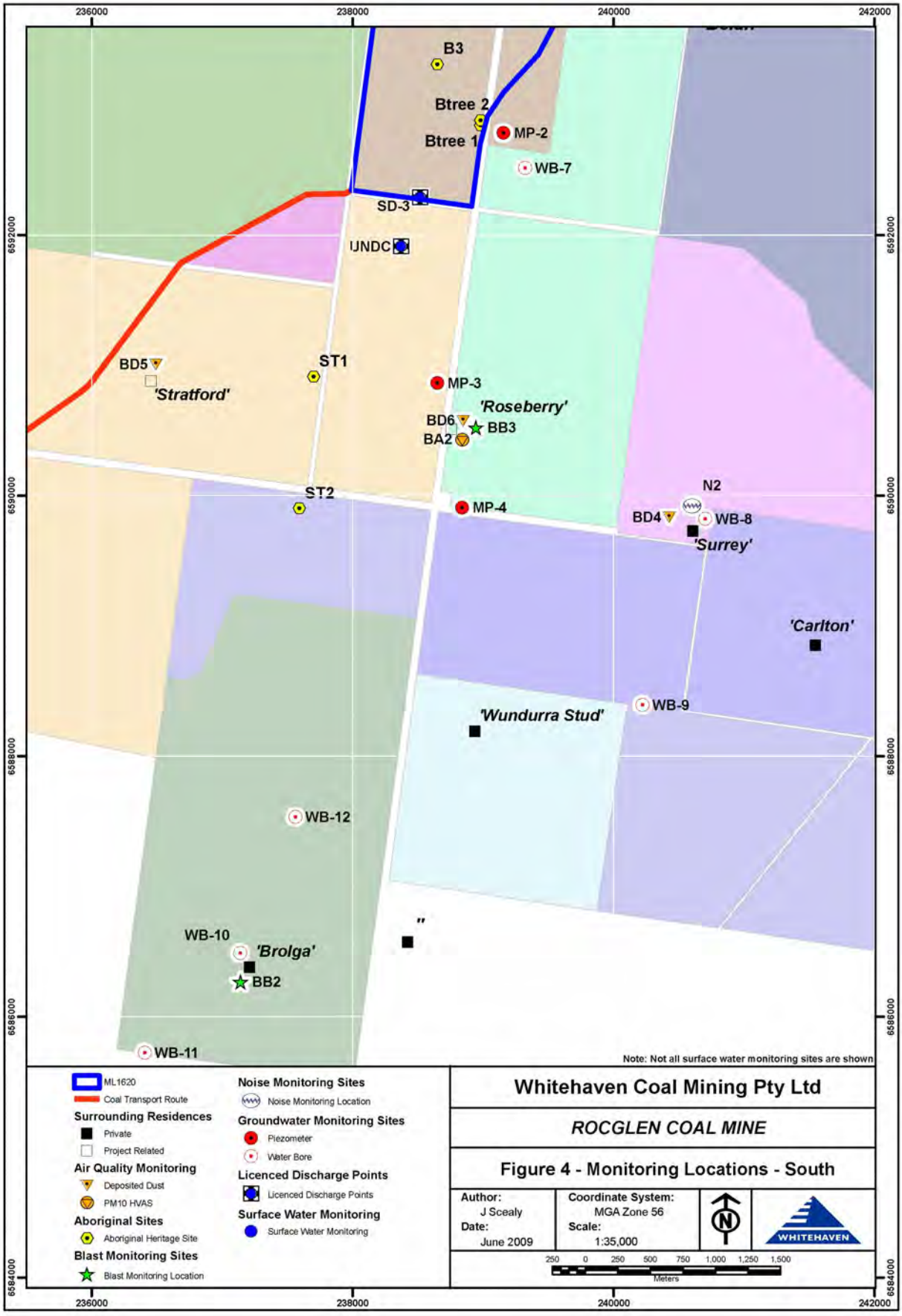


Figure 4 - Monitoring Locations - South

3.1 Air Pollution

3.1.1 Criteria

The air quality criteria applicable to the Rocglen Coal Mine are specified in PA 06_0198 MOD 1 Schedule 3, Tables 5, 6 & 7 (Appendix 1), which is summarised below.

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

Notwithstanding the diversity of the criteria identified above, routine air quality monitoring at the Rocglen Coal 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, Whitehaven employs a range of air pollution control measures including:

- Use of trunks, branches and litter from clearing for mine site rehabilitation. No materials are burnt;
- Limiting groundcover removal in advance of mining consistent with operational requirements. Under normal operational circumstances, a maximum of 100 m is prepared in advance of mining;
- Groundcover removal as part of the topsoil removal activities, rather than prior to topsoil removal;
- 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 elevated scrapers;

- 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;
- Water application at the crusher and on the conveyor discharge point to the coal bin;
- Cessation of coal processing activities during periods of concurrent high winds and temperatures which cause coal dust dispersal, independent of water applications. This situation did not arise during the Reporting Period;
- ROM coal pad watering;
- Progressive shaping and rehabilitation of areas once they are no longer required for mining purposes;
- Speed limit restrictions on all vehicles and equipment on the mine site;
- Equipment exhaust positioning to avoid exhausts impinging on the ground and causing dust lift-off; and
- Use of covers on all product coal trucks. Toll is the principal contractor engaged in the haulage of coal from the Rocglen Mine to the CHPP. All Toll vehicles and those operated by its contractors are fitted with roll-over tarpaulins.

3.1.3 Dust Monitoring

Table 6 presents a summary of the deposited dust monitoring data presented in Appendix 5. 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 5. Figure 3 and Figure 4 identify the locations of the various deposited dust gauges maintained during the reporting period.

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.

Table 6 - Deposited Dust Monitoring Data (August 2009 - July 2010)

Site (see Figure 3 and Figure 4)	Property Name	Mean Total Insoluble Solids*[1] (g/m^2/month)	Mean Ash*[1] (g/m^2/month)
BD-2	Glenroc	2.0	1.3
BD-3	Belah	1.6	1.0
BD-4	Surrey	1.0	0.7
BD-5	Stratford	1.2	0.8
BD-6	Roseberry	1.2	0.8
BD-7	Roseglass	1.8	1.1
BD-8	Yarrawonga	1.4	0.9
*[1] At end of reporting period			

A review of Table 6 and Appendix 5 shows that, as with the previous reporting period, the mean annual total insoluble solids (deposited dust) criterion was satisfied at all monitoring locations over the last 12 months.

Whitehaven has a High Volume Air Sampler (PM_{10}) located at the property "Glen Roc", to the north of the mine site, which was relocated from the "Costa Vale" property in November 2008. There is another PM_{10} monitor located on the "Roseberry" property, to the south-east of the mine site. This monitor was relocated from the "Surrey" property in June 2009 following issues with the landholder switching off the unit. Each sampler runs for 24 hours every 6 days, with filter papers sent to an accredited laboratory for analysis.

PM_{10} results have indicated compliance with the 24 hour criteria at both monitoring locations throughout the reporting period, as shown in Figure 5 and Figure 6. The 24 hour concentration threshold of 50 $\mu g/m^3$ was generally achieved during the reporting period with the exception of the dates and results detailed in Table 7.

Table 7 - PM_{10} Exceedances

Date	Glenroc	Roseberry
21st October 2009	-	68 $\mu g/m^3$
20th November 2009	-	53 $\mu g/m^3$
8th December 2009	90 $\mu g/m^3$	101 $\mu g/m^3$
14th December 2009	113 $\mu g/m^3$	68 $\mu g/m^3$
25th January 2010	55 $\mu g/m^3$	-

The exceedance at "Roseberry" on the 21st October 2009 was the first exceedance recorded at the monitoring location since inception. It is believed that the exceedance was related to an issue with the unit's flow control, rather than operations at the mine, as ALS Acirl (Whitehaven's environmental monitoring contractor) noted that the flow control was fluctuating slightly during routine manual operation. The weather conditions on the day of the exceedance further support this with wind speeds generally below 4 m/s and variable wind directions.

The exceedance at the "Roseberry" monitor on the 20th November 2009 (53 µg/m^3) coincided with a general increase in PM_{10} levels across the range of Whitehaven HVAS units on that day which is indicative of general regional conditions at the time. It is noteworthy that the DECCW operated HVAS in Tamworth also recorded increased PM_{10} concentrations over the 20th, 21st and 22nd November 2009 which further supports this assessment.

The 24hr criterion of 50 µg/m^3 was breached at both monitor locations on the 8th and 14th December 2009. Review of other PM_{10} units operated by Whitehaven confirmed a general spike in PM_{10} concentrations on these days and coincided with bushfires in the region producing significant smoke haze. The HVAS unit in Tamworth operated by the DECCW experienced an increase in PM_{10} levels over the period 8th – 14th December with PM_{10} levels ranging from 24 µg/m^3 to 325 µg/m^3, which indicates general regional conditions were responsible for the higher concentrations recorded at the "Glenroc" and "Roseberry" monitors.

Operational activities on the 25th January 2010, when an exceedance was recorded at "Roseberry" were consistent with normal operations at the site, with wind direction split between north-westerly and south-easterly dominance. PM_{10} levels returned to normal following the exceedance.

The long term PM_{10} levels and averages are provided in Figure 5 and Figure 6. Both figures show a relatively consistent annual average which increased slightly following the elevated results in September/October 2009 (from regional dusty conditions) and December 2010 (from the Kelvin Range bushfire). The annual average at both locations decreased towards the end of the reporting period as a result of the ongoing low PM_{10} levels recorded during May – July 2010.

The full PM_{10} data set is provided in Appendix 5.

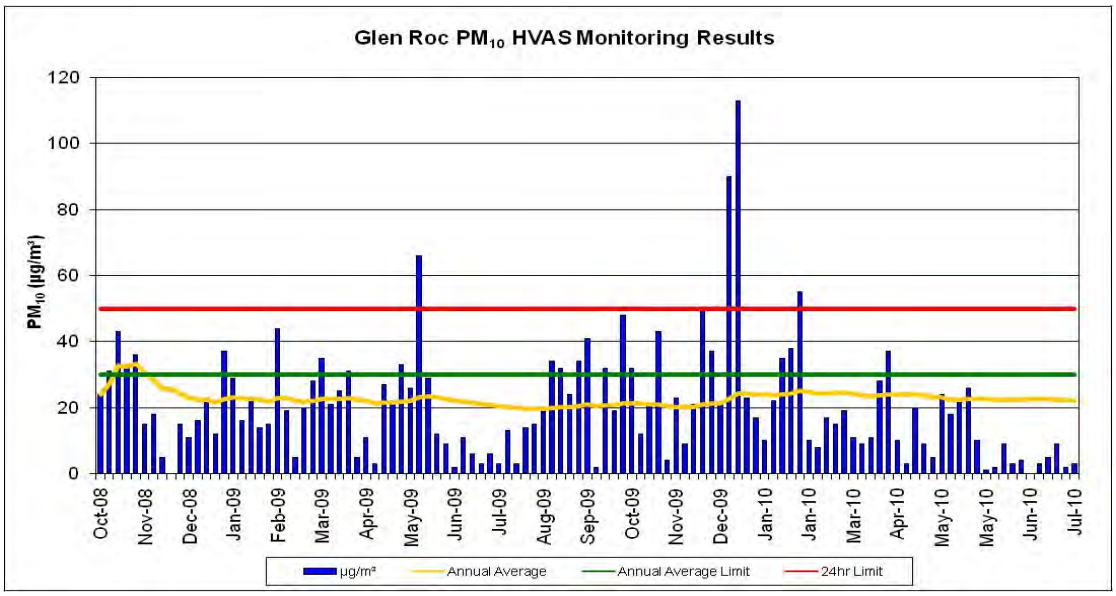


Figure 5 - Glenroc HVAS PM_{10} Data

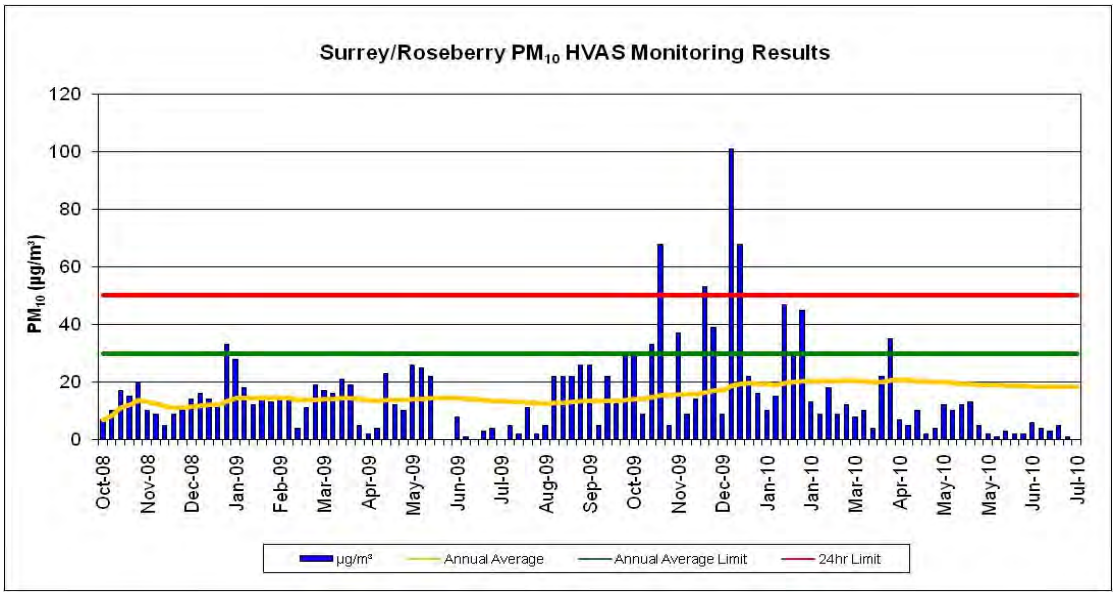


Figure 6 – Surrey/Roseberry HVAS PM_{10} Data

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 Site Water Management Plan prepared in accordance with PA 06_0198 MOD 1.

Control of erosion and sediment generation is achieved 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 requirements. A maximum of 100 m is generally disturbed in advance of mining;
- Revegetation of long-term subsoil and topsoil stockpiles, areas shaped to their final landform and areas no longer required for mining-related purposes;
- Undertaking soil management activities generally in accordance with the soil stripping and stockpiling recommendations from Geoff Cunningham Natural Resource Consultants; and
- Installation of contour banks and rock-lined waterways on the final landform following soil application.

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, Whitehaven is aware of the potential for stockpile erosion and will adopt stockpile protective procedures to minimise impacts as required over the remaining life of the mine. All soil stockpiles on the site have been sown to cover crops on completion to aid in stabilisation.

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 Whitehaven personnel, 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 extent of rainfall over the reporting period provided a good opportunity to review performance of structures which all performed to design with no significant erosion events identified or requiring ameliorative actions. The volume of rainfall has highlighted the necessity for additional surface storages to adequately provide for settling time to reduce discharge of sediment laden waters, despite the fact the site currently meets the 90%ile 5 day storage criteria. This issue will be addressed over the next reporting period with additional storage capacity to be provided below SD3, as well as additional storage capacity to be developed at the northern end of site to

cater for an expanded northern emplacement should the proposed extension be approved.

The site has maintained sediment fencing in appropriate locations throughout the reporting period, particularly at the two discharge locations. Planting of sedges in and around the discharge point of SD3 was also undertaken to increase capacity for filtration of waters as it discharges. Whilst the sampling results have indicated elevated sediment loads in the latter half of the reporting period, site personnel have made every effort to try to minimise sediment loading in surface waters in difficult circumstances given the extent of regular rainfall.

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 worked well during the first half of the reporting period, however management of concentration threshold limits and offsite discharges has been particularly problematic since January 2010. Section 2.8.3 provides a detailed description of each wet weather discharge as well as the efforts made during the period to reduce TSS levels and minimise discharges.

In addition to monitoring any water discharge events, Rocglen undertakes quarterly sampling of surface waters. The results of analysis are presented in Appendix 4. Whilst there are no criteria or concentration limits specified for the quarterly surface water samples, the results do provide an indication as to the quality of waters on-site. In general, the water quality in each dam remained consistent throughout the reporting period. The Void Water Dam has consistently poorer water quality in terms of pH and EC than the other surface water storages due to the collection of pit water and the Santos water deliveries. This dam is not allowed to discharge and is prioritised as a water source for dust suppression to prevent any discharge occurring. As discussed in Section 2.8.3, an anomalous oil and grease result of 56mg/L was recorded in SD3 on the 12th May 2010. An oil and grease result of 6mg/L from a re-sample on the 24th May 2010 confirmed the previous error.

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, with particular emphasis on heavy metals, and major cations and anions. Groundwater monitoring requirements are identified in Table 8.

3.4.2 Performance

Throughout the life of the mine to date, the mine'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 piezometers and bores within ML 1620 and extending to adjacent properties, where practicable, at the frequency and for the parameters identified in Table 8.

Table 8 - Groundwater Monitoring

Site (see Figure 3 and Figure 4)	Registered Bore No. & Licence No	Property/ Location	Frequency		Purpose
			SWL*[2], EC*[3] and pH	Representative Metals and Ions*[4]	
MP-1	GW968533 90BL254855	"Glenroc"	Quarterly	Six monthly	To determine existing status and any impacts
MP-2	GW968534 90BL254856	Mine site	Quarterly	Six monthly	To determine existing status and any impacts
MP-3	GW968535 90BL254857	"Stratford"	Quarterly	Six monthly	To determine existing status and any impacts
MP-4*[1]	GW968536 90BL254858	Surrey Lane	Quarterly	Six monthly	To determine existing status and any impacts
MP-5	GW968537 90BL254859	"Yarrawonga"	Quarterly	Six monthly	To determine existing status and any impacts
WB-1*[1]	GW000743	"Costa Vale"	Quarterly	Six monthly	To determine existing status and any impacts
WB-2*[1]	GW050395 90BL111536	"Roseberry"	Quarterly	Six monthly	To determine existing status and any impacts
WB-3[1]	GW050166 90BL110883	"Glenroc"	Quarterly	Six monthly	To determine existing status and any impacts
WB-4	GW045621 90BL104367	"Yarrawonga"	Quarterly	Six monthly	To determine existing status and any impacts
WB-5*[1]	GW011066 90BL004169	"Roseberry"	Quarterly	Six monthly	To determine existing status and any impacts
WB-6*[6]	GW044068 90BL102845	"Yarrari"	Quarterly	Six monthly	To determine existing status and any impacts
WB-7*[1]	GW022319 90BL013922	"Roseberry"	Quarterly	Six monthly	To determine existing status and any impacts
WB-8*[1]	GW052958 90BL107181	"Surrey"	Quarterly	Six monthly	To determine existing status and any impacts
WB-9*[1]		"Carlton"	Quarterly	Six monthly	To determine existing status and any impacts
WB-10*[1]		"Brolga"	Quarterly	Six monthly	To determine existing status and any impacts
WB-11*[1]		"Brolga"	Quarterly	Six monthly	To determine existing status and any impacts
WB-12*[1]		"Brolga"	Quarterly	Six monthly	To determine existing status and any impacts
Yarrari		"Yarrari"	Quarterly	Six monthly	To determine existing status and any impacts

*[1] Non-Company owned bore *[2] SWL – Standing Water Level *[3] EC = Electrical Conductivity
*[4] As specified in SWMP *[5] Company production bore

Appendix 6 presents the results of the groundwater monitoring undertaken since the commencement of the mine. Monitoring sites are shown on Figure 3 and Figure 4.

Groundwater sampling and analysis was conducted by ALS Acirl Pty Ltd during the reporting period.

A review of the groundwater monitoring results presented in Appendix 6 shows the following trends:

Groundwater levels

- Groundwater levels have remained relatively consistent at all monitoring locations, with the exception of WB-3, WB-5 and WB-8.
- WB-3 is located north of the mine site on the "Glenroc" property. SWL has remained relatively consistent since monitoring began in September 2008, with eight separate monitoring occasions recording an SWL of 8.6 – 9m. Outlier results recorded on the 23rd January 2009 (23.72m) and 3rd May 2010 (18.53m) are likely due to the SWL being measured immediately following water being drawn from the bore to fill water storage points for stock/domestic purposes on the "Yarrawonga" and "Glenroc" properties.
- WB-5 is located adjacent to the north-eastern corner of the Mining Lease. The initial SWL was recorded as 4.23m on the 3rd September 2008. This dropped to approximately 13m between October 2008 and February 2009. The bore was not able to be dipped between February and November 2009, as it was equipped, and when SWL checks recommenced in November 2009 the SWL had dropped to 22.9m. Since then, the SWL has recovered to a more consistent 13m. As with WB-3, it is believed the erratic nature of the SWL in WB-5 is likely associated with water extraction for non-mine related activities.
- WB-8 is located on the "Surrey" property, approximately 4km from the mine site. The SWL has varied between 32m and 50m since monitoring commenced in January 2009. Again, it is believed that the variation in SWL is associated with water extraction for stock/domestic purposes, as confirmed by the landholder.
- MP-1 to MP-5 were established as monitoring piezometers at the commencement of the Rocglen operation. Since June 2009, MP-3 and MP-4 have been consistently dry whilst MP-5 has been observed to run dry. The groundwater assessment conducted by Douglas Partners Pty Ltd for the proposed Rocglen Extension recommended that the piezometers should be deepened as they only just intersect the water table. The report also suggested establishing additional monitoring locations to determine the impact, if any, of the mine on the Namoi alluvium. Any additional groundwater monitoring works will be incorporated in a revised Site Water Management Plan and will be reported on in subsequent AEMRs.

- Douglas Partners Pty Ltd also noted in their proposed Rocglen Extension Groundwater Assessment that the mine has had very little impact on surrounding groundwater levels of the period mid 2008 to mid 2010.

Groundwater quality

- The water in most bores generally has a neutral pH.
- The water in all bores can be described as fresh to brackish.
- Water quality has been compared to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) (ANZECC) guidelines for drinking water (cattle). With the exception of Total Dissolved Solids (TDS) in WB-5, all sampled water complies with the criteria for stock drinking water (cattle). The elevated TDS levels at WB-5, which is located adjacent to the north-eastern corner of the Mining Lease, is not believed to be related to mining operations as they exceeded the criteria prior to mining operations commencing.
- The quality of groundwater at each monitoring location remained relatively consistent throughout the reporting period.

3.5 Contaminated or Polluted Land

Prior to mining, the mine site was a greenfields site. Discussion with landowners during the preparation of the EIS revealed that no environmentally harmful products had been used on their landholding nor had there been any disposal of potential environmental contaminants. This situation has remained unchanged throughout the life of the mine to-date and consequently there is no reason to expect that contaminated lands would be present within the Project Approval area.

3.6 Threatened Flora

Investigations into the occurrence of threatened flora within the Project Approval Area were undertaken as part of the Environmental Assessment by Geoff Cunningham Natural Resource Consultants Pty Ltd (GCNRC) in 2007 following field surveys in 2002 and 2006. The investigation identified no significant impact on threatened flora species, endangered ecological communities, endangered flora populations or critical habitat as a consequence of the development, either because they do not exist in the area or avoidance is possible due to project design.

The mine contains a remnant of the *Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains Bioregions Endangered Ecological Community.* This community was recorded on the 'Glenroc' property in the northern section of the mine. The design for the mine allows this to remain intact meaning it would not be subject to any significant impact under the current approved operation.

Whitehaven had anticipated completion of a Landscape Management Plan (LMP) during the reporting period, pending the outcome of the regional Biodiversity Offset Strategy proposal. The proposal was submitted to DECCW in February 2010 and DECCW completed their site inspection in May 2010 however Whitehaven is yet to receive advice as to the determination of the proposal. The outcomes are expected to vary slightly from those originally planned due to the proposed Rocglen Extension (as discussed in Section 1.2.2).

The LMP will include requirements for a flora monitoring program. Control plots will be established within areas of vegetation that replicate the vegetation communities which have been cleared. Control plots within these communities will provide the basis for future rehabilitation efforts over that area of the mine site to be returned to native vegetation. Monitoring plots will also be established on rehabilitated areas to allow for comparison of these areas with control plots and rehabilitation criteria.

Flora monitoring during the reporting period comprised the establishment of two flora monitoring plots by GCNRC. The report is included in Appendix 7.

Whitehaven engaged RPS Harper Somers O'Sullivan (RPS) to undertake a Flora and Fauna Assessment to support an application for a new Project Approval under Part 3A of the *Environment Planning and Assessment Act 1979* (as discussed in Section 1.2.2). The assessment forms part of the Specialist Consultant Studies Compendium for the project application.

3.7 Threatened Fauna

Investigations into the occurrence of threatened fauna within the Project Approval Area were undertaken by Countrywide Ecological Service as part of the Environment Assessment, following surveys conducted during the period 2001-2007. These investigations identified that the proposed development was unlikely to significantly affect any of the threatened species, fauna populations or communities found or likely to occur in or around the mine site.

Whitehaven currently engages Countrywide Ecological Service to conduct pre-clearing inspections for fauna impact mitigation, as required. Inspections were carried out in September 2009 and January 2010.

As discussed in Section 3.6, Whitehaven will be developing a Landscape Management Plan for the site during the next reporting period. The Plan will provide details for any fauna monitoring requirements. Countrywide Ecological Service established fauna monitoring plots during the reporting period and the first annual fauna monitoring report is expected to be completed in November 2010.

Whitehaven engaged RPS Harper Somers O'Sullivan (RPS) to undertake a Flora and Fauna Assessment to support an application for a new Project Approval under Part 3A of the *Environment Planning and Assessment Act 1979* (as discussed in Section 1.2.2). The assessment forms part of the Specialist Consultant Studies Compendium for the modification application.

3.8 Weeds

3.8.1 Management

Weed management within the ML involves general observations as well as six-monthly targeted inspections to determine levels of weed infestation. Weed control is undertaken by contractors or Whitehaven's Field Officer. All persons involved with weed control hold required chemical handling certificates.

3.8.2 Performance

Rocglen has not experienced any major weed issues during the reporting period. Minor ongoing weed management comprised spot spraying of weeds such as African Boxthorn, Bathurst Burr, Galvanised Burr, Prickly Pear and Noogoora Burr.

3.9 Blasting

3.9.1 Blast Criteria and Control Procedures

3.9.1.1 Blast Criteria

Blasting criteria for the mine are nominated in Project Approval PA 06_0198 MOD 1 (Appendix 1), and Condition L7 of Environment Protection Licence 12870 (Appendix 2) and specify that:

- Blasting must only be carried out between 9.00 am and 5.00 pm, Monday to Saturday.
- The overpressure level from blasting operations must not:
  (a) exceed 115dB (Lin Peak) for more than 5% of the total number of blasts over each Reporting Period; and
  (b) exceed 120dB (Lin Peak) at any time.

  at any residence on privately-owned land.
- Ground vibration peak particle velocity from the blasting operations must not:
  (a) exceed 5mm/s for more than 5% of the total number of blasts during each Reporting Period; and
  (b) exceed 10mm/s at any time,

  at any residence on privately-owned land.

PA 06_0198 MOD 1 also restricts blasting to the following conditions without the written approval of the Director-General:

(a) a maximum of 2 blasts a day; and
(b) 5 blasts a week, averaged over a 12 month period.

3.9.1.2 Control Procedures

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

Road closures during blasting occur as per the Road Closure Management Plan.

3.9.2 Performance

During the reporting period, a total of 25 blasts were initiated. Two blasts exceeded the 115 dBL limit, recording 119.9 dBL at "Costa Vale" on the 24th August 2009 and 116.9 dBL at "Costa Vale" on the 27th August 2009. In accordance with consent conditions, an allowance of 5% of blasts between 115-120 dBL is allowed over a 12 month reporting period. The two exceedances have resulted in Rocglen not complying with this allowance.

Following the exceedances, the blasting contractor, Orica Mining Services, was instructed to provide an investigation report into the reasons for the overpressure exceedances. The outcome of the report was that the blasts occurred in very hard conglomerate rock for which blasting had proven difficult in achieving adequate breakage of rock. Orica implemented revised blasting techniques in this vicinity in the pit following the report with all subsequent blasts meeting compliance criteria. It was noted that due to oversight, advice of the blast exceedances and a copy of the investigation report were not referred to DECCW and DoP at the time of the incidents. This has since been rectified with notifications referred as required.

The maximum recorded ground vibration during the reporting period was 1.39 mm/s recorded at "Costa Vale" on the 8th October 2009. This is well inside the consent criteria of 5 mm/s.

Blast monitoring commenced "Brolga" in June 2009 following reports from the landholder that the property was being affected by blasting. The monitoring event in June 2009 recorded a ground vibration of 0.71 mm/s and a peak overpressure of 104.5 dBL which were both well below the criteria. Subsequent blasts did not trigger the blast monitoring equipment at "Brolga" and on this basis monitoring at the property ceased in August 2009.

All blast monitoring results for the reporting period, including the time of initiation has been included in Appendix 8.

3.10 Operational Noise

3.10.1 Criteria

3.10.1.1 EPA Criteria

The EPA-nominated noise emission criteria, identified in Environment Protection Licence 12870 as applicable to the mine, are as follows.

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

(a) an L_{Aeq}(15minute) noise emission criterion of 35 dB(A) at all times (day, evening and night time periods); and

(b) an $L_{A1(1\ minute)}$ noise emission criterion of 45 dB(A) at night.

L6.2 (Provides definitions)

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".

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

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

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

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

3.10.1.2 Consent Criteria

Noise emission criteria nominated in Project Approval PA 06_0198 MOD 1 (Condition Schedule 3(7) and Schedule 3(8)) is as follows:

3(7) "The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria set out in Table 1 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

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

Table 1: Impact Assessment Criteria dB(A)

However, if the Proponent has a written negotiated agreement with any landowner and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the noise limits in accordance with the negotiated noise agreement.

3(8) The Proponent shall ensure that the cumulative noise generated by road traffic associated with the project, Canyon (Whitehaven) and Tarrawonga mines on public roads does not exceed the criteria in Table 2.

Day $L_{Aeq(1\ hour)}$	***Evening*** $L_{Aeq(1\ hour)}$	***Night*** $L_{Aeq(1\ hour)}$	***Location***
60	*60*	*50*	*Any residence on privately-owned land*

Table 2: Road Traffic Noise Criteria dB(A)

3.10.2 Control Procedures

Control of noise generation and propagation at the mine is by a combination of general source and propagation path methods including:

- Installation and maintenance of appropriate mufflers on plant and equipment;
- Where operationally feasible, scheduling activities to minimise operation of equipment in exposed locations when winds are blowing towards residences;
- Equipment removal or replacement;
- Changing operational procedures;
- Restricting hours of operations;
- Enclosure of fixed items of plant, eg generators;
- Bunding close to noise sources to create obstructions to the propagation path;
- Ongoing site road maintenance using the mine-based grader; and
- Regular equipment maintenance.

Whitehaven also regularly liaises with the majority of surrounding neighbours to seek feedback not only on noise, but on all mining activities. Any issues raised are investigated and appropriate measures are implemented to alleviate further impacts.

3.10.3 Operational Noise Monitoring

3.10.3.1 Introduction

The Noise Monitoring Program details the requirements for attended, unattended and cumulative road haulage noise monitoring to assess noise impacts from mining operations and haulage associated with the mine. The noise monitoring sites are identified on Figure 3 and Figure 4.

Attended noise monitoring was undertaken on a quarterly basis during the reporting period (September 2009, December 2009, March 2010 and June 2010).

Unattended noise monitoring occurs on a 3 monthly basis to establish background noise levels for the mine. Monitoring events occurred in September and December 2009 and March and June 2010. Whitehaven will seek to remove the requirement for unattended monitoring in the near future as sufficient background data has now been obtained.

Cumulative road noise monitoring occurred in December 2009 and June 2010, as required under the Road Noise Management Plan.

The following sub-sections present a summary of the outcomes of attended noise monitoring as well as cumulative road noise monitoring. Monitoring results for attended, unattended and cumulative road noise monitoring are present in Appendix 9.

ATTENDED NOISE MONITORING

3.10.3.2 September 2009 Attended Noise Monitoring

On the 8th September 2009 attended noise monitoring was undertaken at "Costa Vale" (N1) and "Surrey" (N2). Spectrum Acoustics reported that noise emissions from the mine exceeded the criterion of 35 dB(A) at "Surrey" during the morning survey (37 dB(A)) and "Costa Vale" during the evening survey (38 dB(A)). At both locations the mine noise was attributable to engine noise and revs mainly from haul trucks.

On review of the Rocglen weather station data, it was determined that a temperature inversion was present at the time of the exceedance at "Surrey". As the recorded noise level occurred during inversion conditions, the exceedance was not considered as a non-compliance.

A fault with the weather station during the evening survey, when the "Costa Vale" exceedance was recorded, removed the capacity to assess incidence of temperature inversion at that time. As this result represented the first operational noise exceedance at the "Costa Vale" property, Whitehaven proposed to maintain the current noise monitoring arrangements.

DoP and DECCW were notified in writing of the exceedances and the proposed continuation of current monitoring arrangements.

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 mine did not exceed 45 dB(A) at the monitoring locations.

3.10.3.3 December 2009 Attended Noise Monitoring

On the 17th and 18th December 2009 attended noise monitoring was undertaken at "Costa Vale" (N1) and "Surrey" (N2). Spectrum Acoustics reported that noise from the mine remained below the 35 dB(A) criterion at all times.

Spectrum Acoustics also confirmed that during the night time measurement circuit the $L1_{(1\ min)}$ noise from the mine did not exceed 45 dB(A) the monitoring locations.

3.10.3.4 March 2010 Attended Noise Monitoring

Attended noise monitoring was conducted on the 25th and 26th March 2010 at the "Costa Vale" (N1) and "Surrey" (N2) properties. Spectrum Acoustics reported that the mine did not exceed the criterion of 35 dB(A) at the time of monitoring. In addition, during the night time measurement circuit the $L1_{(1\ min)}$ noise from the mine did not exceed 45 dB(A) at the monitoring locations.

3.10.3.5 June 2010 Attended Noise Monitoring

On the 22nd June 2010 attended monitoring was undertaken at the "Costa Vale" (N1) and "Surrey" (N2) properties. The report from Spectrum Acoustics noted that noise from the mine did not exceed the 35 $dB(A)_{LAeq\ (15\ min)}$ day, evening and night criterion or the $L1_{(1\ min)}$ criterion of 45 dB(A) during the night time measurement circuit.

CUMULATIVE ROAD HAULAGE NOISE MONITORING

3.10.3.6 December 2009 Road Noise Monitoring

Road noise monitoring activities were conducted at "Brooklyn" (2 residences) and "Werona" on Blue Vale Road. Simultaneous noise measurements were made at the front of both residences on "Brooklyn". Residence 1 is closest to Blue Vale Road (approximately 90m) and residence 2 is approximately 480m from road. Spectrum Acoustics reported that:

- Noise measurements were undertaken at both "Brooklyn" residences between 9:45am and 10:15am (abandoned due to a wind shift at 10:15am) and "Werona" between 9:30am and 10:30am.

- 20 coal truck movements were recorded during monitoring at the "Brooklyn" property. Based on the 30 minute measurement the calculated contribution from mine-related vehicles was 52.0 dB(A),$L_{eq\ (1\ hour)}$ at residence 1 and 38.8 dB(A),$L_{eq\ (1\ hour)}$ at residence 2. Both measurements are below the daytime criterion of 60 dB(A) $L_{eq\ (1\ hour)}$.
- Over the course of the measurement period at "Werona" there were 40 coal truck movements. The total measured contribution from mine-related vehicles at "Werona" was 49.5 dB(A),$L_{eq\ (1\ hour)}$. This is below the daytime criterion of 60 dB(A) $L_{eq\ (1\ hour)}$.

3.10.3.7 June 2010 Road Noise Monitoring

Road noise monitoring was conducted at the "Brooklyn" (2 residences) and "Werona" properties on the 22nd June 2010 to determine the cumulative noise impacts relating to coal haulage. Spectrum Acoustics reported that:

- Noise measurements were undertaken at both "Brooklyn" residences between 10:32am and 11:32am and at "Werona" between 9:16am and 10:16am.
- 30 coal truck movements were recorded during monitoring at the "Brooklyn" property. The calculated noise contribution from mine-related vehicles was 49 dB(A),$L_{eq\ (1\ hour)}$ at residence 1 and 45 dB(A),$L_{eq\ (1\ hour)}$ at residence 2, which is below the 60 dB(A) $L_{eq\ (1\ hour)}$ noise criterion.
- Over the course of the measurement period at "Werona" there were 46 coal truck movements. The total measured contribution from mine-related vehicles at "Werona" was 49.0 dB(A),$L_{eq\ (1\ hour)}$. This is below the daytime criterion of 60 dB(A) $L_{eq\ (1\ hour)}$.

3.11 Visual, Light

3.11.1 Management

The mine is generally well positioned with respect to visual aspects, with views of the mining operations and/or areas of mine-related disturbance initially limited to those from the project related residences "Glenroc" located adjacent to the northern boundary of the mine site, "Stratford" to the south of the mine site and Vickery State Forest to the west. Wean Road is adjacent to the eastern boundary of the mine site, however amenity bunds have been installed to reduce visual impacts for the public

which utilise this road. As mining has progressed, the southern waste emplacement has developed to be close to maximum height which has resulted in the site being visible from locations further to the south and east. It is expected that reshaping of the southern emplacement will be well advanced during the next AEMR period which will further limit visible impact.

Management / minimisation of local and more distant visual impacts are achieved by:

- Undertaking activities in accordance with the various management plans applicable to the mine, all of which incorporate safeguards which indirectly reduce visual impact;
- Minimising the extent of land disturbance / clearing in advance of mining;
- Progressive rehabilitation of disturbed areas; and
- Sympathetic positioning and direction of lights, when possible, to avoid impacting on local residences.

3.11.2 Performance

Whitehaven received two complaints, on consecutive nights, from the "Surrey" property residents regarding light impacts from the mine site. The complaints prompted discussions with the Open Cut Examiners (OCEs) to ensure placement of lighting is appropriate to minimise impacts on surrounding residences. The complainant's were provided with the night shift OCE mobile phone number to allow direct contact should this problem persist.

From an operational perspective, it is sometimes difficult to position lights in a way which reduces lighting impacts as the southern waste emplacement increases in height. All practicable measures are taken to minimise impacts on surrounding landholders, whilst ensuring safe operations at the mine site, and Whitehaven will endeavour to address any issues or concerns which may be raised by landholders in the future.

3.12 Aboriginal Heritage Management

3.12.1 Sites Management and Performance

An assessment of the cultural heritage of the mine site was conducted by Archaeological Surveys and Reports Pty Ltd (ASR). The investigation commenced in 2002 when officers from Red Chief Local Aboriginal Land Council (LALC) were

consulted and assisted in the field work. In 2007 representatives of Red Chief LALC were consulted again along with representatives of the Bigundi Biame Gunnedarr Traditional People to confirm the previous investigations. The assessment was used in the preparation of the Environmental Assessment for the mine, undertaken by R.W. Corkery & Co. Pty Ltd on behalf of Whitehaven Coal Mining Pty Ltd.

Three artefact sites were recorded within the survey area, with two scarred trees in the Wean Road easement recorded as sites at the request of the Red Chief LALC Sites Officers. Also, two scarred trees were recorded in the Shannon Harbour Road easement to the east of its proposed junction with Riordan Road. Table 9 provides details of the identified artefacts and scarred trees:

Table 9 - Aboriginal Artefacts and Scarred Trees

Site Name	Site Type	Site Description/Comments
B1	Isolated Artefact	8 negative flake scars partly exposed in a dust/sand erosion feature along a fence line, 10m from the central drainage line.
B2	Artefact Scatter	8 small trimming flakes were scattered on and around a large ant mound on the crest of a contour bank. Perhaps the remains of a knapping or a tool manufacturing site.
B3	Extended Artefact Scatter	Artefact scatter extending approximately 800m along the western bank of the central drainage line containing >40 artefacts.
Btree 1	Scarred Tree	The scar is 160cm long, 40cm wide and 295cm from the ground on a large box gum located on the eastern side of the Wean Road Easement.
Btree 2	Scarred Tree	The scar is 57cm long, 15cm wide and 146cm from the ground on a large box gum located on the eastern side of the Wean Road Easement
Stratford ST1	Scarred Tree	The scar is 223cm long, 70cm wide and 18cm from the ground on a large box gum located in a closed road on the “Stratford” property
Stratford ST2	Scarred Tree	The scar is 140cm long, 42cm wide and 14cm from the ground on a large box gum located north-south oriented closed road easement on the “Stratford” property
Source: Modified after ASR (2007) – Section 7		

Of the seven Aboriginal sites identified, it is noted that three (Sites B1, B2 & B3) are located within the limit of open cut mining. Sites Btree1 and Btree 2 lie within the Project’s site boundary, and Sites ST1 and ST2 lie within the “Stratford” property, adjacent to the mine site, coal transport route and Wean Road, as depicted in Plan 3.

All of these sites have been identified in the Rocglen Coal Mine Aboriginal and Cultural Heritage Management Plan which is held at the administrative office of the mine site.

The conservation methods for each artefact and scarred tree is as follows:

Sites B1, B2 and B3

Sites B1, B2 and B3 were salvaged by Archaeological consultant, Mr John Appleton, together with representatives of the Red Chief Local Aboriginal Land Council, Bigundi Biame Traditional People, Gunida Gunya and Min Min Aboriginal Corporation August 2008. The GPS coordinates for each artefact have been recorded.

Application for a Care Agreement for Aboriginal Artefacts was made for the keeping of the Artefacts at the Cumbo Gunerah Keeping Place in accordance with Section 85a of the NP&W Act.

A report regarding salvage of the artefacts was prepared by Mr John Appleton and copies of the report were provided to each of the representative Aboriginal groups and to the then DECC.

Sites Btree1 and Btree2

Btree1 and Btree2 are two scarred trees both located on the eastern side of the Wean Road easement as depicted on Plan 3. They lie just within the eastern boundary of the mine site. The construction of soil stockpiles within this vicinity have been engineered so that no disturbance to the scarred trees will occur.

On recommendation of representatives of the Red Chief LALC, these scarred trees will not be disturbed in any way. Fencing and/or signage of the scarred trees has not occurred, as recommended, as it was considered that these actions could be potentially detrimental by drawing attention to the existence of the artefacts which are within a public road reserve.

Sites ST1 and ST2

ST1 and ST2 are two scarred trees both located on the “Stratford” property on a section of closed road oriented north-south. They lie approximately 1.5km to the south of the Project’s site boundary, approximately 1.25km south-east of the

transport route, and approximately 1km west of Wean Road. They both lie within ribbons of remnant vegetation.

3.12.2 Consultation

Whitehaven, through the soil stripping contractor, regularly consults with representatives of the local Aboriginal community. In accordance with the agreement with the representative Aboriginal groups, notification of planned topsoil stripping is provided by the soil stripping contractor directly to the nominated Aboriginal site monitors approximately 2 to 3 days in advance of planned activities.

Given that pre-stripping (separate stripping of topsoil, subsoil and friable overburden) is undertaken well in advance of mining and the soil stripping contractor is also engaged in other activities on the mine site, the flexibility exists to delay topsoil stripping activities should the situation ever arise in the future where monitors are temporarily unavailable.

During the reporting period, no cultural material of significance was identified during soil stripping activity. To date, the measures in place to protect Aboriginal Cultural Heritage are considered satisfactory, with all measures identified in the EIS and consent criteria in place.

RPS was engaged during the reporting period to undertake Aboriginal and European archaeological works for the proposed Rocglen Extension Project detailed in Section 1.2.2. RPS recorded three sites during the field investigation, comprising an isolated find and two artefact scatters. All three sites were found in the level plain area of the valley depression between the Kelvin and Vickery State Forests (north of the current ML boundary). Following approval of the Rocglen Extension Project, the Aboriginal and Cultural Heritage Management Plan will be updated to incorporate the new sites. If the northern waste emplacement will impact on any of the sites a salvage will take place, in consultation with Aboriginal stakeholders, prior to the disturbance occurring.

3.13 Natural Heritage

There are no features of natural heritage within the Project Approval Area and hence, no specific management procedures are required.

3.14 Spontaneous Combustion

3.14.1 Management

The mine has a low percentage of inorganic sulphur and hence a low potential for exothermic oxidation reactions. The short residence time of ROM coal stockpiles at the mine also minimises the potential for spontaneous combustion incidents.

In the event of spontaneous combustion, Whitehaven personnel are present within the area of the ROM coal stockpiles during work hours and are trained to watch for indications of spontaneous combustion. Any incident would be followed by excavation to identify the source and extinguishment through water saturation.

3.14.2 Performance

There were no incidents of spontaneous combustion during the reporting period.

3.15 Bushfire Management

3.15.1 Management

The mine maintains firebreaks around both its landholding and the mine area and maintains fire fighting equipment as well as earthmoving equipment, a water truck etc which would be used in the control of fires. Rocglen personnel also liaise with the local (Nandewar) Rural Fire Service, as required.

3.15.2 Performance

There have been no bushfire incidents within the mine lease since development commenced. As discussed in Section 3.1, lightning strikes in December 2009 initiated bushfires in the proposed Whitehaven biodiversity offset area located approximately 2.5km east of the mine. The fires were controlled by the Rural Fire Service and National Parks and Wildlife Service.

3.16 Mine Subsidence

Mine subsidence is not an issue with open cut mines and hence it is not an issue at Rocglen.

3.17 Hydrocarbon Contamination

3.17.1 Management

It is Whitehaven's objective that:

- All bulk hydrocarbons, i.e. fuel, oils, grease etc (both new and waste) retained at the 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 the three-phase system identified in the relevant management plan required under the Consent.

3.17.2 Performance

Whitehaven'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.

The DPI (now I&I NSW) undertook a site visit in July 2009 and identified that hydrocarbon management activities at the workshop required improvements. Additional concrete bunding has since been installed at the re-fuelling (Plate 3), oil-water separator and hydrocarbon storage areas to reduce the likelihood of soil and water contamination. A steel bollard has also been erected adjacent to the northern end of the fuel tank, following a suggestion from the then DPI in July 2009 that the fuel tank should be protected from approaching vehicles (Plate 3).

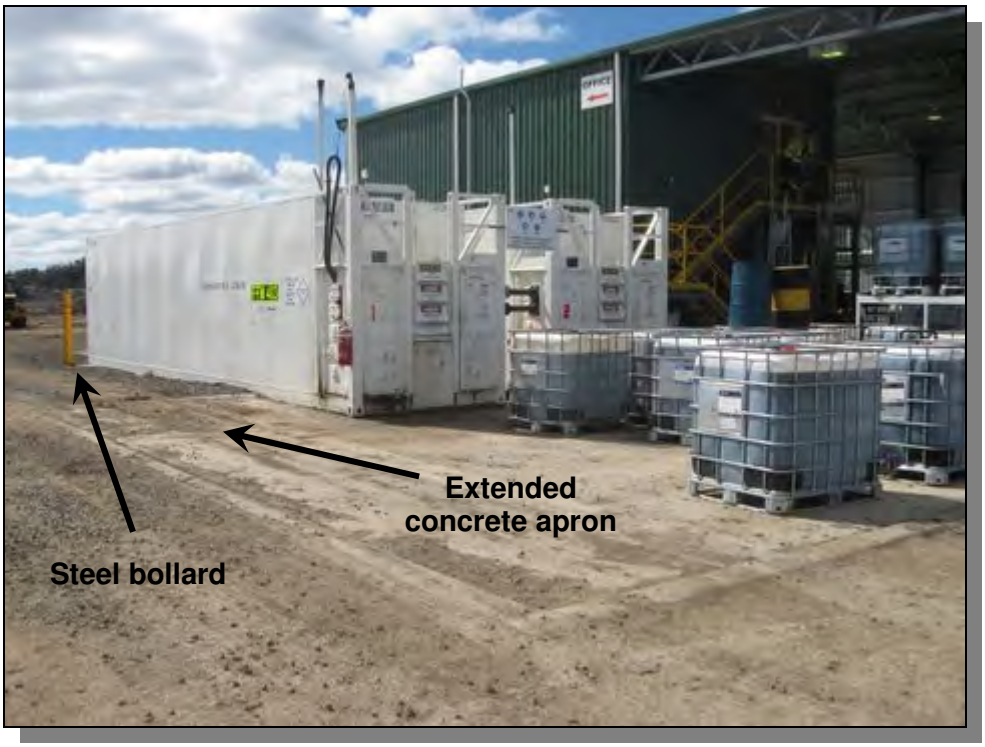


Plate 3 - Extended Concrete Apron at Refuelling Bay

3.17.3 Greenhouse Gas Emissions

Diesel Consumption

During the reporting period, a total of 6,696,754 litres of diesel fuel was used on site for mining related activity. Assuming an energy content of diesel fuel of 38.6MJ/L, and using Table 3 of the "National Greenhouse Accounts (NGA) Factors" – November 2008, the estimated direct – scope 1, Greenhouse Gas Emissions including all CO_2 and non CO_2 gases are as follows.

Table 10 - GHG Emissions - Diesel Fuel

	Diesel Fuel Usage kL	Emission Factor T CO2-e/kL	Equivalent Tonnes
GHG 2008/09	5,852	2.7	15,803
GHG 2009/10	6,697	2.7	18,082

The site does not utilise electricity from the power grid, but via a number of diesel powered gensets. The emissions associated with diesel consumption by the gensets are included in the table above.

Explosives

During the reporting period, a total of 3,841 t of explosives was used at the mine. Assuming a conversion factor of 0.1778, it is estimated that blasting at the mine yielded 683 equivalent tonnes of CO_2.

Fugitive Emissions

ROM coal production is used to estimate fugitive emission factors. Based on 956,535 tonnes of ROM coal production during the reporting period and a conversion factor of 0.045 (from Table 8 of the "National Greenhouse Accounts (NGA) Factors" – November 2008), it is estimated that 43,044 tonnes of CO_2 were emitted during the reporting period.

Summary

A summary of calculated total CO_2 equivalent tonnes/year for the reporting period is provided in Table 11.

Table 11 - GHG Emissions Summary

Source	Calculated Total CO_2 Equivalent (t/year)
Diesel	18,554
Explosives	683
Fugitive Emissions	43,044
TOTAL	**62,281**

The potential for reducing greenhouse gas emissions at Rocglen is related predominantly to consumption of diesel use by plant and equipment. Methods are in place at site to maximise efficiency from the mining fleet through regular maintenance scheduling and, where possible, minimising the gradient and length of loaded haul runs for the operating dump trucks.

Whitehaven is committed to a reduction in emission levels as a result of operations at the mine site. As part of this process, the mine operates a fleet of new Caterpillar rear dump trucks which burn less diesel fuel as compared to older trucks with the same capacity. Fuel burn during the reporting period was 7.0 litres/tonne ROM coal. This is slightly lower than the last reporting period which had a fuel burn of 7.17 litres/tonne ROM coal.

In addition to this, the coal haulage contractor, Toll Resources continues to utilise a fleet of purpose built B-Doubles with the Prime Mover's specifically engineered to comply with emission and noise criteria. This includes being speed limited to 93km/hr which has been determined as the optimum operating speed in terms of operational and fuel efficiency.

Whitehaven reported greenhouse gas emissions for the Whitehaven Group (including Rocglen) for the 2008/2009 financial year via the Federal Government's National Greenhouse and Energy Reporting Scheme (NGERS). Reporting was undertaken in October 2009 and will continue in subsequent years.

3.18 Methane Drainage / Ventilation

Methane drainage / ventilation are not of relevance to open cut mines and hence are not an issue at the mine.

3.19 Public Safety

3.19.1 Management

The mine is located wholly on WCL owned land in a relatively remote area, with a private access road entering the site on the south-western boundary and the Wean Road positioned adjacent to the eastern side of the mine boundary. The site is fenced and appropriate signs installed.

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. Procedures are in place with respect to blasting to ensure the area around each blast site is clear of personnel and that all surrounding residents are advised in advance of proposed blasts.

3.19.2 Performance

The procedures in place have been effective throughout the reporting period. The isolated incidents of fuel theft during the previous reporting period have not continued which is likely a result of the site being manned 24 hours per day by maintenance personnel.

3.20 Feral Animal Control

Feral animals are not a significant land management issue on Whitehaven'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 the reporting period.

In accordance with prior commitments, Whitehaven will continue to monitor feral animal occurrences and implement necessary control programmes if and when necessary.

3.21 Land Capability

All land currently disturbed by mining is classified as Land Capability Class III, V and VI with the remaining areas to be disturbed over the life of the approved mine primarily comprising the same classes.

On completion of all mining activities, the successful rehabilitation of areas of disturbance and the relinquishment of the mining lease, the land affected by mining within the Project Approval area will, in the main, be returned to a classification similar to that prior to mining.

3.22 Meteorological Monitoring

3.22.1 Introduction

A new meteorological station for the Rocglen Mine was commissioned in April 2009 at the "Glenroc" property north of the mine site. The previous weather station was located at "Belmont" (installed 2002) and relocated to "Glenroc" in January 2008. Data collection during the reporting period has been plagued with battery failure on a regular basis (ie. every couple of months). Whitehaven engaged Boztek Solutions Pty Ltd in June 2009 to service the weather station and determine the cause of the battery issues. It was identified that the super capacitor (which stores electricity generated from the solar panel) needed replacing and connecting to the weather console. This allows the batteries to only be used as a backup, thereby ensuring their longevity.

The station, shown on Figure 3, has been operating continuously since April 2009 recording 15 minute wind speed, wind direction, temperatures, humidity and rainfall.

Daily meteorological data for is presented in Appendix 10.

3.22.2 Rainfall

Rainfall data from the previous 12 months is presented in Table 12 and Figure 7. Full station data is presented in Appendix 10.

Table 12 - Rainfall Data (1 Aug 2009 – 31 July 2010)

Month	Monthly Rainfall Reporting Period	Long Term Average Rainfall*[1]	Raindays Reporting Period	Long Term Average Raindays*[1]
August 2009	6.0	41.3	4	6.2
September 2009	36.8	39.8	6	5.8
October 2009	42.6	55.2	6	6.9
November 2009	17.8	60.9	7	6.8
December 2009	107.6	68.6	6	7.0
January 2010	53.4	71.3	3	6.5
February 2010	60.4	66.5	4	6.1
March 2010	32.4	48.1	6	4.7
April 2010	23.6	37.7	3	4.3
May 2010	23.4	42.4	4	5.1
June 2010	31.8	43.9	6	6.3
July 2010	85.6	42.7	9	6.3
TOTAL	**521.4**	**618.4**	**64**	**72**

*[1] Gunnedah Pool (Station 055 023) averages from 1876-2010.

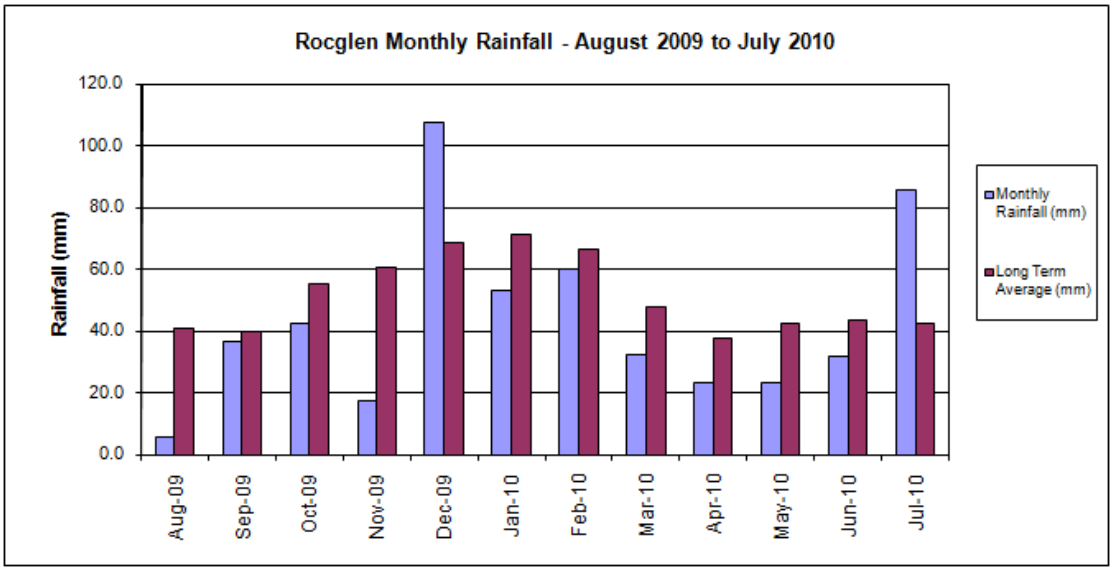


Figure 7 – Monthly Rainfall Data

A review of Table 12 and Figure 7 shows that the total rainfall at the mine during the reporting period was 521.4mm, compared to a long term average of 618.4mm at Gunnedah and 647.8mm recorded in the previous reporting period. It is believed that the total rainfall recorded by the meteorological station does not fully represent the actual rainfall received. The Bureau of Meteorology station at the Gunnedah Pool (055023) recorded 780.6mm for the same period whilst the Canyon Coal Mine meteorological station recorded 681.0mm. It is possible that the gauge did not accurately record rainfall data as a result of dust and other contaminants (grass, insects etc) obstructing the gauge. Data lost during a number of months (due to power failure) would have also contributed to the lower rainfall total. Whitehaven personnel now conduct monthly inspections of the weather station to ensure it is operating effectively. Boztek Solutions Pty Ltd are utilised for technical issues.

3.22.3 Temperature

Average maximum and minimum temperatures for the reporting period are presented in Table 13 together with long-term monthly averages for Gunnedah Pool (Bureau of Meteorology Station 055023).

Table 13 - Average Monthly Temperatures
(August 2009 – July 2010)

Month	Average Daily Temperature			
	Reporting Period (°C)		Station 055023 (Gunnedah Pool)* (°C)	
	Min	Max	Min	Max
August 2009	6.2	22.6	4.1	18.9
September 2009	8.9	24.5	6.9	22.8
October 2009	11.0	27.0	10.7	26.7
November 2009	19.2	34.3	14.1	30.3
December 2009	20.8	29.4	16.8	33.0
January 2010	19.6	33.2	18.3	34.0
February 2010	19.2	31.4	18.1	32.9
March 2010	16.6	29.4	15.8	30.7
April 2010	12.2	25.5	11.4	26.4
May 2010	6.9	21.4	7.1	21.3
June 2010	5.0	16.3	4.3	17.6
July 2010	5.1	16.9	3.0	16.9

* Gunnedah Pool (Station 055 023) averages from 1876-2010

Table 13 shows that:

- Average minimum and maximum temperatures at the mine site were above the Gunnedah average during August – November 2009, which is indicative of the hot and dry conditions at the time; and
- During the period December 2009 to July 2010, average minimum temperatures were generally above the long term average whilst maximum temperatures were below the long term averages. This is attributable to the wet conditions experienced during this period.

3.22.4 Wind Speed and Direction

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

Wind roses for the reporting period, specifically Winter 2009 (August 2009), Spring 2009 (September-November 2009), Summer 2009/2010 (December 2009-February 2010), Autumn 2010 (March-May 2010) and Winter 2010 (June-July 2010) as well as an annual wind rose are presented in Appendix 10, and show the following:

- Predominant wind directions throughout the seasons varied between northerlies (Winter and Spring 2009) and southerlies (Spring 2009 through to Winter 2010) with the predominant wind direction for the reporting period being from the south. The distinct trend of north/south wind directions is a result of the local topography, with the mine located in a gully bordered by the Kelvin Range to the east and the Vickery State Forest to the west; and
- Throughout the year wind speeds are generally less that 5m/s with occasional gusts greater than 5m/s. The Spring 2009 windrose shows a higher proportion of wind speeds greater than 5m/s from all directions. This correlates with windy conditions experienced during September and October 2009 which lead to dusty conditions, in particular the severe dust storm on the 23rd September 2009.

3.22.5 Inversions

Rocglen's meteorological station is fitted with temperature sensors at 2m and 10m intervals to assist in the determination of inversion conditions. As discussed in Section 3.10.3.2, the meteorological station data was used to identify an inversion at the time of a noise exceedance at the "Surrey" property.

4 COMMUNITY RELATIONS

4.1 Environmental Complaints

Whitehaven maintains a designated complaints line, with messages checked on a daily basis (seven days/week) by the Environmental Manager. In the event of a complaint, details pertaining to the complainant, complaint and action taken are recorded on a "Complaints Form".

Over the last 12 months, two complaints have been received in relation to operations at the mine. Both complaints were made by the same complainant in relation to noise and lighting issues over two consecutive nights as well as increased rubbish along Wean Road. The complaints were made directly to the Group Environmental Manager. No complaints were received via the designated complaints line. The nature of the complaints, details and responses to each complaint are presented in Table 14. Table 15 compares the number and nature of complaints registered during the previous and current reporting periods.

Table 14 - Complaints Summary

Date/Time of Complaint	Nature of Complaint	Investigation	Action Taken / Follow-up
10/05/2010 11:40pm	Lights shining off dump in direction of "Surrey" property and loud noise from the mine throughout the night.	Environmental Manager contacted Project Manager to determine activities occurring at the time of the complaint. It was noted that on the morning inspection of the site that one of the lighting plants was directed towards the east and the "Surrey" property and was to be rectified for next night shift. Dumping was occurring on the higher lifts during the night due to limited dump space available. Project Manager was advised to consider noise propagation issues given the cooler weather.	Phone call was also made to Mr Barnes on the 11th May to provide him with the night shift OCE mobile number to enable direct access to site in the event of ongoing lighting/noise issues.
11/5/2010 10:00pm	Lights shining off dump in direction of "Surrey" property, loud noise from the mine throughout the previous night, general dissatisfaction with the mine itself and the extent of rubbish strewn along Wean Road.	Environmental Manager had previously contacted the complainant's husband in relation to the matters outlined apart from the issue of roadside rubbish. Whitehaven will investigate engaging a contractor to do a rubbish collection on a regular basis between Riordan Lane and Billynudgel road along Wean Road to address this matter.	Follow up contact previously made with complainant's husband. Environmental Manager discussed the issues in person with Rod Barnes on the 12th May 2010.

Table 15 - Complaints Comparison

AEMR period	Issue					Total
	Driver behaviour (contractors)	Dust from Wean Rd	Lack of consultation	Blasting	Noise/Light/ Rubbish	
2008-2009	1	1	1	4		7
2009-2010					2	2

The number and nature of complaints received during the reporting period represents a substantial improvement from the previous period. This is partly related to the mine moving from construction to operation and the sealing of Wean Road. The four complaints received last year in relation to a single blast also elevated the total number of complaints for the 2008-2009 reporting period.

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

4.2 Employment Status, Demography and Socio-Economic Contributions

4.2.1 Employment Status and Demography

During the reporting period the mine had an average of 53 personnel with additional personnel employed by contractors (Toll Global Resources) in the haulage of coal from the mine site back to the Whitehaven CHPP.

Approximately 85% of mine related employees reside in the Gunnedah area with the remainder residing in the surrounding districts.

4.2.2 Social and Economic Contributions

In addition to direct and indirect employment, and the purchase of goods and services from local suppliers, the Whitehaven Group continues to support the local community through donations and sponsorship of local groups and events.

Whitehaven also contributed to the provision of cadetships to two young local students, Mr Duncan McGregor and Mr Chris Thomas. Chris began graduate work as an Environmental Officer with Whitehaven in January 2010 whilst Duncan commenced full time employment during July 2010.

As members of the Gunnedah / Boggabri 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 5 of PA 06_0198 a Community Consultative Committee (CCC) was formed in July 2008. The committee comprises representatives of Gunnedah Shire Council, Rocglen Coal Mine and the community and is chaired by Mr John Sturgess.

Since its inception, the CCC has met on a regular basis, meeting 4 times per year. During the reporting period meetings were held on the 12th August 2009, 11th November 2009, 10th February 2010 and 12th May 2010.

Rocglen Mine representatives and Whitehaven's Community Liaison Officers (1 x full time, 1 x part time) continue to maintain regular personal contact with the neighbours in the vicinity of the mine. These contacts not only provide a means of information dissemination, but also enable Whitehaven to ascertain and address any potential issues which may arise from time to time.

Community organisations and other local business and institutions regularly identify an interest with activities occurring at the mine site. In this regard, and to maintain links with those business and community members, information is provided as required, and on occasion, guided tours of the facility have been undertaken. Rocglen has provided tours for the CCC during the reporting period.

5 REHABILITATION

5.1 Buildings

No rehabilitation of buildings occurred during the reporting period.

5.2 Rehabilitation of Disturbed Land

5.2.1 Objectives

Rocglen Coal Mine's rehabilitation/land use objectives for the mine site are as follows:

(a) Areas affected by mining – short term

(i) Stabilising all earthworks, drainage lines and disturbed areas that are no longer required for mine related activities; and

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

(b) Areas affected by mining – long term

(i) Creating a low maintenance, geotechnically stable and safe landform which is commensurate with the agricultural and nature conservation land uses on and around the mine site.

(ii) Blending of the final landform with the surrounding topography such that the visual impact of the post-mining landform is minimised.

(iii) Re-establishing 61ha of agricultural land over the areas disturbed by the mine; and

(iv) Increasing the area of land allocated to nature conservation through the revegetation of 77.5ha of those areas disturbed by the mine and the long-term conservation of 51.3ha of remnant and degraded native vegetation and/or habitat corridors on the mine site.

(c) Areas to be unaffected by mining

(i) Stock exclusion through fencing of the entire mining lease. This includes areas disturbed and rehabilitated with native vegetation and existing agricultural land fenced to exclude stock and allowed to naturally revegetate.

5.2.2 Achievements During the Reporting Period

Table 16 and Table 17 present a Rehabilitation Summary and listing of maintenance activities as required in the DMR Guidelines. Rehabilitation of disturbed land undertaken during the reporting period comprised reshaping approximately 5.2ha and reshaping and topsoiling approximately 5.2ha of the southern waste emplacement. Contour banks installed to direct runoff back to natural ground level (Plate 4) appear to be working well with minimum erosion occurring despite very little groundcover being present.

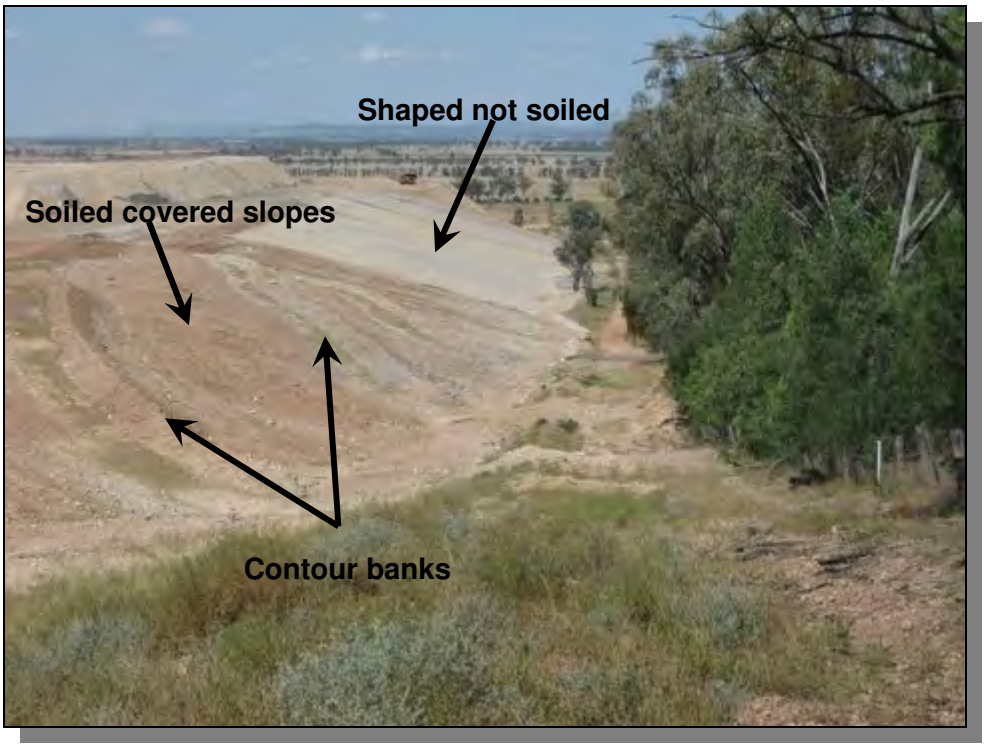


Plate 4 - Shaped Waste Emplacement and Contour Banks

Sedges were planted in February 2010 on the outflow of SB19 (ie. in the channel that directs overflow to SD3) and SD3 in order to increase cover and reduce sediment flow.

Seed collection programmes were undertaken through Bilby Blooms who supply Whitehaven with significant quantities of understorey and overstorey species each year. Discussions were held with the Red Chief Local Aboriginal Land Council to determine their interest in seed collection, however, this failed to eventuate. Additional seed collection contractors will be sourced over the next reporting period.

Seeds will continue to be propagated at the Whitehaven CHPP propagation unit as well as off-site by local contractors.

Table 16 - Rehabilitation Summary

		Area Affected (hectares)			
		This Report Period (as of 31.07.10)	**Last Report Period (as of 31.07.09)**	**Cumulative Next Report Period (estimated)**	
A:	**MINE LEASE AREA**				
A1	**Mine Lease(s) Area**	365			
B:	**DISTURBED AREAS**				
B1	**Infrastructure area** (other disturbed areas to be rehabilitated at closure including facilities, roads)	16	15	16	
B2:	**Active Mining Area** (excluding items B3 - B5 below)	46	29	61	
B3	**Waste emplacements**, (active/unshaped/in or out-of-pit)	83	48	91	
B4	**Tailings emplacements,** (active/unshaped/uncapped)	N/A	N/A	N/A	
B5	**Shaped waste emplacement** (awaits final vegetation)	5	0	21	
ALL DISTURBED AREAS		150	92	189	F1
C	**REHABILITATION PROGRESS**				
C1	**Total Rehabilitated area*** (except for maintenance)	0	0	0	F2
D:	**REHABILITATION ON SLOPES**				
D1	**10 to 18 degrees**	0	0	21	
D2	**Greater than 18 degrees**	0	0	0	
E:	**SURFACE OF REHABILITATED LAND**				
E1	**Pasture and grasses**	0	0	21	
E2	**Native forest/ecosystems***	0	0	0	
E3	**Plantations and crops**	0	0	0	
E4	**Other** (include non vegetative outcomes)	N/A	N/A	N/A	

* Areas with established tube stock are considered to be “native forest/ecosystem” and contribute to the Total Rehabilitated Area. “Pasture and Grasses” also includes areas with recently planted tube stock that are not yet established.

Table 17 - Maintenance Activities on Rehabilitated Land

NATURE OF TREATMENT	Area Treated (ha)		Comment/control strategies/ treatment detail
	Report period	Next period	
Additional erosion control works (drains re-contouring, rock protection**)**	Nil	0.01	Planned installation of flexible liner on inflow to SD3 to reduce sediment levels.
Re-covering (detail - further topsoil, subsoil sealing etc)	Nil	Nil	
Soil treatment (detail - fertilizer, lime, gypsum etc)	Nil	2	Compost trial on western face of southern waste emplacement.
Treatment/Management (detail - grazing, cropping, slashing etc)	Nil	Nil	
Re-seeding/Replanting (detail - species density, season etc)	Nil	Nil	
Adversely Affected by Weeds (detail - type and treatment)	5 ha	5 ha	General weed control.
Feral animal control (detail - additional fencing, trapping, baiting etc)	Nil	Nil	

5.3 Rehabilitation Monitoring and Performance

Besides cover crop establishment on soil stockpiles and the amenity bund, the only rehabilitation that occurred in the previous reporting period was planting of approximately 200 tubestock along the site access road to provide a future screening of the site from Riorden Road. The tubestock are now well established, as shown in Plate 5.

Plate 5 - Established Tubestock along Site Access Road

6 CONTINUOUS IMPROVEMENT AND TARGET INITIATIVES

6.1 Objectives

Whitehaven Coal Mining 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.

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

6.2 Achievements to Date

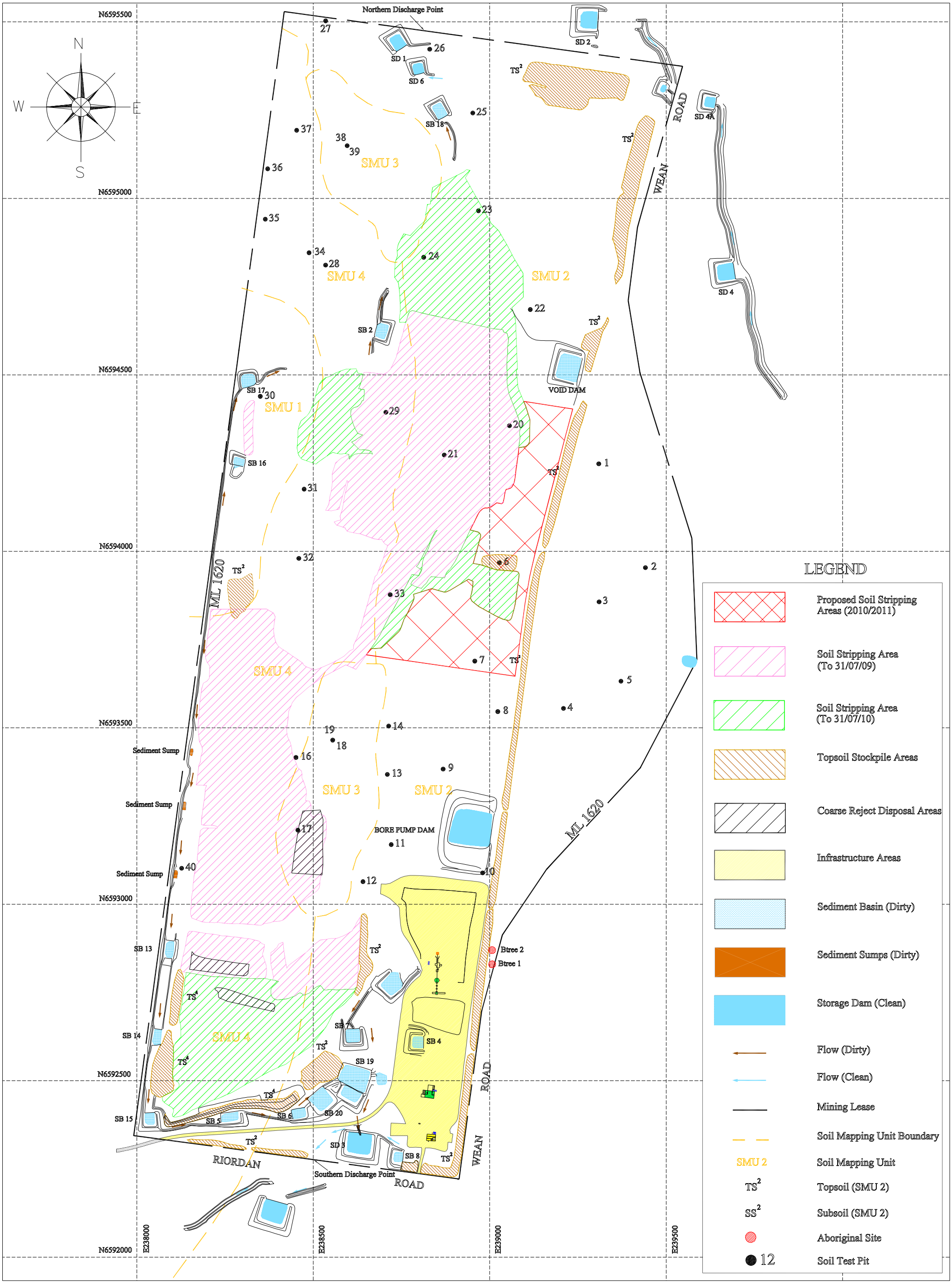
Achievements at the mine during the reporting period have included:

- 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 approved management plans;
- Continued commitment to a recycling program maintained by Whitehaven personnel;
- Implementation of a revised blasting strategy in hard conglomerate rock following the incidence of overpressure exceedances, and subsequent return to compliance;
- Implementation of a flocculation program in SD3 as a trial to seek reduced sediment loading. Results of this trial and ongoing investigations will lead to improved sediment control across Whitehaven operations;
- The establishment and maintenance of an open and honest relationship with the neighbours, community in general, regulatory authorities, Local Government and other groups such as the local Aboriginal community.

- Commencement of a partnership with a local supplier to trial the use of a compost material in rehabilitation areas as a means of identifying optimum rates of application and measure rehabilitation performance.

6.3 Targets and Goals

- The extension of active rehabilitation on the western waste emplacement over the next 12 months;
- Establishment of a Landscape Management Plan to define flora and fauna monitoring locations and objectives, in conjunction with the management of the biodiversity offset area;
- Continued community liaison, support and involvement / education in the mines activities;
- Compliance with all relevant conditions of the lease, licences and consents;
- Improved surface water quality and reduced sediment loads in discharge waters through the implementation of additional storage and settling capacities, improved inflow and discharge conditions to minimise sediment entrainment, and enhanced flocculation of dirty water through ongoing trials and development of the most effective strategy for site;
- Finalisation of the establishment of the Whitehaven Regional Biodiversity Offset Area, which includes areas set aside as offset against the Rocglen development;
- Implementation of the compost trial and establishment of initial trial plots in the rehabilitation areas; and
- Commencement of tubestock planting on the reshaped waste emplacement – April 2011.



REV	REVISIONS	DATE	REV	REVISIONS	DATE

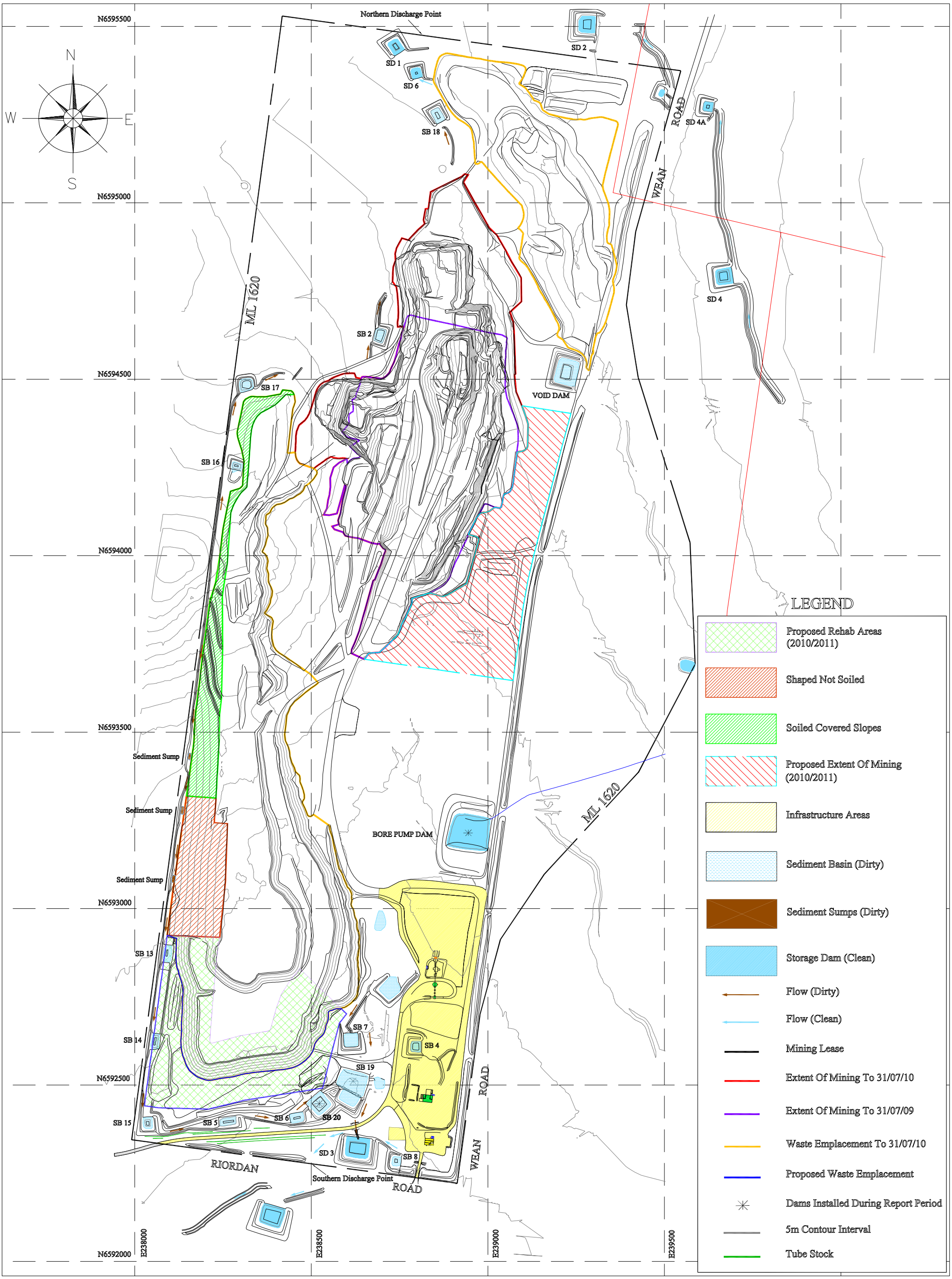
WHITEHAVEN COAL MINING PTY LTD
PO Box 600 Gunnedah NSW 2380

Prepared by Horizon Surveying Pty Ltd Ph 02 65773215 Fax 02 65773216

ROCGLEN COAL MINE - AEMR PLAN 3
LAND PREPARATION

Date	Reduction Ratio	Drawn	Checked	Approved
19/09/10	1:10,000	AJC		

Drawing No: 5600 - 0810.1
Revision No: 2
Sheet Size: A3



REV	REVISIONS	DATE	REV	REVISIONS	DATE

WHITEHAVEN COAL MINING PTY LTD
PO Box 600 Gunnedah NSW 2380

Prepared by Horizon Surveying Pty Ltd Ph 02 65773215 Fax 02 65773216

ROCGLEN COAL MINE - AEMR PLAN 4
MINING AND REHABILITATION

Date	Reduction Ratio	Drawn	Checked	Approved	Sheet Size
19/09/10	1:10,000	AJC			A3

Drawing No: 5600 - 0810.2
Revision No: 2

Appendix 1

PA 06_0198 MOD 1

Notice of Modification

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

As delegate of the Minister for Planning, I modify the development consent referred to in Schedule 1, as set out in Schedule 2.

David Kitto
Director, Mining & Industry Projects

Sydney 27 MAY 2010

SCHEDULE 1

The project approval for the Rocglen Coal Mine (formerly known as the Belmont Coal Project), granted by the Minister for Planning on 15 April 2008.

SCHEDULE 2

1. In condition 2 of Schedule 2, delete all words after "statement of commitments;" and add the following:

   (c) modification application 06_0198 – MOD 1 and the accompanying Environmental Assessment prepared by GSS Environmental and dated May 2010; and
   (d) the conditions of this approval.

Project Approval

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

I approve the project application referred to in schedule 1, subject to the conditions in schedules 2 to 5.

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.

Frank Sartor MP
Minister for Planning

Sydney 15th August 2008

SCHEDULE 1

Application No:	06_0198
Proponent:	Whitehaven Coal Limited
Approval Authority:	Minister for Planning
Land:	See Appendix 1
Project:	Belmont Coal Project

TABLE OF CONTENTS

DEFINITIONS

AEMR	Annual Environmental Management Report
Biodiversity Offsets	The conservation and enhancement program described in the EA
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 titled *Belmont Coal Project Environmental Assessment* and *Specialist Consultant Studies Compendium*, Volumes 1 & 2 (October 2007), including the *Response to Public and Government Agency Submissions* dated 11 February 2008
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
Hoad Lane intersection	The intersection of Hoad Lane and Shannon Harbour Road
Kamilaroi Highway intersections	The intersection of the Kamilaroi Highway with the Whitehaven Siding coal handling and preparation plant access road and also its intersection with Blue Vale Road
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
Minister	Minister for Planning, or delegate
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	Whitehaven Coal 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 Belmont Coal Project described in the EA
Reasonable and Feasible	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. Feasible relates to engineering considerations and what is practical to build
ROM	Run-of-mine
RTA	Roads and Traffic Authority
Site	Land to which the project application applies, which includes the project site, sections 1 and 2 of the transport route, Wean Road and its proposed diversion (see Figures 1 and 2 of Appendix 2)
Statement of Commitments	The Proponent's commitments in Appendix 3

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; and
   (c) conditions of this approval.

   Notes:
   - *The general layout of the project is shown in Figures 1 and 2 of Appendix 2; and*
   - *The statement of commitments is reproduced in Appendix 3.*

3. If there is any inconsistency between the above documents, the latter 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 12 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 than1.5 million tonnes of ROM coal a year from the site.

Hours of Operation

7. The Proponent is permitted to undertake mining operations 24 hours a day, Monday to Saturday, with the exception of public holidays.

   Note: This condition does affect the operation of conditions 13 and 40 of schedule 3 in relation to blasting and coal transportation hours.

8. The Proponent is only permitted to undertake construction activities between the hours of:
   (a) 6 am to 8 pm, Monday to Saturday;
   (b) 6 am to 5 pm, Sunday; and
   (c) at no time on public holidays.

Management Plans / Monitoring Programs

9. 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

10. 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

11. 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

12. 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

SOIL AND WATER

Note: These conditions should be read in conjunction with sections 4, 5, 10, 13 and 17 of the Statement of Commitments.

Discharge

1. Except as may be expressly provided for by an EPL, the Proponent shall not discharge any surface waters from the site.

Water Management Plan

2. The Proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Director-General. This plan must:
   (a) be prepared in consultation with DWE and DECC by suitably qualified expert/s whose appointment/s have been approved by the Director-General;
   (b) be submitted to the Director General prior to the commencement of construction activities (not including construction of the Kamilaroi Highway and Hoad Lane intersections or sections 1 and 2 of the road transport route); and
   (c) include a:
      - Site Water Balance;
      - Erosion and Sediment Control Plan;
      - Surface Water Monitoring Plan;
      - Groundwater Monitoring Program; and
      - 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

3. The Site Water Balance must:
   (a) include details of:
      - sources and security of water supply;
      - water use on site;
      - water management on site;
      - any off-site water transfers;
   (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

4. 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

5. 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; and
   (d) procedures for reporting the results of this monitoring.

Groundwater Monitoring Program

6. 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; and
   (e) procedures for reporting the results of this monitoring.

NOISE

Note: These conditions should be read in conjunction with sections 8 and 17 of the Statement of Commitments.

Impact Assessment Criteria

7. The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria set out in Table 1 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

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)

However, if the Proponent has a written negotiated noise agreement with any landowner and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated noise agreement.

Notes:

- *To determine compliance with the $L_{Aeq(15\ minute)}$ noise limits, 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 Department and 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 Department and DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*

Road Traffic Impact Assessment Criteria

8. The Proponent shall ensure that the cumulative noise generated by road traffic associated with the project, Canyon (Whitehaven) and Tarrawonga mines on public roads does not exceed the criteria in Table 2.

Day	Evening	Night	Location
$L_{Aeq(1\ hour)}$	$L_{Aeq(1\ hour)}$	$L_{Aeq(1\ hour)}$	
60	60	50	Any residence on privately-owned land.

Table 2: Road Traffic Noise Criteria dB(A)

Continuous Improvement

9. 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

10. 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 prepared in consultation with the DECC;
   (b) be submitted to the Director-General for approval prior to the commencement of construction activities (not including the construction of the Kamilaroi Highway and Hoad Lane intersections and sections 1 and 2 of the coal transport route);
   (c) use attended noise monitoring measures to monitor the performance of the project; and
   (d) include a protocol to establish whether the project is complying with the noise impact assessment criteria in Tables 1 and 2.

BLASTING AND VIBRATION

Note: These conditions should be read in conjunction with sections 9 and 17 of the Statement of Commitments.

Airblast Overpressure Impact Assessment Criteria

11. The Proponent shall ensure that the airblast overpressure level from blasting at the project does not exceed the criteria in Table 3 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 3: Airblast overpressure impact assessment criteria

Note: The overpressure values in Table 3 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

12. 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 4 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 4: Ground vibration impact assessment criteria

Blasting Hours

13. The Proponent shall only carry out blasting on site between 9 am and 5 pm Monday to Saturday.

Blasting Frequency

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

Operating Conditions

15. During mining operations on site, the Proponent shall implement best blasting practice to:
    (a) protect the safety of people, property, public infrastructure, and livestock;
    (b) minimise the dust and fume emissions from blasting at the mine site,
    to the satisfaction of the Director-General.

16. The Proponent shall not undertake blasting within 500 metres of any privately-owned land, unless suitable arrangements have been made with the landowner and any tenants to minimise the risk of flyrock-related impact to the property to the satisfaction of the Director-General.

Road Closure

17. Prior to blasting within 500 metres of any public road, the Proponent shall prepare and implement a Road Closure Management Plan for the project to the satisfaction of GSC and DPI.

Public Notice

18. During mining operations on site, the Proponent shall:
    (a) notify any person who registers an interest in being notified about the blasting schedule at the mine;
    (b) operate a Blasting Hotline, or alternate system agreed to by the Director-General, to enable the public to get up-to-date information on the blasting schedule at the project;
    (c) advertise the blasting hotline number in a local newspaper each year; and
    (d) provide signage, with updated details of proposed blasting times, immediately to the north and south of the mine site on Wean Road,
    to the satisfaction of the Director-General.

Property Inspections

19. Before carrying out any blasting, the Proponent shall advise the owners of "Costa Vale", "Surrey" and "Brolga", 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 any building or structure on 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 in consultation with DECC, and to the satisfaction of the Director-General.

AIR QUALITY

Note: These conditions should be read in conjunction with sections 14 and 17 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 5 to 7 at any residence on privately owned land, or on more than 25 percent of any privately-owned land.

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

Table 5: Long term impact assessment criteria for particulate matter

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

Table 6: 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 7: 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 in consultation with DECC, and 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 Kamilaroi Highway and Hoad Lane intersections and sections 1 and 2 of the coal transport route);
    (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 subsidence of the land surface caused by auger coal mining does not result in vertical subsidence of greater than 20 mm.

LANDSCAPE

Note: These conditions should be read in conjunction with sections 4, 6, 11, 13 and 16 of the Statement of Commitments.

Biodiversity Offsets

27. The Proponent shall:
    (a) implement the Biodiversity Offsets summarised in Table 8 and described in the EA (shown conceptually in Figure 6 in Appendix 4); and
    (b) make suitable arrangements to provide appropriate long term security for the offset areas by the end of August 2010,

    to the satisfaction of the Director-General.

	Offset Area	*Minimum Size*
1	"Glenroc" remnant Ironbark – Pilliga Grey Box vegetation	42.3 ha
2	Northern boundary of project site	2.6 ha
3	Jaeger Lane	2.6 ha
4	Southern boundary of project site	3.8 ha
5	Whitehaven Regional Biodiversity Offset Area	60 ha (see condition 28)

Table 8: Biodiversity Offsets

28. The Proponent is to allocate at least 60 ha of the required offset from the Whitehaven Regional Biodiversity Offset area (offset 5 in Table 8 - also refer to Appendix 5). This must be done in consultation with DECC, and to the satisfaction of the Director-General.

Rehabilitation

29. The Proponent shall progressively rehabilitate the site in a manner that is generally consistent with the final landform set out in the EA (shown conceptually in Figure 5 in Appendix 4) to the satisfaction of the Director-General and DPI.

    The final landform shall provide for at least 84 hectares of woodland vegetation, in a manner generally consistent with that shown conceptually in Figure 6 in Appendix 4.

Landscape Management Plan

30. 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 prepared in consultation with DWE, DECC and GSC by suitably qualified expert/s whose appointment/s have been approved by the Director-General;
    (b) be submitted to the Director-General for approval by the end of March 2009; and
    (c) include a:
        - Rehabilitation and Offset Management Plan;
        - Final Void Management Plan; and
        - Mine Closure Plan.

    Note: The Department accepts that the initial Landscape Management Plan may not include the detailed Final Void Management Plan and Mine Closure Plan. However, if this occurs, the Applicant will be required to seek approval from the Director-General for an alternative timetable for the completion and approval of the Final Void Management Plan and Mine Closure Plan.

Rehabilitation and Offset Management Plan

31. The Rehabilitation and Offset Management Plan must include:
    (a) the objectives for rehabilitation of the site and offset areas;

(b) a strategic description of how the rehabilitation of the site would be integrated with surrounding land use;
(c) a description of the short and long term measures that would be implemented to:
- rehabilitate the site;
- implement the biodiversity offsets;
- manage the remnant vegetation and habitat on the site and in the offset areas; and
- maximise effective vegetative linkages for the offset areas and across the valley floor to the Whitehaven Regional Biodiversity Offset area;

(d) detailed performance and completion criteria for the rehabilitation of the site and the implementation of the biodiversity offsets;
(e) a detailed description of how the performance of the rehabilitation works and the offset areas would be monitored over time to achieve the stated objectives;
(f) 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/or biodiversity offsets and Aboriginal cultural heritage;

(g) a description of the potential risks to successful rehabilitation and/or revegetation, and a description of the contingency measures that would be implemented to mitigate these risks; and
(h) details of who is responsible for monitoring, reviewing and implementing the plan.

Final Void Management Plan

32. The Final Void Management Plan must:
(a) justify the final location, configuration and future use of the final void;
(b) incorporate design criteria and specifications of the final void based on verified groundwater modelling predictions and re-assessment of the post-mining groundwater levels;
(c) assess the potential interactions between groundwater resources, surface water flows and the final void; and
(d) describe what actions and measures would be implemented to:
- minimise any potential adverse impacts associated with the final void; and
- manage and monitor the potential impact of the final void.

Mine Closure Plan

33. The Mine Closure Plan must:
(a) define the objectives and criteria for mine closure;
(b) investigate options for the future use of the site, including the final void;
(c) investigate ways to minimise the adverse socio-economic effects associated with mine closure, including reduction in local and regional employment levels;
(d) describe the measures that would be implemented to minimise or manage the on-going environmental effects of the project; and
(e) describe how the performance of these measures would be monitored over time.

HERITAGE

Note: These conditions should be read in conjunction with section 7 of the Statement of Commitments.

Destruction of Aboriginal Sites

34. The Proponent may destroy sites B1, B2 and B3, and undertake salvage of the artefacts contained in these sites, to the satisfaction of DECC. Representatives of the local Aboriginal community may, subject to the conditions of a Care and Control permit, relocate some or all of the artefacts contained in these sites to the Cumbo Gunerah Keeping Place.

Aboriginal Cultural Heritage Management Plan

35. The Proponent shall not destroy any known Aboriginal objects (as defined in the *National Parks and Wildlife Act 1974*), except in accordance with condition 34, without the written approval of the Director-General.

36. 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 and Hoad Lane intersections);
    (b) be prepared in consultation with the DECC, Red Chief Local Aboriginal Land Council, Gunida Gunyah Aboriginal Corporation, Min Min Aboriginal Corporation and Bigundi Gunnedar Traditional People;
    (c) include a protocol for the ongoing consultation and involvement of Aboriginal communities in the conservation and management of Aboriginal heritage on site;
    (d) make provision for the local Aboriginal community to monitor works at the project site that occur in areas considered by the local Aboriginal community to be culturally sensitive;
    (e) describe the measures that would be implemented to protect Aboriginal objects and traditional resources (such as Wild Orange - *Capparis mitchellii*) on site, or if any new Aboriginal objects or skeletal remains are discovered during the project; and
    (f) describe the cultural heritage awareness and protection training program to be undertaken by all employees and contractors.

TRANSPORT

Note: These conditions should be read in conjunction with sections 12 and 17 of the Statement of Commitments.

Monitoring of Coal Transport

37. The Proponent shall keep records of the amount of coal transported from the mine site, and number of coal truck movements each year, and include these records in the AEMR.

Coal Haul Road

38. Prior to coal being transported from the site, the Proponent shall ensure the coal transport route from the Belmont mine site to the Whitehaven Siding coal handling and preparation plant is constructed and tar sealed, to the satisfaction of GSC. If agreement cannot be reached, the matter shall be referred to the Director-General for resolution.

39. The Proponent shall transport all coal from the site to the Whitehaven Siding coal handling and preparation plant by use of the road transport route shown in Figure 3 of Appendix 2, unless otherwise approved by the Director-General.

Coal Transportation Hours

40. The Proponent shall only dispatch coal from the site by road between the hours of:
    (a) 7 am to 9.15 pm, Monday to Friday;
    (b) 7 am to 5.15 pm Saturday; and
    (c) at no time on Sundays and public holidays.

Kamilaroi Highway Intersections

41. The Proponent shall construct the Kamilaroi Highway intersections in consultation with GSC and to the satisfaction of RTA. This intersection must:
    (a) be completed within 18 months of this approval;
    (b) be constructed in accordance with a Traffic Management Plan approved by NSC and RTA; and
    (c) include appropriate signage and illumination of the intersections.

Hoad Lane Intersection

42. Prior to coal being transported from the site, the Proponent shall construct the Hoad Lane intersection in general accordance with the design shown in Figure 4 of Appendix 1, and to the satisfaction of GSC.

Wean Road

43. By the end of March 2009, the Proponent shall reconstruct and bitumen seal Wean Road from the northern end of the existing tar seal to a point 200 metres north of the proposed light vehicle entry to the site from Wean Road. Additionally, within 3 months of the completion of the proposed diversion of Wean Road to facilitate open cut mining operations, the Proponent shall reconstruct and extend the bitumen seal Wean Road to a point 200 metres north of the relocated position of Jaeger Lane (see Figure 1 of Appendix 2) in general accordance with GSC's Rural Local Roads Standard, and to the satisfaction of GSC.

Road Maintenance Agreement

44. By the end of September 2008, the Proponent shall review (and implement any approved changes to) the road maintenance agreement between the Proponent and GSC for public roads used as the coal transport route within Gunnedah Shire, to the satisfaction of GSC. If agreement cannot be reached, the matter shall be referred to the Director-General for resolution.

Road Noise Management Plan

45. Prior to the transport of any coal from the mine site, the Proponent shall produce and implement a combined Road Noise Management Plan for the project, Canyon (Whitehaven) and Tarrawonga mines, including a noise monitoring program and full consideration of the combined impacts of traffic associated with these mines, in consultation with GSC, and to the satisfaction of the Director-General.

VISUAL

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

46. The Proponent shall:
    (a) ensure no outdoor lights shine above the horizontal;
    (b) ensure that all external lighting associated with the project complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting*;
    (c) take all practicable measures to mitigate off-site lighting impacts from the project; and
    (d) minimise the visual impacts of the project,
    to the satisfaction of the Director-General.

GREENHOUSE & ENERGY EFFICIENCY

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

47. The Proponent shall prepare and implement a Greenhouse and Energy Efficiency Plan for the project to the satisfaction of the Director-General. This plan must:
    (a) be prepared in consultation with DECC and generally in accordance with the *Guidelines for Energy Savings Action Plans* (DEUS 2005, or its latest version);
    (b) be submitted to the Director-General for approval by the end of September 2008;
    (c) include a program to monitor greenhouse gas emissions and energy use generated by the project;
    (d) include a framework for investigating and implementing measures to reduce greenhouse gas emissions and energy use at the site; and
    (e) describe how the performance of these measures would be monitored over time.

WASTE

Note: These conditions should be read in conjunction with section 3 of the Statement of Commitments.

Waste Minimisation

48. The Proponent shall:
    (a) monitor the amount of waste generated by the project;
    (b) investigate ways to reuse, recycle, or minimise the waste generated by the project;
    (c) implement reasonable and feasible measures to minimise 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) report on waste management and minimisation in the AEMR,
    to the satisfaction of the Director-General.

SCHEDULE 4

ADDITIONAL PROCEDURES

INDEPENDENT REVIEW

1. 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.

2. 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.

3. 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
   (b) conduct further monitoring to determine whether these measures ensure compliance.

   If the additional monitoring referred to above subsequently determines that the project is complying with the relevant criteria in schedule 3, or the Proponent and landowner enter into a negotiated agreement to allow these exceedances, then the Proponent may discontinue the independent review with the approval of the Director-General.

4. If the independent review determines that the relevant criteria in schedule 3 are being exceeded, but that more than one project is responsible for this non-compliance, then the Proponent shall, together with the relevant project/s:
   (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the relevant criteria are complied with; and
   (b) conduct further monitoring to determine whether these measures ensure compliance; or
   (c) secure a written agreement with the landowner and other relevant projects to allow exceedances of the criteria in schedule 3,

   to the satisfaction of the Director-General.

   If the additional monitoring referred to above subsequently determines that the projects are complying with the relevant criteria in schedule 3, then the Proponent may discontinue the independent review with the approval of the Director-General.

5. If the landowner disputes the results of the independent review, either the Proponent or the landowner may refer the matter to the Director-General for resolution.

   If the matter cannot be resolved within 21 days, the Director-General shall refer the matter to an Independent Dispute Resolution Process (see Appendix 6).

SCHEDULE 5

ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING

Note: This schedule should be read in conjunction with sections 17 and 18 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 (not including the construction of the Kamilaroi Highway and Hoad Lane intersections and sections 1 and 2 of the road transport route), and:
   (a) provide the strategic framework 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 by the end of September 2008 and consolidate the various monitoring requirements in schedule 3 of this approval into a single document.

REPORTING

Incident Reporting

3. 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. By the end of March 2009, 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. By the end of March 2011, 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 in this approval and any associated EPL or Mining Lease (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 ecology and minesite rehabilitation.

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. By the end of September 2008, or other date agreed by the Director-General, the Proponent shall establish a Community Consultative Committee (CCC) for the project to the satisfaction of the Director-General. This CCC must be established and operated in general accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects (Department of Planning, 2007*, or its latest version) to the satisfaction of the Director-General.

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

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. From the end of September 2008, and thereafter during the project, the Proponent shall:
    (a) provide a copy of this approval as may be modified from time to time on its website;
    (b) provide a comprehensive, running summary of monitoring results required under this approval on its website; and
    (c) update these results on a regular basis (at least every three months).

APPENDIX 1
SCHEDULE OF PROJECT LAND

Area	*Land Title Reference*
Mine Site Area including the proposed Wean Road diversion	*Lots 1 and 4 DP 1120601* *Lot 1 DP 787417*
Coal Haulage Route	*Lots 23 and 28 DP 754929* *Council roads and road reserve, including:* • *Shannon Harbour road (SR 93);* • *Hoad Lane (SR 95);* • *Blue Vale Road (SR 7); and* • *Kamilaroi Highway (SH 29).*
Wean Road	*Wean Road (SR 6)*

APPENDIX 2
PROJECT MAPS

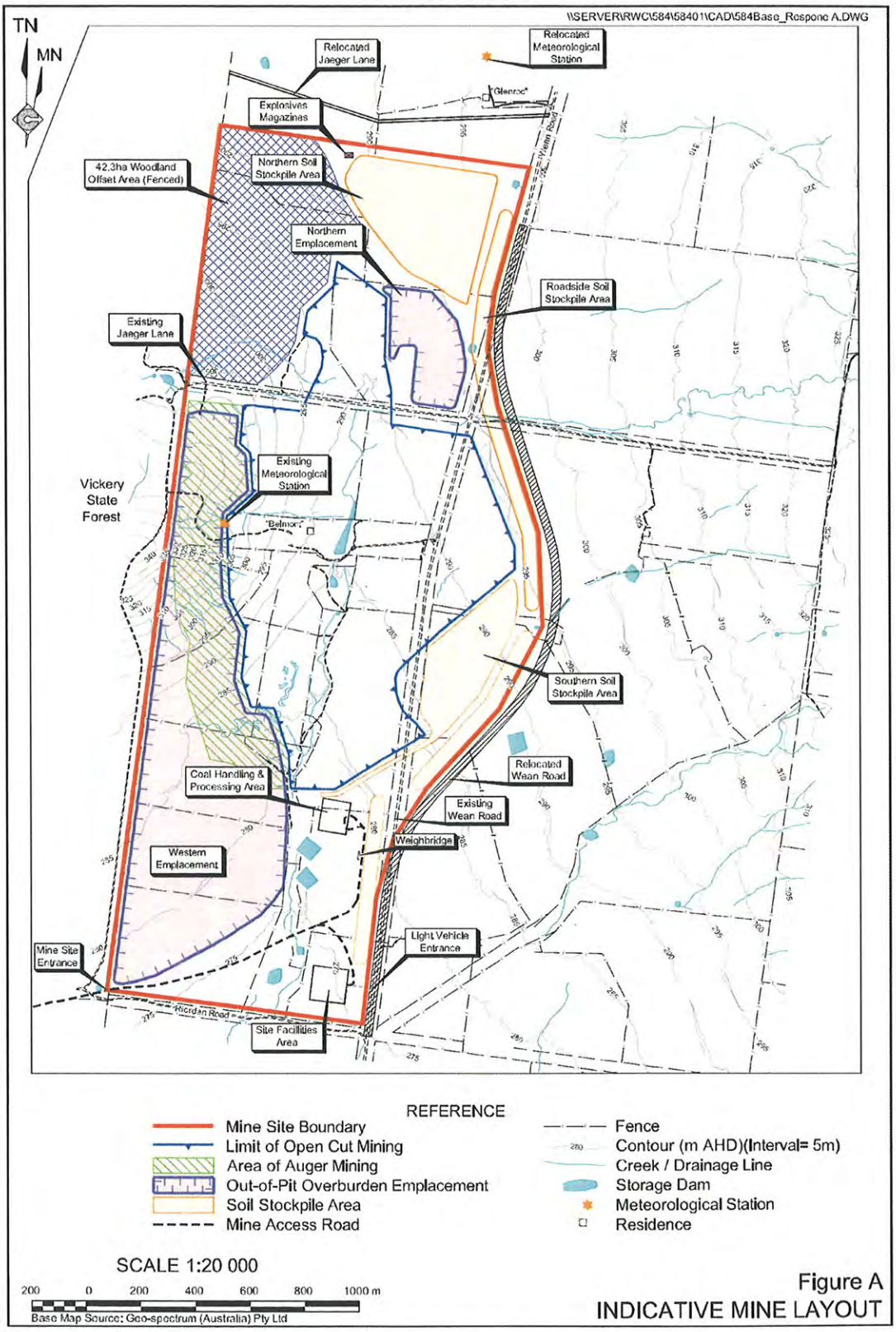


Figure 1: *Project Mine Layout*

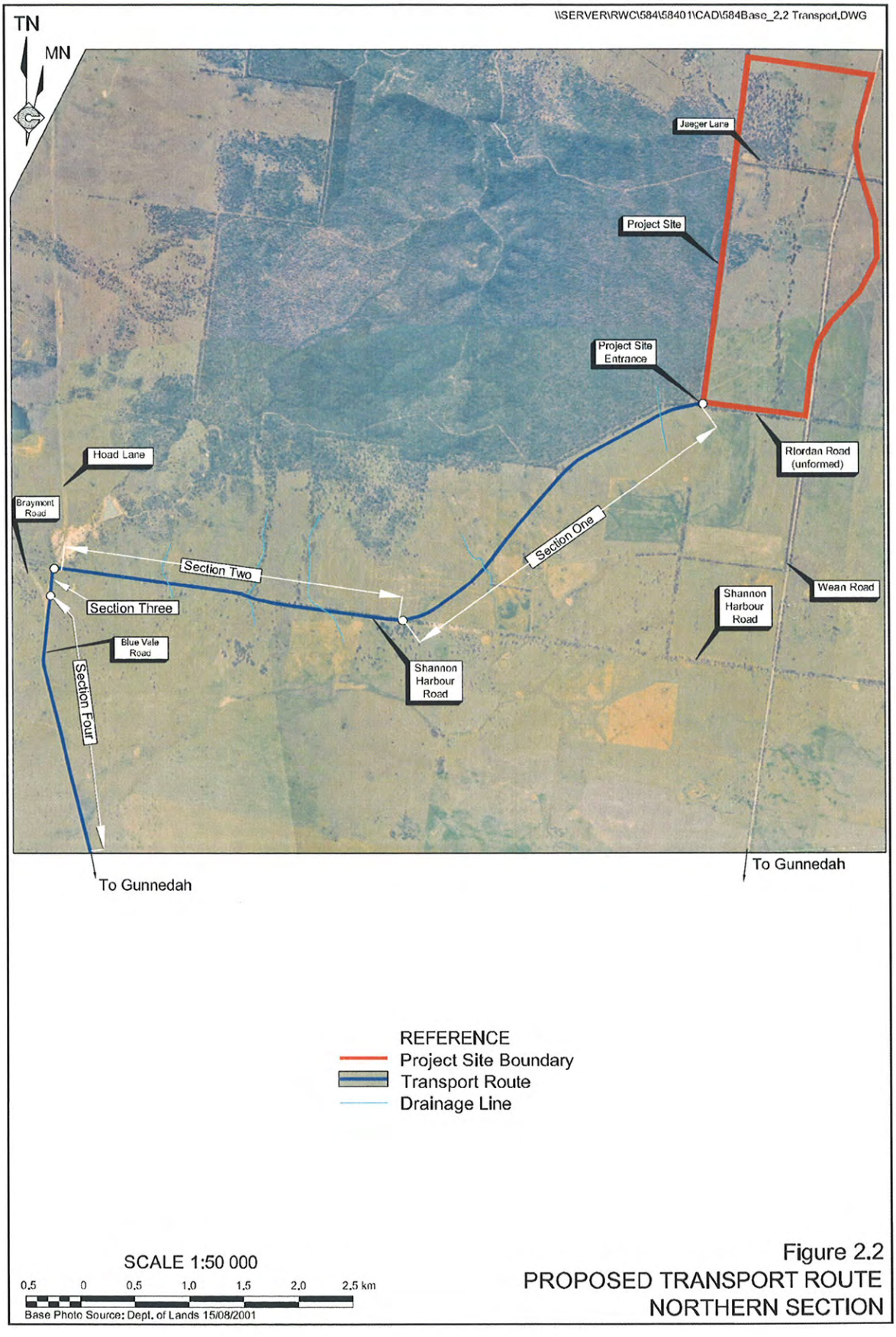


Figure 2: *Project Site (which includes Sections 1 and 2 of the Transport Route)*

Appendix 2

ENVIRONMENT PROTECTION LICENCE 12870

Section 55 Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 12870

Department of **Environment & Climate Change** NSW

Licence Details	
Number:	12870
Anniversary Date:	31-July
Review Due Date:	18-Aug-2014

Licensee

WHITEHAVEN COAL MINING LIMITED
PO BOX 600
GUNNEDAH NSW 2380

Licence Type

Premises

Premises

Rocglen Coal Mine
Wean Road
GUNNEDAH NSW 2380

Scheduled Activity

Mining for coal
Coal works

Fee Based Activity	**Scale**
Mining for coal	> 500000 - 2000000 T produced
Coal works	0 - 2000000 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 - 12870

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:

WHITEHAVEN COAL MINING LIMITED
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	> 500000 - 2000000 T produced
Coal works	0 - 2000000 T loaded

A1.3 Not applicable.

A2 Premises to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
Rocglen Coal Mine
Wean Road
GUNNEDAH
NSW
2380
LOT 1 DP 787417; LOTS 1 & 4 DP 1120601

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 - 12870

Air

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Description of Location
2	Ambient Air Monitoring		Location labelled BD2 (Glenroc) identified on Figure 3 Proposed Air Quality Monitoring Network provided with licence variation application and letter from Whitehaven Coal Mining Pty. Ltd. dated 27 February 2009.
3	Ambient Air Monitoring		Location labelled BD3 (Belah) identified on Figure 3 Proposed Air Quality Monitoring Network provided with licence variation application and letter from Whitehaven Coal Mining Pty. Ltd. dated 27 February 2009.
4	Ambient Air Monitoring		Location labelled BD4 (Surrey) identified on Figure 3 Proposed Air Quality Monitoring Network provided with licence variation application and letter from Whitehaven Coal Mining Pty. Ltd. dated 27 February 2009.
5	Ambient Air Monitoring		Location labelled BD5 (Stratford) identified on Figure 3 Proposed Air Quality Monitoring Network provided with licence variation application and letter from Whitehaven Coal Mining Pty. Ltd. dated 27 February 2009.
6	Ambient Air Monitoring		Location labelled BD6 (Roseberry) identified on Figure 3 Proposed Air Quality Monitoring Network provided with licence variation application and letter from Whitehaven Coal Mining Pty. Ltd. dated 27 February 2009.
7	Ambient Air Monitoring		Location labelled BD7 (Roseglass) identified on Figure 3 Proposed Air Quality Monitoring Network provided with licence variation application and letter from Whitehaven Coal Mining Pty. Ltd. dated 27 February 2009.

EPA Identification no.	Type of Monitoring Point	Type of Discharge Point	Description of Location
8	Ambient Air Monitoring		Location labelled BD8 (Yarrawonga) identified on Figure 3 Proposed Air Quality Monitoring Network provided with licence variation application and letter from Whitehaven Coal Mining Pty. Ltd. dated 27 February 2009.
9	Ambient Air Monitoring		PM10 location labelled BA1 (Glenroc) identified on Figure 3 Proposed Air Quality Monitoring Network provided with licence variation application and letter from Whitehaven Coal Mining Pty. Ltd. dated 27 February 2009.
10	Ambient Air Monitoring		PM10 location labelled "Roseberry" identified on Figure 3 Proposed Air Quality Monitoring Network provided with licence variation application and letter from Whitehaven Coal Mining Pty. Ltd. dated 27 February 2009.

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 - 12870

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 from storage dam 3 identified as 'SD3 Wet Weather Discharge Monitor Point Southern Boundary - Site Exit" on Figure titled "Figure 1 Rocglen Site Water Monitoring for Wet Weather Discharge" submitted to DECC by email on 7 May 2009.
12	Wet weather discharge Discharge water quality monitoring	Wet weather discharge Discharge water quality monitoring	Discharge location at northern site boundary labelled "Wet Weather Discharge Monitori Point Northern Boundary - Site Exit" on Figure titled "Figure 1 Rocglen Site Water Monitoring for Wet Weather Discharge" submitted to DECC by email on 7 May 2009
13	Ambient water quality monitoring		Monitoring point on northern side of mining lease to assess water quality in Driggle Draggle Creek identified as "DDCK" on Figure titled "Figure 1 Rocglen Site Water Monitoring for Wet Weather Discharge" submitted to DECC by email on 7 May 2009
14	Ambient water quality monitoring		Monitoring point on southern side of mining lease to assess water quality in unnamed drainage channel identified as "UNDC" on on Figure titled "Fig 1 Rocglen Site Water Monitoring for Wet Weather Discharge" submitted to DECC by email on 7 May 2009
15	Ambient water quality monitoring		Monitoring point on eastern side of mining lease to monitor upstream water quality in unamed creek identified as "SD7" on Figure titled "Fig 1 Rocglen Site Water Monitoring for Wet Weather Discharge" submitted to DECC by email on 7 May 2009
16	Surface water quality monitoring		Void Mine water dam located on premises

P1.4 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 located on the premises identified as 'relocated meteorological station" on figure A Indicative Mine Layout submitted with licence application dated 28 February 2008

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

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 and 12 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) an $L_{Aeq\ (15\ minute)}$ noise emission criterion of 35 dB(A) at all times (day, evening and night time periods); and

(b) an $L_{A1(1\ minute)}$ noise emission criterion of 45 dB(A) at night

L6.2 **Definitions**

$L_{Aeq\ (15\ minute)}$ is the equivalent continuous noise level- the level of noise equivalent to the energy-average of noise levels occurring over a measures period (i.e. 15 minutes).

$L_{A1(1\ minute)}$ is the A-weighted sound pressure level that is exceeded for 1 per cent of the time over a 1 minute measurement period.

Day time is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and public holidays.

Evening is defined as the period from 6pm to 10pm.

Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays.

Notes

To determine compliance with the LAeq (15 minute) noise limits, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30m of a dwelling where the dwelling is more than 30m from the boundary, over a period of 15 minutes using “FAST“ response on the sound level meter.

To determine compliance with $L_{A1(1\ minute)}$ 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 EPA may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Policy).

The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.

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 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.

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 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.

L7.4 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.

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.

O3.2 Trucks transporting coal from the premises must be covered immediately after loading to prevent wind blown emissions and spillage. The covering must be maintained until immediately before unloading the trucks.

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

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

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 13,14,15

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

POINT 16

Pollutant	Units of measure	Frequency	Sampling Method
Aluminium	milligrams per litre	Yearly	Grab sample
Arsenic	milligrams per litre	Yearly	Grab sample
Bicarbonate	milligrams per litre	Yearly	Grab sample
Chloride	milligrams per litre	Yearly	Grab sample
Conductivity	microsiemens per centimetre	Quarterly	In situ
Iron	milligrams per litre	Yearly	Grab sample
Manganese	milligrams per litre	Yearly	Grab sample
Oil and Grease	milligrams per litre	Quarterly	Grab sample
Sodium	milligrams per litre	Yearly	Grab sample
Total organic carbon	milligrams per litre	Quarterly	Grab sample
Total suspended solids	milligrams per litre	Quarterly	Grab sample
pH	pH	Quarterly	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 a flow during the quarter) at a time when there is flow and as soon as practicable after each wet weather discharge from points 11 and 12 commences and in any case not more than 12 hours after each discharge commences.

Note: Groundwater monitoring points have not been formally included in the licence. However, the licensee is required to undertake groundwater monitoring in accordance with a Department of Planning approved Water Management Plan required under Schedule 3, condition 2 Project Approval 06-0198 dated 15 April 2008. The licensee has submitted the document "*Site Water Management Plan for the Rocglen Coal Mine, Whitehaven Coal Mining Pty Ltd, 2008."* This document has been approved by Planning following consultation by the licensee with the EPA. The results of this monitoring are required to be reported in the Annual Environmental Management Report (AEMR).

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 and Blast Monitoring

M8.1 For each monitoring point specified below, the Licensee must monitor the noise or vibration 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

Parameter	Units of measure	Frequency	Sampling Method
Ambient Noise	$L_{Aeq\ (15\ minute)}$ L_{Amax} $L_{A1(1\ minute)}$ L_{A10} L_{A90} L_{Amin}	Frequency of monitoring as detailed in the document "Noise Monitoring Program for the Rocglen Mine, Whitehaven Coal Mining Pty. Ltd., 24/4/2008"	Type 1 Noise Meter – unattended and attended monitoring as detailed in the document "Noise Monitoring Program for the Rocglen Mine, Whitehaven Coal Mining Pty. Ltd., 24/4/2008"

M8.2 To determine compliance with condition(s) L7.1, L7.2, L7.3 and L7.4:

a) Airblast overpressure and ground vibration levels must be measured and electronically recorded at points N1, N2 - for all blasts carried out in or on the premises; and
b) Instrumentation used to measure the airblast overpressure and ground vibration levels must meet the requirements of Australian Standard AS 2187.2-2006.

M8.3 For the purpose of conditions L8.1 and L8.2, the noise monitoring locations are described as:

EPA Identification No.	Description of Location
N1	Property 'Costa Vale' residence
N2	Property 'Surrey' residence

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.

R4 The licensee must report any exceedence of the licence blasting limits to the regional office of the EPA as soon as practicable after the exceedence becomes known to the licensee or to one of the licensee's employees or agents.

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

E1.1 Not applicable.

Dictionary

General Dictionary

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

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 12870

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
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

Environment Protection Licence

Licence - 12870

Department of Environment & Climate Change NSW

Mr Robert O'Hern

Environment Protection Authority

(By Delegation)

Date of this edition - 18-Aug-2009

End Notes

1	Licence varied by notice 1096864, issued on 19-May-2009, which came into effect on 19-May-2009.
2	Licence varied by notice 1103283, issued on 18-Aug-2009, which came into effect on 18-Aug-2009.

Appendix 3

COMPLIANCE REVIEWS

- PA 06_0198 MOD 1 (Table A3-1)
- Environment Protection Licence No 12870 (Table A3-2)
- ML 1620 (Table A3-3)

TABLE A3.1

Compliance Review – PA 06_0198 MOD 1

Condition	Conditional Requirement	Compliance	Comments
Schedule 2: Administrative Conditions			
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.	Yes	Activities on site are undertaken on the basis of minimising harm to the environment.
2.	The Proponent shall carry out the project generally in accordance with the: (a) EA; (b) statement of commitments; (c) modification application 06_0198 MOD 1 and the accompanying Environmental Assessment prepared by GSS Environmental and dated May 2010; and (d) the conditions of this approval.	Yes	The activities on site were being undertaken in accordance with the nominated documents.
3.	If there is an inconsistency between the above documents, the latter document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.	Not Applicable	
4.	The Proponent shall comply with any reasonable and feasible requirements of the Director-General arising from the Departments 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	Any requests by the Department have been addressed.
5.	Mining operations may take place on the site for 12 years from the grant of the mining lease for the project.	Not Yet Applicable	
6.	The Proponent shall not extract more than 1.5 million tonnes of ROM coal a year from the site.	Yes	During the reporting period 956,535 tonnes of ROM coal was extracted.
7.	The Proponent is permitted to undertake mining operations 24 hours a day, Monday to Saturday, with the exception of public holidays. Note: This condition does affect the operation of conditions 13 and 40 of schedule 3 in relation to blasting and coal transportation hours.	Yes	As per condition. See Section 2.4.4.
8.	The Proponent is only permitted to undertake construction activities between the hours of: (a) 6 am to 8 pm, Monday to Saturday; (b) 6 am to 5 pm, Sunday; and (c) At no time on public holidays	Not Applicable	No construction during the reporting period.
9.	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.	Not Applicable	
10.	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.	Yes	All buildings meet relevant requirements.
11.	The Proponent shall ensure that all demolition work is carried out in accordance with *Australian Standard 2601-2001: The Demolition of Structures*, or its latest version.	Not Applicable	No buildings demolished during reporting period.

Condition	Conditional Requirement	Compliance	Comments
12.	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 plant and equipment maintained in a proper and efficient manner.
Schedule 3: Specific Environmental Conditions			
1.	Except as may be expressly provided for by an EPL, the Proponent shall not discharge any surface waters from the site.	Yes	Water only discharged from locations nominated on EPL. See Section 2.8.3 for details about discharges during the reporting period.
2.	The Proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Director-General. This plan must: (a) be prepared in consultation with DWE and DECC by suitably qualified expert/s whose appointment/s have been approved by the Director-General (b) be submitted to the Director-General prior to the commencement of construction activities (no including construction of the Kamilaroi Highway and Hoad Lane intersections or sections 1 and 2 of the road transport route); and (c) include a: • Site Water Balance; • Erosion and Sediment Control Plan; • Surface Water Monitoring Plan; • Groundwater Monitoring Program; and • Surface and Groundwater Response Plan, setting out the procedures for: o investigating, and if necessary mitigating, any exceedances of the surface or groundwater assessment criteria (see below); and o responding to any unforeseen impacts of the project.	Yes	Water Management Plan prepared in accordance with this condition and approved on 16th June 2008 by the Director-General. Amended SWMP (incorporated additional water management structures and EPL wet weather discharge points) approved on 6th October 2009 by the Director-General.
3.	The Site Water Balance must: (a) include details of: • sources and security of water supply; • water use on site; • water management on site; • any off-site water transfers; (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.	Yes	As per condition.
4.	The Erosion and Sediment Control Plan must: (d) be consistent with the requirements of *Managing Urban Stormwater: Soils and Construction* manual (Landcom 2004, or its latest version); (e) identify activities that could cause soil erosion and generate sediment; (f) describe measures to minimise soil erosion and the potential for transport of sediment to downstream waters; (g) describe the location, function, and capacity of erosion and sediment control structures; and (h) describe what measures would be implemented to monitor and maintain the structures over time.	Yes	As per condition.

Condition	Conditional Requirement	Compliance	Comments
5.	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; and (d) procedures for reporting the results of this monitoring.	Yes	As per condition.
6.	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; and (e) procedures for reporting the results of this monitoring.	Yes	As per condition.
7.	The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria set out in Table 1 at any residence on privately-owned land, or on more that 25 percent of any privately-owned land. However, if the Proponent has a written negotiated noise agreement with any landowner and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated noise agreement.	No	2 dB exceedance at "Surrey" and 3 dB exceedance at "Costa Vale" on the 8th September 2009. See Section 3.10.3 for details.
8.	The Proponent shall ensure that the cumulative noise generated by road traffic associated with the project, Canyon (Whitehaven) and Tarrawonga mines on public roads does not exceed the criteria in Table 2.	Yes	Cumulative road noise below criteria. See Section 3.10.3.
9.	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	As per condition.
10.	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 prepared in consultation with the DECC; (b) be submitted to the Director-General for approval prior to the commencement of construction activities (not including the construction of the Kamilaroi Highway and Hoad Lane intersections and sections 1 and 2 of the coal transport route); (c) use attended noise monitoring measures to monitor the performance of the project; and (d) include a protocol to establish whether the project is complying with the noise impact assessment criteria in Tables 1 and 2.	Yes	Plan approved by DG – 27th May 2008.

Condition	Conditional Requirement	Compliance	Comments
11.	The Proponent shall ensure that the airblast overpressure level from blasting at the project does no exceed the criteria in Table 3 and any residence on privately-owned land. • 115dBL, Allowable exceedances: 5% of the total number of blasts in a 12 month period. • 120dBL at any time.	No	See Section 3.9 and Appendix 8.
12.	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 4 at any residence on privately-owned land. • 5mm/s, Allowable exceedances: 5% of the total number of blasts in a 12 month period. • 10mm/s at any time.	Yes	All ground vibration levels at non-project-related residences were less than 5mm/s. See Section 3.9 and Appendix 8.
13.	The proponent shall only carry out blasting on site between 9 am and 5 pm Monday to Saturday.	Yes	As per condition. See Appendix 8.
14.	The Proponent may carry out: (a) a maximum of 2 blasts a day; (b) 5 blasts a week, averaged over a 12 month period; on site without the written approval of the Director-General.	Yes	As per condition. See Appendix 8.
15.	During mining operations on site, the Proponent shall implement the best blasting practice to: (a) protect the safety of people, property, public infrastructure, and livestock; (b) minimise the dust and fume emissions from blasting at the mine site to the satisfaction of the Director-General.	Yes	As per Blasting Monitoring Program.
16.	The Proponent shall not undertake blasting within 500 metres of any privately-owned land, unless suitable arrangements have been made with the landowner and any tenants to minimise the risk of flyrock-related impact to the property to the satisfaction of the Director-General.	Yes	As per Blasting Monitoring Program.
17.	Prior to blasting within 500 metres of any public road, the Proponent shall prepare and implement a Road Closure Management Plan for the project to the satisfaction of the GSC and DPI.	Yes	Road Closure Management Plan approved by GSC on the 9th February 2009 and DPI on the 7th April 2009.
18.	During mining operations on site, the Proponent shall: (a) notify any person who registers an interest in being notified about the blasting schedule at the mine; (b) operate a Blasting Hotline, or alternate system agreed to by the Director-General, to enable the public to get up-to-date information on the blasting schedule at the project; (c) advertise the blasting hotline number in a local newspaper each year; and (d) provide signage, with updated details of proposed blasting times, immediately to the north and south of the mine site on Wean Road, to the satisfaction of the Director-General.	Yes	As per condition.
19.	Before carrying out any blasting, the Proponent shall advise the owners of "Costa Vale", "Surrey" and "Brolga", 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.	Yes	Blasting system in place to ensure all affected landowners/occupiers are kept informed of blasting arrangements.

Condition	Conditional Requirement	Compliance	Comments
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.	Yes	As per condition.
21.	If any landowner within a 2 km of proposed blasting activities, or any other landowner nominated by the Director-General, claims that any building or structure on 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.	Not Yet Applicable	No requests for property inspections received.
22.	Prior to the commencement of blasting, the Proponent shall prepare and implement a detailed Blasting Monitoring Program for the project in consultation with DECC, and to the satisfaction of the Director-General.	Yes	Blasting Monitoring Program approved 27th May 2008.
23.	The Proponent shall ensure that dust emissions generated by the project does not cause additional exceedances of the criteria in Tables 5 to 7 at any residence on privately owned land, or on more than 25 percent of any privately-owned land. • Total suspended particulate (TSP) matter – Annual average: 90µg/m3 • Particulate matter <10 µm(PM10) – Annual average: 30 µg/m3 • Particulate matter <10 µm(PM10) – 24 hour period - 50 µg/m3 • Deposited dust – Annual average: o Maximum increase in deposited dust level – 2 g/m2/month o Maximum total deposited dust level – 4 g/m2/month	No	See Section 3.1.3 and Appendix 5.
24.	The Proponent shall prepare and implement an Air Quality Monitoring Program for the project in consultation with DECC, and 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 Kamilaroi Highway and Hoad Lane intersections and sections 1 and 2 of the coal transport route); (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.	Yes	Air Quality Monitoring Program (AQMP) approved 27th May 2008. AQMP revised in Jan 2009 to include HVAS relocation. Updated locations also incorporated in Environmental Monitoring Program (approved by DG – July 2009).

Condition	Conditional Requirement	Compliance	Comments
25.	During the project, the Proponent shall ensure there is a suitable meteorological station on site that complies with the requirements in *Approved Methods for Sampling of Air Pollutants in New South Wales* (DECC, 2007), or its latest version.	Yes	Long term meteorological station used onsite since 2002. Meteorological station upgrade in April 2009 to ensure station meets the requirements in the Approved Methods.
26.	The Proponent shall ensure that subsidence of the land surface caused by auger coal mining does not result in vertical subsidence of greater than 20 mm.	Yes	Nil subsidence.
27.	The Proponent shall: (a) implement the Biodiversity Offsets summarised in Table 8 and described in the EA (shown conceptually in Figure 6 in Appendix 4); and (b) make suitable arrangements to provide appropriate long term security for the offset areas by the end of August 2010, to the satisfaction of the Director-General.	Not Yet Applicable	Regional Biodiversity Offset expected to be established by the end of October 2010
28.	The Proponent is to allocate at least 60 ha of the required offset from the Whitehaven Regional Biodiversity Offset area (offset 5 in Table 8). This must be done in consultation with DECC, and to the satisfaction of the Director-General.	Not Yet Applicable	Regional Biodiversity Offset expected to be established by the end of October 2010.
29.	The Proponent shall progressively rehabilitate the site in a manner that is generally consistent with the final landform set out in the EA (shown conceptually in Figure 5 in Appendix 4) to the satisfaction of the Director-General and DPI. The final landform shall provide for at least 84 hectares of woodland vegetation, in a manner generally consistent with that shown conceptually in Figure 6 in Appendix 4.	Not Yet Applicable	As per condition.
30.	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 prepared in consultation with DWE, DECC and GSC by suitably qualified expert/s whose appointment/s have been approved by the Director-General; (b) be submitted to the Director-General for approval by the end of March 2009; and (c) include a: • Rehabilitation and Offset Management Plan; • Final Void Management Plan; and • Mine Closure Plan	No	Awaiting completion of Regional Biodiversity Offset Strategy (see condition 27).

Condition	Conditional Requirement	Compliance	Comments
31.	The Rehabilitation and Offset Management Plan must include: (a) the objectives for rehabilitation of the site and offset areas; (b) a strategic description of how the rehabilitation of the site would be integrated with surrounding land use; (c) a description of the short and long term measures that would be implemented to: • rehabilitate the site; • implement the biodiversity offsets; • manage the remnant vegetation and habitat on the site and in the offset areas; and • maximise effective vegetative linkages for the offset areas and across the valley floor to the Whitehaven Regional Biodiversity Offset area; (d) detailed performance and completion criteria for the rehabilitation of the site and the implement of the biodiversity offsets; (e) a detailed description of how the performance of the rehabilitation works and the offset areas would be monitored over time to achieve the stated objectives; (f) a detailed description of the measures that would be implemented to rehabilitate the site, including 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/or biodiversity offsets and Aboriginal cultural heritage; (g) a description of the potential risks to successful rehabilitation and/or revegetation, and a description of the contingency measures that would be implemented to mitigate these risks; and (h) details of who is responsible for monitoring, reviewing and implementing the plan.	No	See condition 30.
32.	The Final Void Management Plan must: (a) justify the final locations, configuration and future use of the final void; (b) incorporate design criteria and specifications of the final void based on verified groundwater modelling predictions and re-assessment of the post-mining groundwater levels; (c) assess the potential interactions between groundwater resources, surface water flows and the final void; and (d) describe what actions and measures would be implemented to: • minimise any potential adverse impacts associated with the final void; and • manage and monitor the potential impact of the final void.	No	See condition 30.

Condition	Conditional Requirement	Compliance	Comments
33.	The Mine Closure Plan must: (a) define the objectives and criteria for mine closure; (b) investigate options for the future use of the site, including the final void; (c) investigate ways to minimise the adverse socio-economic effects associated with mine closure, including reduction in local and regional employment levels; (d) describe the measures that would be implemented to minimise or manage the on-going environmental effects of the project and (e) describe how the performance of these measures would be monitored over time.	No	See condition 30.
34.	The Proponent may destroy sites B1, B2 and B3, and undertake salvage of the artefacts contained in these sites, to the satisfaction of DECC. Representatives of the local Aboriginal community may, subject to the conditions of a Care and Control permit, relocate some or all of the artefacts contained in these sites to the Cumbo Gunerah Keeping Place.	Yes	Complete.
35.	The Proponent shall not destroy any known Aboriginal objects (as defined in the National Parks and Wildlife Act 1974), except in accordance with condition 34, without the written approval of the Director-General.	Yes	No known Aboriginal objects destroyed.
36.	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 to the Director-General prior to the commencement of construction activities (not including the construction of the Kamilaroi Highway and Hoad Lane intersections); (b) be prepared in consultation with the DECC, Red Chief Local Aboriginal Land Council, Gunida Gunyah Aboriginal Corporation, Min Min Aboriginal Corporation and Bigundi Gunnedar Traditional People; (c) include a protocol for the ongoing consultation and involvement of Aboriginal communities in the conservation and management of Aboriginal heritage on site; (d) make provision for the local Aboriginal community to monitor works at the project site that occur in areas considered by the local Aboriginal community to be culturally sensitive; (e) describe the measures that would be implemented to protect Aboriginal objects and traditional resources (such as Wild Orange – *Capparis mitchellii*) on site, or if any new Aboriginal objects or skeletal remains are discovered during the project; and (f) describe the cultural heritage awareness and protection training program to be undertaken by all employees and contractors.	Yes	Aboriginal Cultural Heritage Management Plan approved 5th June 2008.
37.	The Proponent shall keep records of the amount of coal transported from the mine site, and number of coal truck movements each year, and include these records in the AEMR.	Yes	As per condition.
38.	Prior to coal being transported from the site, the Proponent shall ensure the coal transport route from the Belmont mine site to the Whitehaven Siding coal handling and preparation plant is constructed and tar sealed, to the satisfaction of GSC. If agreement cannot be reached, the matter shall be referred to the Director-General for resolution.	Yes	As per condition.

Condition	Conditional Requirement	Compliance	Comments
39.	The Proponent shall transport all coal from the site to the Whitehaven Siding coal handling and preparation plant by use of the road transport route shown in Figure 3 of Appendix 2, unless otherwise approved by the Director-General.	Yes	As per condition.
40.	The Proponent shall only dispatch coal from the site by road between the hours of (a) 7 am to 9:15 pm, Monday to Friday; (b) 7 am to 5:15 pm Saturday; and (c) At no time on Sundays and public holidays.	Yes	As per condition.
41.	The Proponent shall construct the Kamilaroi Highway intersections in consultation with GSC and to the satisfaction of RTA. This intersection must: (a) be completed within 18 months of this approval; (b) be constructed in accordance with a Traffic Management Plan approved by NSC and RTA; and (c) include appropriate signage and illumination of the intersections.	No	Works currently being completed.
42.	Prior to coal being transported from the site, the Proponent shall construct the Hoad Lane intersection in general accordance with the design shown in Figure 4 of Appendix 1, and to the satisfaction of GSC.	Yes	As per condition.
43.	By the end of March 2009, the Proponent shall reconstruct and bitumen seal Wean Road from the northern end of the existing tar seal to a point 200 metres north of the proposed light vehicle entry to the site from Wean Road. Additionally, within 3 months of the completion of the proposed diversion of Wean Road to facilitate open cut mining operations, the Proponent shall reconstruct and extend the bitumen seal Wean Road to a point 200 metres north of the relocated position of Jaeger Lane (see Figure 1 of Appendix 2) in general accordance with GSC's Rural Local Roads Standard, and to the satisfaction of GSC.	No	Wean Road reconstruction and bitumen sealing completed April 2010. Realignment of Wean Road scheduled for next AEMR period.
44.	By the end of September 2008, the Proponent shall review (and implement any approved changes to) the road maintenance agreement between the Proponent and GSC for public roads used as the coal transport route within Gunnedah Shire, to the satisfaction of GSC. If agreement cannot be reached, the matter shall be referred to the Director-General for resolution.	No	Completed early August 2009.
45.	Prior to the transport of any coal from the mine site, the Proponent shall produce and implement a combined Road Noise Management Plan for the project, Canyon (Whitehaven) and Tarrawonga mines, including a noise monitoring program and full consideration of the combined impacts of traffic associated with these mines, in consultation with GSC, and to the satisfaction of the Director-General.	Yes	Road Noise Management Plan approved 7th November 2008.
46.	The Proponent shall: (a) ensure no outdoor lights shine above the horizontal; (b) ensure that all external lighting associated with the project complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting*; (c) take all practicable measures to mitigate off-site lighting impacts from the project; and (d) minimise the visual impacts of the project, to the satisfaction of the Director-General.	Yes	As per condition.

Condition	Conditional Requirement	Compliance	Comments
47.	The Proponent shall prepare and implement a Greenhouse and Energy Efficiency Plan for the project to the satisfaction of the Director-General. The plan must: (a) be prepared in consultation with DECC and generally in accordance with the *Guidelines for Energy Savings Action Plans* (DEUS 2005, or its latest version) (b) be submitted to the Director-General for approval by the end of September 2008; (c) include a program to monitor greenhouse gas emissions and energy use generated by the project; (d) include a framework for investigating and implementing measures to reduce greenhouse gas emissions and energy use at the site; and (e) describe how the performance of these measures would be monitored over time.	No	Greenhouse and Energy Efficiency Plan approved 10th July 2009.
48.	The Proponent shall: (a) monitor the amount of waste generated by the project; (b) investigate ways to reuse, recycle, or minimise the waste generated by the project; (c) implement reasonable and feasible measures to minimise 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) report on waste management and minimisation in the AEMR, to the satisfaction of the Director-General.	Yes	As per condition.
Schedule 4: Additional Procedures			
1.	If a landholder 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.	Not Yet Applicable	No requests from adjoining landowners.
2.	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.	Not Yet Applicable	

Condition	Conditional Requirement	Compliance	Comments
3.	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 (b) conduct further monitoring to determine whether these measures ensure compliance. If the additional monitoring referred to above subsequently determines that the project is complying with the relevant criteria in schedule 3, or the Proponent and landowner enter into a negotiated agreement to allow these exceedances, then the Proponent may discontinue the independent review with the approval of the Director-General .	Not Yet Applicable	
4.	If the independent review determines that the relevant criteria in schedule 3 are being exceeded, but that more than one project is responsible for this non-compliance, then the Proponent shall, together with the relevant project/s: (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the relevant criteria are complied with; and (b) conduct further monitoring to determine whether these measures ensure compliance; or (c) secure a written agreement with the landowner and other relevant projects to allow exceedances of the criteria in schedule 3, to the satisfaction of the Director-General. If the additional monitoring referred to above subsequently determines that the projects are complying with the relevant criteria in schedule 3, then the Proponent may discontinue the independent review with the approval of the Director-General.	Not Yet Applicable	
5.	If the landowner disputes the results of the independent review, either the Proponent or the landowner may refer the matter to the Director-General for resolution. If the matter cannot be resolved within 21 days, the Director-General shall refer the matter to an Independent Dispute Resolution Process (see Appendix 6).	Not Yet Applicable	

Condition	Conditional Requirement	Compliance	Comments
Schedule 5: Environmental Management, Monitoring, Auditing and Reporting			
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 (not including the construction of the Kamilaroi Highway and Hoad Lane intersections and sections 1 and 2 of the road transport route), and: (a) provide the strategic framework 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.	Yes	Environmental Management Strategy approved by DG on 27th May 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 by the end of September 2008 and consolidate the various monitoring requirements in schedule 3 of this approval into a single document.	No	Environmental Monitoring Program approved by DG on 15th July 2009.
3.	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.	Yes	As per condition.
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) describe 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.	Yes	As per condition.

Condition	Conditional Requirement	Compliance	Comments
5.	By the end of March 2009, 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 • predications in the EA; (g) identify any trends in the monitoring results over the life of the project; (h) identify any non-compliance during the previous year; and (i) describe what actions were, or are being, taken to ensure compliance.	Yes	AEMR includes requirements of this condition.
6.	By the end of March 2011, 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 in this approval and any associated EPL or Mining Lease (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.	Not Yet Applicable	
7.	Within 6 weeks of the completing of this audit, or as otherwise directed 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.	Not Yet Applicable	
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.	Not Yet Applicable	
9.	By the end of September 2008, or other date agreed by the Director-General, the Proponent shall establish a Community Consultative Committee (CCC) for the project to the satisfaction of the Director-General. This CCC must be established and operated in general accordance with the Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects (Department of Planning, 2007, or its latest version) to the satisfaction of the Director-General.	Yes	Rocglen Community Consultative Committee established in July 2008.

Condition	Conditional Requirement	Compliance	Comments
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.	Yes	As per condition.
11.	From the end of September 2008, and thereafter during the project, the Proponent shall: (a) provide a copy of this approval as may be modified from time to time on its website; (b) provide a comprehensive, running summary or monitoring results required under this approval on its website; and (c) update these results on a regular basis (at least every three months).	Yes	As per condition.

TABLE A3.2

Compliance Review – Environment Protection Licence 12870

Condition	Conditional Requirement	Compliance	Comments
A1.2	Mining for coal: >500,000 – 2,000,000 t produced. Coal works: 0 – 2,000,000 t loaded	Yes	ROM coal production in 2009/2010 reporting period = 956,535 tonnes Coal loaded within specified limits.
A4.1	Carry out works and activities in accordance with proposal contained in licence application.	Yes	As per condition.
L1.1	Comply with Section 120 of the POEO Act 1997 (re pollution of waters).	Yes	All efforts are maintained to ensure compliance with Section 120.
L3.1	Comply with concentration limits: Oil & Grease 10 mg/L pH 6.5 – 8.5 TSS 50 mg/L	No	See Section 2.8.3 for details.
L6.1	Ensure noise compliance: (a) $L_{Aeq(15min)}$ criterion of 35dB(A) at all times (day, evening and night time periods); and (b) $L_{A1(1\ min)}$ criterion of 45dB(A) at night.	No	2 dB exceedance at "Surrey" and 3 dB exceedance at "Costa Vale" on 8th September 2009. See Section 3.10.3 for details.
L6.2	Noise to be measured at any residence not on the premises to determine compliance	Yes	Noise levels monitored at residences as identified and approved in the Noise Monitoring Program. See Appendix 9 for details.
L7.1	The overpressure level from blasting operations at the premises must not exceed 115dB(Lin Peak) for more than 5% of total number of blasts over reporting period.	No	See Section 3.9 and Appendix 8 for details on exceedances.
L7.2	The overpressure level from blasting operations at the premises must not exceed 120dB(Lin Peak) at any time.	Yes	As per condition. See Section 3.9 and Appendix 8 for details.
L7.3	Ground vibration peak particle velocity from blasting operations must not exceed 5mm/s for more than 5% of the total number of blasts during the reporting period.	Yes	See Appendix 8. No exceedances during reporting period.
L7.4	Ground vibration peak particle velocity from blasting operations must not exceed 10mm/s at any time.	Yes	See Appendix 8. No exceedances 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; and (b) treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.	Yes Yes	As per licence condition.
O2.1	All plant and equipment installed at the premises or used in connection with the licensed activity must: (a) be maintained in a proper and efficient condition; and (b) be operated in a proper and efficient manner.	Yes	All plant and equipment is closely monitored and regularly serviced by Rocglen Coal Mine personnel.
O3.1	Minimise or prevent emission of dust from the premises.	Yes	Dust emissions are successfully minimised (unable to "prevent" dust emission) principally through watering and progressive rehabilitation.
03.2	Ensure all trucks cover their loads after loading to prevent wind blown emissions and spillage.	Yes	All trucks are required to use tarpaulins in the transport of coal.
M1.1	Record and retain monitoring results required as per this licence.	Yes	Monitoring records documented in the AEMRs.
M1.2	Keep all monitoring records associated with this licence: (a) in a legible form; (b) for at least 4 years; (c) produced in a legible form to any authorised officer of the EPA who asks to see them.	Yes	As per condition.
M1.3	Keep the following records in respect to samples required: (a) sampling date; (b) sampling time; (c) sampling location; and (d) sample collector's name.	Yes Yes Yes Yes	This information is held on chain-of-custody documentation compiled to accompany samples to the laboratory.
M2.1	Monitor the concentration of each pollutant specified using the sampling method, units and frequency specified.	Yes	Monitoring undertaken as required.

Condition	Conditional Requirement	Compliance	Comments
M3.1	Monitor air pollutants in accordance with the Approved Methods publication or as approved by EPA.	Yes	Test method used refers to the EPA approved publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW."
M3.2	Monitor pollutants discharged to waters in accordance with the Approved Methods publication or as approved by EPA.	Yes	As per condition.
M4.1	Keep a legible record of all complaints re pollution arising from licenced activity.	Yes	Complaints register maintained by Environmental Manager.
M4.2	Keep the following records of complaints. (a) date and time of complaint; (b) method complaint made; (c) any personal details of complainant; (d) nature of complaint; (e) licensee's action in response, any follow-up contact; and (f) if no action – reason why.	 Yes Yes Yes Yes Yes Yes	Complaints records are compiled in accordance with the condition.
M4.3	Keep records of complaints for 4 years.	Yes	All records have been kept to date.
M4.4	Present records to EPA upon request.	Yes	All records would be made available to the EPA upon request.
M5.1	Operate telephone complaints line for receipt of complaints from the public.	Yes	Rocglen Coal Mine operates a complaints hotline on telephone No. 0439 441 251.
M5.2	Notify the public of the complaints telephone line number.	Yes	Complaints hotline advertised in local press.
M7.1	Monitor meteorological conditions as specified	Yes	Initial meteorological station installed in 2002 and new station installed April 2009. Meteorological conditions monitored as specified in condition.
M8.1	For monitoring points specified, monitor noise utilising sampling method, units and frequency as directed.	Yes	As per condition.
R1.1	Complete and supply Annual Return to EPA comprising: (a) Statement of Compliance; (b) Monitoring & Complaints Summary.	Yes	As per condition.

Condition	Conditional Requirement	Compliance	Comments
R1.5	Provide EPA with Annual Return no later than 60 days after end of each reporting period.	Yes	As per condition.
R1.7	Retain copy of Annual Return for 4 years.	Yes	As per condition.
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	As per condition.
R2.1	Notify EPA of threatening or harmful incidents as soon as practicable by phoning EPA's Pollution Line service.	Not Yet Applicable	No incidents during reporting period.
R2.2	Provide written details of the incident to EPA within 7 days of incident.	Not Yet Applicable	No incidents during reporting period.
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.	Not Yet Applicable	No requests received from EPA during reporting period (or to date).
R3.2	The licensee must make all reasonable inquiries in relation to the even and supply the report to the EPA within such time as may be specified in the request.	Not Yet Applicable	No requests received from EPA during reporting period (or to date).

Condition	Conditional Requirement	Compliance	Comments
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 contact with complainants in relation to event; (f) mitigation measures proposed to prevent recurrence; (g) any other relevant matters.	Not Yet Applicable	No requests received from EPA during reporting period (or to date).
R3.4	EPA may request further details – must be supplied within specified time.	Not Yet Applicable	No requests received from EPA during reporting period (or to date).
R4	Report any exceedance of the licence blasting limits to the regional office of the EPA as soon as practicable after the exceedance becomes known.	No	The exceedance in overpressure was not initially reported to agencies due to oversight. A report has been completed into the incident and has now been referred under covering letter to agencies.
G1.1	Retain a copy of this licence at premises to which the licence applies.	Yes	Retained in the Rocglen Site Office.
G1.2	Produce licence to EPA officer upon request.	Not Yet Applicable	Rocglen Coal Mine personnel would produce the licence upon request.
G1.3	Make licence available for inspection by any employee or agent of licencee working at premises.	Yes	Licence is located in Rocglen Site Office if required. Rocglen Coal Mine personnel would produce the licence upon request.

TABLE A3-3

Compliance Review – ML 1620

Relevant Condition	Conditional Requirement	Compliance	Comments
1	Service of notice on landholders of granting of mining lease.	Yes	All affected landholders were advised within 3 months of the grant date.
2	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 development.	Yes	As per condition.
3	Prepare and submit a MOP in accordance with DG's guidelines.	Yes	Initial MOP lodged with DPI and accepted on the 12th June 2008. MOP amendment for highwall stability works submitted 23rd September 2010 and awaiting approval. MOP period ends May 2014.
4	Lodge an annual Environmental Management Report with DG annually.	Yes	As per condition.
5.	Prepare the EMR in accordance with requirements in the Mining Lease.	Yes	Prepared in accordance with the requirements.
6	Submit additional environmental reports as directed by the DG.	Not Yet Applicable	No directions issued.
7	Rehabilitate disturbed land to a sustainable/agreed end land use to the satisfaction of the DG.	Yes	Reshaping and rehabilitation works progressing as appropriate.
8	Prepare a Subsidence Management Plan prior to commencing underground mining, in accordance with specified requirements	Not Applicable	No underground mining.
9	(a) Ensure that at least 15 competent people are efficiently employed on the lease area on each week day except Sunday or any week day that is a public holiday. OR (b) Expend on operations an amount of not less than $262,500 per annum whilst the lease is in force.	Yes	An average of 53 full time personnel employed during the reporting period.
10	Comply with any direction given by an Environmental Officer of the Department in regard to non-compliance with the Act or any condition of this lease.	Not Yet Applicable	No direction received during reporting period.

Relevant Condition	Conditional Requirement	Compliance	Comments
11	Provide an exploration report, within a period of 28 days after each anniversary of the date this lease has effect. The report must be to the satisfaction of the DG and contain the specified requirements.	No	Report overdue.
15(a)	Ensure that ground vibration peak particle velocity generated by any blasting does not exceed 10mm/sec and does not exceed 5mm/sec in more than 5% of the total number of blasts over a period of 12 months at any dwelling or occupied premises.	Yes	No exceedances recorded. See Appendix 8.
15(b)	Ensure that blast overpressure noise level generated by any blasting does not exceed 120 dB (linear) and does not exceed 115 dB (linear) more than 5% of the total number of blasts over a period of 12 months, at any dwelling or occupied premises.	No	Two exceedances recorded. See Appendix 8.
16	Carry out operations in a manner that ensures the safety of persons and stock.	Yes	As per condition.
17(a)	Advise DWE Regional hydrogeologist of intention to drill exploration holes 28 days prior to commencement.	No	NSW Office of Water (NOW) not notified.
17(b)	All exploration drill holes must be completed to the satisfaction of the Director General in relation to:- • adequate marking/survey • sealed to prevent collapse • sealed with cement plugs to prevent discharge of groundwaters • if meets gas, it is plugged to prevent escape • if meets artesian or sub-artesian flow is sealed to prevent contamination of aquifer • once no longer used, is sealed according to Department guidelines • once no longer used, the land is left in a clean, tidy and stable condition.	Yes	As per condition.

Relevant Condition	Conditional Requirement	Compliance	Comments
18	Operations must be carried out so as not to cause or aggravate air pollution, water pollution or soil contamination or erosion.	Yes	As per Air Quality and Site Water Management Plans. Surface water discharges have occurred above concentration threshold for TSS, however measures are being investigated to minimise potential for downstream pollution.
19	Operations must not interfere with transmission lines, pipelines or any other utility, without prior written approval of the DG and subject to any conditions he may stipulate.	Yes	As per condition.
20	Activities must not interfere with or damage fences and gates must be closed or left open in accordance with landholder requirements.	Yes	As per condition.
21(a)	Operations must not affect any road unless in accordance with the MOP or written approval of Director General.	Yes	As per condition.
21(b)	Leaseholder must pay to the authority responsible for the road the cost incurred in fixing any damage to the roads caused by the operations.	Yes	Agreement in place with GSC.
22	Access tracks kept to a minimum and positioned so as not to cause unnecessary damage. Temporary tracks to be ripped, topsoiled and revegetated when no longer required.	Yes	As per condition.
23(a)	Trees must not be felled without the consent of the landholder who is entitled to the use of the timber.	Yes	As per condition.
23(b)	Trees must not be felled on the lease area except where it directly obstructs or prevents the carrying out of operations.	Yes	As per condition.
23(c)	Timber from Crown land within the lease area must not be used until all relevant approvals have been obtained.	Yes	As per condition.
25	Comply with direction of Director General if notice is issued with regard to resource recovery	Not Yet Applicable	No notice issued.
27	Provision of Security of $100,000 to the Minister to ensure fulfilment of lease conditions.	Yes	As per condition.

Appendix 4

SURFACE WATER AND WET WEATHER DISCHARGE MONITORING DATA

Surface Water Monitoring Data

Sample No.	Date	Time	Sample Location	pH	Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (TOC)	Grease & Oil (mg/L)	Comments
31492.01	23 September 2008	1310	UNDC	7.7	150	510		<2	
32279.01	17 December 2008	1029	SB8	7.8	295	1080		<2	
32279.02	17 December 2008	1100	UNDC	6.6	145	21		<2	
ES0909245-001	24 June 2009		DAM VOID 1	9.3	1540	216	20	<10	Limit of Reporting was raised for Oil and Grease due to insufficient samples
ES0909245-002	24 June 2009		SB3	8.36	502	110	10	<10	Limit of Reporting was raised for Oil and Grease due to insufficient samples
ES0909245-003	24 June 2009		SD3	8.56	354	1340	35	<10	Limit of Reporting was raised for Oil and Grease due to insufficient samples
ES0912984-001	27 August 2009	1335	DAM VOID 1	8.85	2260	60	3	<10	Limit of Reporting (LOR) was raised for Oil and Grease due to insufficient samples
ES0912984-002	27 August 2009	1240	SB3	8.86	504	66	10	<10	Limit of Reporting (LOR) was raised for Oil and Grease due to insufficient samples
ES0912984-003	27 August 2009	1255	SD3	8.34	587	71	8	<10	Limit of Reporting (LOR) was raised for Oil and Grease due to insufficient samples
ES0918304-001	30 November 2009	1130	SB3	7.78	620	128	3	<10	Limit of Reporting (LOR) was raised for Oil and Grease due to insufficient samples
ES0919288-001	16 December 2009	1415	Dam Void 1	9.15	4210	14	4	<10	Limit of Reporting (LOR) was raised for Oil and Grease due to insufficient samples
ES0919290-001	16 December 2009	1205	SB7	9.38	600	18	8	<10	Limit of Reporting (LOR) was raised for Oil and Grease due to insufficient samples
ES0919290-002	16 December 2009	1225	SB5	8.9	1440	50	7	<10	Limit of Reporting (LOR) was raised for Oil and Grease due to insufficient samples
ES0919290-003	16 December 2009	1255	SB14	8.76	577	50	7	<10	Limit of Reporting (LOR) was raised for Oil and Grease due to insufficient samples
ES0919733-001	29 December 2009	1530	SB19	6.85	110	444	5		
ES1003579-001	25 February 2010	1535	SB3	8.34	423	56	15	<5	Limit of Reporting (LOR) was raised for TOC due to matrix interference
ES1003579-002	25 February 2010	1550	SD3	8.44	374	37	<5	<5	
ES1003579-003	25 February 2010	1515	DAM VOID1	8.99	1390	106	5	<5	
ES1005718-001	25 March 2010	1550	SD3	8.71	445	58		<5	
ES1008743-001	7 May 2010	830	SD3	8.26	434	13		<5	
ES1008996-001	12 May 2010	1400	SB3	8.2	565	64	7	<5	
ES1008996-002	12 May 2010	1408	SD3	8.42	422	19	14	56	
ES1008996-003	12 May 2010	1315	DAM VOID 1	8.9	2470	20	3	<5	
ES1009880-001	24 May 2010	1320	SD3	8.57	412	92	4	6	

Wet Weather Discharge Monitoring Data

Sample No.	Sample Location	Date	Time	pH	Electrical Conductivity (µS/cm)	Total Suspended Solids (mg/L)	Total Organic Carbon (TOC)	Grease & Oil (mg/L)	Comments
ES0919733-002	SD3	29 December 2009	1530	7.51	180	552	4		
ES0919733-003	UNDC	29 December 2009	1545	6.87	94	236	7		
ES1000144-001	SD3	4 January 2010	1200	7.74	325	1490	2	<5	
ES1000144-002	UNDC	4 January 2010	1245	7.37	467	34	17	6	
ES1000715-001	DD CK	15 January 2010	1130	6.86	338	258	3	<5	
ES1000715-002	SB 18	15 January 2010	1150	7.51	356	1490	3	<5	
ES1002195-001	SD3	8 February 2010	0925	7.87	323	157	6	6	
ES1002884-001	SD3	15 February 2010	0900	7.48	329	406	3	<5	
ES1002884-002	UNDC	15 February 2010	0925	7.15	318	186	8	<5	
ES1002884-003	SB 18	15 February 2010	0945	7.37	395	556	5	<5	
ES1002884-004	DDCK	15 February 2010	1010	7.34	359	15	6	<5	
ES1002884-005	SB 20	16 February 2010	0715	7.16	119	46	9	<5	
ES1006098-001	SD3	31 March 2010	0925	8.14	435	108	12	<5	
ES1010661-001	SD3	2 June 2010	1200	8.21	410	260	35	<5	
ES1014922-001	SD 3 Pre discharge (controlled)	26 July 2010	0840	8.34	458	17	5	<5	
ES1015036-001	SD3	28 July 2010	1430	8.23	437	23	4	<10	

Appendix 5

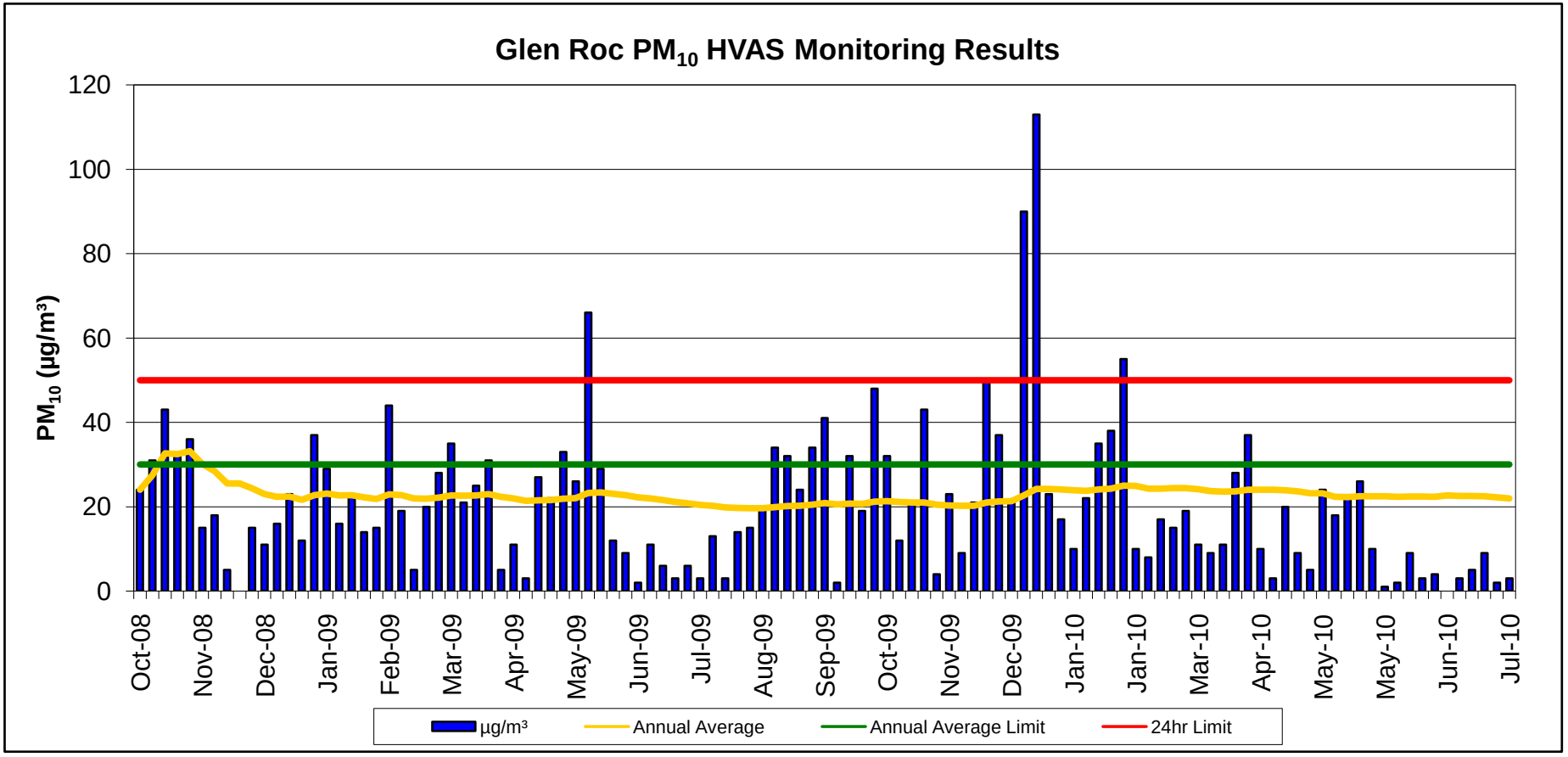
DUST MONITORING RESULTS

GLEN ROC PM10 HIGH VOLUME AIR SAMPLER

Date	mg/paper	µg/m³	Annual Average	Annual Average Limit	24hr Limit
8/10/2008	38.5	24	24.00	30	50
14/10/2008	49.3	31	27.50	30	50
20/10/2008	67.2	43	32.67	30	50
26/10/2008	48.7	32	32.50	30	50
1/11/2008	55	36	33.20	30	50
7/11/2008	22.2	15	30.17	30	50
13/11/2008	26.6	18	28.43	30	50
19/11/2008	7.7	5	25.50	30	50
25/11/2008	*	*	25.50	30	50
1/12/2008	23.2	15	24.33	30	50
7/12/2008	16.8	11	23.00	30	50
13/12/2008	24.4	16	22.36	30	50
19/12/2008	26.8	23	22.42	30	50
25/12/2008	22.8	12	21.62	30	50
31/12/2008	56.7	37	22.71	30	50
6/01/2009	44.4	29	23.13	30	50
12/01/2009	25.4	16	22.69	30	50
18/01/2009	36.5	23	22.71	30	50
24/01/2009	20.5	14	22.22	30	50
30/01/2009	23.8	15	21.84	30	50
5/02/2009	66.8	44	22.95	30	50
11/02/2009	30.3	19	22.76	30	50
17/02/2009	7.7	5	21.95	30	50
23/02/2009	30.4	20	21.87	30	50
1/03/2009	43	28	22.13	30	50
7/03/2009	54.4	35	22.64	30	50
13/03/2009	33.7	21	22.58	30	50
19/03/2009	39.8	25	22.67	30	50
25/03/2009	48.2	31	22.96	30	50
31/03/2009	8.4	5	22.34	30	50
6/04/2009	18.2	11	21.97	30	50
12/04/2009	5.2	3	21.35	30	50
18/04/2009	43.8	27	21.53	30	50
24/04/2009	35.1	22	21.55	30	50
30/04/2009	52.9	33	21.88	30	50
6/05/2009	41.7	26	22.00	30	50
12/05/2009	105.8	66	23.22	30	50
18/05/2009	45.8	29	23.38	30	50
24/05/2009	18.9	12	23.08	30	50
30/05/2009	14	9	22.72	30	50
5/06/2009	3.3	2	22.20	30	50
11/06/2009	18.2	11	21.93	30	50

Date	mg/paper	µg/m³	Annual Average	Annual Average Limit	24hr Limit
17/06/2009	10.3	6	21.55	30	50
23/06/2009	6.4	3	21.12	30	50
29/06/2009	4.8	6	20.77	30	50
5/07/2009	4.6	3	20.38	30	50
11/07/2009	21.9	13	20.22	30	50
17/07/2009	4.1	3	19.85	30	50
23/07/2009	22.7	14	19.73	30	50
29/07/2009	24	15	19.63	30	50
4/08/2009	31.9	20	19.64	30	50
10/08/2009	54.3	34	19.92	30	50
16/08/2009	51.4	32	20.15	30	50
22/08/2009	38.1	24	20.23	30	50
28/08/2009	55	34	20.48	30	50
3/09/2009	66.5	41	20.85	30	50
9/09/2009	2.6	2	20.52	30	50
15/09/2009	50.5	32	20.72	30	50
21/09/2009	29.7	19	20.69	30	50
27/09/2009	76.9	48	21.15	30	50
3/10/2009	50.4	32	21.33	30	50
9/10/2009	19.5	12	21.13	30	50
15/10/2009	32.9	21	20.97	30	50
21/10/2009	67.3	43	20.97	30	50
27/10/2009	6.6	4	20.50	30	50
2/11/2009	36.2	23	20.28	30	50
8/11/2009	14.7	9	20.18	30	50
14/11/2009	32.9	21	20.23	30	50
20/11/2009	75.9	50	20.98	30	50
26/11/2009	55.7	37	21.25	30	50
2/12/2009	33	21	21.34	30	50
8/12/2009	133.4	90	22.64	30	50
14/12/2009	174.9	113	24.23	30	50
20/12/2009	36.3	23	24.23	30	50
26/12/2009	25.9	17	24.10	30	50
1/01/2010	16.1	10	23.87	30	50
7/01/2010	33.7	22	23.75	30	50
13/01/2010	52.6	35	24.07	30	50
19/01/2010	58.8	38	24.31	30	50
25/01/2010	84	55	24.98	30	50
31/01/2010	15.7	10	24.90	30	50
6/02/2010	12.4	8	24.31	30	50
12/02/2010	25.1	17	24.28	30	50
18/02/2010	23.4	15	24.44	30	50
24/02/2010	12.1	19	24.43	30	50
2/03/2010	17.9	11	24.15	30	50
8/03/2010	13.5	9	23.72	30	50

Date	mg/paper	µg/m³	Annual Average	Annual Average Limit	24hr Limit
14/03/2010	16.7	11	23.56	30	50
20/03/2010	43.5	28	23.61	30	50
26/03/2010	57.9	37	24.02	30	50
1/04/2010	15.2	10	24.00	30	50
7/04/2010	5.4	3	24.00	30	50
13/04/2010	32.3	20	23.88	30	50
19/04/2010	14.2	9	23.67	30	50
25/04/2010	7.5	5	23.20	30	50
1/05/2010	38.5	24	23.17	30	50
7/05/2010	28.3	18	22.37	30	50
13/05/2010	34.4	22	22.25	30	50
19/05/2010	42.3	26	22.48	30	50
25/05/2010	16.3	10	22.50	30	50
31/05/2010	2	1	22.48	30	50
6/06/2010	2.6	2	22.33	30	50
12/06/2010	14.7	9	22.38	30	50
18/06/2010	4.1	3	22.38	30	50
24/06/2010	6.8	4	22.35	30	50
30/06/2010	No sample - HVAS error		22.68	30	50
6/07/2010	5.5	3	22.51	30	50
12/07/2010	8	5	22.54	30	50
18/07/2010	14.4	9	22.46	30	50
24/07/2010	3.3	2	22.24	30	50
30/07/2010	5.3	3	21.95	30	50

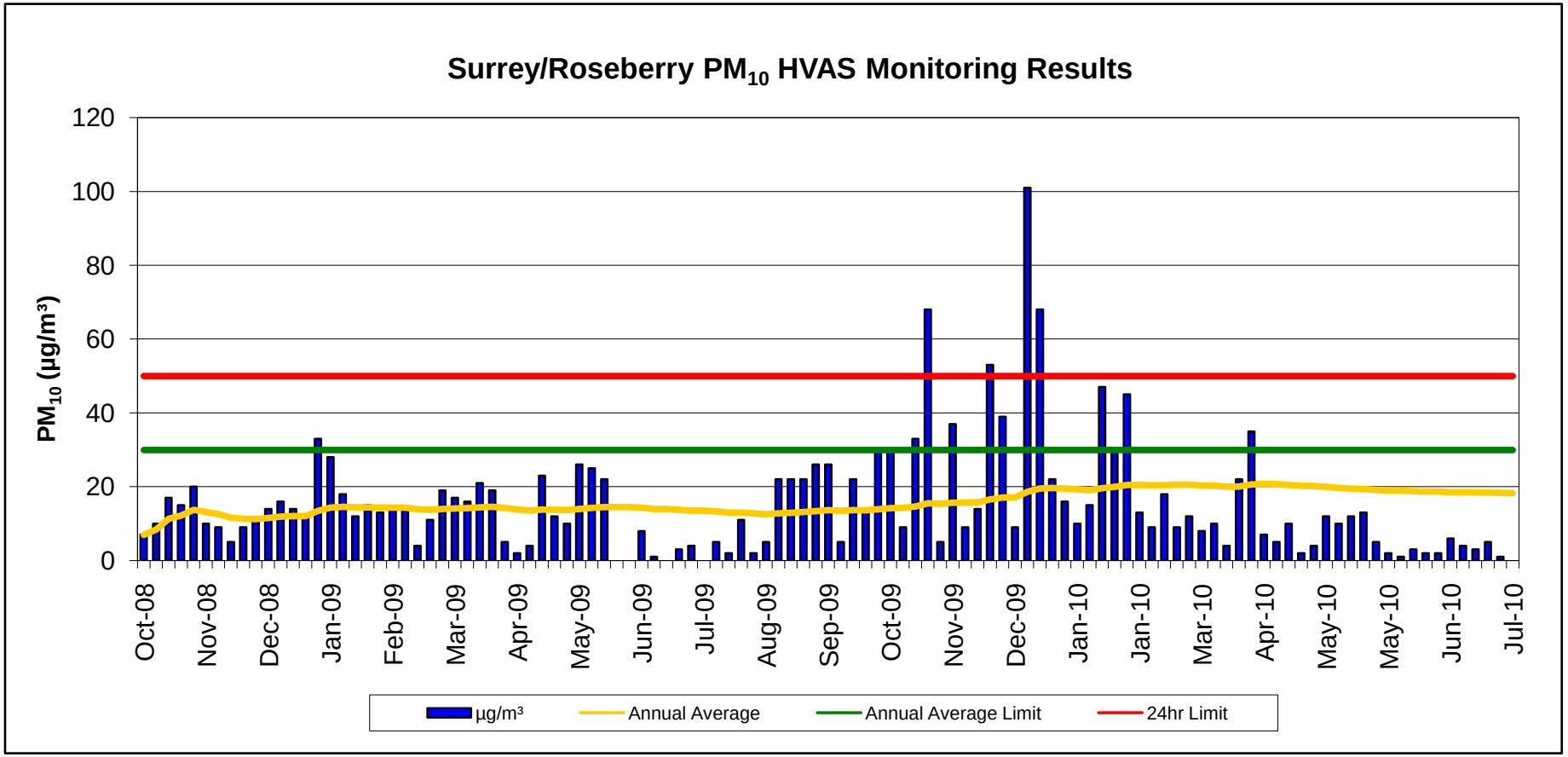

Glen Roc PM10 HVAS Monitoring Results
PM10 (µg/m³)
120
100
80
60
40
20
0
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Jan-10
Mar-10
Apr-10
May-10
May-10
Jun-10
Jul-10
µg/m³
Annual Average
Annual Average Limit
24hr Limit

SURREY/ROSEBERRY PM10 HIGH VOLUME AIR SAMPLER

Date	mg/paper	µg/m³	Annual Average	Annual Average Limit	24hr Limit
8/10/2008	11.6	7	7.00	30	50
14/10/2008	15.9	10	8.50	30	50
20/10/2008	26.6	17	11.33	30	50
26/10/2008	23.7	15	12.25	30	50
1/11/2008	31.4	20	13.80	30	50
7/11/2008	14.8	10	13.17	30	50
13/11/2008	13.7	9	12.57	30	50
19/11/2008	7	5	11.63	30	50
25/11/2008	14.1	9	11.33	30	50
1/12/2008	17.5	11	11.30	30	50
7/12/2008	21.1	14	11.55	30	50
13/12/2008	23.6	16	11.92	30	50
19/12/2008	22.2	14	12.08	30	50
25/12/2008	19	12	12.07	30	50
31/12/2008	51.2	33	13.47	30	50
6/01/2009	42.6	28	14.38	30	50
12/01/2009	28.6	18	14.59	30	50
18/01/2009	19.5	12	14.44	30	50
24/01/2009	22.3	15	14.47	30	50
30/01/2009	20.1	13	14.40	30	50
5/02/2009	21.8	14	14.38	30	50
11/02/2009	12.9	14	14.36	30	50
17/02/2009	6	4	13.91	30	50
23/02/2009	16.6	11	13.79	30	50
1/03/2009	29.4	19	14.00	30	50
7/03/2009	26.3	17	14.12	30	50
13/03/2009	25.4	16	14.19	30	50
19/03/2009	32.2	21	14.43	30	50
25/03/2009	29	19	14.59	30	50
31/03/2009	8.7	5	14.27	30	50
6/04/2009	3	2	13.87	30	50
12/04/2009	3.8	4	13.56	30	50
18/04/2009	37	23	13.85	30	50
24/04/2009	18.9	12	13.79	30	50
30/04/2009	16.4	10	13.69	30	50
6/05/2009	40.8	26	14.03	30	50
12/05/2009	40.2	25	14.32	30	50
18/05/2009	36	22	14.53	30	50
24/05/2009	PM10 switched off by resident		14.53	30	50
30/05/2009	PM10 switched off by resident		14.53	30	50
5/06/2009	4	8	14.36	30	50
11/06/2009	1.8	1	14.03	30	50

Date	mg/paper	µg/m³	Annual Average	Annual Average Limit	24hr Limit
17/06/2009	PM10 switched off by resident		14.03	30	50
23/06/2009	2.6	3	13.76	30	50
29/06/2009	6.5	4	13.52	30	50
5/07/2009	0.5	<1	13.52	30	50
11/07/2009	7.8	5	13.33	30	50
17/07/2009	3.6	2	13.07	30	50
23/07/2009	17.8	11	13.02	30	50
29/07/2009	3.6	2	12.78	30	50
4/08/2009	11.1	5	12.62	30	50
10/08/2009	35.4	22	12.81	30	50
16/08/2009	35.2	22	13.00	30	50
22/08/2009	34.1	22	13.18	30	50
28/08/2009	41.9	26	13.43	30	50
3/09/2009	42.8	26	13.67	30	50
9/09/2009	7.7	5	13.51	30	50
15/09/2009	35	22	13.67	30	50
21/09/2009	19.7	13	13.65	30	50
27/09/2009	46.9	30	13.95	30	50
3/10/2009	46.9	30	14.23	30	50
9/10/2009	15.1	9	14.26	30	50
15/10/2009	51.1	33	14.67	30	50
21/10/2009	107.5	68	15.56	30	50
27/10/2009	7.9	5	15.39	30	50
2/11/2009	58.4	37	15.68	30	50
8/11/2009	14.7	9	15.67	30	50
14/11/2009	21.4	14	15.75	30	50
20/11/2009	79.8	53	16.60	30	50
26/11/2009	58.5	39	17.12	30	50
2/12/2009	14.8	9	17.09	30	50
8/12/2009	150.6	101	18.61	30	50
14/12/2009	104.5	68	19.53	30	50
20/12/2009	34	22	19.67	30	50
26/12/2009	25	16	19.50	30	50
1/01/2010	14.8	10	19.33	30	50
7/01/2010	22.7	15	19.11	30	50
13/01/2010	70.2	47	19.61	30	50
19/01/2010	47.3	30	19.93	30	50
25/01/2010	68.1	45	20.46	30	50
31/01/2010	20.3	13	20.46	30	50
6/02/2010	14.4	9	20.37	30	50
12/02/2010	27	18	20.44	30	50
18/02/2010	14	9	20.53	30	50
24/02/2010	18.3	12	20.54	30	50
2/03/2010	13.2	8	20.35	30	50
8/03/2010	15.9	10	20.23	30	50

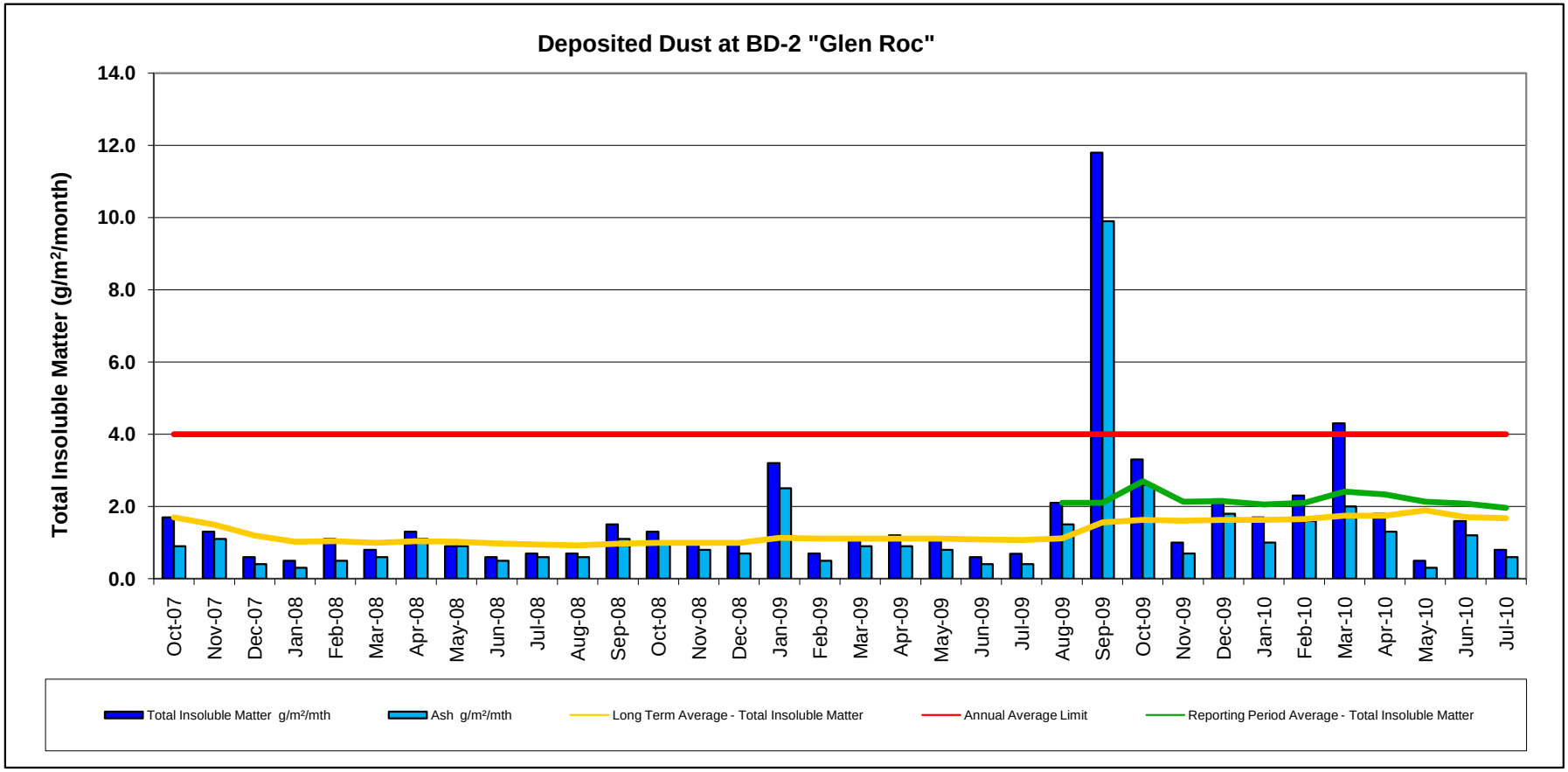
Date	mg/paper	µg/m³	Annual Average	Annual Average Limit	24hr Limit
14/03/2010	6.5	4	20.02	30	50
20/03/2010	34.4	22	20.04	30	50
26/03/2010	54.5	35	20.59	30	50
1/04/2010	10.1	7	20.68	30	50
7/04/2010	8.2	5	20.70	30	50
13/04/2010	16.4	10	20.46	30	50
19/04/2010	3.9	2	20.29	30	50
25/04/2010	6.9	4	20.18	30	50
1/05/2010	19.1	12	19.93	30	50
7/05/2010	16.3	10	19.66	30	50
13/05/2010	18.7	12	19.48	30	50
19/05/2010	20.5	13	19.37	30	50
25/05/2010	7.9	5	19.12	30	50
31/05/2010	2.5	2	19.02	30	50
6/06/2010	1.5	1	19.02	30	50
12/06/2010	4.6	3	18.75	30	50
18/06/2010	2.8	2	18.73	30	50
24/06/2010	3.2	2	18.69	30	50
30/06/2010	10	6	18.48	30	50
6/07/2010	5.8	4	18.47	30	50
12/07/2010	4.6	3	18.48	30	50
18/07/2010	8	5	18.38	30	50
24/07/2010	2	1	18.37	30	50
30/07/2010	0.6	0	18.28	30	50


Surrey/Roseberry PM10 HVAS Monitoring Results
PM10 (µg/m³)
120
100
80
60
40
20
0
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Jan-10
Mar-10
Apr-10
May-10
May-10
Jun-10
Jul-10
µg/m³
Annual Average
Annual Average Limit
24hr Limit

Deposited Dust BD-2 "Glen Roc"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time	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
28550.02	BD-2	5-Nov-07	Oct-07	Client	1330	765	1.7		1.7	4.0	0.9	
28662.02	BD-2	5-Dec-07	Nov-07	Client	1305	1255	1.3		1.5	4.0	1.1	
28923.02	BD-2	3-Jan-08	Dec-07	Client	1050	1505	0.6		1.2	4.0	0.4	
29224.02	BD-2	5-Feb-08	Jan-08	Client	1320	1510	0.5		1.0	4.0	0.3	
29525.02	BD-2	5-Mar-08	Feb-08	Client	1245	1445	1.1		1.0	4.0	0.5	
29773.02	BD-2	4-Apr-08	Mar-08	Client	0950	50	0.8		1.0	4.0	0.6	
30055.02	BD-2	5-May-08	Apr-08	Client	1155	230	1.3		1.0	4.0	1.1	
30386.02	BD-2	4-Jun-08	May-08	Client	1010	720	0.9		1.0	4.0	0.9	
30660.02	BD-2	9-Jul-08	Jun-08	Client	1415	380	0.6		1.0	4.0	0.5	
30902.02	BD-2	5-Aug-08	Jul-08	Client	0910	460	0.7		1.0	4.0	0.6	
31210.02	BD-2	1-Sep-08	Aug-08	Client	1545	715	0.7		0.9	4.0	0.6	
31527.02	BD-2	2-Oct-08	Sep-08	Client	1400	1240	1.5		1.0	4.0	1.1	
31775.02	BD-2	5-Nov-08	Oct-08	Client	1615	1780	1.3		1.0	4.0	1.0	
32023.02	BD-2	4-Dec-08	Nov-08	Client	0930	1085	1.0		1.0	4.0	0.8	
32518.02	BD-2	5-Jan-09	Dec-08	Client	1528	1075	1.0		1.0	4.0	0.7	
32246.02	BD-2	2-Feb-09	Jan-09	Client	1600	325	3.2		1.1	4.0	2.5	
32863.02	BD-2	2-Mar-09	Feb-09	Client	1458	1210	0.7		1.1	4.0	0.5	
2600 1004 -00	BD-2	1-Apr-09	Mar-09	ALS Acirl		<50	1.1		1.1	4.0	0.9	
2600 1019 -00	BD-2	1-May-09	Apr-09	ALS Acirl		500	1.2		1.1	4.0	0.9	
2600 1034 -01	BD-2	4-Jun-09	May-09	ALS Acirl		600	1.1		1.1	4.0	0.8	
2600 1042 - 01	BD-2	6-Jul-09	Jun-09	ALS Acirl		550	0.6		1.1	4.0	0.4	
2600 1054 - 01	BD-2	3-Aug-09	Jul-09	ALS Acirl	1430	350	0.7		1.1	4.0	0.4	
2600 1064 - 00	BD-2	31-Aug-09	Aug-09	ALS Acirl	1430	50	2.1	2.1	1.1	4.0	1.5	
2600 1098 - 01	BD-2	29-Sep-09	Sep-09	ALS Acirl	1327	800	11.8	2.1	1.6	4.0	9.9	
2600 1128 - 00	BD-2	3-Nov-09	Oct-09	ALS Acirl	1345	700	3.3	2.7	1.6	4.0	2.6	
2600 1204 - 00	BD-2	4-Dec-09	Nov-09	ALS Acirl	1135	dry	1	2.1	1.6	4.0	0.7	
2600 1222 - 00	BD-2	4-Jan-10	Dec-09	ALS Acirl	1615	2500	2.2	2.2	1.6	4.0	1.8	
2600 1234 - 00	BD-2	1-Feb-10	Jan-10	ALS Acirl	1430	400	1.7	2.1	1.6	4.0	1	
2600 1247 - 00	BD-2	2-Mar-10	Feb-10	ALS Acirl	1325	2300	2.3	2.1	1.7	4.0	1.6	
2600 1260 - 00	BD-2	30-Mar-10	Mar-10	ALS Acirl	1200	250	4.3	2.4	1.7	4.0	2	
2600 1268 - 00	BD-2	27-Apr-10	Apr-10	ALS Acirl	1250	350	1.8	2.3	1.7	4.0	1.3	
2600 1277 - 00	BD-2	25-May-10	May-10	ALS Acirl	1400	10	0.5	2.1	1.9	4.0	0.3	
2600 1288 - 776	BD-2	24-Jun-10	Jun-10	ALS Acirl	0950	800	1.6	2.1	1.7	4.0	1.2	
2600 1288 - 827	BD-2	22-Jul-10	Jul-10	ALS Acirl	0930	600	0.8	2.0	1.7	4.0	0.6	

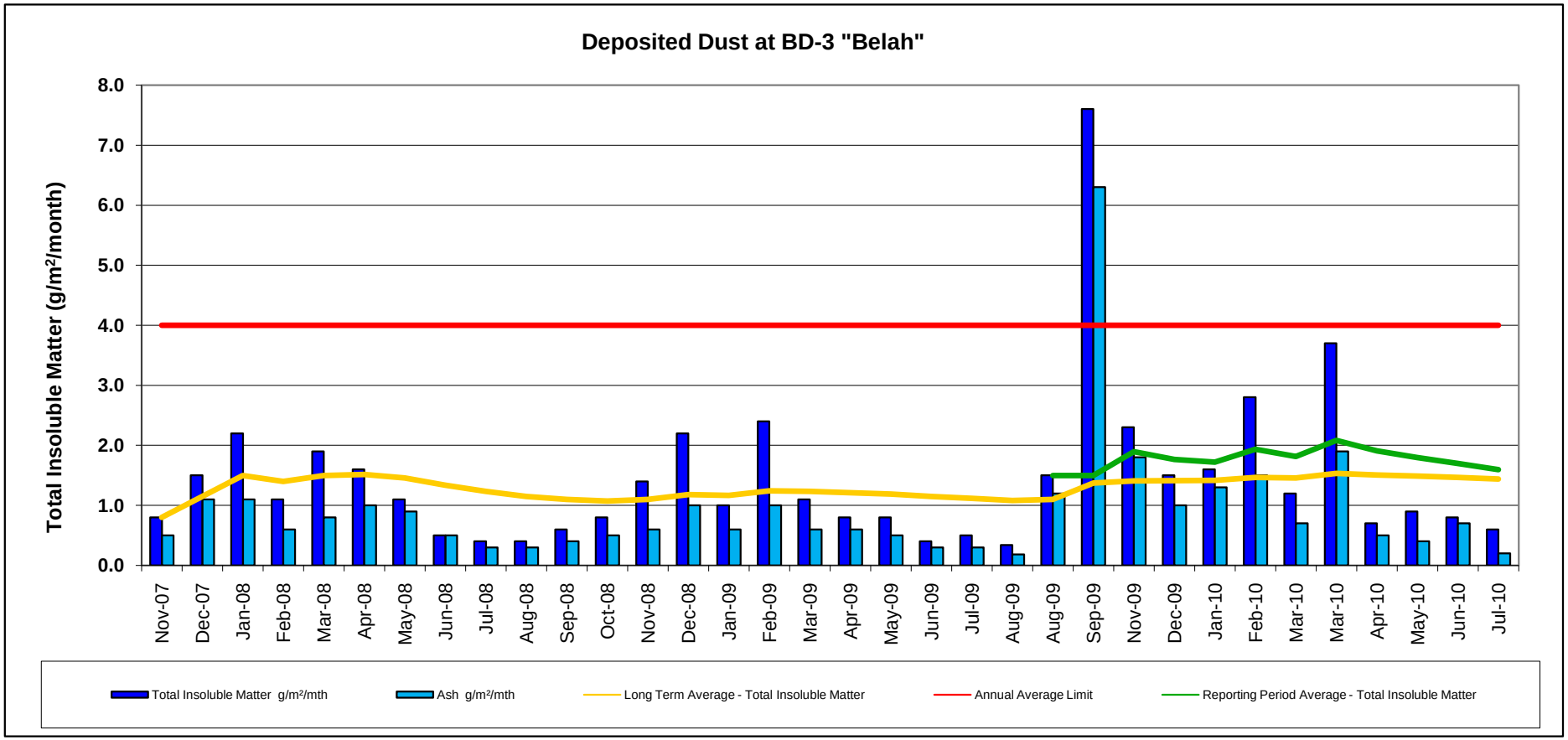
Note: September 2009 result excluded from reporting period average


Deposited Dust at BD-2 "Glen Roc"
Total Insoluble Matter (g/m²/month)
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Total Insoluble Matter g/m²/mth
Ash g/m²/mth
Long Term Average - Total Insoluble Matter
Annual Average Limit
Reporting Period Average - Total Insoluble Matter

Deposited Dust BD-3 "Belah"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time	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
28550.03	BD-3	5-Nov-07	Oct-07	Client	1315	630	0.8		0.8	4.0	0.5	
28662.03	BD-3	5-Dec-07	Nov-07	Client	1315	1515	1.5		1.2	4.0	1.1	
28923.03	BD-3	3-Jan-08	Dec-07	Client	1035	1345	2.2		1.5	4.0	1.1	
29224.03	BD-3	5-Feb-08	Jan-08	Client	1330	1335	1.1		1.4	4.0	0.6	
29525.03	BD-3	5-Mar-08	Feb-08	Client	1205	1170	1.9		1.5	4.0	0.8	
29773.03	BD-3	4-Apr-08	Mar-08	Client	0940	90	1.6		1.5	4.0	1.0	
30055.03	BD-3	5-May-08	Apr-08	Client	1205	230	1.1		1.5	4.0	0.9	
30386.03	BD-3	4-Jun-08	May-08	Client	1020	865	0.5		1.3	4.0	0.5	
30660.03	BD-3	9-Jul-08	Jun-08	Client	1330	445	0.4		1.2	4.0	0.3	
30902.03	BD-3	5-Aug-08	Jul-08	Client	0850	395	0.4		1.2	4.0	0.3	
31210.03	BD-3	1-Sep-08	Aug-08	Client	1640	740	0.6		1.1	4.0	0.4	
31527.03	BD-3	2-Oct-08	Sep-08	Client	1545	1085	0.8		1.1	4.0	0.5	
31775.03	BD-3	5-Nov-08	Oct-08	Client	1750	1685	1.4		1.1	4.0	0.6	
32023.03	BD-3	4-Dec-08	Nov-08	Client	0730	1005	2.2		1.2	4.0	1.0	
32518.03	BD-3	5-Jan-09	Dec-08	Client	1558	1130	1.0		1.2	4.0	0.6	
32246.03	BD-3	2-Feb-09	Jan-09	Client	1650	230	2.4		1.2	4.0	1.0	
32863.03	BD-3	2-Mar-09	Feb-09	Client	1535	1300	1.1		1.2	4.0	0.6	
2600 1004 -00	BD-3	1-Apr-09	Mar-09	ALS Acirl		<50	0.8		1.2	4.0	0.6	
2600 1019 -00	BD-3	1-May-09	Apr-09	ALS Acirl		400	0.8		1.2	4.0	0.5	
2600 1034 -01	BD-3	4-Jun-09	May-09	ALS Acirl		600	0.4		1.2	4.0	0.3	
2600 1042 - 01	BD-3	6-Jul-09	Jun-09	ALS Acirl		500	0.5		1.1	4.0	0.3	
2601 1054 - 01	BD-3	3-Aug-09	Jul-09	ALS Acirl	1500	350	0.3		1.1	4.0	0.2	
2600 1064 - 00	BD-3	31-Aug-09	Aug-09	ALS Acirl	1450	50	1.5	1.5	1.1	4.0	1.2	
2600 1098 - 01	BD-3	29-Sep-09	Sep-09	ALS Acirl	1355	600	7.6	1.5	1.4	4.0	6.3	
2600 1128 - 00	BD-3	3-Nov-09	Oct-09	ALS Acirl	1405	600	2.3	1.9	1.4	4.0	1.8	
2601 1204 - 00	BD-3	4-Dec-09	Nov-09	ALS Acirl	1150	dry	1.5	1.8	1.4	4.0	1	
2600 1222 - 00	BD-3	4-Jan-10	Dec-09	ALS Acirl	1625	2500	1.6	1.7	1.4	4.0	1.3	
2600 1234 - 00	BD-3	1-Feb-10	Jan-10	ALS Acirl	1450	200	2.8	1.9	1.5	4.0	1.5	
2600 1247 - 00	BD-3	2-Mar-10	Feb-10	ALS Acirl	1345	2000	1.2	1.8	1.5	4.0	0.7	
2600 1260 - 00	BD-3	30-Mar-10	Mar-10	ALS Acirl	1230	200	3.7	2.1	1.5	4.0	1.9	
2600 1268 - 00	BD-3	27-Apr-10	Apr-10	ALS Acirl	1320	400	0.7	1.9	1.5	4.0	0.5	
2600 1277 - 00	BD-3	25-May-10	May-10	ALS Acirl	1420	10	0.9	1.8	1.5	4.0	0.4	
2600 1288 - 776	BD-3	24-Jun-10	Jun-10	ALS Acirl	0930	900	0.8	1.7	1.5	4.0	0.7	
2600 1288 - 827	BD-3	22-Jul-10	Jul-10	ALS Acirl	0940	600	0.6	1.6	1.4	4.0	0.2	

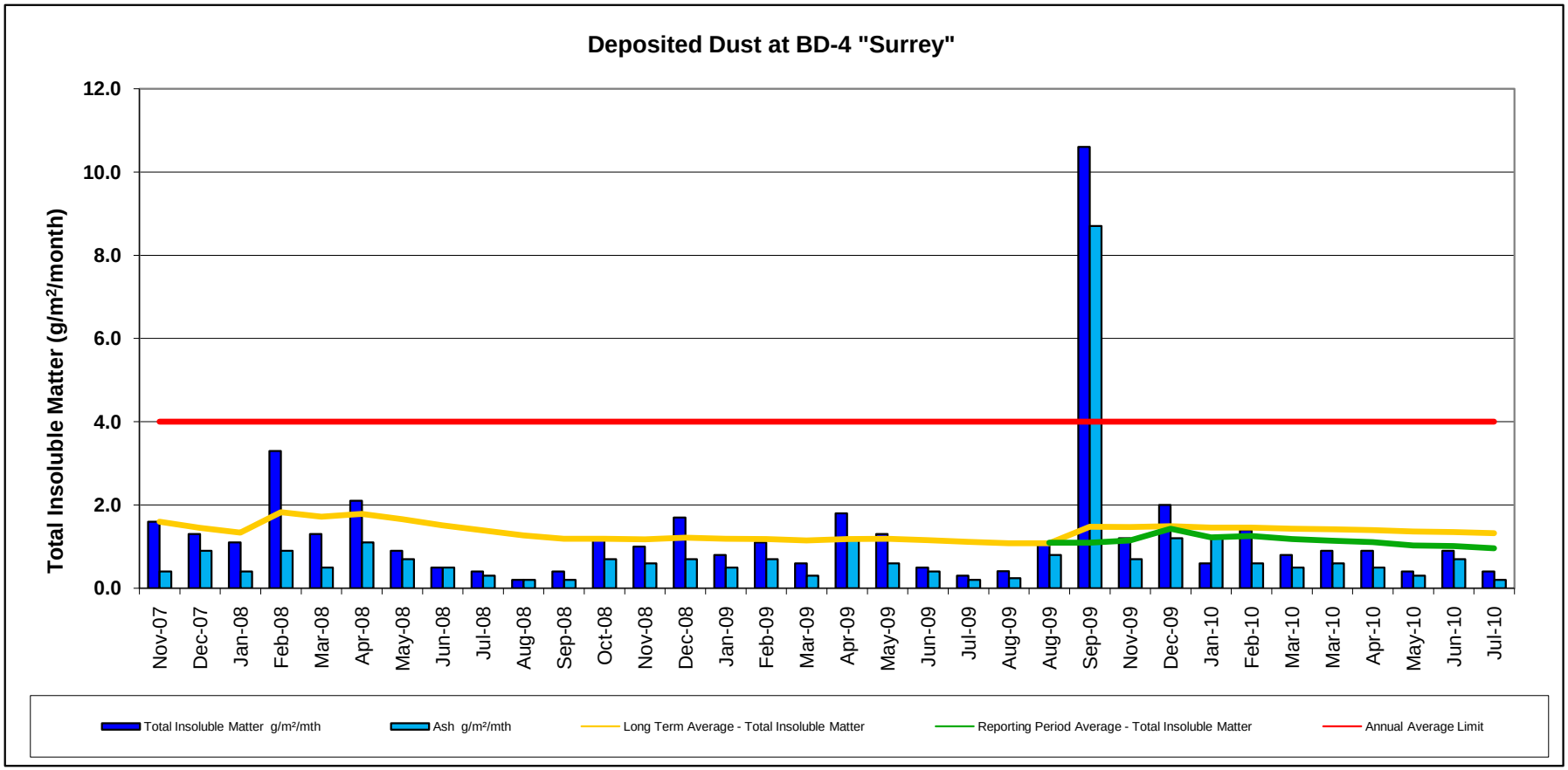
Note: September 2009 result excluded from reporting period average


Deposited Dust at BD-3 "Belah"
Total Insoluble Matter (g/m²/month)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Aug-09
Sep-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Total Insoluble Matter g/m²/mth
Ash g/m²/mth
Long Term Average - Total Insoluble Matter
Annual Average Limit
Reporting Period Average - Total Insoluble Matter

Deposited Dust BD-4 "Surrey"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time	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
28550.04	BD-4	5-Nov-07	Oct-07	Client	1245	610	1.6		1.6	4.0	0.4	
28662.04	BD-4	5-Dec-07	Nov-07	Client	1400	1530	1.3		1.5	4.0	0.9	
28923.04	BD-4	3-Jan-08	Dec-07	Client	1000	1465	1.1		1.3	4.0	0.4	
29224.04	BD-4	5-Feb-08	Jan-08	Client	1415	1365	3.3		1.8	4.0	0.9	
29525.04	BD-4	5-Mar-08	Feb-08	Client	1135	1115	1.3		1.7	4.0	0.5	
29773.04	BD-4	4-Apr-08	Mar-08	Client	0845	100	2.1		1.8	4.0	1.1	
30055.04	BD-4	5-May-08	Apr-08	Client	1300	210	0.9		1.7	4.0	0.7	
30386.04	BD-4	4-Jun-08	May-08	Client	1140	965	0.5		1.5	4.0	0.5	
30660.04	BD-4	9-Jul-08	Jun-08	Client	1300	505	0.4		1.4	4.0	0.3	
30902.04	BD-4	5-Aug-08	Jul-08	Client	0840	280	0.2		1.3	4.0	0.2	
31210.04	BD-4	1-Sep-08	Aug-08	Client	1730	715	0.4		1.2	4.0	0.2	
31527.04	BD-4	2-Oct-08	Sep-08	Client	1500	1215	1.2		1.2	4.0	0.7	
31775.04	BD-4	5-Nov-08	Oct-08	Client	1735	1760	1.0		1.2	4.0	0.6	
32023.04	BD-4	4-Dec-08	Nov-08	Client	0845	1150	1.7		1.2	4.0	0.7	
32518.04	BD-4	5-Jan-09	Dec-08	Client	1642	1100	0.8		1.2	4.0	0.5	
32246.04	BD-4	2-Feb-09	Jan-09	Client	1504	215	1.1		1.2	4.0	0.7	
32863.04	BD-4	2-Mar-09	Feb-09	Client	1628	1620	0.6		1.1	4.0	0.3	
2600 1004 -00	BD-4	1-Apr-09	Mar-09	ALS Acirl		<50	1.8		1.2	4.0	1.2	
2600 1019 -00	BD-4	1-May-09	Apr-09	ALS Acirl		300	1.3		1.2	4.0	0.6	
2600 1034 -01	BD-4	4-Jun-09	May-09	ALS Acirl		600	0.5		1.2	4.0	0.4	
2600 1042 - 01	BD-4	6-Jul-09	Jun-09	ALS Acirl		450	0.3		1.1	4.0	0.2	
2602 1054 - 01	BD-4	3-Aug-09	Jul-09	ALS Acirl	1530	350	0.4		1.1	4.0	0.2	
2600 1064 - 00	BD-4	31-Aug-09	Aug-09	ALS Acirl	1512	20	1.1	1.1	1.1	4.0	0.8	
2600 1098 - 01	BD-4	29-Sep-09	Sep-09	ALS Acirl	1425	800	10.6	1.1	1.5	4.0	8.7	
2600 1128 - 00	BD-4	3-Nov-09	Oct-09	ALS Acirl	1433	700	1.2	1.2	1.5	4.0	0.7	
2601 1204 - 00	BD-4	4-Dec-09	Nov-09	ALS Acirl	1230	dry	2	1.4	1.5	4.0	1.2	
2600 1222 - 00	BD-4	4-Jan-10	Dec-09	ALS Acirl	1640	2500	0.6	1.2	1.5	4.0	1.2	
2600 1234 - 00	BD-4	1-Feb-10	Jan-10	ALS Acirl	1525	50	1.4	1.3	1.5	4.0	0.6	
2600 1247 - 00	BD-4	2-Mar-10	Feb-10	ALS Acirl	1410	2300	0.8	1.2	1.4	4.0	0.5	
2600 1260 - 00	BD-4	30-Mar-10	Mar-10	ALS Acirl	1340	200	0.9	1.1	1.4	4.0	0.6	
2600 1268 - 00	BD-4	27-Apr-10	Apr-10	ALS Acirl	1400	350	0.9	1.1	1.4	4.0	0.5	
2600 1277 - 00	BD-4	25-May-10	May-10	ALS Acirl	1505	10	0.4	1.0	1.4	4.0	0.3	
2600 1288 - 776	BD-4	24-Jun-10	Jun-10	ALS Acirl	0915	900	0.9	1.0	1.4	4.0	0.7	
2600 1288 - 827	BD-4	22-Jul-10	Jul-10	ALS Acirl	0835	600	0.4	1.0	1.3	4.0	0.2	

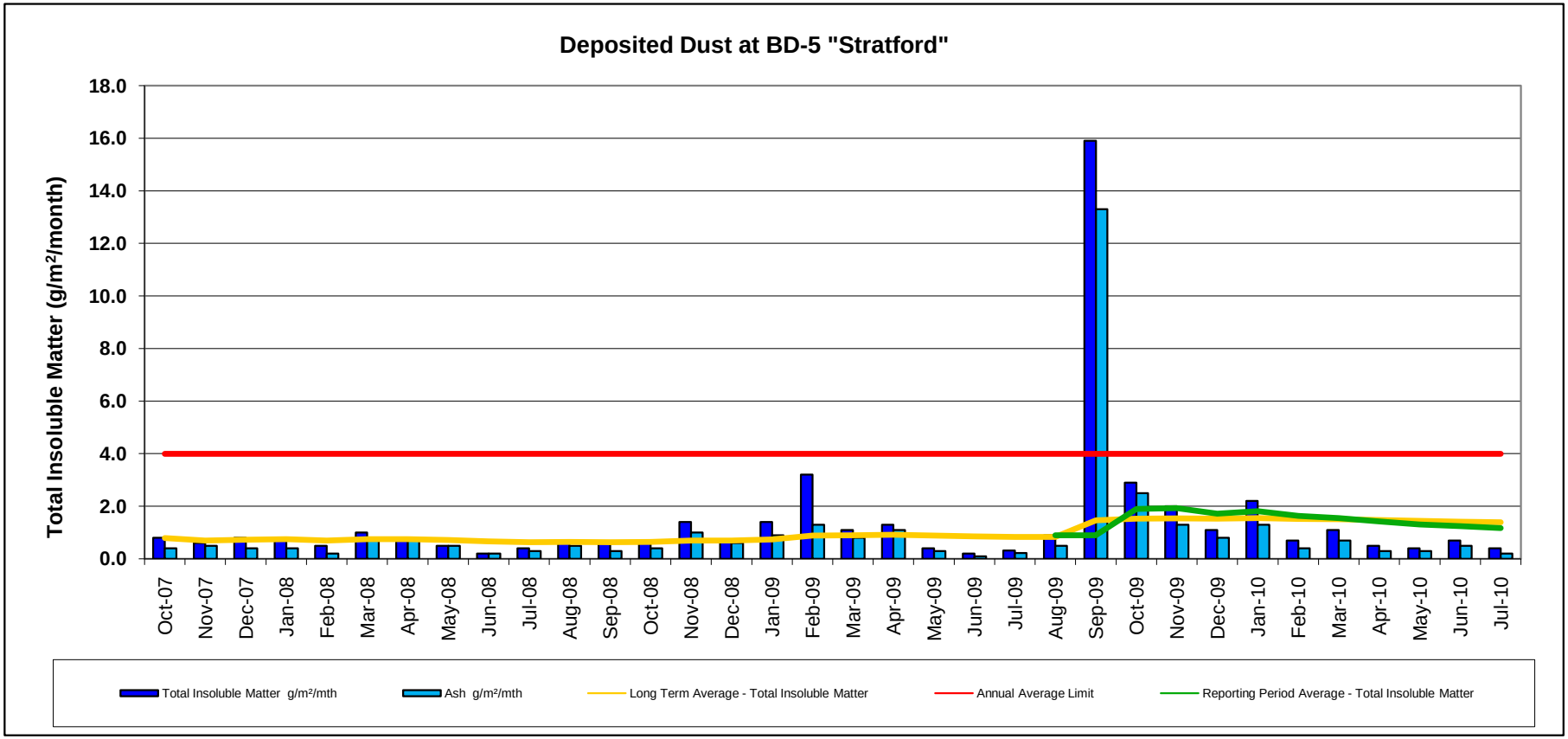
Note: September 2009 result excluded from reporting period average


Deposited Dust at BD-4 "Surrey"
Total Insoluble Matter (g/m²/month)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Aug-09
Sep-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Total Insoluble Matter g/m²/mth
Ash g/m²/mth
Long Term Average - Total Insoluble Matter
Reporting Period Average - Total Insoluble Matter
Annual Average Limit

Deposited Dust BD-5 "Stratford"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time	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
28550.05	BD-5	5-Nov-07	Oct-07	Client	1300	695	0.8		0.8	4.0	0.4	
28662.05	BD-5	5-Dec-07	Nov-07	Client	1350	1165	0.6		0.7	4.0	0.5	
28923.05	BD-5	3-Jan-08	Dec-07	Client	1020	1500	0.8		0.7	4.0	0.4	
29224.05	BD-5	5-Feb-08	Jan-08	Client	1350	1220	0.8		0.8	4.0	0.4	
29525.05	BD-5	5-Mar-08	Feb-08	Client	1150	1050	0.5		0.7	4.0	0.2	
29773.05	BD-5	4-Apr-08	Mar-08	Client	0905	50	1.0		0.8	4.0	0.7	
30055.05	BD-5	5-May-08	Apr-08	Client	1230	175	0.8		0.8	4.0	0.7	
30386.05	BD-5	4-Jun-08	May-08	Client	1110	835	0.5		0.7	4.0	0.5	
30660.05	BD-5	9-Jul-08	Jun-08	Client	1315	555	0.2		0.7	4.0	0.2	
30902.05	BD-5	5-Aug-08	Jul-08	Client	0820	280	0.4		0.6	4.0	0.3	
31210.05	BD-5	2-Sep-08	Aug-08	Client	1100	640	0.7		0.6	4.0	0.5	
31527.05	BD-5	2-Oct-08	Sep-08	Client	1430	995	0.6		0.6	4.0	0.3	
31775.05	BD-5	5-Nov-08	Oct-08	Client	1700	1500	0.7		0.6	4.0	0.4	
32023.05	BD-5	4-Dec-08	Nov-08	Client	0805	1175	1.4		0.7	4.0	1.0	
32518.05	BD-5	5-Jan-09	Dec-08	Client	1614	1180	0.7		0.7	4.0	0.6	
32246.05	BD-5	2-Feb-09	Jan-09	Client	1442	235	1.4		0.7	4.0	0.9	
32863.05	BD-5	2-Mar-09	Feb-09	Client	1551	1520	3.2		0.9	4.0	1.3	
2600 1004 -00	BD-5	1-Apr-09	Mar-09	ALS Acirl		50	1.1		0.9	4.0	0.8	
2600 1019 -00	BD-5	1-May-09	Apr-09	ALS Acirl		400	1.3		0.9	4.0	1.1	
2600 1034 -01	BD-5	4-Jun-09	May-09	ALS Acirl		500	0.4		0.9	4.0	0.3	
2600 1042 - 01	BD-5	6-Jul-09	Jun-09	ALS Acirl		550	0.2		0.9	4.0	0.1	
2603 1054 - 01	BD-5	3-Aug-09	Jul-09	ALS Acirl	1355	450	0.3		0.8	4.0	0.2	
2600 1064 - 00	BD-5	31-Aug-09	Aug-09	ALS Acirl	1524	20	0.9	0.9	0.8	4.0	0.5	
2600 1098 - 01	BD-5	29-Sep-09	Sep-09	ALS Acirl	1450	700	15.9	0.9	1.5	4.0	13.3	
2600 1128 - 00	BD-5	3-Nov-09	Oct-09	ALS Acirl	1445	600	2.9	1.9	1.5	4.0	2.5	
2601 1204 - 00	BD-5	4-Dec-09	Nov-09	ALS Acirl	1205	10	2	1.9	1.5	4.0	1.3	
2600 1222 - 00	BD-5	4-Jan-10	Dec-09	ALS Acirl	1645	2500	1.1	1.7	1.5	4.0	0.8	
2600 1234 - 00	BD-5	1-Feb-10	Jan-10	ALS Acirl	1500	300	2.2	1.8	1.6	4.0	1.3	
2600 1247 - 00	BD-5	2-Mar-10	Feb-10	ALS Acirl	1430	2200	0.7	1.6	1.5	4.0	0.4	
2600 1260 - 00	BD-5	30-Mar-10	Mar-10	ALS Acirl	1300	400	1.1	1.6	1.5	4.0	0.7	
2600 1268 - 00	BD-5	27-Apr-10	Apr-10	ALS Acirl	1335	400	0.5	1.4	1.5	4.0	0.3	
2600 1277 - 00	BD-5	25-May-10	May-10	ALS Acirl	1345	10	0.4	1.3	1.4	4.0	0.3	
2600 1288 - 776	BD-5	24-Jun-10	Jun-10	ALS Acirl	1136	800	0.7	1.3	1.4	4.0	0.5	
2600 1288 - 827	BD-5	22-Jul-10	Jul-10	ALS Acirl	0855	600	0.4	1.2	1.4	4.0	0.2	

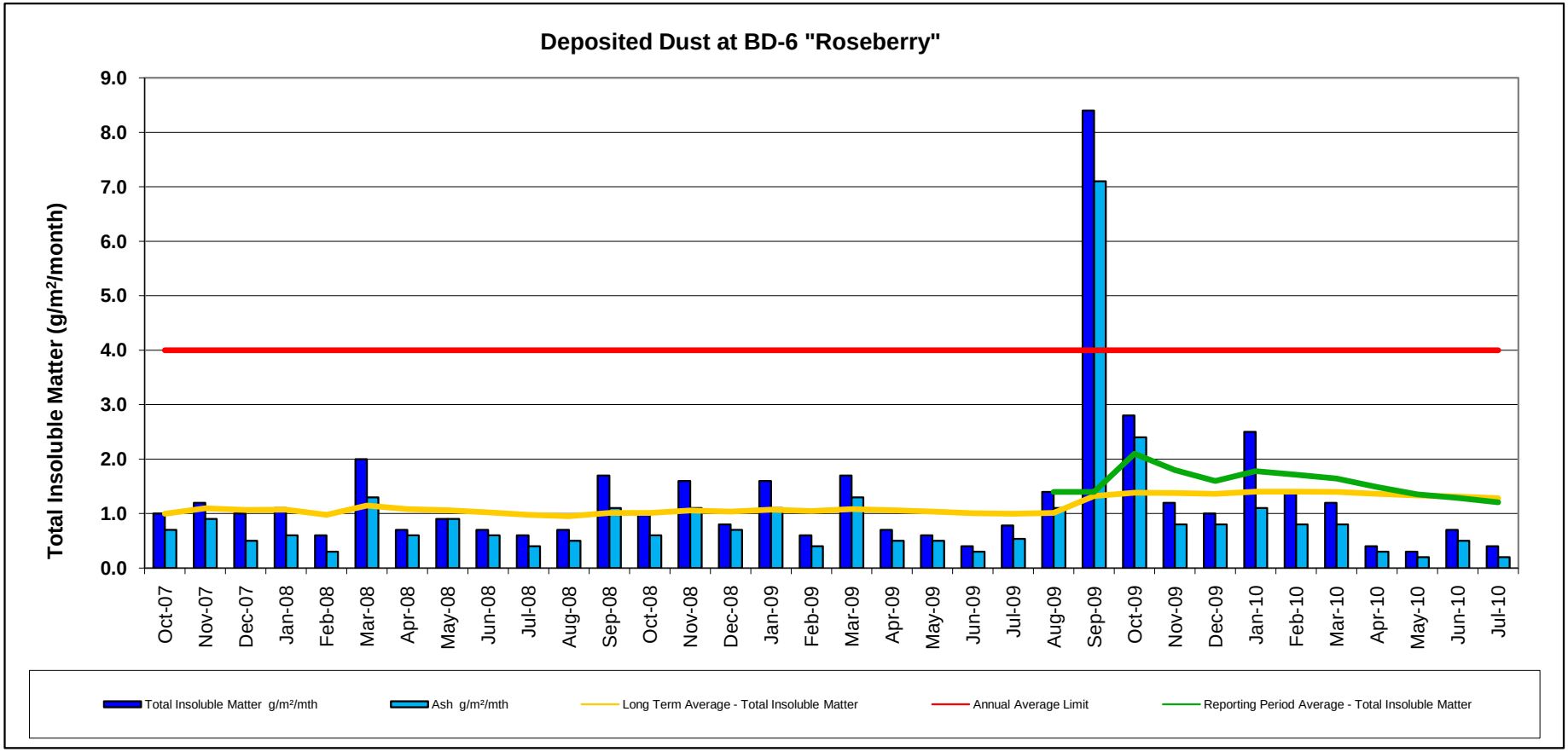
Note: September 2009 result excluded from reporting period average


Deposited Dust at BD-5 "Stratford"
Total Insoluble Matter (g/m²/month)
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Total Insoluble Matter g/m²/mth
Ash g/m²/mth
Long Term Average - Total Insoluble Matter
Annual Average Limit
Reporting Period Average - Total Insoluble Matter

Deposited Dust BD-6 "Roseberry"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time	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
28550.06	BD-6	5-Nov-07	Oct-07	Client	1250	610	1.0		1.0	4.0	0.7	
28662.06	BD-6	5-Dec-07	Nov-07	Client	1330	1690	1.2		1.1	4.0	0.9	
28923.06	BD-6	3-Jan-08	Dec-07	Client	1010	1235	1.0		1.1	4.0	0.5	
29224.06	BD-6	5-Feb-08	Jan-08	Client	1400	1065	1.1		1.1	4.0	0.6	
29525.06	BD-6	5-Mar-08	Feb-08	Client	1145	1090	0.6		1.0	4.0	0.3	
29773.06	BD-6	4-Apr-08	Mar-08	Client	0855	130	2.0		1.2	4.0	1.3	
30055.06	BD-6	5-May-08	Apr-08	Client	1240	215	0.7		1.1	4.0	0.6	
30386.06	BD-6	4-Jun-08	May-08	Client	1125	860	0.9		1.1	4.0	0.9	
30660.06	BD-6	9-Jul-08	Jun-08	Client	1305	565	0.7		1.0	4.0	0.6	
30902.06	BD-6	5-Aug-08	Jul-08	Client	0830	310	0.6		1.0	4.0	0.4	
31210.06	BD-6	1-Sep-08	Aug-08	Client	1700	665	0.7		1.0	4.0	0.5	
31527.06	BD-6	2-Oct-08	Sep-08	Client	1515	1245	1.7		1.0	4.0	1.1	
31775.06	BD-6	5-Nov-08	Oct-08	Client	1710	1595	1.0		1.0	4.0	0.6	
32023.06	BD-6	4-Dec-08	Nov-08	Client	0825	1275	1.6		1.1	4.0	1.1	
32518.06	BD-6	5-Jan-09	Dec-08	Client	1630	1230	0.8		1.0	4.0	0.7	
32246.06	BD-6	2-Feb-09	Jan-09	Client	1520	110	1.6		1.1	4.0	1.1	
32863.06	BD-6	2-Mar-09	Feb-09	Client	1605	1450	0.6		1.0	4.0	0.4	
2600 1004 -00	BD-6	1-Apr-09	Mar-09	ALS Acirl		<50	1.7		1.1	4.0	1.3	
2600 1019 -00	BD-6	1-May-09	Apr-09	ALS Acirl		300	0.7		1.1	4.0	0.5	
2600 1034 -01	BD-6	4-Jun-09	May-09	ALS Acirl		600	0.6		1.0	4.0	0.5	
2600 1042 - 01	BD-6	6-Jul-09	Jun-09	ALS Acirl		650	0.4		1.0	4.0	0.3	
2604 1054 - 01	BD-6	3-Aug-09	Jul-09	ALS Acirl	1510	350	0.8		1.0	4.0	0.5	
2600 1064 - 00	BD-6	31-Aug-09	Aug-09	ALS Acirl	1500	20	1.4	1.4	1.0	4.0	1.1	
2600 1098 - 01	BD-6	29-Sep-09	Sep-09	ALS Acirl	1405	300	8.4	1.4	1.3	4.0	7.1	
2600 1128 - 00	BD-6	3-Nov-09	Oct-09	ALS Acirl	1415	700	2.8	2.1	1.4	4.0	2.4	
2601 1204 - 00	BD-6	4-Dec-09	Nov-09	ALS Acirl	1215	dry	1.2	1.8	1.4	4.0	0.8	
2600 1222 - 00	BD-6	4-Jan-10	Dec-09	ALS Acirl	1635	2500	1	1.6	1.4	4.0	0.8	
2600 1234 - 00	BD-6	1-Feb-10	Jan-10	ALS Acirl	1517	100	2.5	1.8	1.4	4.0	1.1	
2600 1247 - 00	BD-6	2-Mar-10	Feb-10	ALS Acirl	1400	2300	1.4	1.7	1.4	4.0	0.8	
2600 1260 - 00	BD-6	30-Mar-10	Mar-10	ALS Acirl	1330	200	1.2	1.6	1.4	4.0	0.8	
2600 1268 - 00	BD-6	27-Apr-10	Apr-10	ALS Acirl	1345	400	0.4	1.5	1.4	4.0	0.3	
2600 1277 - 00	BD-6	25-May-10	May-10	ALS Acirl	1450	10	0.3	1.4	1.3	4.0	0.2	
2600 1288 - 776	BD-6	24-Jun-10	Jun-10	ALS Acirl	0920	800	0.7	1.3	1.3	4.0	0.5	
2600 1288 - 827	BD-6	22-Jul-10	Jul-10	ALS Acirl	0845	500	0.4	1.2	1.3	4.0	0.2	

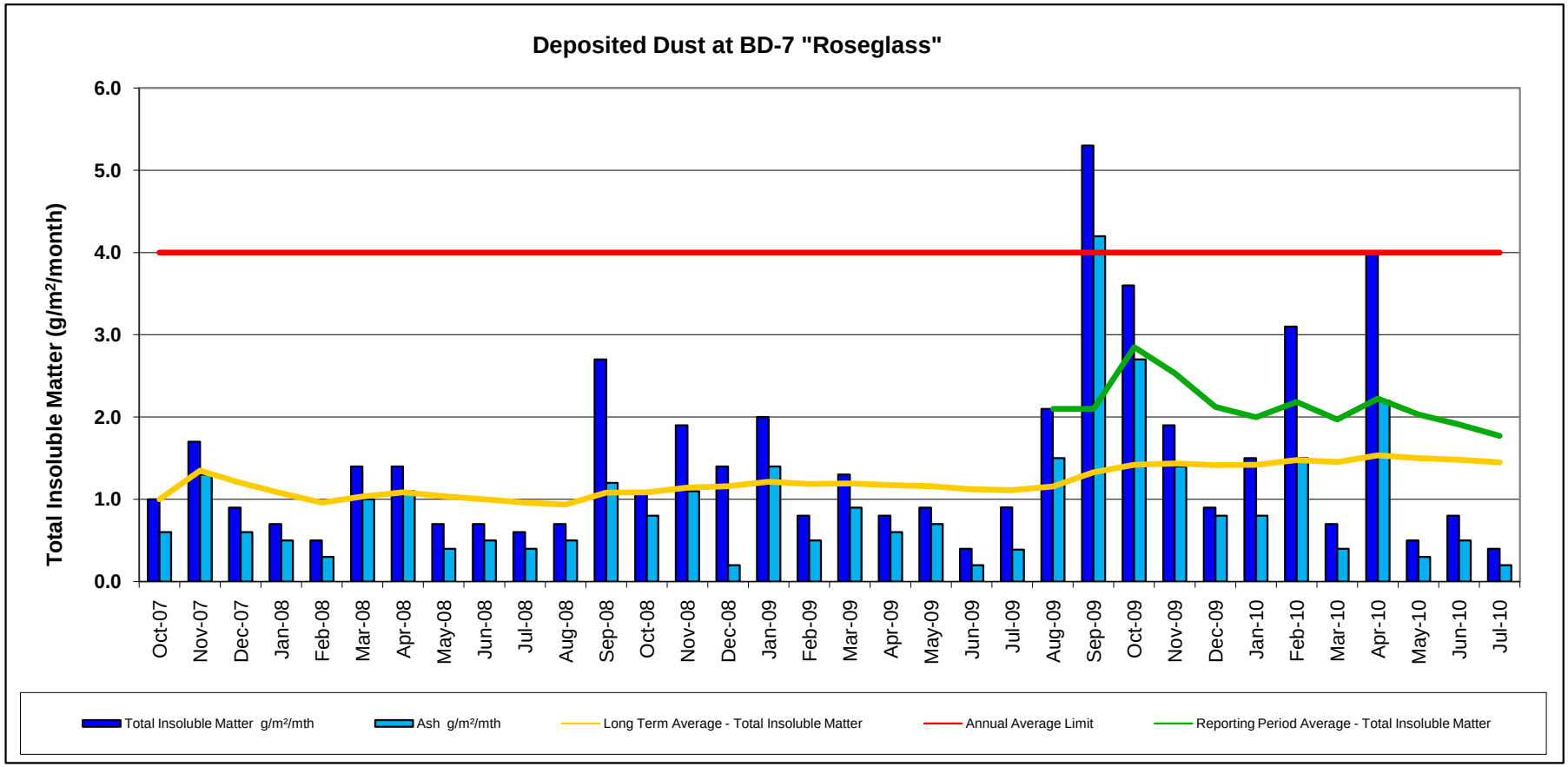
Note: September 2009 result excluded from reporting period average


Deposited Dust at BD-6 "Roseberry"
Total Insoluble Matter (g/m²/month)
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Total Insoluble Matter g/m²/mth
Ash g/m²/mth
Long Term Average - Total Insoluble Matter
Annual Average Limit
Reporting Period Average - Total Insoluble Matter

Deposited Dust BD-7 "Roseglass"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time	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
28550.07	BD-7	5-Nov-07	Oct-07	Client	1355	600	1.0		1.0	4.0	0.6	
28662.07	BD-7	5-Dec-07	Nov-07	Client	1240	1270	1.7		1.4	4.0	1.3	
28923.07	BD-7	3-Jan-08	Dec-07	Client	1110	1315	0.9		1.2	4.0	0.6	
29224.07	BD-7	5-Feb-08	Jan-08	Client	1300	1370	0.7		1.1	4.0	0.5	
29525.07	BD-7	5-Mar-08	Feb-08	Client	1305	1630	0.5		1.0	4.0	0.3	
29773.07	BD-7	4-Apr-08	Mar-08	Client	1010	50	1.4		1.0	4.0	1.0	
30055.07	BD-7	5-May-08	Apr-08	Client	1130	180	1.4		1.1	4.0	1.1	
30386.07	BD-7	4-Jun-08	May-08	Client	0945	770	0.7		1.0	4.0	0.4	
30660.07	BD-7	9-Jul-08	Jun-08	Client	1440	370	0.7		1.0	4.0	0.5	
30902.07	BD-7	5-Aug-08	Jul-08	Client	0925	350	0.6		1.0	4.0	0.4	
31210.07	BD-7	1-Sep-08	Aug-08	Client	1515	710	0.7		0.9	4.0	0.5	
31527.07	BD-7	2-Oct-08	Sep-08	Client	1330	1180	2.7		1.1	4.0	1.2	
31775.07	BD-7	5-Nov-08	Oct-08	Client	1541	1640	1.1		1.1	4.0	0.8	
32023.07	BD-7	4-Dec-08	Nov-08	Client	1000	990	1.9		1.1	4.0	1.1	
32518.07	BD-7	5-Jan-09	Dec-08	Client	1514	1200	1.4		1.2	4.0	0.2	
32246.07	BD-7	2-Feb-09	Jan-09	Client	1624	145	2.0		1.2	4.0	1.4	
32863.07	BD-7	2-Mar-09	Feb-09	Client	1442	1490	0.8		1.2	4.0	0.5	
2600 1004 -00	BD-7	1-Apr-09	Mar-09	ALS Acirl		<50	1.3		1.2	4.0	0.9	
2600 1019 -00	BD-7	1-May-09	Apr-09	ALS Acirl		500	0.8		1.2	4.0	0.6	
2600 1034 -01	BD-7	4-Jun-09	May-09	ALS Acirl		550	0.9		1.2	4.0	0.7	
2600 1042 - 01	BD-7	6-Jul-09	Jun-09	ALS Acirl		400	0.4		1.1	4.0	0.2	
2605 1054 - 01	BD-7	3-Aug-09	Jul-09	ALS Acirl	1410	350	0.9		1.1	4.0	0.4	
2600 1064 - 00	BD-7	31-Aug-09	Aug-09	ALS Acirl	1420	50	2.1	2.1	1.2	4.0	1.5	
2600 1098 - 01	BD-7	29-Sep-09	Sep-09	ALS Acirl	1308	800	5.3	2.1	1.3	4.0	4.2	
2600 1128 - 00	BD-7	3-Nov-09	Oct-09	ALS Acirl	1330	700	3.6	2.9	1.4	4.0	2.7	
2601 1204 - 00	BD-7	4-Dec-09	Nov-09	ALS Acirl	1110	25	1.9	2.5	1.4	4.0	1.4	
2600 1222 - 00	BD-7	4-Jan-10	Dec-09	ALS Acirl	1600	2500	0.9	2.1	1.4	4.0	0.8	
2600 1234 - 00	BD-7	1-Feb-10	Jan-10	ALS Acirl	1420	1600	1.5	2.0	1.4	4.0	0.8	
2600 1247 - 00	BD-7	2-Mar-10	Feb-10	ALS Acirl	1315	2300	3.1	2.2	1.5	4.0	1.5	
2600 1260 - 00	BD-7	30-Mar-10	Mar-10	ALS Acirl	1140	300	0.7	2.0	1.5	4.0	0.4	
2600 1268 - 00	BD-7	27-Apr-10	Apr-10	ALS Acirl	1240	350	4	2.2	1.5	4.0	2.2	
2600 1277 - 00	BD-7	25-May-10	May-10	ALS Acirl	1350	10	0.5	2.0	1.5	4.0	0.3	
2600 1288 - 776	BD-7	24-Jun-10	Jun-10	ALS Acirl	1000	800	0.8	1.9	1.5	4.0	0.5	
2600 1288 - 827	BD-7	22-Jul-10	Jul-10	ALS Acirl	0955	600	0.4	1.8	1.5	4.0	0.2	

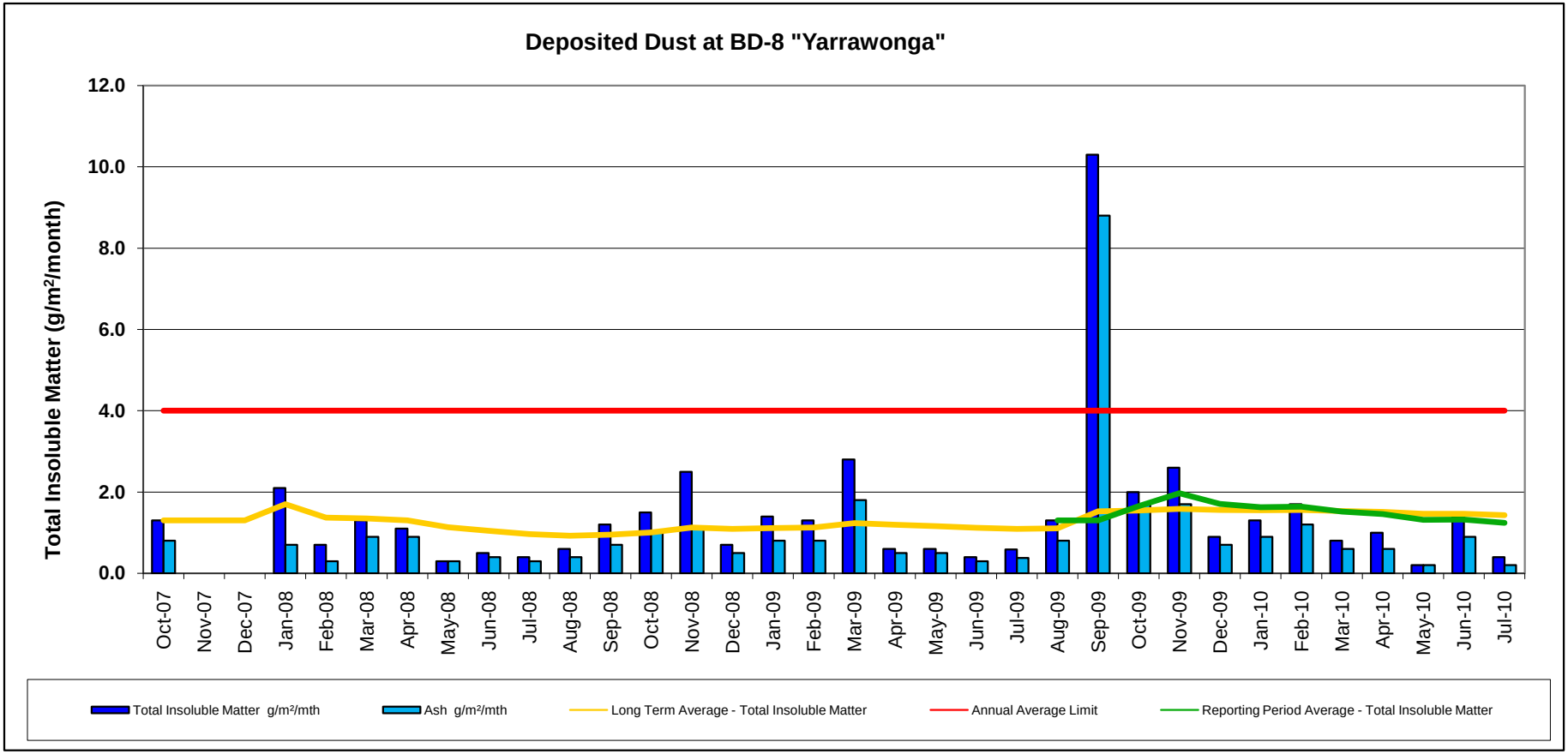
Note: September 2009 result excluded from reporting period average


Deposited Dust at BD-7 "Roseglass"
Total Insoluble Matter (g/m²/month)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Total Insoluble Matter g/m²/mth
Ash g/m²/mth
Long Term Average - Total Insoluble Matter
Annual Average Limit
Reporting Period Average - Total Insoluble Matter

Deposited Dust BD-8 "Yarrawonga"

Sample Number	Sample Location	Sample Date	Sample Month	Sampler	Time	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
28550.08	BD-8	5-Nov-07	Oct-07	Client	1130	630	1.3		1.3	4.0	0.8	
28662.08	BD-8	5-Dec-07	Nov-07	Client	1320				1.3	4.0		No access
28923.08	BD-8	3-Jan-08	Dec-07	Client	1045				1.3	4.0		No access
29224.08	BD-8	5-Feb-08	Jan-08	Client	1340	>2500	2.1		1.7	4.0	0.7	Exposure period 85 days
29525.08	BD-8	6-Mar-08	Feb-08	Client	1030	1595	0.7		1.4	4.0	0.3	
29773.08	BD-8	4-Apr-08	Mar-08	Client	0925	75	1.3		1.4	4.0	0.9	
30055.08	BD-8	5-May-08	Apr-08	Client	1215	380	1.1		1.3	4.0	0.9	
30386.08	BD-8	4-Jun-08	May-08	Client	1045	795	0.3		1.1	4.0	0.3	
30660.08	BD-8	9-Jul-08	Jun-08	Client	1405	470	0.5		1.0	4.0	0.4	
30902.08	BD-8	5-Aug-08	Jul-08	Client	0900	445	0.4		1.0	4.0	0.3	
31210.08	BD-8	1-Sep-08	Aug-08	Client	1615	800	0.6		0.9	4.0	0.4	
31527.08	BD-8	2-Oct-08	Sep-08	Client	1410	1360	1.2		1.0	4.0	0.7	
31775.08	BD-8	5-Nov-08	Oct-08	Client	1627	1980	1.5		1.0	4.0	1.0	
32023.08	BD-8	4-Dec-08	Nov-08	Client	0920	1185	2.5		1.1	4.0	1.1	
32518.08	BD-8	5-Jan-09	Dec-08	Client	1537	1460	0.7		1.1	4.0	0.5	
32246.08	BD-8	2-Feb-09	Jan-09	Client	1535	500	1.4		1.1	4.0	0.8	
32863.08	BD-8	2-Mar-09	Feb-09	Client	1517	1575	1.3		1.1	4.0	0.8	
2600 1004 -00	BD-8	1-Apr-09	Mar-09	ALS Acirl		<50	2.8		1.2	4.0	1.8	
2600 1019 -00	BD-8	1-May-09	Apr-09	ALS Acirl		400	0.6		1.2	4.0	0.5	
2600 1034 -01	BD-8	4-Jun-09	May-09	ALS Acirl		500	0.6		1.2	4.0	0.5	
2600 1042 - 01	BD-8	6-Jul-09	Jun-09	ALS Acirl		600	0.4		1.1	4.0	0.3	
2606 1054 - 01	BD-8	3-Aug-09	Jul-09	ALS Acirl	1440	450	0.6		1.1	4.0	0.4	
2600 1064 - 00	BD-8	31-Aug-09	Aug-09	ALS Acirl	1440	50	1.3	1.3	1.1	4.0	0.8	
2600 1098 - 01	BD-8	29-Sep-09	Sep-09	ALS Acirl	1340	800	10.3	1.3	1.5	4.0	8.8	
2600 1128 - 00	BD-8	3-Nov-09	Oct-09	ALS Acirl	1355	500	2	1.7	1.5	4.0	1.7	
2601 1204 - 00	BD-8	4-Dec-09	Nov-09	ALS Acirl	1145	50	2.6	2.0	1.6	4.0	1.7	
2600 1222 - 00	BD-8	4-Jan-10	Dec-09	ALS Acirl	1620	2500	0.9	1.7	1.6	4.0	0.7	
2600 1234 - 00	BD-8	1-Feb-10	Jan-10	ALS Acirl	1440	1000	1.3	1.6	1.5	4.0	0.9	
2600 1247 - 00	BD-8	2-Mar-10	Feb-10	ALS Acirl	1330	2200	1.7	1.6	1.6	4.0	1.2	
2600 1260 - 00	BD-8	30-Mar-10	Mar-10	ALS Acirl	1215	250	0.8	1.5	1.5	4.0	0.6	
2600 1268 - 00	BD-8	27-Apr-10	Apr-10	ALS Acirl	1310	350	1	1.5	1.5	4.0	0.6	
2600 1277 - 00	BD-8	25-May-10	May-10	ALS Acirl	1415	10	0.2	1.3	1.5	4.0	0.2	
2600 1288 - 776	BD-8	24-Jun-10	Jun-10	ALS Acirl	0940	900	1.4	1.3	1.5	4.0	0.9	
2600 1288 - 827	BD-8	22-Jul-10	Jul-10	ALS Acirl	0910	600	0.4	1.2	1.4	4.0	0.2	

Note: September 2009 result excluded from reporting period average


Deposited Dust at BD-8 "Yarrawonga"
Total Insoluble Matter (g/m²/month)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Oct-07
Nov-07
Dec-07
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Total Insoluble Matter g/m²/mth
Ash g/m²/mth
Long Term Average - Total Insoluble Matter
Annual Average Limit
Reporting Period Average - Total Insoluble Matter

Appendix 6

GROUNDWATER MONITORING DATA

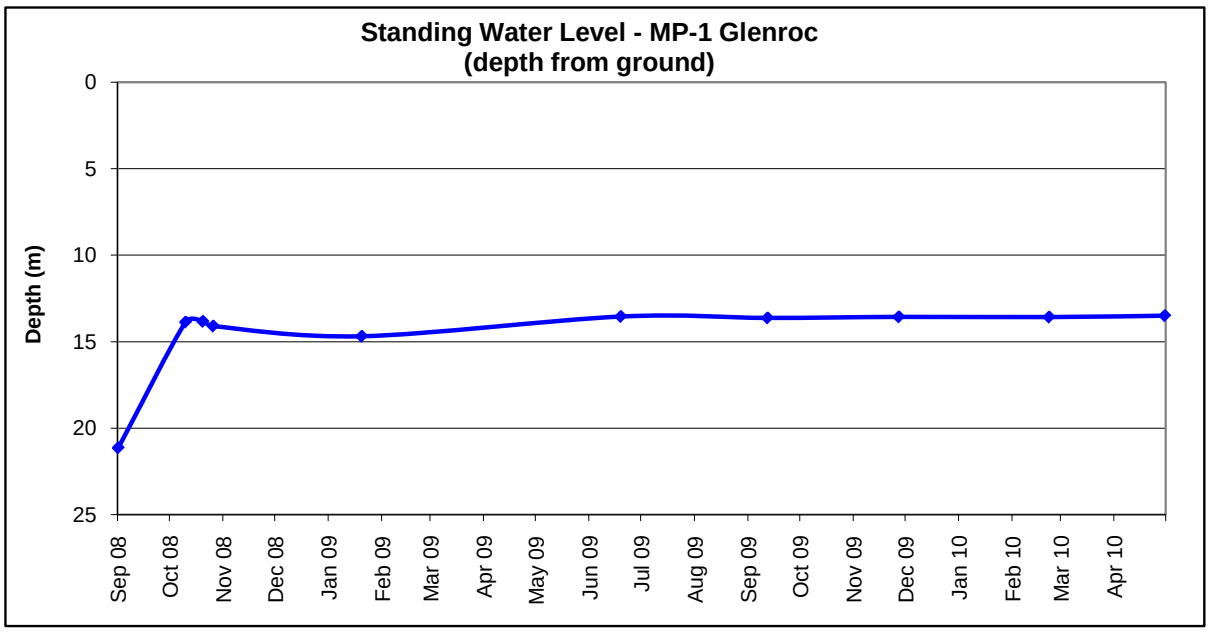
Site ID	Date	Time	Depth to Ground - mbgl	Depth to Stand - mbtoc	Field Parameters			Total Metals														Mercury (Hg) - mg/L	pH - Lab	EC - Lab - µs/cm	Major Cations				Total Cations - meq/L	Major Anions						Total Anions - meq/L	Ionic Balance	Ammonia as Nitrogen (N)	Nitrite as N (mg/L)	Nitrate as 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							
ANZECC guideline*								**5**	**0.5**			**0.01**	**1**	**1**	**1**		**0.1**			**1**	**20**	**0.002**			**1000**						**1000**									**1500**	**400**		**4000**
MP-1	04-Sep-08	1040	21.14	22.11																																				
Registered Number:	13-Oct-08	1500	13.87	14.84																																				
GW968533	23-Oct-08	0915	13.83	14.8																																				
Licence Number:	29-Oct-08		14.1	15.07	7.61	2360	22.1		0.011	0.148	<0.0001	0.0001	0.002	0.001	0.002	0.84	0.004	0.332	0.332	<0.01	0.016	<0.0001			51	32	400	4	22.7	222	51	<1	<1	686	686	21	3.76	<0.01				
90BL254855	23-Jan-09	1600	14.69	15.66																																				
	22-Jun-09	0915	13.55	14.65	7.8	2250	19.8		0.013	0.147	<0.001	<0.0001	0.01	0.002	0.009	1.12	0.003	0.249	0.014	<0.01	0.067	<0.0001		2210	39	25	487	4	25.3	235	78	<1	<1	741	741	23	4.6	<0.01				1300
	15-Sep-09	1540	13.63	14.6																																				
	30-Nov-09	1250	13.57	14.54	7.77	2251	25.3	<0.01	0.004				<0.005		<0.001	<0.05	<0.001	0.237	0.013		<0.005	<0.0001	7.85	2250	31	26	465	4	24.1	224	120	<1	<1	751	751	23.8	0.51		<0.01	0.17	0.17	
	25-Feb-10	1425	13.58	14.55																																				
	03-May-10	1410	13.5	14.47	8.06	2440	22.8		0.009	0.313	<0.001	0.0004	0.01	0.006	0.14	12.2	0.032	0.832	0.04	0.02	0.886	<0.0001		2100	34	23	493	6	25.2	255	102	<1	<1	828	828	25.9	1.37	3.12				1170
MP-2	03-Sep-08	1650	13.53	14.55																																				
Registered Number:	13-Oct-08	1255	12.98	14.00																																				
GW968534	23-Oct-08	0930	13.56	14.58																																				
Licence Number:	29-Oct-08		13.2	14.22	7.35	4180	21		0.001	0.618	<0.001	0.0001	0.002	0.001	0.003	1.1	0.011	0.234	0.234	<0.01	0.042	<0.0001			174	101	529	5	40.1	926	45	<1	<1	559	559	38.2	2.37	0.02				
90BL254856	23-Jan-09	1741	14.6	15.7																																				
	22-Jun-09	1200	13.7	14.8	7	5210	22.5		0.001	0.766	<0.001	<0.0001	0.01	0.003	0.008	5.01	0.007	0.145	0.011	0.01	0.095	<0.0001		4830	254	150	646	7	53.3	1490	61	<1	<1	538	538	54.1	0.74	<0.01				3040
	15-Sep-09	1520	13.88	14.88																																				
	30-Nov-09	1030	13.9	14.9	6.91	5230	30.2	<0.01	0.002				<0.005		0.019	<0.05	<0.001	0.07	0.006		0.01	<0.0001	6.99	4560	247	161	593	7	51.6	1390	19.5	<1	<1	446	446	48.4	3.16		<0.01	0.6	0.6	
	25-Feb-10	1320	14.14	15.14																																				
	03-May-10	1130	14	15	7.37	5240	22.3		<0.001	0.737	<0.001	<0.0001	0.004	0.002	0.022	4.31	0.012	0.148	0.009	0.01	0.335	<0.0001		4760	237	150	584	6	49.8	1510	28.6	<1	<1	527	527	53.8	3.88	0.01				3120
MP-3	04-Sep-08	1130	11.81	12.75																																				
Registered Number:	13-Oct-08	1000	9.06	10.00																																				
GW968535	23-Oct-08	0830	17.36	18.3																																				
Licence Number:	29-Oct-08																																							
90BL254857	23-Jan-09	1800	18.3	19.24																																				
	22-Jun-09	1240		Dry																																				
	15-Sep-09	1505		Dry																																				
	30-Nov-09	1220		Dry																																				
	25-Feb-10	1140		Dry																																				
	03-May-10	1050		Dry																																				
MP-4	03-Sep-08	1715	22.62	23.60																																				
Registered Number:	13-Oct-08	1045	23.02	24.00																																				
GW968536	22-Oct-08	1555	23.17	24.15																																				
Licence Number:	29-Oct-08																																							
90BL254858	23-Jan-09	1810	24.16	25.14																																				
	22-Jun-09	1247		Dry																																				
	15-Sep-09	1455		Dry																																				
	30-Nov-09	1220		Dry																																				
	25-Feb-10	1035		Dry																																				
	03-May-10	1000		Dry																																				
MP-5	04-Sep-08	0940	53.13	54.00																																				
Registered Number:	13-Oct-08	1515	52.9	53.77																																				
GW968537	23-Oct-08	0900	52.96	53.83																																				
Licence Number:	29-Oct-08																																							
90BL254859	23-Jan-09	1616	54.44	55.26																																				
	22-Jun-09	1020		Dry																																				
	15-Sep-09	1608		Dry																																				
	30-Nov-09	0915	54.42	55.52																																				
	25-Feb-10	1445	54.48	55.58																																				
	03-May-10	1330	54.6	55.45																																				
WB-1	13-Oct-08	1640	8.95	9.35																																				
Registered Number:	28-Oct-08		8.85	9.25	7.93	1996	22.4		0.018	0.355	<0.001	0.0001	<0.001	<0.001	0.009	8.7	0.027	0.045	0.045	<0.01	1.19	<0.0001			9	12	388	4	18.4	286	30	<1	<1	483	483	17.8	1.57	1.23				1050
GW000743																																								
WB-2	3-Sep-08	1400	16.87	17.25																																				
Registered Number:	13-Oct-08	1630	16.49	16.87																																				
GW050395	28-Oct-08		16.60	16.98	7.72	3430	22.7		<0.001	0.127	<0.001	<0.0001	<0.001	<0.001	0.011	0.15	<0.001	0.01	0.01	0.02	0.023	<0.0001			207	120	281	3	32.5	816	6	<1	<1	389	389	31.4	1.7	0.17				2310
Licence Number:	23-Jan-09	1532	17	17.39																																				
90BL111536	22-Jun-09	0830	16.65	17.03	7.2	3160	19.6		0.003	0.128	<0.001	<0.0001	0.001	<0.001	0.132	20.1	0.012	0.826	0.024	0.05	1.32	<0.0001		3050	205	103	274	4	30.7	798	27	<1	<1	464	464	32.3	2.52	0.08				1750
	15-Sep-09	1552	16.45	16.83																																				
	6-Jan-10	0930	16.45	16.83	8.5	2070	24.1	<0.01	<0.001				<0.001		0.021	<0.05	<0.001	0.036	0.009		0.334	<0.0001	7.51	2010	126	62	159	7	18.5	326	13.7	<1	<1	330	330	16.7	5		0.02	8.96	8.98	
	25-Feb-10	1355	16.48	16.86																																				
	3-May-10	1250	16.56	16.94	7.84	1821	23.1		0.001	0.084	<0.001	0.0002	<0.001	<0.001	0.138	11.8	0.007	0.541	0.01	0.03	1.03	<0.0001		2190	148	73	194	7	22	505	35.5	<1	<1	364	364	22.3	0.47	2.77				1290
WB-3	3-Sep-08	1430	8.82	9.40																																				
Registered Number:	13-Oct-08	1555	8.87	9.45																																				
GW050166	29-Oct-08		8.95	9.53	7.2	4480	21.7		0.002	0.012	<0.001	0.0004	0.05	0.001	0.009	0.61	0.003	0.026	0.026	0.04	0.026	<0.0001			264	196	363	2	45.1	1210	29	<1	<1	395	395	42.7	2.75	0.06				
Licence Number:	23-Jan-09	1545	23.72	24.3																																				
90BL110883	9-Feb-09	1600	9	9.5																																				
	22-Jun-09	0905	8.99	9.57	7.5	4380	15.9		<0.001	0.005	<0.001	<0.0001	<0.001	<0.001	0.028	0.06	<0.001	0.004	0.006	0.04	0.131	<0.0001		4080	259	184	407	2	45.8	1270	22	<1	<1	434	434	44.8	1.1	0.18				2690
	15-Sep-09	1549	8.76	9.57																																				
	30-Nov-09	0845	8.8	9.61	7.67	2900	25.6	<0.01	0.001				<0.005		0.017	<0.05	<0.001	0.003	0.005		0.078	<0.0001	7.74	3890	215	185	360	3	41.7	1220	21.2	<1	<1	324	324	41.3	0.5		<0.01	3.78	3.78	
	25-Feb-10	1410	8.69	9.5																																				
	3-May-10	1320	18.53	19.11	7.88	4290	23.5		0.001	0.006	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.05	<0.001	<0.001	<0.001	0.04	<0.005	<0.0001		4000	229	168	354	2	40.7	1210	29.8	<1	<1	428	428	43.2	3.06	<0.01				2680

Site ID	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						
ANZECC guideline*								**5**	**0.5**			**0.01**	**1**	**1**	**1**		**0.1**			**1**		**20**	**0.002**			**1000**						**1000**								**1500**	**400**		**4000**
WB-4	3-Sep-08	casing sealed																																						
Registered Number:	13-Oct-08	casing sealed																																						
GW045621	29-Oct-08	casing sealed																																						
Licence Number:	22-Jun-09	casing sealed																																						
90BL104367	15-Sep-09	casing sealed																																						
	30-Nov-09	casing sealed																																						
	25-Feb-10	casing sealed																																						
WB-5	3-Sep-08	1540	4.23	4.65																																				
Registered Number:	13-Oct-08	1600	12.92	13.34																																				
GW011066	28-Oct-08		12.85	13.27	7.29	8400	22.5		<0.001	0.165	<0.001	0.0002	<0.001	<0.001	0.003	0.47	<0.001	0.267	0.267	<0.01	0.103	<0.0001			314	288	979	8	82.1	2350	89	<1	<1	505	505	78.2	2.39	0.22				5680
Licence Number:	23-Jan-09	1700	13.1	13.5																																				
90BL004169	22-Jun-09	1045			6.6	7930	21.3		<0.001	0.163	<0.001	<0.0001	<0.001	<0.001	0.002	2.36	<0.001	0.231	0.002	<0.01	0.045	<0.0001	7590		318	270	1080	9	85.3	2680	67	<1	<1	612	612	89.4	2.36	0.02				4580
	15-Sep-09	1620			Unable to be dipped																																				
	30-Nov-09	0930	22.93	23.33	7.06	4880	27.9	<0.01	<0.001				<0.005		0.002	<0.05	<0.001	0.253	0.001		0.086	<0.0001	7250	7.26	282	280	965	10	79.3	2330	63.8	<1	<1	494	494	77	1.45		<0.01	2.23	2.23	
	25-Feb-10	1345	13.14	13.54																																				
	3-May-10	1215	12.97	13.37	7.43	7500	23		<0.001	0.124	<0.001	<0.0001	<0.001	<0.001	0.003	0.21	<0.001	0.124	0.001	<0.01	0.085	<0.0001	6720		217	268	1020	9	77.5	2360	91	<1	<1	415	415	76.8	0.41	<0.01				4570
WB-6	3-Sep-08	1626	23.18	23.64																																				
Registered Number:	13-Oct-08	1315	23.05	23.51																																				
GW044068	29-Oct-08																																							
Licence Number:	23-Jan-09	1720	23.81	24.3																																				
90BL102845	22-Jun-09	1110	23.74	24.2	Unable to sample																																			
	15-Sep-09	1528	23.83	24.32																																				
	30-Nov-09	1000	24.02	24.51	Bore equipped																																			
	25-Feb-10	1335	25.05	25.54																																				
	3-May-10	1155	23.71	24.2																																				
WB-7	4-Sep-08	0830	41.75	42.00																																				
Registered Number:	13-Oct-08	1240	19.11	19.36																																				
GW022319	28-Oct-08		18.90	19.15	7.25	2730	22.1		0.002	0.609	<0.001	<0.0001	<0.001	<0.001	0.021	0.19	<0.001	0.012	0.012	0.02	0.052	<0.0001			113	63	387	4	27.8	529	25	<1	<1	489	489	25.2	4.78	<0.001				1540
Licence Number:	23-Jan-09	1752	21.35	21.43																																				
90BL013922	22-Jun-09	1210	Sample from tank		7.4	2690	18.8		0.001	0.665	<0.001	<0.0001	<0.001	<0.001	0.02	0.09	<0.001	0.012	<0.001	0.02	0.046	<0.0001		2660	117	58	417	4	28.9	604	33	<1	<1	533	533	28.4	0.92	1.4				1460
	15-Sep-09	1508			Bore equipped																																			
	30-Nov-09	1200	Sample from tank		7.39	2640	30.8	<0.01	0.002				<0.005		0.019	<0.05	<0.001	0.006	<0.001		0.029	<0.001	7.3	2260	102	58	367	4	25.9	571	21.7	<1	<1	497	497	26.5	1.06		0.09	5.94	6.03	
	25-Feb-10	1300	Sample from tank																																				
	3-May-10	1100	15	15.27	7.45	2890	21.4		0.002	0.663	<0.001	<0.0001	<0.001	<0.001	0.038	0.45	0.006	0.024	0.003	0.002	5.72	<0.0001		2470	122	58	360	3	26.6	535	28.1	<1	<1	572	572	27.1	0.84	<0.01				1320
WB-8	3-Sep-08	no access																																						
Registered Number:	13-Oct-08	no access																																						
GW052958	29-Oct-08	no access																																						
Licence Number:	23-Jan-09	1840	46.4	46.9																																				
90BL107181	22-Jun-09	1255	32.75	33.17	8.2	2240	18.5		0.02	0.173	<0.001	0.0004	<0.001	<0.001	0.004	0.36	0.003	0.016	<0.001	0.01	0.335	<0.0001		2190	49	38	429	7	24.4	378	37	<1	<1	554	554	22.5	4.04	0.12				1210
	15-Sep-09	1450	43.38	43.88																																				
	30-Nov-09	1350		Dry																																				
	25-Feb-10	1045	49.32	49.82																																				
	3-May-10	1035	32.59	33.09																																				
WB-9	3-Sep-08	1740	23.88	24.15																																				
	13-Oct-08	1100	24.09	24.36																																				
	28-Oct-08		24.50	24.77	7.53	931	23.3		0.021	0.459	<0.001	0.0008	0.001	<0.001	0.023	37.3	0.034	0.157	0.157	0.02	2.44	<0.0001			40	32	99	5	9.04	88	17	<1	<1	300	300	8.83	1.12	4.54				417
	23-Jan-09	1816	24.27	24.57																																				
	22-Jun-09	1345	23.99	24.26	7.9	1080	20.6		0.005	0.648	<0.01	0.0017	<0.001	<0.001	0.004	11.8	0.005	0.034	0.002	<0.001	0.792	<0.0001		1040	21	27	104	8	8.03	84	<10	<1	<1	403	403	10.4	13	1.34				508
	15-Sep-09	1443	23.94	24.25																																				
	30-Nov-09	1400	24.05	24.36	7.17	1261	25.3	<0.01	<0.001				<0.005		<0.001	0.33	<0.001	0.158	0.002		1.78	<0.001	7.14	1020	91	46	115	2	13.3	56.1	64.5	<1	<1	527	527	13.4	0.48		<0.01	0.2	0.2	
	25-Feb-10	1120	25.58	25.89																																				
	3-May-10	1010	24.26	24.57																																				
WB-10	25-Jul-08	1050	13.75	13.85																																				
	4-Sep-08	0750	13.80	13.90																																				
	13-Oct-08	1200	13.77	13.87																																				
	28-Oct-08		13.9	14	7.45	2235	17.8		0.002	0.045	<0.001	<0.0001	0.001	<0.001	0.002	6.47	0.004	0.02	0.02	0.01	0.571	<0.0001			138	79	248	<1	24.2	141	280	<1	<1	632	632	22.4	3.72	0.04				1310
	27-Jan-09	1119	14.23	14.27																																				
	22-Jun-09	1530	14.01	14.08	7	2220	21.2		0.002	0.05	<0.001	<0.0001	<0.001	<0.001	0.004	6.91	0.003	0.021	0.002	0.01	0.858	<0.0001		2180	139	70	283	1	25	150	279	<1	<1	751	751	25.1	0.06	0.21				1320
	11-Sep-09	1432	14.65	14.72																																				
	30-Nov-09	1450	14.62	14.69	7.11	2052	23.8	<0.01	<0.001				<0.005		0.008	<0.05	<0.001	0.014	0.001		0.195	<0.0001	6.89	1690	123	67	259	<1	23	117	225	<1	<1	717	717	22.3	1.47		<0.01	0.15	0.15	
	25-Feb-10	1015	14.23	14.3																																				
	3-May-10	1440	14.47	14.54	7.93	2300	22.5		0.005	0.089	<0.001	0.0003	0.001	0.001	0.02	18	0.016	0.069	0.005	0.03	1.12	<0.0001		2010	137	70	266	<1	24.2	155	360	<1	<1	722	722	26.3	4.17	<0.01				1260
WB-11	25-Jul-08	1105	18.11	18.28																																				
	4-Sep-08	0740	18.61	18.78																																				
	13-Oct-08	1150	18.13	18.30																																				
	28-Oct-08		18.4	18.57	7.57	1086	19.6		<0.001	0.124	<0.001	<0.0001	<0.001	<0.001	0.004	4.24	0.004	0.253	0.253	<0.01	0.048	<0.0001			34	28	149	6	10.6	133	31	<1	<1	323	323	10.9	1.15	0.78				576
	23-Jan-09	1109	18.73	18.91																																				
	22-Jun-09	1505	18.1	18.35	8	880	21.3		<0.001	0.1	<0.001	<0.0001	<0.001	<0.001	0.002	5.4	0.004	0.298	0.002	<0.01	0.041	<0.0001		917	360	24	130	2	9.2	132	10	<1	<1	247	247	8.86	1.86	1.79				476
	11-Sep-09	1425	18.63	18.88																																				
	30-Nov-09	1425	18.6	18.85	7.89	938	23.1	<0.01	<0.001				<0.001		0.001	<0.05	<0.001				0.005	<0.0001	6.65	929	29	24	122	2	8.79	138	2.52	<1	<1	251	251	8.97	1.05		<0.01	0.08	0.08	
	25-Feb-10	1000	18.47	18.72																																				
	3-May-10	1515	18.24	18.49	8.37	1083	22.5		<0.001	0.08	<0.001	<0.0001	<0.001	<0.001	0.001	6.02	0.003	0.379	0.002	<0.01	0.016	<0.0001		921	33	24	127	2	9.19	156	5.84	<1	<1	246	246	9.44	1.34	0.95				474
WB-12	25-Jul-08	1120	12.73	13.03																																				
	4-Sep-08	0800	12.80	13.10																																				
	13-Oct-08	1213	12.83	13.13																																				
	28-Oct-08		12.95	13.25	8.15	2152	19.4		0.001	0.102	<0.001	0.0001	0.001	0.001	0.005	5.55	0.003	0.099	0.099	<0.01	0.314	<0.0001			34	78	301	3	21.3	254	2	<1	<1	649	649	20.2	2.57	6.95				1040
	27-Jan-09	1129	13.16	13.33																																				
	22-Jun-09	1550	12.99	13.21	8	2070	22.2		0.001	0.108	<0.001	<0.0001	0.004	0.001	0.002	8.97	0.003	0.13	0.007	<0.01	0.871	<0.0001		1990	31	79	325	2	22.2	261	<5	<1	<1	725	725	21.8	0.81	6.82				1050
	11-Sep-09	1438	13.05	13.27																																				
	30-Nov-09	1425	12.99	13.21	8.6	1537	22.8	<0.01	<0.001				<0.005		0.009	<0.05	<0.001	0.029	0.001		0.017	<0.0001	8.34	1640	16	43	284	6	16.8	149	10.8	<1	86	516	602	16.4	1.13		0.02	1.37	1.39	

Site ID	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							
ANZECC guideline*								**5**	**0.5**			**0.01**	**1**	**1**	**1**		**0.1**			**1**		**20**	**0.002**			**1000**						**1000**									**1500**	**400**		**4000**
	25-Feb-10	1020	13.19	13.41																																					
	3-May-10	1500	13.15	13.37	8.27	1490	22.5		0.002	0.069	<0.001	0.0001	<0.001	<0.001	0.004	6.2	0.003	0.111	0.003	<0.01	1.27		<0.0001		1390	19	43	266	4	16.2	137	13.6	<1	15	567	582	15.8	1.17	3.1				750
Yarrari	3-Sep-08	1555	55.24	56.06																																					
	13-Oct-08	1310	50.18	51.00																																					
	29-Oct-08				7.35	4030	24		<0.001	0.1	<0.001	0.0002	0.001	<0.001	0.005	0.11	<0.001	0.011	0.011	<0.01	0.013		0.0001			51	50	558	3	39.4	987	46	<1	<1	372	372	36.2	4.12	0.1				
	29-Oct-08								0.003	0.104	<0.001	<0.0001	<0.001	<0.001	0.004	0.08	<0.001	0.011	<0.001	<0.01	0.016		<0.0001			214	50	563	3	39.3	1040	46	<1	<1	374	374	37.8	1.94	<0.01				
	23-Jan-09	1714	49.90	50.58																																					
	22-Jun-09	1120		>50	7.1	3580	21.3	Sample not analysed due to lab administrative error																																			
	27-Aug-09	1500			7.34	3330	22.1		<0.001	0.061	<0.001	<0.0001	<0.001	<0.001	0.013	<0.05	<0.001	0.026	<0.001	<0.01	0.041		<0.0001		3070	167	32	504	3	33	803	42.9	<1	<1	430	430	32.1	1.31	<0.01				1980
	30-Nov-09	1005			7.25	3480	27.4	<0.01	<0.001				<0.005	0.004		<0.05	<0.001	<0.001	<0.001		0.006		<0.0001	7.2	3160	178	35	508	3	33.9	882	34.7	<1	<1	377	377	33.1	1.19		<0.01	0.51	0.51	
	25-Feb-10	1330	Bore equipped																																						
	3-May-10	1205			7.52	3520	22		<0.001	0.063	<0.001	<0.0001	<0.001	<0.001	0.005	<0.05	<0.001	0.018	<0.001	<0.01	0.007		<0.0001		3310	175	32	528	3	34.4	930	52.4	<1	<1	314	314	33.6	1.14	<0.01				1900

* ANZECC guideline - stock drinking water (cattle)

Denotes dissolved metals


Standing Water Level - MP-1 Glenroc
(depth from ground)
Depth (m)
0
5
10
15
20
25
Sep 08
Oct 08
Nov 08
Dec 08
Jan 09
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Mar 09
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May 09
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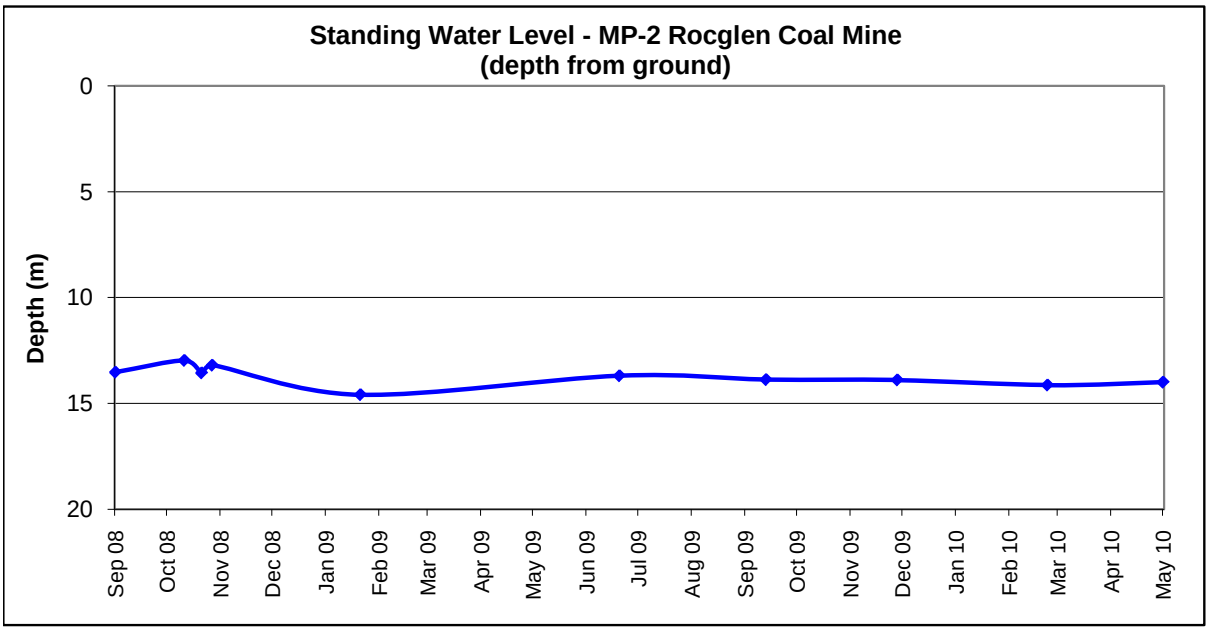
Jan 10
Feb 10
Mar 10
Apr 10


Standing Water Level - MP-2 Rocglen Coal Mine
(depth from ground)
Depth (m)
0
5
10
15
20
Sep 08
Oct 08
Nov 08
Dec 08
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Feb 09
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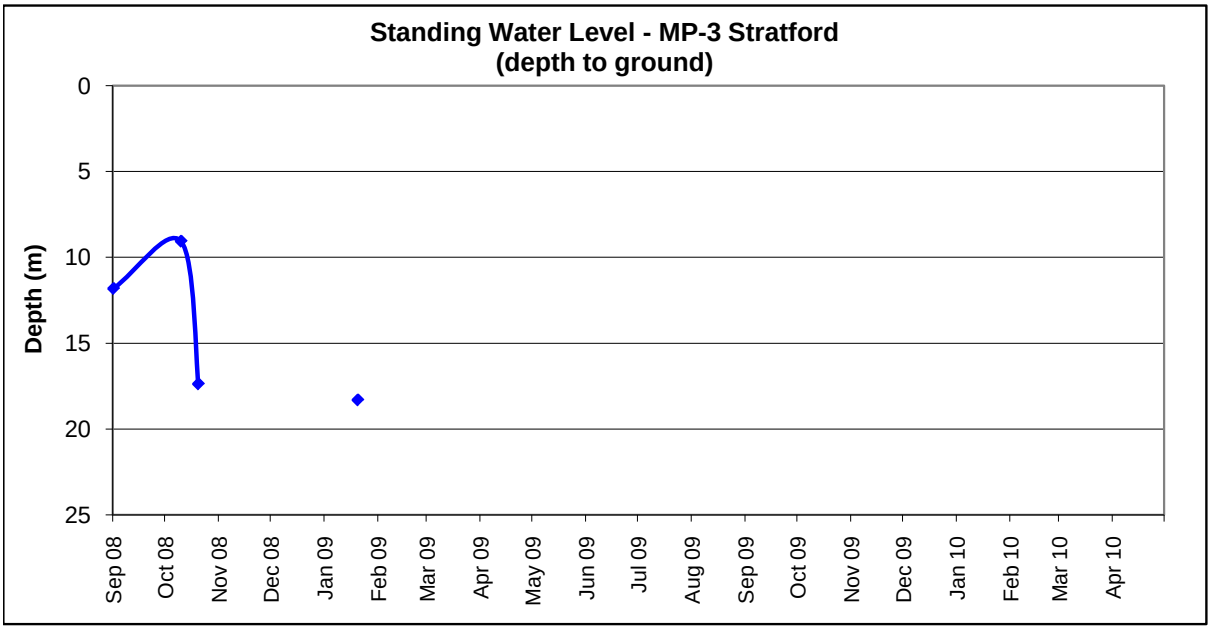
Feb 10
Mar 10
Apr 10
May 10


Standing Water Level - MP-3 Stratford
(depth to ground)
Depth (m)
0
5
10
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Sep 08
Oct 08
Nov 08
Dec 08
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Mar 09
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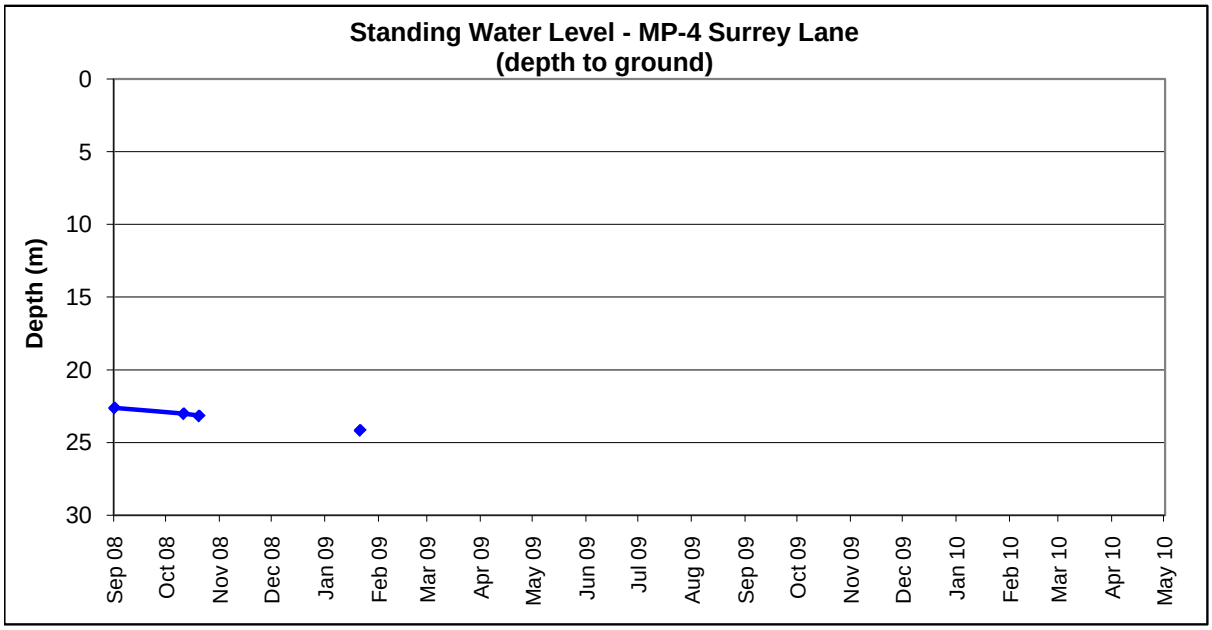
Dec 09
Jan 10
Feb 10
Mar 10
Apr 10


Standing Water Level - MP-4 Surrey Lane
(depth to ground)
Depth (m)
0
5
10
15
20
25
30
Sep 08
Oct 08
Nov 08
Dec 08
Jan 09
Feb 09
Mar 09
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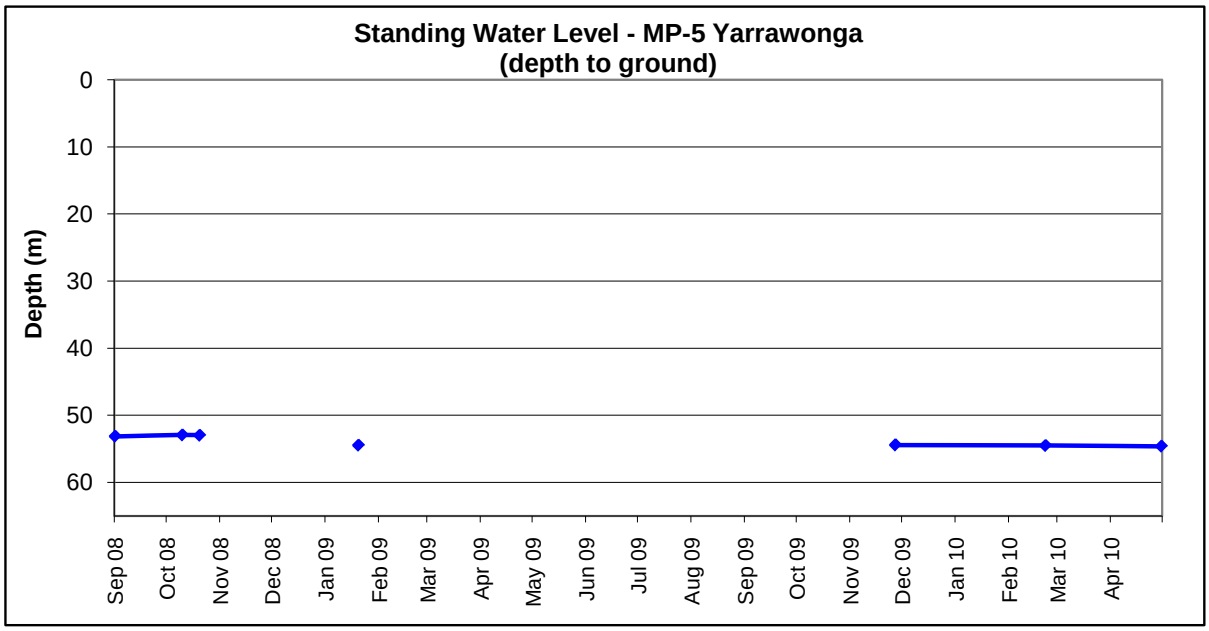
Feb 10
Mar 10
Apr 10
May 10


Standing Water Level - MP-5 Yarrawonga
(depth to ground)
Depth (m)
0
10
20
30
40
50
60
Sep 08
Oct 08
Nov 08
Dec 08
Jan 09
Feb 09
Mar 09
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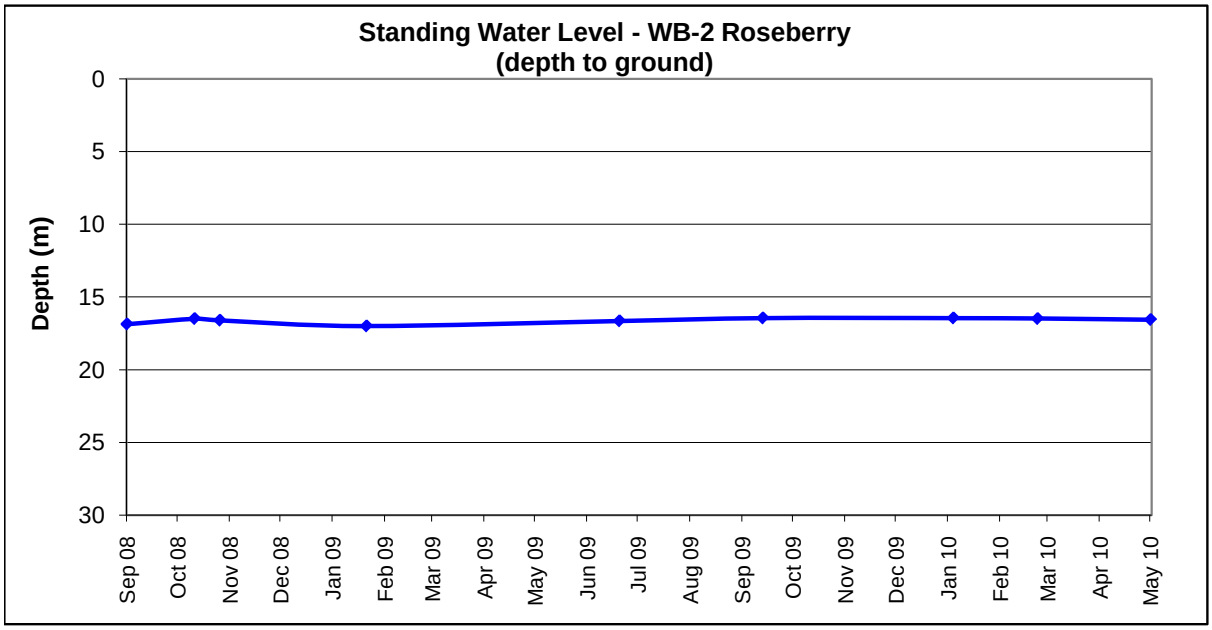
Feb 10
Mar 10
Apr 10


Standing Water Level - WB-2 Roseberry
(depth to ground)
Depth (m)
0
5
10
15
20
25
30
Sep 08
Oct 08
Nov 08
Dec 08
Jan 09
Feb 09
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Apr 09
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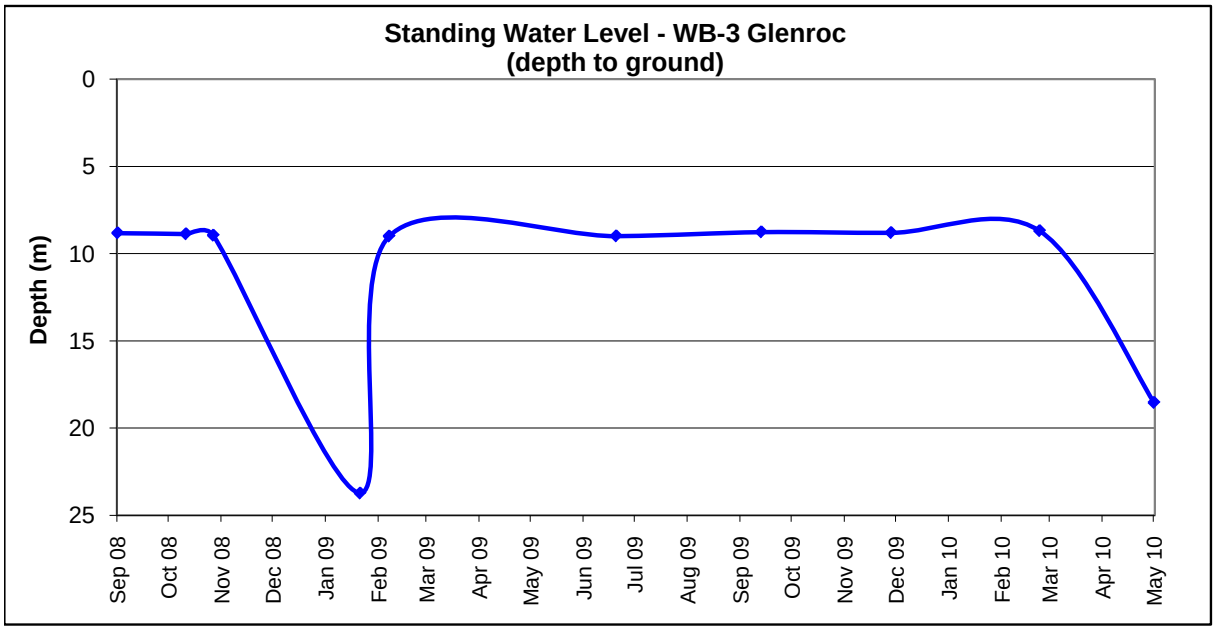
Mar 10
Apr 10
May 10


Standing Water Level - WB-3 Glenroc
(depth to ground)
Depth (m)
0
5
10
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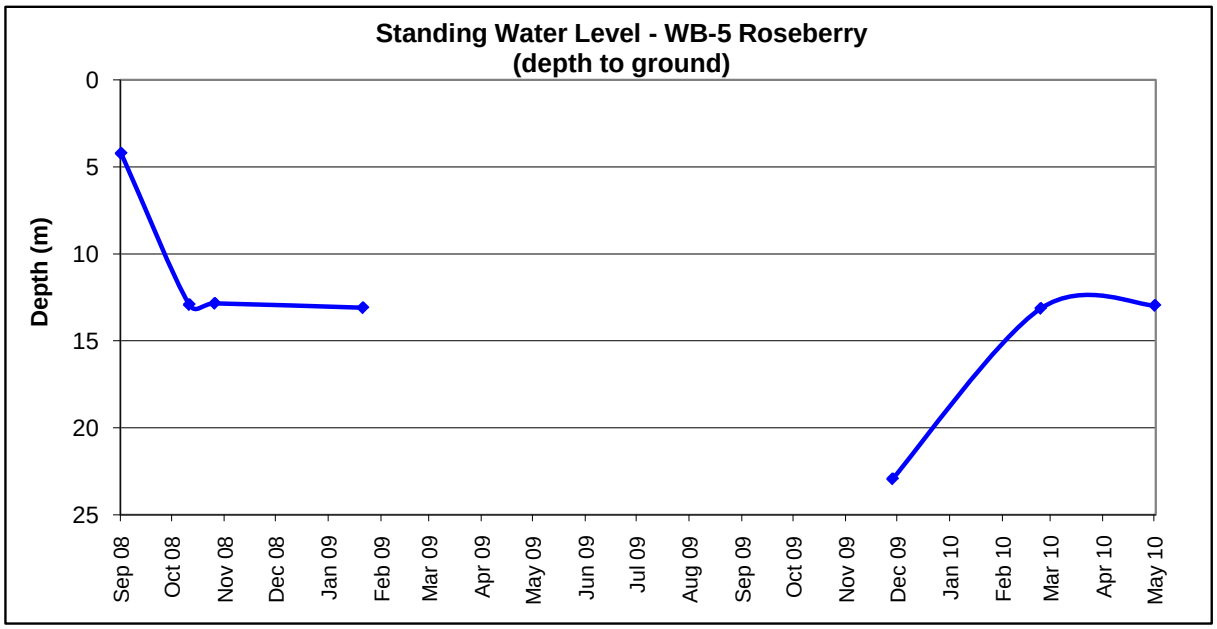
Apr 10
May 10


Standing Water Level - WB-5 Roseberry
(depth to ground)
Depth (m)
0
5
10
15
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Sep 08
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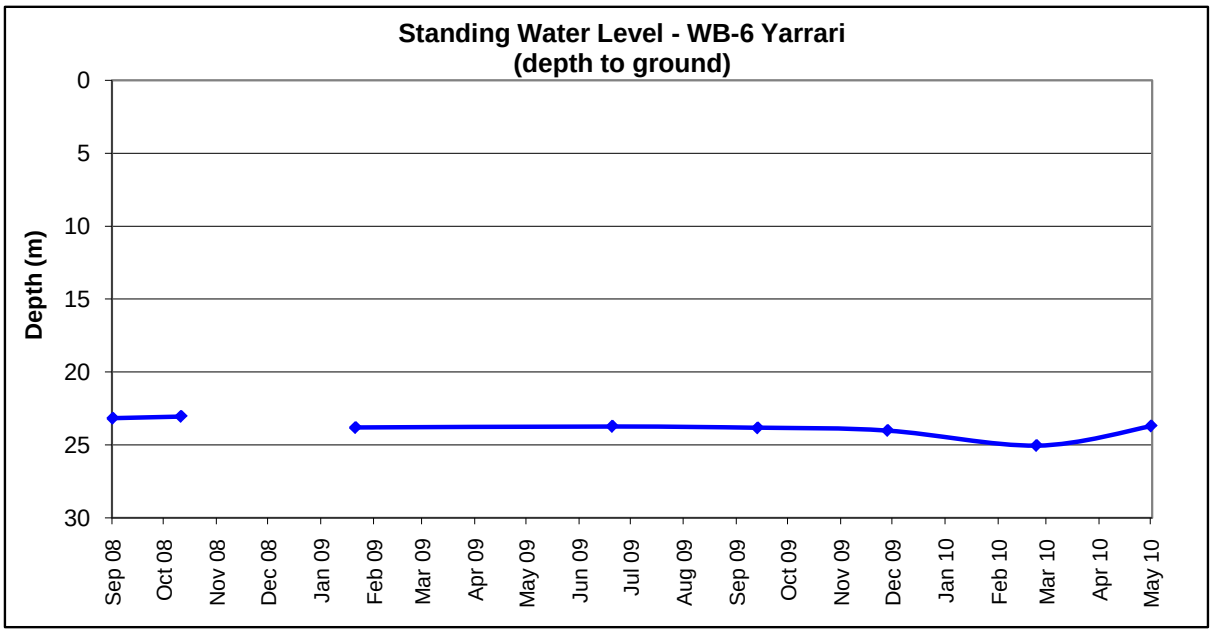
May 10


Standing Water Level - WB-6 Yarrari
(depth to ground)
Depth (m)
0
5
10
15
20
25
30
Sep 08
Oct 08
Nov 08
Dec 08
Jan 09
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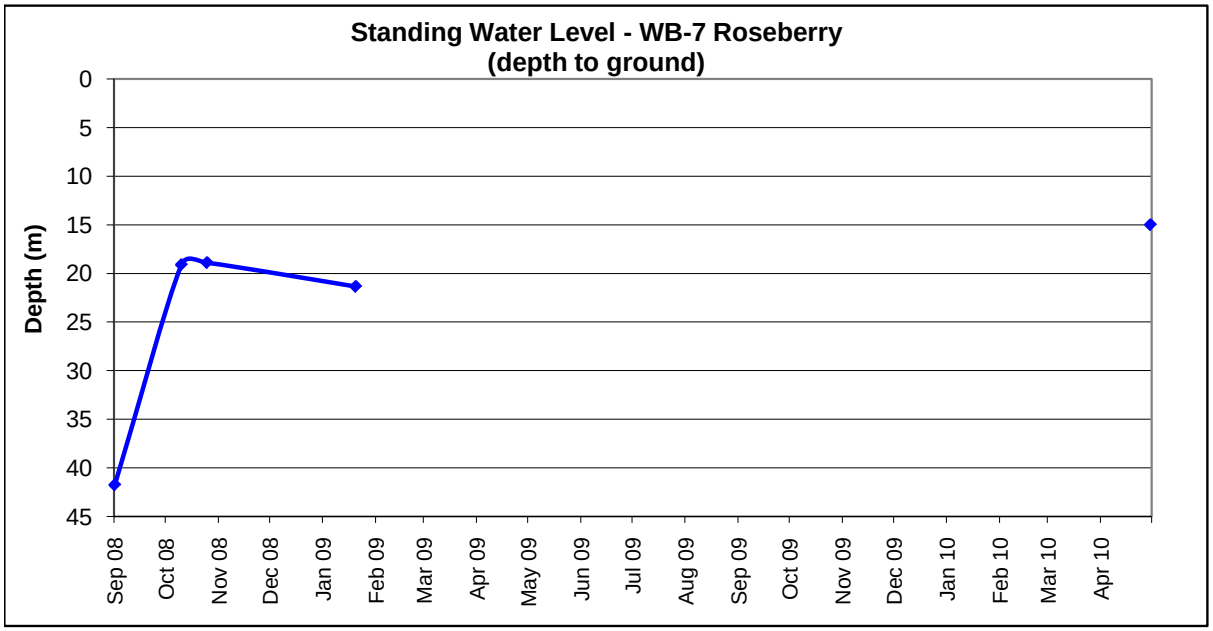
Apr 10
May 10


Standing Water Level - WB-7 Roseberry
(depth to ground)
Depth (m)
0
5
10
15
20
25
30
35
40
45
Sep 08
Oct 08
Nov 08
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Mar 10
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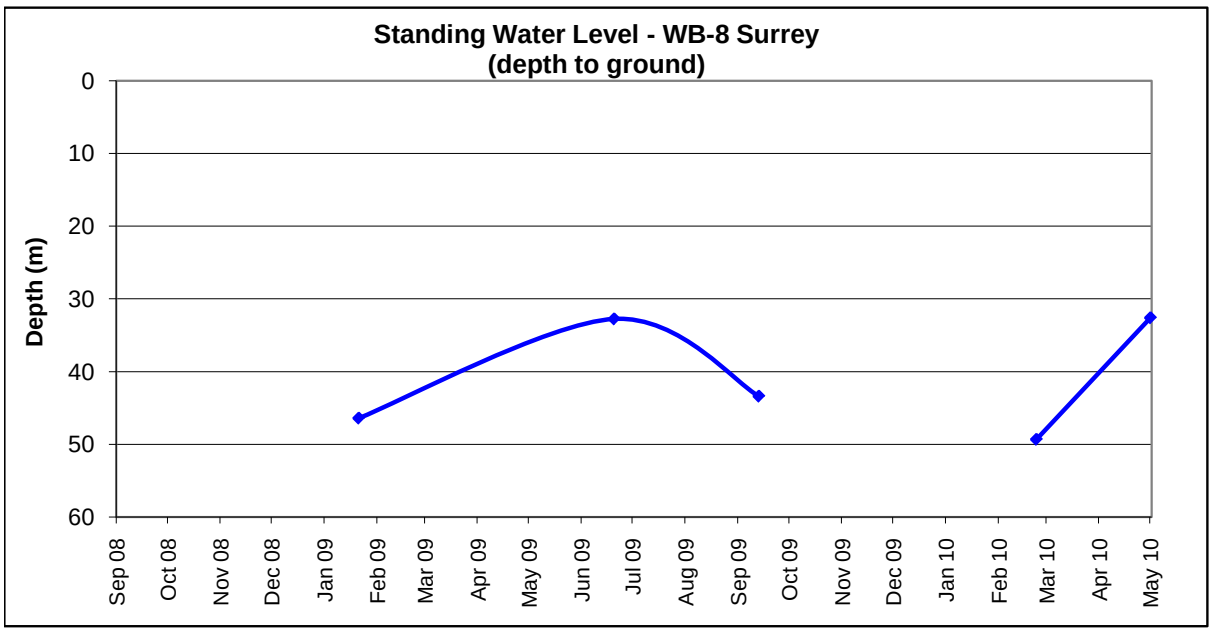
Standing Water Level - WB-8 Surrey
(depth to ground)
Depth (m)
0
10
20
30
40
50
60
Sep 08
Oct 08
Nov 08
Dec 08
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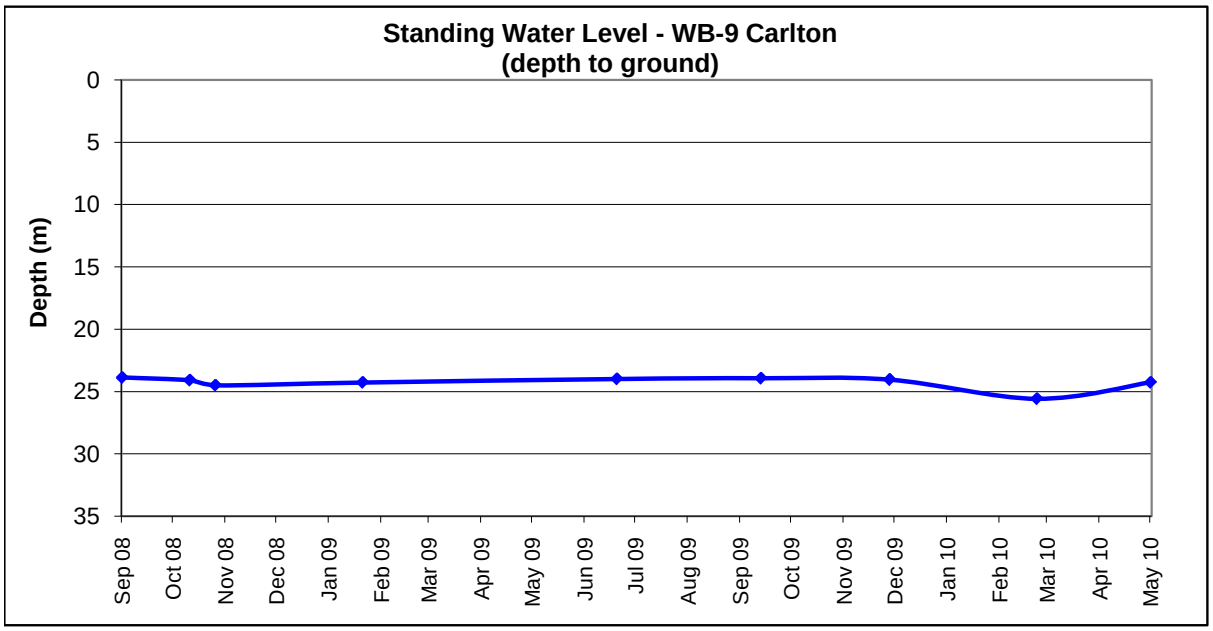
May 10


Standing Water Level - WB-9 Carlton
(depth to ground)
Depth (m)
0
5
10
15
20
25
30
35
Sep 08
Oct 08
Nov 08
Dec 08
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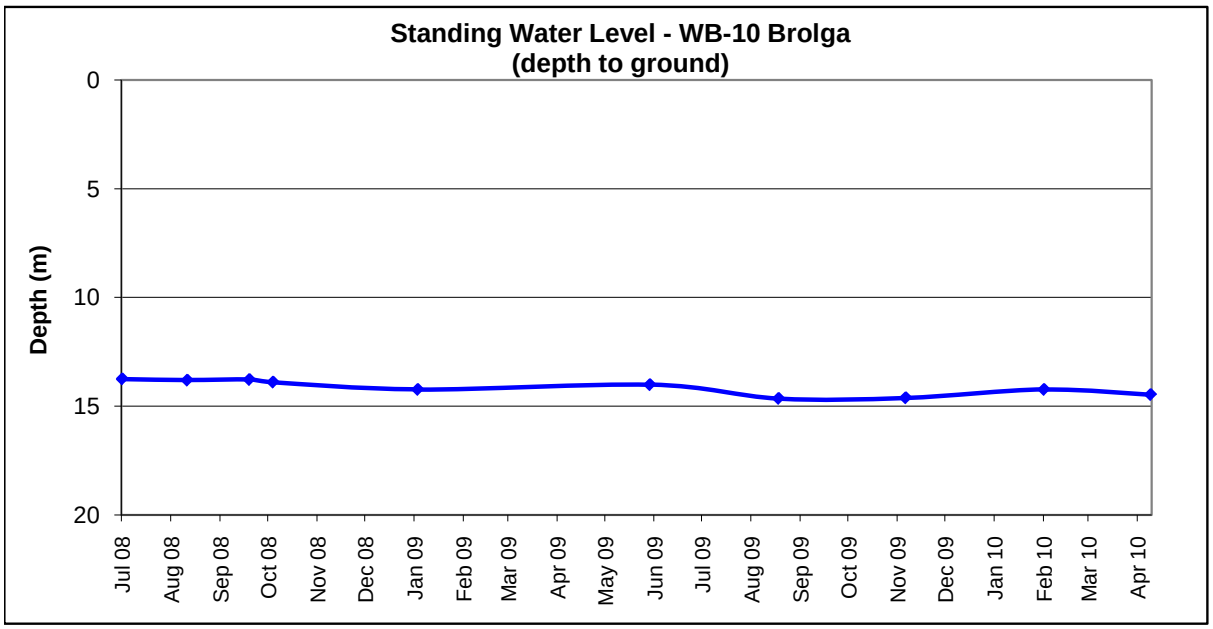
Apr 10
May 10


Standing Water Level - WB-10 Brolga
(depth to ground)
Depth (m)
0
5
10
15
20
Jul 08
Aug 08
Sep 08
Oct 08
Nov 08
Dec 08
Jan 09
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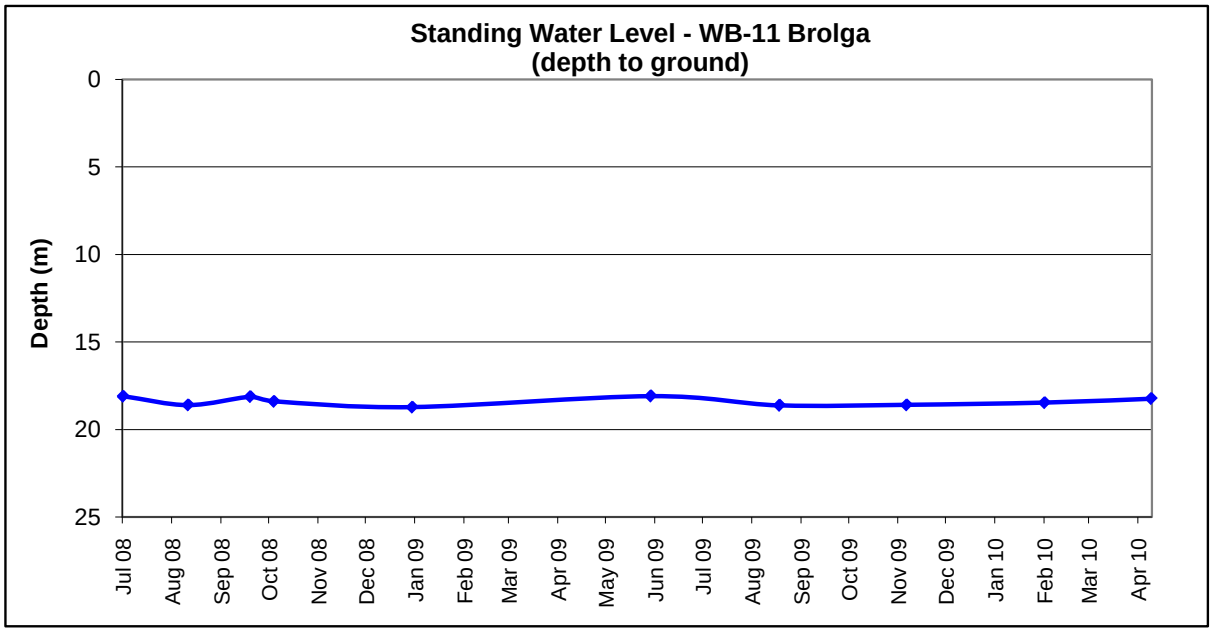
Standing Water Level - WB-11 Brolga
(depth to ground)
Depth (m)
0
5
10
15
20
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Jul 08
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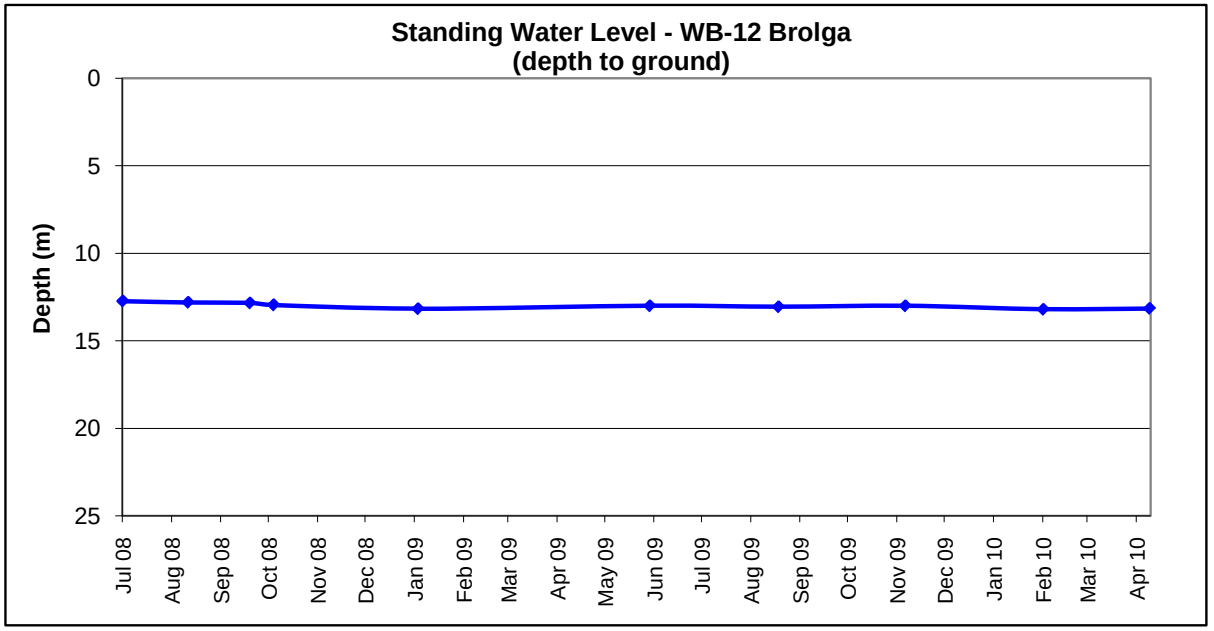
Standing Water Level - WB-12 Brolga
(depth to ground)
Depth (m)
0
5
10
15
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Jul 08
Aug 08
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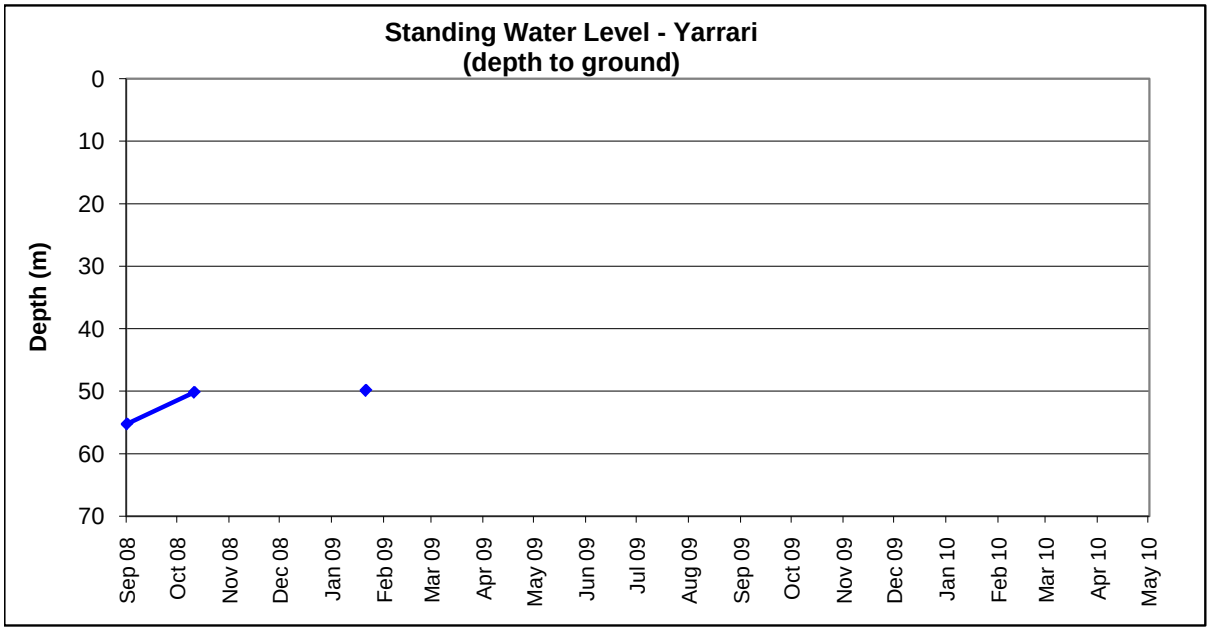
Standing Water Level - Yarrari
(depth to ground)
Depth (m)
0
10
20
30
40
50
60
70
Sep 08
Oct 08
Nov 08
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Jan 09
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Apr 10
May 10

Appendix 7

FLORA MONITORING REPORT

FLORA MONITORING REPORT

ROCGLEN COAL MINE –

2010

Prepared for **Whitehaven Coal Mining Pty Ltd**
PO Box 600
GUNNEDAH NSW 2380

BY

Geoff Cunningham Natural Resource Consultants Pty Ltd,
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KILLARA NSW 2071 [ACN 058 178 493]

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Fax: 02 9416 6626
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June , 2010

ROCGLEN COAL MINE, GUNNEDAH

INITIAL MONITORING REPORT – APRIL, 2010

1 BACKGROUND

Whitehaven Coal Mining Pty Ltd [WCM] recognizes the need for ongoing monitoring of undisturbed vegetation communities as well as areas being rehabilitated at the Rocglen Coal Mine site..

As a consequence, WCM has adopted the following monitoring process for each of the control and rehabilitated site monitoring quadrats that will be established at Sunnyside.

- Monitoring will be undertaken by a qualified ecologist experienced in the flora of the Gunnedah area.

- The ecologist will establish a minimum of one permanent photopoint and an associated 100m x 100m quadrat in each vegetation community to be disturbed over the life of the mine.

- Photographs will be taken in set directions from one or more set corners of the permanent quadrat at the commencement of monitoring and thereafter at annual intervals for five years and then at two year intervals until the mine monitoring program ceases.

- Each permanent quadrat will be monitored at the commencement of the monitoring program and thereafter at annual intervals for the next five years and then every two years until the mine monitoring program ceases.

- Measurements to be undertaken include include:

    - foliage cover along two 100m step point transects;
    - an assessment of the species composition of the ground flora in the quadrat using the modified Braun-Blanquet scale;
    - tree and shrub counts in the quadrat to quantify deaths or regeneration..

WCM will consult with the monitoring ecologist within four weeks of each Monitoring programme to establish the need for, and any recommendations for replantings,further plantings, maintenance works etc. required to ensure the success of the native vegetation establishment program. The recommended works will be undertaken in the timeframe recommended by the ecologist

Nine separate vegetation communities have been identified within the wider Sunnyside Coal Mine Study Area [GCNRC, 2007].

2 EXTENT OF REQUIRED MONITORING

2.1 The Vegetation Communities Present at Rocglen

NOTE * denotes an introduced species

The flora study for the proposed Rocglen [then known as Belmont] Coal Mine [GCNRC, 2007] identified six vegetation communities within the area associated with the mine site proper. Additional communities were identified along two possible haul road routes but these are not relevant to this Monitoring Report.

The relevant vegetation communities associated with the mine proper, **with the original community numbers as they appeared in the flora study**, are:

- **Community 1** - Narrow-leaf Ironbark - Pilliga Grey Box Community
- **Community 2** - Pilliga Grey Box - White Cypress Pine Community
- **Community 3** - Pilliga Grey Box - White Box - Yellow Box - White Cypress Pine Community
- **Community 6** - Brigalow Community
- **Community 7** - Regenerating White Cypress Pine
- **Community 8** - Cleared Lands - Used for Grazing and / or Cultivation

Descriptions of these communities are presented in the following sections.

2.1.1 - Community 1 - Narrow-leaf Ironbark - Pilliga Grey Box Community

The main tree species within this community are *Eucalyptus crebra* [Narrow-leaf Ironbark] and *Eucalyptus pilligaensis* [Pilliga Grey Box] and *Callitris glaucophylla* [White Cypress Pine] spaced from 1 to 10 metres apart. Other tree species occurring in this community include *Alectryon oleifolius* [Rosewood], *Geijera parviflora* [Wilga], *Callitris endlicheri* [Black Cypress Pine] and *Pittosporum phillyraeoides* [Butterbush].

Parts of this area have been used as gravel pits and are regenerating.

Shrubs are spaced from <1 to 2 metres apart or may be scattered. Species include *Myoporum montanum* [Western Boobialla], *Acacia decora* [Western Golden Wattle], *Dodonaea viscosa* subsp. *spatulata* [Broad-leaf Hopbush], *Beyeria viscosa* [Sticky Wallaby-bush], *Pimelea microcephala* [Shrubby Riceflower], *Cassinia laevis* [Cough Bush] and *Acacia dealbata* [Silver Wattle].

The main ground cover species include *Aristida jerichoensis* var. *subspinulifera* [No. 9 Wiregrass], *Cymbopogon refractus* [Barbed-wire Grass], *Dichondra repens* [Kidney Weed], *Austrostipa scabra* [Rough Speargrass], *Digitaria brownii* [Cotton Panic], *Solanum ferocissimum* [Spiny Potato-bush], *Vittadinia muelleri* [Fuzzweed] and *Opuntia* sp. [Prickly Pear].

2.1.2 – Community 2 - Pilliga Grey Box - White Cypress Pine Community

Trees are spaced from <2 to 15 metres apart. The main tree species are *Eucalyptus pilligaensis* [Pilliga Grey Box] and *Callitris glaucophylla* [White Cypress Pine]. Other tree species include *Eucalyptus crebra* [Narrow-leaf Ironbark], *Eucalyptus albens* [White Box], *Alectryon oleifolius* [Rosewood], *Geijera parviflora* [Wilga], *Capparis mitchellii* [Wild Orange], *Allocasuarina luehmannii* [Bull Oak] and occasional *Casuarina cristata* [Belah], *Eucalyptus populnea* subsp. *bimbil* [Bimble Box] [including seedlings] and *Eucalyptus melliodora* [Yellow Box].

Shrubs are spaced from <1 to 15 metres apart or may be widely scattered. The main species is *Maireana microphylla* [Eastern Cottonbush], *Parsonsia eucalyptophylla* [Gargaloo], *Eremophila mitchellii* [Budda], *Acacia oswaldii* [Miljee], *Myoporum montanum* [Western Boobialla] and *Notelaea microcarpa* var. *microcarpa* [Native Olive].

Occasional dead plants of *Lycium ferocissimum** [African Boxthorn] were noted in roadside locations.

The main ground cover species are *Aristida ramosa* Purple Wiregrass], *Aristida jerichoensis* var. *subspinulifera* [No. 9 Wiregrass], *Austrostipa verticillata* [Slender Bamboo Grass], *Einadia nutans* [Climbing Saltbush], *Enteropogon acicularis* [Curly Windmill Grass], *Sclerolaena birchii* [Galvanised Burr], *Sida rhombifolia** [Paddy's Lucerne] and *Austrostipa scabra* [Rough Speargrass]

2.1.3 – Community 3 - Pilliga Grey Box - White Box - Yellow Box - White Cypress Pine Community

This community is largely restricted to roadside remnants and occurrences along the main drainage line through the centre of the study area.

Trees are spaced from 2 to 30 metres apart. The main tree species are *Eucalyptus pilligaensis* [Pilliga Grey Box], *Eucalyptus albens* [White Box], *Callitris glaucophylla* [White Cypress Pine], *Eucalyptus melliodora* [Yellow Box] and *Allocasuarina luehmannii* [Bull Oak].

Other tree species include *Eucalyptus crebra* [Narrow-leaf Ironbark], *Geijera parviflora* [Wilga], *Alectryon oleifolius* [Rosewood], *Pittosporum angustifolium* [Butterbush] and *Eucalyptus melanophloia* [Silver-leaf Ironbark]. *Eucalyptus dealbata* [Tumbledown Gum] occurs within this community in some midslope areas.

Shrub cover varies from relatively dense [<1 to 10 metre spacings] to scattered. The main species is *Maireana microphylla* [Eastern Cottonbush] with some *Acacia oswaldii* [Miljee], *Acacia dealbata* [Silver Wattle] and *Dodonaea viscosa* subsp. *spatulata* [Broad-leaf Hopbush].

Ground cover species include *Aristida ramosa* [PurpleWiregrass], *Aristida jerichoensis* var. *subspinulifera* [No. 9 Wiregrass], *Austrostipa scabra* [Rough

Speargrass], *Austrostipa verticillata* [Slender Bamboo Grass], *Carthamus lanatus** [Saffron Thistle], *Chloris truncata* [Windmill Grass], *Digitaria brownii* [Cotton Panic], *Einadia nutans* [Climbing Saltbush], *Enteropogon acicularis* [Curly Windmill Grass], *Eragrostis molybdea* [Granite Lovegrass], *Sclerolaena birchii* [Galvanised Burr] and *Vittadinia* sp. [Fuzzweed].

2.1.4 – Community 6 - Brigalow Community

The Brigalow community is represented by a single isolated remnant of about 55 stems of *Acacia harpophylla* [Brigalow]. Some trees may be multi-stemmed so the number of individual trees present is undoubtedly somewhat less

The remnant is located in the centre of a cultivation paddock that regularly produces crops.

Maireana microphylla [Eastern Cottonbush] shrubs are spaced from <1 to 3m apart and some *Lycium ferocissimum** [African Boxthorn] plants are present.

The community was heavily grazed and the only recognisable ground cover species was *Austrostipa veritcillata* [Slender Bamboo Grass].

2.1.5 – Community 7 - Regenerating White Cypress Pine Community

Trees are spaced from <1 to 20 metres apart. *Callitis glaucophylla* [White Cypress Pine] is really the only tree species of note within these areas. The height of the saplings varies considerably from less than 1 metre to 7- 8 metres or so.

Few shrubs occur within this community. Those recorded were *Indigofera australis* [Hill Indigo], and *Pimelea microcephala* [Shrubby Riceflower].

The main ground cover species include *Aristida ramosa* [PurpleWiregrass], *Aristida jerichoensis* var. *subspinulifera* [No. 9 Wiregrass], *Austrostipa scabra* [Rough Speargrass], *Bothriochloa macra* [Red Grass], *Carthamus lanatus** [Saffron Thistle], *Chamaesyce drummondii* [Caustic Weed], Cheilanthes sieberi [Rock Fern], *Enneapogon gracilis* [Slender Bottlewashers], *Eragrostis* sp. [Lovegrass], *Glycine* sp. [Glycine], *Opuntia* sp. [Prickly Pear], *Petrorhagia nanteuillii** [Proliferous Pink], *Rostellularia adscendens* [Pink Tongues], *Sida corrugata* [Corrugated Sida], *Desmodium brachypodum* [Large Tick-trefoil], *Sida cunninghamii* [Ridge Sida], *Solanum esuriale* [Quena], *Sclerolaena birchii* [Galvanised Burr], *Vittadinia* sp. [Fuzzweed] and *Wahlenbergia* sp [Bluebell].

2.1.6 – Community 8 - Cleared Lands - Used for Grazing and / or Cultivation

This community is basically treeless although some shade trees remain in most paddocks.

Species present as scattered trees within the paddocks or around boundaries include *Eucalyptus pilligaensis* [Pilliga Grey Box], *Brachychiton populneus* [Kurrajong], *Geijera parviflora* [Wilga], *Callitris glaucophylla* [White Cypress Pine], *Allocasuarina luehmannii* [Bull Oak], *Eucalyptus melliodora* [Yellow Box],

Alectryon oleifolius [Rosewood] and occasional *Eucalyptus crebra* [Narrow-leaf Ironbark].

Maireana microphylla [Eastern Cottonbush] is basically the only shrub present and its spacing varies from 5 to 30 metre through a scattered distribution to complete absence on recently cultivated land.

The main ground cover species are *Aristida ramosa* [Purple Wiregrass] *Aristida jerichoensis* var. *subspinulifera*] [No. 9 Wiregrass], *Austrostipa scabra* [Rough Speargrass], *Bothriochloa macra* [Red Grass], *Carthamus lanatus** [Saffron Thistle], *Sclerolaena birchii* [Galvanised Burr], *Austrostipa verticillata* [Slender Bamboo Grass], *Centaurium tenuiflorum** [Centaury], *Chloris truncata* [Windmill Grass] and *Chondrilla juncea** [Skeleton Weed].

A complete listing of the species recorded in this community is contained in **Table 2.**

Note: In **Table 1**, data for field survey quadrats 31-38 [inclusive] have been omitted from the Table as they were located along an alternative transport route that is now not relevant to the proposal. The remaining quadrats retain their original numbers.

2.2 Vegetation Communities to be Monitored

The Monitoring program outlined in **Section 1** requires permanent photopoints and quadrats to be established and other forms of regular monitoring to be undertaken within vegetation communities that will be affected by the mine.

Of the six communities described in the flora study that was prepared prior to the mine establishment [GCNRC, 2007] only two vegetation communities will be affected. These are Communities 2 and 8. The remaining communities will not be affected. Consequently, Community 2 is the only native vegetation community that requires permanent monitoring facilities to be established at this time.

In addition to the monitoring quadrat in Community 2, a single quadrat was established within Community 8 to monitor ground cover and other vegetation changes in this open cleared area. Additional quadrats will be established on the mined area once rehabilitation is complete.

3 OVERVIEW OF MONITORING

3.1 Initial Monitoring Plots [2010]

Monitoring at Rocglen Coal Mine commenced on 20th April, 2010

Details of these monitoring [permanent quadrat] sites are contained in **Table 1.**

Table 1

Permanent Quadrat Locations

SITE NO.	POINT DESCRIPTION	EASTING	NORTHING	COMMUNITY / LAND DESCRIPTION
I	north-west corner peg	238377E	6594961N	Community 2
2	north-west corner peg	238300E	6595324N	Community 8

4 MONITORING OUTCOMES

4.1 PERMANENT QUADRATS

4.1.1 Tree and Shrub Counts

Tree and shrub counts on each quadrat were carried out when the permanent quadrats were established on 18th April, 2010. The data are contained in **Tables 2 and 3** along with any relevant comments about tree and shrub health.

Table 2

Tree and Shrub Count for **Permanent Quadrat 1**

SPECIES	MATURE TREES / SHRUBS	SAPLINGS	SEEDLINGS	TOTAL / COMMENT
Eremophila mitchellii [Budda]	**100**	**0**	**7**	**107**
Geijera parviflora [Wilga]	**6**	**53**	**0**	**59**
Hakea leucoptera [Needlewood]	**1**	**0**	**21 [suckers]**	**22**
Senna artemisioides subsp. *filifolia* [Punty Bush]	**2**	**0**	**0**	**2**
Eucalyptus pilligaensis [Pilliga Grey Box]	**3**	**0**	**7**	**10**
*Pittosporum angustifolia*um [Butterbush]	**1**	**0**	**0**	**1**
Maireana microphylla [Eastern Cottonbush]	**72**	**0**	**0**	**72**
Acacia oswaldii [Miljee]	**2**	**0**	**1**	**3**
Casuarina luehmanniana [Bull Oak]	**2**	**0**	**3**	**5**
Alectryon oleifolius [Rosewood	**2**	**0**	**3**	**5**

Table 2 [cont]

Tree and Shrub Count for **Permanent Quadrat 1**

SPECIES	MATURE TREES / SHRUBS	SAPLINGS	SEEDLINGS	TOTAL / COMMENT
Notelaea microcarpa subsp. *microcarpa* [Native Olive]	**1**	**0**	**1**	**2**
Capparis lasiantha [Nepine]	**2**	**0**	**0**	**2**
*Lycium ferocissimum** [African Boxthorn]	**3**	**0**	**0**	**3**
Pimelea microcephala [Shrubby Rice-flower]	**0**	**0**	**1**	**1**

Table 2

Tree and Shrub Count for **Permanent Quadrat 2**

SPECIES	MATURE TREES / SHRUBS	SAPLINGS	SEEDLINGS	TOTAL / COMMENT
Eremophila mitchellii [Budda]	**11**	**0**	**0**	**11**
Eucalyptus pilligaensis [Pilliga Grey Box]	**0**	**0**	**1**	**1**
*Lycium ferocissimum** [African Boxthorn]	**1**	**0**	**0**	**1**
Maireana microphylla [Eastern Cottonbush]	**7**	**0**	**0**	**7**

4.1.2 Step-point Transect [Vegetative Cover] Data

Two 100-point step-point transects were undertaken on each permanent Quadrat to obtain a measure of plant cover and the species composition of the ground cover. The observations recorded for each Quadrat are shown in **Tables 3and 4.**

It should be noted that in these Tables the **perennial** component of the vegetation cover includes only definitely perennial species while the **annual** cover class includes both annual and biennial species.

4.1.2.1. Quadrat 1

Table 3

Step-point Data for the groundcover on Permanent Quadrat 1

SPECIES	% COVER TRANSECT 1	% COVER TRANSECT 2	MEAN % COVER
Aristida ramosa [Purple Wiregrass]	2.0%	0%	1.0%
Austrodanthonia sp. [Wallaby Grass]	18.0%	3.0%	10.5%
Austrostipa scabra [Rough Speargrass]	4.0%	4.0%	4.0%
Austrostipa verticillata [Slender Bamboo Grass]	0%	1.0%	0.5%
Bothriochloa macra [Red Grass]	3.0%	1.0%	2.0%
Chloris truncata [Windmill Grass]	0%	1.0%	0.5%
Enteropogon acicularis [Curly Windmill Grass]	51.0%	61.0%	56.0%
Eragrostis alveiformis [Granite Lovegrass]	2.0%	5.0%	3.5%
Eragrostis lacunaria [Purple Lovegrass]	1..0%	1.0%	1.0%
Paspalidium constrictum [Box Grass]	2.0%	6.0%	4.0%
Perennial Grass	2.0%	1.0%	1.5%
Portulaca oleracea [Munyeroo]	0%	1.0%	0.5%
Sclerolaena birchii [Galvanised Burr]	2.0%	2.0%	2.0%
Sclerolaena muricata [Black Roly-poly	1.0%	0%	0.5%
Sporobolus caroli [Fairy Grass]	4.0%	0%	2.0%
Vittadinia sp. [Fuzzweed]	1.0%	0%	0.5%
Wahlenbergia communis [Tufted Bluebell]	0%	1.0%	0.5%
BARE	**1.0%**	**8.0%**	**4.5%**
LITTER	**6.0%**	**4.0%**	**5.0%**
TOTAL COVER	**99.0%**	**92.0%**	**95.5%**
TOTAL LIVING VEGETATION	**93.0%**	**88.0%**	**90.5%**
TOTAL ANNUAL COVER	**0%**	**1.0%**	**0.5%**
TOTAL PERENNIAL VEGETATION COVER	**93.0%**	**87.0%**	**90.0%**

Additional Species Observed Within the Quadrat but not Recorded in Step Points

*Alternathera pungens** [Khaki Weed]
*Carthamus lanatus** [Saffron Thistle]
Chamaesyce drummondii [Caustic Weed]
Convolvulus erubescens [Australian Bindweed]
Dichanthium sericeum [Queensland Bluegrass]
Evolvulus alsinoides [Blue Bindweed]
*Oxalis sp.** [Wood Sorrel]
Sida cunninghamii [Hill Sida]

4.1.2.2 Quadrat 2

Table 4

Step-point Data for the groundcover on **Permanent Quadrat 2**

SPECIES	% COVER TRANSECT 1	% COVER TRANSECT 2	MEAN % COVER
Alternanthera sp. [Joyweed]	0%	4.0%	2.0%
Aristida ramosa [Purple Wiregrass]	1.0%	1.0%	1.0%
Austrodanthonia sp. [Wallaby Grass]	0%	1.0%	0.5%
Austrostipa scabra . [Speargrass]	0%	6.0%	3.0%
Bothriochloa macra [Red Grass]	19.0%	3.0%	11.0%
Chloris truncata [Windmill Grass]	7.0%	8.0%	7.5%
Cymbopogon refractus [Barbed-wire Grass]	4.0%	0%	2.0%
*Cynodon dactylon** [Couch Grass]	1.0%	8.0%	4.5%
Dactyloctenium radulans [Button Grass]	3.0%	4.0%	3.5%
Dichanthium sericium [Queensland Bluegrass]	1.0%	0%	0.5%
Dichondra repens [Kidney Weed]	1.0%	0%	0.5%
Enteropogon acicularis [Curly Windmill Grass]	1.0%	17.0%	9.0%
Eragrostis alveiformis [Granite Lovegrass]	13.0%	6.0%	9.5%
*Eragrostis cilianensis** [Stinking Lovegrass]	5.0%	0%	2.5%
Eragrostis microcarpa [Dainty Lovegrass]	14.0%	13.0%	13.5%
Eriochloa pseudoacrotricha [Cupgrass]	12.0%	2.0%	7.0%
Oxalis sp. [Wood Sorrel]	1.0%	0%	0.5%
Paspalidium constrictum. [Box Grass]	4.0%	1.0%	2.5%
Sclerolaena birchii [Galvanised Burr]	3.0%	7.0%	5.0%
Sida sp. [Sida]	1.0%	0%	0.5%
*Sida rhombifolia** [Paddy's Lucerne]	5.0%	7.0%	6.0%
Sporobolus caroli [Fairy Grass]	1.0%	4.0%	2.5%
Sporobolus elongatus [Western Rat'stail Grass]	0%	1.0%	0.5%
Tragus australianus [Small-burr Grass]	1.0%	0%	0.5%
Urochloa sp.	1.0%	1.0%	1.0%
LITTER	**1.0%**	**4.0%**	**2.5%**
BARE	**0%**	**2.0%**	**1.0%**
TOTAL COVER	**100.0%**	**98.0%**	**99.0%**
TOTAL LIVING COVER	**99.0%**	**94.0%**	**96.5%**
PERENNIAL LIVING COVER	**89.0.0%**	**89.0%**	**89.0%**
ANNUAL LIVING COVER	**10.0%**	**5.0%**	**7.5%**

Additional Species Observed Within the Quadrat but not Recorded in Step Points

Austrostipa verticillata [Slender Bamboo Grass]
Chloris ventricosa [Tall Chloris]
Portulaca oleracea [Munyeroo]
Sclerolaena muricata [Black Roly-poly]

Sida sp.

4.1.3 Species Abundance Data

The Rocglen Monitoring procedure adopted by WCM requires that the species recorded on each of the permanent quadrats will be given a modified Braun-Blanquet [Poore, 1995] cover abundance scale rating at each monitoring event. This scale is summarised in **Table 5.**

The species recorded on the different quadrats in the step-pointing transects are not the only species present. There are other species that were present in low numbers [i.e. < 0.5% cover] that were recorded as being present on the different quadrats.

These species were recorded during the step-point transects as plants not actually 'hit' but nevertheless present.

Tables 6 and **7** provide this data based on the Step-point transects and these additional observations on each of the Permanent Quadrats.

Table 5

Modified Braun-Blanquet Cover Abundance Scale [Poore, 1955]

Aerial Vegetative Cover	Cover Class
95 -100°/a	6
75 - 95°/a	5
50 - 75%	4
25 - 50%	3
5 - 25%	2
1-5%	1
< 1%	+
Rare	r

Table 6

Species Lists and modified Braun-Blanquet Scores for **Permanent Quadrat 1**

SPECIES	**modified BRAUN-BLANQUET SCORE**
*Alternathera pungens** [Khaki Weed]	r
Aristida ramosa [Purple Wiregrass]	1
Austrodanthonia sp. [Wallaby Grass]	2
Austrostipa scabra [Rough Speargrass]	1
Austrostipa verticillata [Slender Bamboo Grass]	+
Bothriochloa macra [Red Grass]	1
*Carthamus lanatus** [Saffron Thistle]	r
Chamaesyce drummondii [Caustic Weed]	r
Chloris truncata [Windmill Grass]	+
Convolvulus erubescens [Australian Bindweed]	r
Dichanthium sericeum [Queensland Bluegrass]	r
Enteropogon acicularis [Curly Windmill Grass]	4
Eragrostis alveiformis [Granite Lovegrass]	1
Eragrostis lacunaria [Purple Lovegrass]	1
Evolvulus alsinoides [Blue Bindweed]	r
*Oxalis sp.** [Wood Sorrel]	r
Paspalidium constrictum [Box Grass]	1
Perennial Grass	1
Portulaca oleracea [Munyeroo]	+
Sclerolaena birchii [Galvanised Burr]	1
Sclerolaena muricata [Black Roly-poly	+
Sida cunninghamii [Hill Sida]	r
Sporobolus caroli [Fairy Grass]	1
Vittadinia sp. [Fuzzweed]	+
Wahlenbergia communis [Tufted Bluebell]	+

Table 7

Species Lists and modified Braun-Blanquet Scores for **Permanent Quadrat 2**

SPECIES	modified BRAUN-BLANQUET SCORE
Alternanthera sp. [Joyweed]	1
Aristida ramosa [Purple Wiregrass]	1
Austrodanthonia sp. [Wallaby Grass]	+
Austrostipa scabra . [Speargrass]	1
Austrostipa verticillata [Slender Bamboo Grass]	r
Bothriochloa macra [Red Grass]	2
Chloris truncata [Windmill Grass]	2
Chloris ventricosa [Tall Chloris]	r
Cymbopogon refractus [Barbed-wire Grass]	1
*Cynodon dactylon** [Couch Grass]	1
Dactyloctenium radulans [Button Grass]	1
Dichanthium sericium [Queensland Bluegrass]	+
Dichondra repens [Kidney Weed]	+
Enteropogon acicularis [Curly Windmill Grass]	2
Eragrostis alveiformis [Granite Lovegrass]	2
*Eragrostis cilianensis** [Stinking Lovegrass]	1
Eragrostis microcarpa [Dainty Lovegrass]	2
Eriochloa pseudoacrotricha [Cupgrass]	2
Oxalis sp. [Wood Sorrel]	+
Paspalidium constrictum. [Box Grass]	1
Portulaca oleracea [Munyeroo]	r
Sclerolaena birchii [Galvanised Burr]	2
Sclerolaena muricata [Black Roly-poly]	r
*Sida rhombifolia** [Paddy's Lucerne]	2
Sida sp.	r
Sida sp. [Sida]	+
Sporobolus caroli [Fairy Grass]	1
Sporobolus elongatus [Western Rat'stail Grass]	+
Tragus australianus [Small-burr Grass]	+
Urochloa sp.	1

4.2 PHOTOPOINTS

Photopoints were established at each of the two permanent monitoring plots in April, 2010. The aim is to visually record changes in the overall ground cover and numbers of trees and shrubs during the life of the monitoring program.

Views from the two photopoints are contained in **Appendix 1**.

5 COMMENTS ON MONITORING

5.1 Rainfall Since January 2009

Table 8 shows the rainfall records for Whitehaven since April, 2009 [monitoring commenced April, 2010]

Table 8 – Rocglen Rainfall

MONTH	2009	2010
January	*	53.4mm
February	*	51.4mm
March	*	15.6mm
April	29.6mm	23.6mm
May	23.8mm	*
June	30.2mm	*
July	0.2mm	*
August	1.6mm	*
September	36.8mm	*
October	2.4mm	*
November	17.8mm	*
December	107.6mm	*

5.2 Development of Vegetation Cover

5.2.1 Changes on Monitoring Quadrat 1

Table 9 shows the initial levels of vegetation cover within Quadrat 1 at the time of establishment in April 2010.

Any changes in vegetative cover that occur within the quadrat in the coming year will be reported in the 2011 Monitoring Report.

Table 9

Note – ND indicates no data

Cover Classification	Percentage Cover at Observation		Change [in absolute terms
	April, 2010		
Total Living Vegetation Cover	**90.5%**	**ND**	**ND**
Total Annual Cover	**0.5%**	**ND**	**ND**
Total Perennial Cover	**90.0%**	**ND**	**ND**
Litter Cover	**5.0%**	**ND**	**ND**
Bare Surface	**4.5%**	**ND**	**ND**

5.2.2 Changes on Monitoring Quadrat 2

Table 10 shows the initial levels of vegetation cover within Quadrat 2 at the time of establishment in April 2010.

Any changes in vegetative cover that occur within the quadrat in the coming year will be reported in the 2011 Monitoring Report.

Table 10

Cover Classification	Percentage Cover at Observation		Change [in absolute terms
	April, 2010		
Total Living Vegetation Cover	**96.5%**	**ND**	**ND**
Total Annual Cover	**7.5%**	**ND**	**ND**
Total Perennial Cover	**89.0%**	**ND**	**ND**
Litter Cover	**2.5%**	**ND**	**ND**
Bare Surface	**1.0%**	**ND**	**ND**

5.3 Noxious Weed Control

Two noxious weeds were recorded during the monitoring. These are *Lycium ferocissinmium** [African Boxthorn] and *Scleolaena birchii* [Galvanised Burr].

These weeds require control and regular onitoring o ensure that they are eradicated from the monitoring quadrats.

6 ACTIONS REQUIRED

The monitoring quadrats should both be fenced to exclude grazing domestic livestock so that adequate monitoring records can be obtained.

Signs should be erected on both quadrats indicating that they are 'NO GO' zones and all mine employees and contractors should be made aware of the presence and purpose of the quadrats.

Control of noxious weeds, and other weed species that may appear, should be undertaken.

7 REFERENCES

GCNRC [2007] – Flora Assessment. Belmont Coal Project near 'Belmont' Property via Gunnedah.. Specialist Consultant Studies Compendium. Part.2. In Environmental Assessment prepared by RW Corkery and Co Pty Limited, Orange for Whitehaven Coal Mining Pty Ltd, Gunnedah

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30th June, 2010

APPENDIX 1 –Photographs from Photopoints

Rocglen Monitoring Quadrat 1 – April 2010 – Photo from southeast corner looking snorthwest

Sunnyside Monitoring Quadrat 2 – April 2010 – Photo from southeast corner looking northwest

Appendix 8

BLAST MONITORING RESULTS

Rocglen - Environmental Blast Monitoring

SHOT NO	*DATE*	*MONITOR LOCATION*	*PEAK GROUND PRESSURE*	*PEAK OVERPRESSURE*	*TIME*
1		Costa Vale	DNT	DNT	DNT
1		Brolga	DNT	DNT	DNT
1		Surrey	DNT	DNT	DNT
2	22/Aug/08	Costa Vale	DNT	DNT	DNT
2	22/Aug/08	Roadside	0.66 mm/s	102.1 dBL	13:48:38
3	03/Sep/08	Costa Vale	0.10 mm/s	110.2 dBL	9:08:16
3	03/Sep/08	Roadside	0.58 mm/s	110.7 dBL	9:07:58
4	11/Sep/08	Costa Vale	DNT	DNT	DNT
4	11/Sep/08	Brolga	DNT	DNT	DNT
4	11/Sep/08	Surrey	DNT	DNT	DNT
5 (block 3)	25/Sep/08	Costa Vale	DNT	DNT	DNT
5 (block 3)	25/Sep/08	Brolga	DNT	DNT	DNT
5 (block 3)	25/Sep/08	Surrey	DNT	DNT	DNT
5 (block 4b)	26/Sep/08	Costa Vale	DNT	DNT	DNT
5 (block 4b)	26/Sep/08	Brolga	DNT	DNT	DNT
5 (block 4b)	26/Sep/08	Surrey	DNT	DNT	DNT
6	02/Oct/08	Costa Vale	0.65 mm/s	102.3 dBL	12:08:53
6	02/Oct/08	Roseberry	0.66 mm/s	102.1 dBL	12:08:38
7	21/Oct/08	Costa Vale	0.35 mm/s	110.5 dBL	12:37:23
7	21/Oct/08	Roseberry	0.86 mm/s	107.5 dBL	12:37:48
7	21/Oct/08	Roadside	0.86 mm/s	107.5 dBL	12:37:48
8	31/Oct/08	Costa Vale	DNT	DNT	DNT
8	31/Oct/08	Surrey	DNT	DNT	DNT
8	31/Oct/08	Roseberry	DNT	DNT	DNT
9	28/Nov/08	Costa Vale	0.36 mm/s	105.5 dBL	12:14:57
9	28/Nov/08	Surrey	DNT	DNT	DNT
9	28/Nov/08	Roseberry	1.04 mm/s	103.2 dBL	12:14:04
10	12/Dec/08	Costa Vale	1.46 mm/s	115.0 dBL	10:06:25
10	12/Dec/08	Roseberry	1.50 mm/s	114.9 dBL	10:06:14
12	30/Jan/09	Roseberry	1.48 mm/s	114.8 dBL	9:14:12
12	30/Jan/09	Costa Vale	1.46 mm/s	114.9 dBL	9:14:25
13	10/Feb/09	Costa Vale	0.53 mm/s	111.2 dBL	12:29:19
13	10/Feb/09	Roseberry	DNT	DNT	DNT
14	25/Feb/09	Costa Vale	0.51 mm/s	107.2 dBL	12:13:59
14	25/Feb/09	Roseberry	0.33 mm/s	102.2 dBL	12:14:15
15	27/Feb/09	Costa Vale	0.36 mm/s	114.9 dBL	10:58:03
15	27/Feb/09	Roseberry	DNT	DNT	DNT
16	12/Mar/09	Costa Vale	0.56 mm/s	113.2 dBL	12:10:42
16	12/Mar/09	Roseberry	1.22 mm/s	114.6 dBL	12:10:26
17	25/Mar/09	Costa Vale	0.4 mm/s	108.2 dBL	12:59:41
17	25/Mar/09	Roseberry	0.13 mm/s	111.7 dBL	13:00:06
18	08/Apr/09	Costa Vale	0.71 mm/s	107.2 dBL	12:05:38
18	08/Apr/09	Roseberry	0.30 mm/s	114.8 dBL	12:05:55

SHOT NO	DATE	MONITOR LOCATION	PEAK GROUND PRESSURE	PEAK OVERPRESSURE	TIME
19	24/Apr/09	Costa Vale	Monitors not set		
19	24/Apr/09	Roseberry	Monitors not set		
20	08/May/09	Costa Vale	0.43 mm/s	103.3 dBL	11:59:57
20	08/May/09	Roseberry	DNT	DNT	
21	25/May/09	Costa Vale	0.76 mm/s	109.1 dBL	15:13:22
21	25/May/09	Roseberry	0.46 mm/s	111.5 dBL	15:15:04
22	01/Jun/09	Costa Vale	0.48 mm/s	87.4 dBL	12:03:17
22	01/Jun/09	Roseberry	DNT	DNT	
23	04/Jun/09	Costa Vale	DNT	DNT	
23	04/Jun/09	Roseberry	DNT	DNT	
24	16/Jun/09	Costa Vale	DNT	DNT	
24	16/Jun/09	Roseberry	DNT	DNT	
25	26/Jun/09	Costa Vale	0.43 mm/s	107.2 dBL	14:52:49
25	26/Jun/09	Roseberry	0.43 mm/s	104.6 dBL	15:53:04
25	26/Jun/09	Brolga	0.71 mm/s	104.5 dBL	14:52:34
26	07/Jul/09	Costa Vale	0.68 mm/s	106.7 dBL	12:10:16
26	07/Jul/09	Roseberry	DNT	DNT	
26	07/Jul/09	Brolga	DNT	DNT	
27	27/Jul/09	Costa Vale	0.78 mm/s	103.7 dBL	12:07:24
27	27/Jul/09	Roseberry	0.47 mm/s	100.2 dBL	12:07:18
27	27/Jul/09	Brolga	DNT	DNT	
28	06/Aug/09	Costa Vale	0.56 mm/s	113.2 dBL	12:43:42
28	06/Aug/09	Roseberry	0.99 mm/s	109.2 dBL	12:43:08
28	06/Aug/09	Brolga	DNT	DNT	
29	24/Aug/09	Costa Vale	0.41 mm/s	119.9 dBL	11:41:53
29	24/Aug/09	Roseberry	DNT	DNT	
30	27/Aug/09	Costa Vale	0.38 mm/s	116.9 dBL	12:02:45
30	27/Aug/09	Roseberry	DNT	DNT	
31	16/Sep/09	Costa Vale	0.53 mm/s	101.9 dBL	12:27:48
31	16/Sep/09	Roseberry	0.76 mm/s	100.0 dBL	12:27:52
32	17/Sep/09	Costa Vale	0.43 mm/s	99.3 dBL	12:09:22
32	17/Sep/09	Roseberry	DNT	DNT	
33	08/Oct/09	Costa Vale	1.39 mm/s	108.8 dBL	11:03:10
33	08/Oct/09	Roseberry	0.43 mm/s	110.5 dBL	11:03:07
33	08/Oct/09	Brolga	0.25 mm/s	109.7 dBL	11:02:50
34	23/Oct/09	Costa Vale	DNT	DNT	
34	23/Oct/09	Roseberry	DNT	DNT	
35	06/Nov/09	Costa Vale	DNT	DNT	
35	06/Nov/09	Roseberry	DNT	DNT	
36	19/Nov/09	Costa Vale	0.84 mm/s	104.0 dBL	11:57:29
36	19/Nov/09	Roseberry	DNT	DNT	
37	30/Nov/09	Costa Vale	0.68 mm/s	103.6 dBL	12:21:03
37	30/Nov/09	Roseberry	0.69 mm/s	106.9 dBL	12:21:09
38	16/Dec/09	Costa Vale	0.65 mm/s	102.3 dBL	12:08:53
38	16/Dec/09	Roseberry	0.66 mm/s	102.1 dBL	12:08:38
39	21/Jan/10	Costa Vale	0.58 mm/s	110.2 dBL	13:00:56
39	21/Jan/10	Roseberry	DNT	DNT	

SHOT NO	*DATE*	*MONITOR LOCATION*	*PEAK GROUND PRESSURE*	*PEAK OVERPRESSURE*	*TIME*
40	28/Jan/10	Costa Vale	0.74 mm/s	100.9 dBL	12:01:59
40	28/Oct/10	Roseberry	DNT	DNT	
41	05/Feb/10	Costa Vale	DNT	DNT	
41	05/Feb/10	Roseberry	0.13 mm/s	111.2 dBL	11:09:02
42	02/Mar/10	Costa Vale	0.96 mm/s	108.6 dBL	12:18:47
42	02/Mar/10	Roseberry	DNT	DNT	
43	05/Mar/10	Costa Vale	0.84 mm/s	104.3 dBL	10:33:29
43	05/Mar/10	Roseberry	0.13 mm/s	113.5 dBL	10:33:59
44	16/Mar/10	Costa Vale	DNT	DNT	
44	16/Mar/10	Roseberry	DNT	DNT	
45	30/Mar/10	Costa Vale	0.13 mm/s	109.4 dBL	12:16:37
45	30/Mar/10	Roseberry	DNT	DNT	
46	24/Mar/10	Costa Vale	0.81 mm/s	111.9 dBL	12:03:47
46	24/Mar/10	Roseberry	DNT	DNT	
47	19/Apr/10	Costa Vale	DNT	DNT	
47	19/Apr/10	Roseberry	DNT	DNT	
48	28/Apr/10	Costa Vale	0.61 mm/s	110.7 dBL	12:06:05
48	28/Apr/10	Roseberry	DNT	DNT	
49	14/May/10	Costa Vale	DNT	DNT	
49	14/May/10	Roseberry	DNT	DNT	
50	25/May/10	Costa Vale	0.89 mm/s	108.2 dBL	12:08:57
50	25/May/10	Roseberry	0.13 mm/s	111.3 dBL	12:08:28
51	25/Jun/10	Costa Vale	0.99 mm/s	104.2 dBL	10:13:36
51	25/Jun/10	Roseberry	DNT	DNT	
52	09/Jul/10	Costa Vale	DNT	DNT	
52	09/Jul/10	Roseberry	DNT	DNT	

Appendix 9

NOISE MONITORING RESULTS

Attended Noise Monitoring

September 2009

8 September 2009 (Day)				
Location	Time	dB(A),Leq	Wind speed/ direction	Identified Noise Sources
Surrey	7:45 am	43	1 m/s, NW	Birds & insects (41), RCM (37)
Costa Vale	8:04 am	48	1 m/s, NW	Birds (48), RCM (33)
8 September 2009 (Evening)				
Surrey	7:59 pm	34	<0.5 m/s, NW	Cattle (33), RCM (27)
Costa Vale	7:31 pm	39	<0.5 m/s, NW	RCM (38), frogs & insects (30)
8 September 2009 (Night)				
Surrey	11:31 pm	40	Calm	Cattle (40), RCM (27)
Costa Vale	10:57 pm	32	Calm	RCM (30), insects (28)

December 2009

17 December 2009 (Evening)				
Location	Time	dB(A),Leq	Wind speed/ direction	Identified Noise Sources
Surrey	9:42 pm	41	1 m/s, NW	Dogs (40). insects (32), RCM (31)
Costa Vale	9:15 pm	30	1 m/s, NW	Insects (30), RCM inaudible
17 December 2009 (Night)				
Surrey	10:33 pm	32	<0.5 m/s, NW	RCM (31), insects (26)
Costa Vale	11:14 pm	28	<0.5 m/s, NW	Insects (28), RCM inaudible
18 December 2009 (Day)				
Surrey	7:45 am	44	1 m/s N	Birds (44), RCM (<20)
Costa Vale	8:10 am	42	2 m/s N	Birds & insects (42), RCM inaudible

March 2010

25 March 2010 (Evening)				
Location	Time	dB(A),Leq	Wind speed/ direction	Identified Noise Sources
Surrey	7:42 pm	39	Calm	Insects (39), RCM (30)
Costa Vale	8:15 pm	40	Calm	Insects (38), RCM (30)
25 March 2010 (Night)				
Surrey	10:21 pm	38	<0.5 m/s, SW	Insects (37), RCM (31)
Costa Vale	10:52 pm	34	<0.5 m/s, SW	Insects (33), RCM (25)
26 March 2010 (Day)				
Surrey	7:14 am	43	Calm	Birds & insects (42), rooster (34), RCM (24)
Costa Vale	7:45 am	50	2 m/s N	Birds & insects (50), RCM (30)

June 2010

22 June 2010 (Day)				
Location	Time	dB(A),Leq	Wind speed/ direction	Identified Noise Sources
Surrey	9:51 am	42	1.5 m/s, SE	Wind (40).Birds (37), RCM (28)
Costa Vale	9:20 am	41	1.5 m/s, SE	Birds (39), Wind (32) RCM (30)
22 June 2010 (Evening)				
Surrey	9:06 pm	45	1.5 m/s, SE	Insects (42), Wind (40), RCM inaudible
Costa Vale	8:43 pm	47	1.5 m/s, SE	Insects (45), Wind (41) RCM inaudible
22 June 2010 (Night)				
Surrey	11:48pm	40	1.0 m/s SE	Insects & Frogs (37), Wind (37) RCM inaudible
Costa Vale	10:27pm,	38	1.0 m/s SE	Wind (36), Birds (32), RCM (28)

Unattended Noise Monitoring

September 2009

Costa Vale

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
7-Sep-09	55.7	29.7	46.2	31.0	26.2	25.0
8-Sep-09	44.5	37.5	49.3	27.5	26.0	25.3
9-Sep-09	45.7	37.5	48.1	29.0	26.5	25.0
LAeq	52	36	48			
L90				29	26	25

Surrey

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
7-Sep-09	52.8	26.7	47.6	25.5	25.0	25.0
8-Sep-09	46.8	36.2	44.8	28.0	27.0	25.0
9-Sep-09	46.8	37.2	50.1	31.0	25.7	25.0
LAeq	50	35	48			
L90				28	26	25

** Note 25 dB(A) is the lower* limit *of the logger as setup*

December 2009

Costa Vale

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
8-Dec-09	63.6	46.4	42.7	46.0	30.1	17.1
9-Dec-09	53.0	46.2	42.6	29.3	24.2	17.1
10-Dec-09	44.8	42.1	43.4	26.0	26.0	22.0
LAeq	59	45	43			
L90				30	26	17

Surrey

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
8-Dec-09	46.3	42.3	41.9	25.3	18.7	17.1
9-Dec-09	47.3	41.3	60.3	27.3	22.8	18.8
10-Dec-09	63.4	33.2	44.5	30.6	26.0	18.5
LAeq	59	40	56			
L90				27	23	19

March 2010

Costa Vale

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
25-Mar-10	35.9	40.3	41.7	23.5	23.9	18.2
26-Mar-10	42.4	41.4	40.7	24.8	23.7	18.1
27-Mar-10	51.4	57.0	55.9	25.0	26.2	25.2
LAeq	47	52	51			
L90				25	24	18

Surrey

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
25-Mar-10	36.8	44.5	41.8	25.2	26.2	19.3
26-Mar-10	40.9	44.0	43.3	24.0	25.0	19.1
27-Mar-10	38.7	47.7	46.7	23.4	25.8	20.7
LAeq	39	46	44			
L90				24	26	19

June 2010

Costa Vale

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
21-Jun-10	45.3	41.8	41.7	29.4	29.5	26.0
22-Jun-10	46.6	44.6	39.5	29.7	26.5	26.0
23-Jun-10	48.5	47.1	43.2	29.0	30.0	25.5
LAeq	47	45	42	--	--	--
L90	--	--	--	30	28	26

Surrey

Date	Leq(day)	Leq(eve)	Leq(night)	L90(day)	L90(eve)	L90(night)
21-Jun-10	42.4		35.6	20.1	21.6	23.0
22-Jun-10	43.2	42.2	38.6	23.7	34.9	19.4
23-Jun-10	62.8	40.4	39.1	28.5	26.4	26.7
LAeq	57	41	39	--	--	--
L90	--	--	--	26	25	22

Cumulative Road Noise Monitoring

21 December 2009

Ref: 06259/3370

Mr. Danny Young
Whitehaven Coal Mine
PO Box 600
GUNNEDAH NSW 2380

RE: WHITEHAVEN COAL – ROAD HAULAGE NOISE MONITORING, DECEMBER 2009

This letter report presents the results of a road noise measurements conducted for the Whitehaven Coal Mine (WCM), Tarrawonga Coal Mine (TCM) and Rocglen Coal Mine (RCM). The measurements were conducted at "Brooklyn" and "Werona" on Blue Vale Road with the intention of determining the $L_{Aeq(1\ hour)}$ noise contribution from mine-related vehicles, particularly coal haul trucks. There are two separate residences on "Brooklyn" and simultaneous noise measurements were made at the front of both residences. Residence 1 is closest to Blue Vale Road (approximately 90m) whilst residence 2 is approximately 480m from the road.

The approvals granted for TCM and RCM state that the cumulative noise level from traffic generated by the three mines must not exceed 60 dB(A),$L_{eq(1hour)}$ during the day and 55 dB(A),$L_{eq(1hour)}$ during the night at these locations. For the purposes of traffic noise assessment the DECC *Environmental Criteria for Road Traffic Noise* (ECRTN) defines day as 7am – 10pm and night as 10pm – 7am. On Sundays and public holidays the 7am transition changes to 8am.

The noise measurements were made adjacent to the front (eastern) facade of both residences at "Brooklyn" between 9:45 am and 10:15 am on Tuesday 8 December and at "Werona" between 9.30 am and 10.30 am on Friday 18 December 2009 with third-octave band Bruel & Kjaer Observer sound level meters (IEC Type 1). The sound level meters were placed on tripods and recorded continuously at 1-second statistical intervals while notes on passing vehicles were written down.

Over the course of the measurement period at "Brooklyn" there were 20 coal truck movements related to WCM, TCM and RCM associated with the mine. Other significant noise sources observed throughout the monitoring period included a contribution from birds and insects and planes. The total measured noise level for the one hour period as dB(A),L_{eq}, therefore, represents that from the trucks, birds, wind and other sources. At approximately 10:15 am a wind shift occurred and strong winds blew up from the North West. The survey was, consequently abandoned at that time.

Due to the discrete nature of the coal truck movements the sound level as each truck past the measurement point (that is from when each truck became audible until it was inaudible again) was readily discernable and the contribution of truck noise could be accurately determined. A breakdown of the heavy vehicle movements for "Brooklyn" is summarised in **Table 1**.

Table 1
Coal Truck pass bys - "Brooklyn", Blue Vale Road 8/12/09

Time	Vehicle direction of travel
9:46	Empty coal truck to mine
9:49	Laden coal truck to CPP
9:49	Laden coal truck to CPP
9:49	Laden coal truck to CPP
9:51	Empty coal truck to mine
9:53	Laden coal truck to CPP
9:56	Empty coal truck to mine
9:58	Laden coal truck to CPP
9:59	Laden coal truck to CPP
10:01	Empty coal truck to mine
10:04	Empty coal truck to mine
10:05	Empty coal truck to mine
10:07	Empty coal truck to mine
10:07	Laden coal truck to CPP
10:08	Laden coal truck to CPP
10:10	Laden coal truck to CPP
10:10	Empty coal truck to mine
10:12	Laden coal truck to CPP
10:13	Laden coal truck to CPP
10:15	Empty coal truck to mine

Based on the 30 minute measurement the calculated contribution from mine-related vehicles at Residence 1 at "Brooklyn" was **52.0 dB(A),$L_{eq\ (1\ hour)}$**. This is below the daytime criterion of **60 dB(A) $L_{eq\ (1\ hour)}$**.

The calculated contribution from mine-related vehicles at Residence 2 was **38.8 dB(A),$L_{eq\ (1\ hour)}$**. This is below the daytime criterion of **60 dB(A) $L_{eq\ (1\ hour)}$**.

Over the course of the measurement period at "Werona" there were 40 coal truck movements related to WCM, TCM and RCM. A breakdown of the heavy vehicle movements for "Werona" is summarised in **Table 2**.

Table 2 Coal Truck pass bys - "Werona", Blue Vale Road 18/12/09	
Time	Vehicle direction of travel
9:31	Laden coal truck to CPP
9:32	Laden coal truck to CPP
9:35	Empty coal truck to mine
9:36	Laden coal truck to CPP
9:37	Laden coal truck to CPP
9:39	Empty coal truck to mine
9:40	Empty coal truck to mine
9:41	Empty coal truck to mine
9:43	Laden coal truck to CPP
9:45	Laden coal truck to CPP
9:46	Empty coal truck to mine
9:49	Laden coal truck to CPP
9:49	Laden coal truck to CPP
9:50	Empty coal truck to mine
9:52	Laden coal truck to CPP
9:53	Empty coal truck to mine
9:54	Empty coal truck to mine
9:54	Laden coal truck to CPP
9:56	Empty coal truck to mine
9:57	Empty coal truck to mine
9:58	Empty coal truck to mine
9:58	Laden coal truck to CPP
10:00	Laden coal truck to CPP
10:03	Empty coal truck to mine
10:05	Empty coal truck to mine
10:09	Empty coal truck to mine
10:09	Empty coal truck to mine
10:09	Laden coal truck to CPP
10:10	Empty coal truck to mine
10:10	Laden coal truck to CPP
10:11	Laden coal truck to CPP
10:12	Empty coal truck to mine
10:15	Empty coal truck to mine
10:15	Laden coal truck to CPP
10:17	Empty coal truck to mine
10:20	Empty coal truck to mine
10:22	Laden coal truck to CPP
10:25	Laden coal truck to CPP
10:26	Empty coal truck to mine
10:29	Empty coal truck to mine

The total measured contribution from mine-related vehicles at "Werona" was **49.5 dB(A),$L_{eq\ (1\ hour)}$**. This is below the daytime criterion of **60 dB(A) $L_{eq\ (1\ hour)}$**.

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:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

6 April 2010

Ref: 06259/3492

Mr. Danny Young
Whitehaven Coal Mine
PO Box 600
GUNNEDAH NSW 2380

RE: WHITEHAVEN COAL – ROAD HAULAGE NOISE MONITORING, MARCH 2010

This letter report presents the results of a road noise measurements conducted for the Tarrawonga Coal Mine (TCM) and Rocglen Coal Mine (RCM). The measurements were conducted at "Brooklyn" and "Werona" on Blue Vale Road with the intention of determining the $L_{Aeq(1\ hour)}$ noise contribution from mine-related vehicles, particularly coal haul trucks. There are two separate residences on "Brooklyn" and simultaneous noise measurements were made at the front of both residences. Residence 1 is closest to Blue Vale Road (approximately 90m) whilst Residence 2 is approximately 480m from the road.

The approvals granted for TCM and RCM state that the cumulative noise level from traffic generated by the two mines must not exceed 60 dB(A),$L_{eq(1hour)}$ during the day and 55 dB(A),$L_{eq(1hour)}$ during the night at these locations. For the purposes of traffic noise assessment the DECCW *Environmental Criteria for Road Traffic Noise* (ECRTN) defines day as 7am – 10pm and night as 10pm – 7am. On Sundays and public holidays the daytime transition changes to 8am.

The noise measurements were made adjacent to the front (eastern) facade of both residences at "Brooklyn" between 3:40 pm and 4:40 pm and at "Werona" between 2.20 pm and 3.20 pm on Wednesday 31 March with third-octave band Bruel & Kjaer Observer sound level meters (IEC Type 1). The sound level meters were placed on tripods and recorded continuously at 1-second statistical intervals while notes on passing vehicles were written down.

Over the course of the measurement period at "Brooklyn" there were 37 coal truck movements related to TCM and RCM. Other significant noise sources observed throughout the monitoring period included a contribution from birds and insects and a dog barking. The total measured noise level for the measurement period as dB(A),L_{eq}, therefore, represents that from the trucks, birds, wind and other sources.

Due to the discrete nature of the coal truck movements the sound level as each truck past the measurement point (that is from when each truck became audible until it was inaudible again) was readily discernable and the contribution of truck noise could be accurately determined. A breakdown of the heavy vehicle movements for "Brooklyn" is summarised in **Table 1**.

Table 1
Coal Truck pass bys - "Brooklyn", Blue Vale Road 31/03/10

Time (pm)	Vehicle direction of travel
3:39	Laden coal truck to CPP
3:40	Laden coal truck to CPP
3:40	Laden coal truck to CPP
3:44	Laden coal truck to CPP
3:45	Empty coal truck to mine
3:45	Empty coal truck to mine
3:46	Laden coal truck to CPP
3:47	Empty coal truck to mine
3:48	Laden coal truck to CPP
3:50	Empty coal truck to mine
3:52	Laden coal truck to CPP
3:53	Empty coal truck to mine
3:53	Empty coal truck to mine
3:59	Empty coal truck to mine
4:01	Laden coal truck to CPP
4:02	Empty coal truck to mine
4:04	Laden coal truck to CPP
4:07	Laden coal truck to CPP
4:10	Laden coal truck to CPP
4:11	Laden coal truck to CPP
4:12	Empty coal truck to mine
4:15	Laden coal truck to CPP
4:16	Laden coal truck to CPP
4:17	Empty coal truck to mine
4:20	Laden coal truck to CPP
4:22	Empty coal truck to mine
4:23	Empty coal truck to mine
4:24	Laden coal truck to CPP
4:24	Laden coal truck to CPP
4:29	Laden coal truck to CPP
4:30	Laden coal truck to CPP
4:31	Empty coal truck to mine
4:34	Laden coal truck to CPP
4:35	Laden coal truck to CPP
4:35	Empty coal truck to mine
4:35	Empty coal truck to mine
4:38	Laden coal truck to CPP

The total measured noise level at Residence 1 at "Brooklyn was 58 dB(A) $L_{eq\ (1\ hour)}$. and the calculated contribution from mine-related vehicles was **53 dB(A),$L_{eq\ (1\ hour)}$**. This is below the daytime criterion of **60 dB(A) $L_{eq\ (1\ hour)}$**.

The calculated contribution from mine-related vehicles at Residence 2 was **41 dB(A),$L_{eq\ (1\ hour)}$**. This is below the daytime criterion of **60 dB(A) $L_{eq\ (1\ hour)}$**.

Over the course of the measurement period at "Werona" there were 40 coal truck movements related to TCM and RCM. A breakdown of the heavy vehicle movements for "Werona" is summarised in **Table 2**.

Table 2
Coal Truck pass bys - "Werona", Blue Vale Road 31/03/10

Time (pm)	Vehicle direction of travel
2:18	Laden coal truck to CPP
2:22	Laden coal truck to CPP
2:23	Empty coal truck to mine
2:24	Empty coal truck to mine
2:25	Laden coal truck to CPP
2:27	Empty coal truck to mine
2:27	Empty coal truck to mine
2:29	Laden coal truck to CPP
2:31	Empty coal truck to mine
2:31	Empty coal truck to mine
2:32	Laden coal truck to CPP
2:35	Empty coal truck to mine
2:35	Empty coal truck to mine
2:39	Laden coal truck to CPP
2:40	Laden coal truck to CPP
2:41	Laden coal truck to CPP
2:41	Empty coal truck to mine
2:43	Empty coal truck to mine
2:44	Empty coal truck to mine
2:44	Laden coal truck to CPP
2:45	Empty coal truck to mine
2:46	Empty coal truck to mine
2:46	Empty coal truck to mine
2:48	Laden coal truck to CPP
2:49	Empty coal truck to mine
2:49	Empty coal truck to mine
2:50	Empty coal truck to mine
2:52	Laden coal truck to CPP
2:52	Empty coal truck to mine
2:54	Laden coal truck to CPP
2:58	Empty coal truck to mine
2:59	Empty coal truck to mine
2:59	Empty coal truck to mine
3:01	Laden coal truck to CPP
3:03	Laden coal truck to CPP
3:04	Empty coal truck to mine
3:08	Laden coal truck to CPP
3:10	Laden coal truck to CPP
3:10	Empty coal truck to mine
3:15	Laden coal truck to CPP

The total measured contribution from mine-related vehicles at "Werona" was **48 dB(A),$L_{eq\ (1\ hour)}$**. This is below the daytime criterion of **60 dB(A) $L_{eq\ (1\ hour)}$**.

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:

Ross Hodge
Acoustical Consultant

Review:

Neil Pennington
Acoustical Consultant

19 July 2010

Ref: 06259/3616

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

RE: WHITEHAVEN COAL – ROAD TRAFFIC NOISE MONITORING, JUNE 2010

This letter report presents the results of a road noise measurements conducted for the Tarrawonga Coal Mine (TCM) and Rocglen Coal Mine (RCM). The measurements were conducted at "Brooklyn" and "Werona" on Blue Vale Road with the intention of determining the $L_{Aeq(1\ hour)}$ noise contribution from mine-related vehicles, particularly coal haul trucks. There are two separate residences on "Brooklyn" and simultaneous noise measurements were made at the front of both residences. Residence 1 is closest to Blue Vale Road (approximately 90m) whilst Residence 2 is approximately 480m from the road.

The approvals granted for TCM and RCM state that the cumulative noise level from traffic generated by the two mines must not exceed 60 dB(A),$L_{eq(1hour)}$ during the day and 55 dB(A),$L_{eq(1hour)}$ during the night at these locations. For the purposes of traffic noise assessment the DECCW *Environmental Criteria for Road Traffic Noise* (ECRTN) defines day as 7am – 10pm and night as 10pm – 7am. On Sundays and public holidays the daytime transition changes to 8am.

The noise measurements were made adjacent to the front (eastern) facade of both residences at "Brooklyn" between 10:32am and 11:32am and at "Werona" between 9:16am and 10:16am on Tuesday June 22 with third-octave band Bruel & Kjaer Observer sound level meters (IEC Type 1). The sound level meters were placed on tripods and recorded continuously at 1-second statistical intervals while notes on passing vehicles were written down.

Over the course of the measurement period at "Brooklyn" there were 30 coal truck movements related to TCM and RCM. Other significant noise sources observed throughout the monitoring period included a contribution from birds and insects and a dog barking. The total measured noise level for the measurement period as dB(A),L_{eq}, therefore, represents that from the trucks, birds, wind and other sources.

Due to the discrete nature of the coal truck movements the sound level as each truck past the measurement point (that is from when each truck became audible until it was inaudible again) was readily discernable and the contribution of truck noise could be accurately determined. A breakdown of the heavy vehicle movements for "Brooklyn" is summarised in **Table 1**.

Table 1
Coal Truck pass bys - "Brooklyn", Blue Vale Road 22/06/10

Time (am)	Vehicle direction of travel
10:32	Empty coal truck to mine
10:34	Empty coal truck to mine
10:36	Laden coal truck to CPP
10:38	Empty coal truck to mine
10:42	Laden coal truck to CPP
10:46	Laden coal truck to CPP
10:47	Laden coal truck to CPP
10:47	Laden coal truck to CPP
10:51	Empty coal truck to mine
10:52	Laden coal truck to CPP
10:52	Laden coal truck to CPP
11:00	Empty coal truck to mine
11:02	Laden coal truck to CPP
11:02	Empty coal truck to mine
11:02	Laden coal truck to CPP
11:02	Empty coal truck to mine
11:03	Laden coal truck to CPP
11:03	Laden coal truck to CPP
11:07	Laden coal truck to CPP
11:08	Empty coal truck to mine
11:10	Empty coal truck to mine
11:16	Empty coal truck to mine
11:17	Empty coal truck to mine
11:18	Laden coal truck to CPP
11:18	Laden coal truck to CPP
11:19	Empty coal truck to mine
11:19	Empty coal truck to mine
11:21	Empty coal truck to mine
11:22	Laden coal truck to CPP
11:29	Laden coal truck to CPP

The total measured noise level at Residence 1 at "Brooklyn was 51 dB(A) $L_{eq\ (1\ hour)}$. and the calculated contribution from mine-related vehicles was **49 dB(A),$L_{eq\ (1\ hour)}$**. This is below the daytime criterion of **60 dB(A) $L_{eq\ (1\ hour)}$**.

The calculated contribution from mine-related vehicles at Residence 2 was **45 dB(A),$L_{eq\ (1\ hour)}$**. This is below the daytime criterion of **60 dB(A) $L_{eq\ (1\ hour)}$**.

Over the course of the measurement period at "Werona" there were 46 coal truck movements related to TCM and RCM. A breakdown of the heavy vehicle movements for "Werona" is summarised in **Table 2**.

Table 2 Coal Truck pass bys - "Werona", Blue Vale Road 22/06/10	
Time (am)	Vehicle direction of travel
9:17	Empty coal truck to mine
9:18	Empty coal truck to mine
9:20	Laden coal truck to CPP
9:25	Empty coal truck to mine
9:25	Laden coal truck to CPP
9:25	Laden coal truck to CPP
9:29	Empty coal truck to mine
9:30	Laden coal truck to CPP
9:31	Laden coal truck to CPP
9:35	Laden coal truck to CPP
9:37	Empty coal truck to mine
9:38	Empty coal truck to mine
9:40	Empty coal truck to mine
9:41	Laden coal truck to CPP
9:41	Laden coal truck to CPP
9:41	Empty coal truck to mine
9:42	Empty coal truck to mine
9:42	Empty coal truck to mine
9:44	Empty coal truck to mine
9:46	Empty coal truck to mine
9:46	Laden coal truck to CPP
9:46	Laden coal truck to CPP
9:47	Laden coal truck to CPP
9:51	Laden coal truck to CPP
9:52	Laden coal truck to CPP
9:52	Laden coal truck to CPP
9:53	Empty coal truck to mine
9:54	Empty coal truck to mine
9:56	Laden coal truck to CPP
9:56	Laden coal truck to CPP
9:57	Laden coal truck to CPP
10:00	Empty coal truck to mine
10:02	Laden coal truck to CPP
10:02	Laden coal truck to CPP
10:03	Laden coal truck to CPP
10:03	Empty coal truck to mine
10:06	Laden coal truck to CPP
10:07	Laden coal truck to CPP
10:08	Empty coal truck to mine
10:09	Empty coal truck to mine
10:12	Empty coal truck to mine
10:12	Laden coal truck to CPP
10:12	Laden coal truck to CPP
10:13	Laden coal truck to CPP
10:16	Empty coal truck to mine
10:16	Empty coal truck to mine

The total measured contribution from mine-related vehicles at "Werona" was **49 dB(A),$L_{eq\ (1\ hour)}$**. This is below the daytime criterion of **60 dB(A) $L_{eq\ (1\ hour)}$**.

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:

Ross Hodge
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Review:

Neil Pennington
Acoustical Consultant

Appendix 10

METEOROLOGICAL DATA

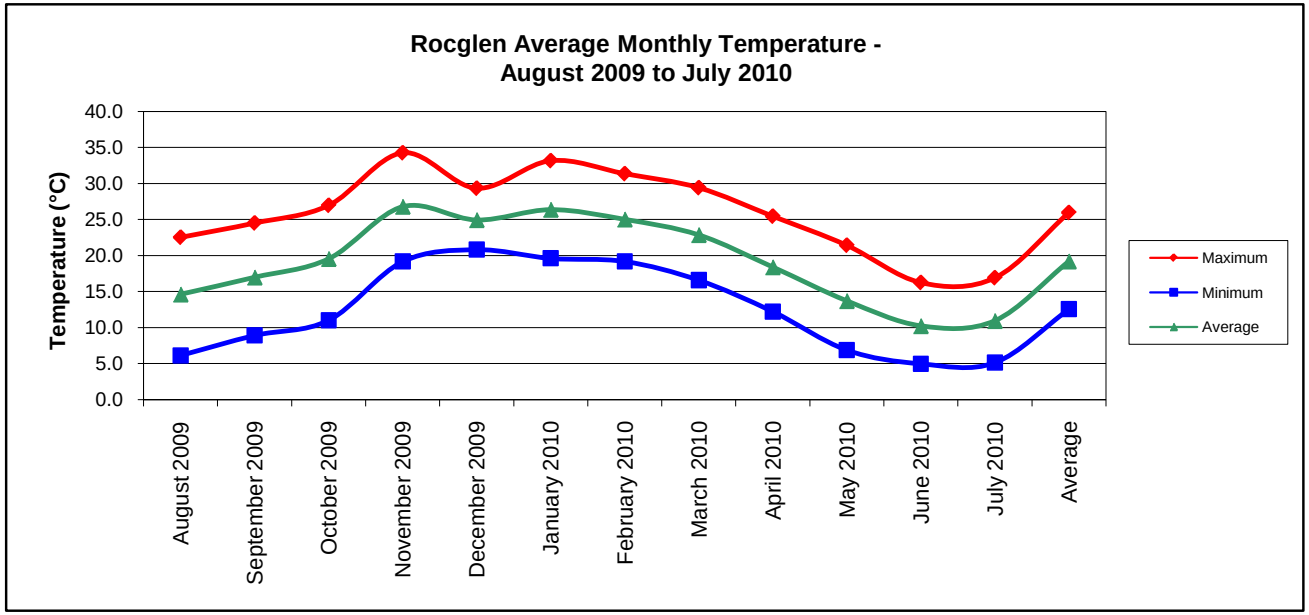
Rocglen Coal Mine Average Monthly Results

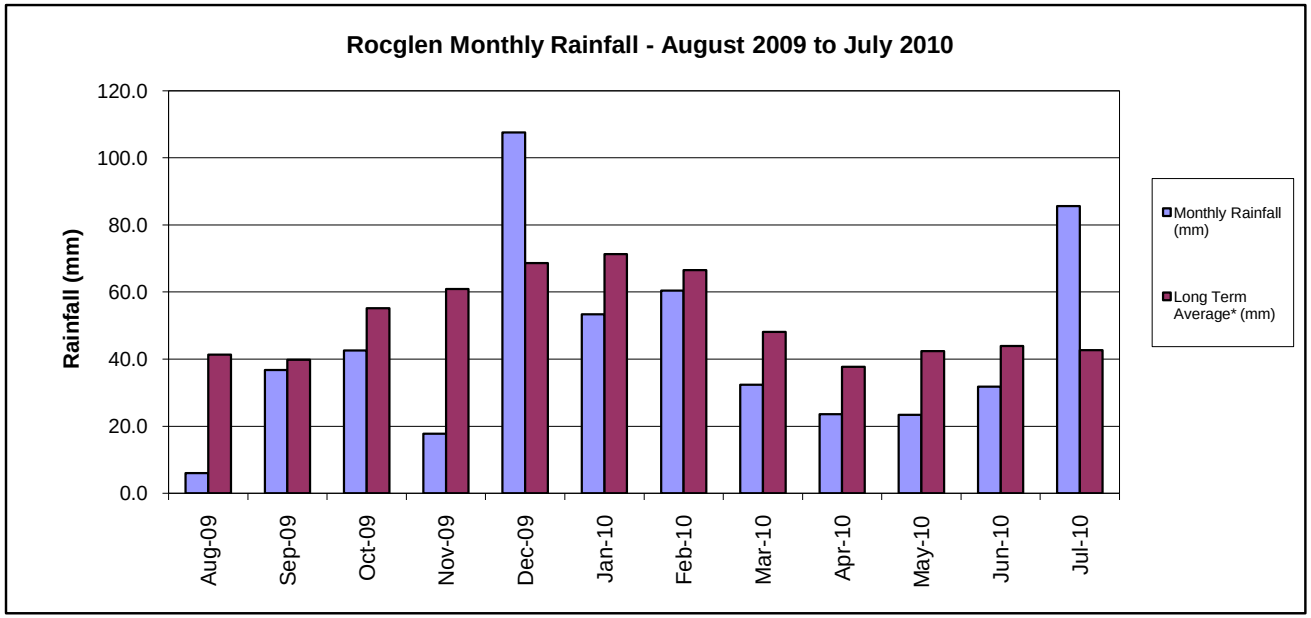
Month	Minimum Air Temp (°C)	Average Air Temp(°C)	Maximum Air Temp (°C)	Minimum Relative Humidity (%)	Average Relative Humidity(%)	Maximum Relative Humidity (%)	Minimum Wind Speed (m/s)	Average Wind Speed (m/s)	Maximum Wind Speed (m/s)
August 2009	6.2	14.6	22.6	28.7	53.1	80.6	0.1	1.8	5.4
September 2009	8.9	17.0	24.5	33.7	59.7	86.7	0.2	2.1	6.0
October 2009	11.0	19.6	27.0	**25.8**	47.9	75.7	0.2	3.2	**8.9**
November 2009	19.2	**26.8**	**34.3**	25.8	**47.0**	**73.3**	0.1	3.0	8.0
December 2009	**20.8**	24.9	29.4	45.9	62.6	77.2	0.4	**3.4**	8.3
January 2010	19.6	26.4	33.2	31.7	57.1	81.5	0.0	2.2	7.3
February 2010	19.2	25.0	31.4	40.1	63.3	86.4	0.2	2.3	7.1
March 2010	16.6	22.9	29.4	39.4	62.0	85.5	0.3	2.5	7.0
April 2010	12.2	18.4	25.5	40.1	66.3	88.8	0.1	1.9	5.4
May 2010	6.9	13.7	21.4	42.2	69.6	93.0	0.0	**1.4**	**4.6**
June 2010	**5.0**	**10.2**	**16.3**	54.9	**79.5**	82.0	0.0	1.4	4.7
July 2010	5.1	10.9	16.9	**54.9**	79.4	**95.3**	0.0	1.6	4.8
Average	**12.6**	**19.2**	**26.0**	**38.6**	**62.3**	**83.8**	**0.1**	**2.2**	**6.5**
Minimum	**5.0**	**10.2**	**16.3**	**25.8**	**47.0**	**73.3**	**0.0**	**1.4**	**4.6**
Maximum	**20.8**	**26.8**	**34.3**	**54.9**	**79.5**	**95.3**	**0.4**	**3.4**	**8.9**
Total									

Month	Monthly Rainfall (mm)	Long Term Average* (mm)	Cumulative Rainfall (mm)	Number of Rain Days**
August 2009	6.0	41.3	6.0	4
September 2009	36.8	39.8	42.8	6
October 2009	42.6	55.2	85.4	6
November 2009	17.8	60.9	103.2	7
December 2009	107.6	68.6	210.8	6
January 2010	53.4	71.3	264.2	3
February 2010	60.4	66.5	324.6	4
March 2010	32.4	48.1	357.0	6
April 2010	23.6	37.7	380.6	3
May 2010	23.4	42.4	404.0	4
June 2010	31.8	43.9	435.8	6
July 2010	85.6	42.7	521.4	9
Total	**521.4**	**618.4**	**521.4**	**64**

* Long term average is from Gunnedah Pool (Station 055023) 1877 - 2010

** Rain day: >0.2mm


Rocglen Average Monthly Temperature -
August 2009 to July 2010
Temperature (°C)
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
August 2009
September 2009
October 2009
November 2009
December 2009
January 2010
February 2010
March 2010
April 2010
May 2010
June 2010
July 2010
Average
Maximum
Minimum
Average


Rocglen Monthly Rainfall - August 2009 to July 2010
Rainfall (mm)
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Monthly Rainfall (mm)
Long Term Average* (mm)

Daily Summary **August 2009**

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/09	1.9	8.7	16.9	42	74	96	0.0	0	0.9	3.1
02/Aug/09	**0.1**	8.7	18.6	31	72	**97**	0.0	0	0.8	3.1
03/Aug/09	1.1	**5.9**	15.1	**56**	**80**	93	0.0	0	0.5	3.6
04/Aug/09	-	-	-	-	-	-	-	-	-	-
05/Aug/09	-	-	-	-	-	-	-	-	-	-
06/Aug/09	-	-	-	-	-	-	-	-	-	-
07/Aug/09	-	-	-	-	-	-	-	-	-	-
08/Aug/09	-	-	-	-	-	-	-	-	-	-
09/Aug/09	7.9	9.6	**11.3**	54	64	68	0.0	0	**0.4**	**1.3**
10/Aug/09	3.7	12.9	22.2	31	55	82	0.0	0	1.4	4.9
11/Aug/09	10.9	17.4	22.7	40	55	76	1.6	0	**3.9**	**8.9**
12/Aug/09	7.2	14.5	22.4	31	60	83	0.0	0	1.6	5.4
13/Aug/09	2.3	12.2	20.9	24	58	92	0.0	0	1.5	4.5
14/Aug/09	3	11.2	19.7	37	63	91	0.0	0	1.1	3.6
15/Aug/09	2.4	11.3	20.6	29	60	90	0.0	0	0.8	3.1
16/Aug/09	1.3	15.7	27.8	19	47	87	0.0	0	1.6	5.8
17/Aug/09	6.4	18.1	23.8	23	42	62	0.0	0.4	3.5	7.6
18/Aug/09	0.3	10.2	20.6	22	51	85	0.0	0	1.6	4.9
19/Aug/09	**0.1**	11.0	21.7	27	52	81	0.0	0	1.0	3.6
20/Aug/09	7.1	14.8	23.8	31	51	69	0.0	0	1.5	4.9
21/Aug/09	6.9	18.7	27.4	26	49	84	0.2	0	3.1	8.5
22/Aug/09	14.2	18.9	23.6	28	53	83	0.2	0	2.1	6.7
23/Aug/09	14.8	22.7	**32.5**	21	51	89	0.0	0	2.0	6.3
24/Aug/09	**18.9**	**24.2**	28.7	28	39	72	0.2	0	2.0	7.2
25/Aug/09	8.2	18.4	22.8	21	38	59	0.4	0	3.1	6.3
26/Aug/09	5.7	14.2	22.8	17	40	66	0.0	0	1.7	5.4
27/Aug/09	2.9	14.8	25.1	**10**	39	79	0.0	0	1.4	4.5
28/Aug/09	8.1	17.8	25.9	15	**33**	**58**	0.0	0	1.2	3.6
29/Aug/09	15.4	22.5	29.8	29	48	84	**1.8**	0	3.1	8.5
30/Aug/09	7.3	15.6	21.3	23	50	86	1.6	**0.9**	3.5	**8.9**
31/Aug/09	2	10.3	18.4	31	56	84	0.0	0	1.4	5.4
Average	**6.2**	**14.6**	**22.6**	**29**	**53**	**81**		**0.1**	**1.8**	**5.4**
Maximum	**18.9**	**24.2**	**32.5**	**56**	**80**	**97**	**1.8**	**0.9**	**3.9**	**8.9**
Minimum	**0.1**	**5.9**	**11.3**	**10**	**33**	**58**	**0.0**	**0.0**	**0.4**	**1.3**
Total							**6.0**			

Note: Weather data for the period 4 - 8 August 2009 not available due to battery failure

Daily Summary **September 2009**

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/09	2.5	11.6	20.8	28	56	87	0.0	0	1.2	4
02/Sep/09	2.1	13.5	23.7	28	52	84	0.0	0	0.9	3.1
03/Sep/09	10.3	18.6	21.3	31	44	57	0.0	0	3.1	8
04/Sep/09	12.9	17.0	21.2	47	75	94	16.6	0	2.4	6.3
05/Sep/09	8.7	15.4	21.4	42	76	97	0.0	0	1.7	6.3
06/Sep/09	4.5	13.7	22.9	40	69	94	0.0	0	1.3	4.5
07/Sep/09	10.5	14.2	18.4	59	82	94	11.8	0	1.8	5.8
08/Sep/09	7.8	13.4	19.6	40	72	96	0.4	0	1.7	6.7
09/Sep/09	5	12.0	19.3	37	67	95	0.0	0	1.9	6.3
10/Sep/09	4.4	12.7	20.7	25	60	92	0.0	0	1.7	5.4
11/Sep/09	3.9	12.9	22	21	59	93	0.0	0	1.0	3.6
12/Sep/09	4.8	15.4	26.3	12	50	89	0.0	0	1.1	3.6
13/Sep/09	6.5	18.3	28.6	22	46	85	0.0	0	1.9	6.3
14/Sep/09	8.3	19.2	28.9	25	48	81	0.0	0	1.3	3.1
15/Sep/09	10.4	20.0	28.3	28	52	86	0.0	0	1.6	5.4
16/Sep/09	13.6	22.0	30.9	25	48	77	0.0	0	1.5	5.8
17/Sep/09	18.8	24.9	31.1	59	82	94	0.0	0.4	3.1	6.3
18/Sep/09	11.3	20.6	27	29	50	75	0.0	0	2.0	4.9
19/Sep/09	6.8	18.1	27.1	24	52	88	0.0	0	2.2	5.8
20/Sep/09	9.4	20.1	29.1	25	48	80	0.0	0	1.3	5.8
21/Sep/09	12.9	19.6	27.5	31	61	87	1.0	0	2.8	9.4
22/Sep/09	15.8	21.2	25.8	53	69	90	5.2	0.4	4.3	11.2
23/Sep/09	14.2	16.4	22.5	44	55	79	1.8	2.7	6.4	9.4
24/Sep/09	-	-	-	-	-	-	-	-	-	-
25/Sep/09	-	-	-	-	-	-	-	-	-	-
26/Sep/09	-	-	-	-	-	-	-	-	-	-
27/Sep/09	-	-	-	-	-	-	-	-	-	-
28/Sep/09	-	-	-	-	-	-	-	-	-	-
29/Sep/09	-	-	-	-	-	-	-	-	-	-
30/Sep/09	-	-	-	-	-	-	-	-	-	-
Average	**8.9**	**17.0**	**24.5**	**34**	**60**	**87**		**0.2**	**2.1**	**6.0**
Maximum	**18.8**	**24.9**	**31.1**	**59**	**82**	**97**	**16.6**	**2.7**	**6.4**	**11.2**
Minimum	**2.1**	**11.6**	**18.4**	**12**	**44**	**57**	**0.0**	**0.0**	**0.9**	**3.1**
Total							**36.8**			

Note: Weather data for the period 24 - 30 September 2009 not available due to battery failure

Daily Summary **October 2009**

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/09	-	-	-	-	-	-	-	-	-	-
02/Oct/09	19.3	24.9	31.3	25	48	76	0.4	0.9	5.0	8.9
03/Oct/09	13.5	19.2	25.3	32	61	87	0.0	0	3.2	8.5
04/Oct/09	9.9	17.1	24.4	39	68	94	0.8	0	3.1	7.2
05/Oct/09	10.2	16.9	26.1	26	64	92	0.0	0	2.0	8
06/Oct/09	6.6	16.0	24.8	25	53	94	0.0	0	1.5	4.5
07/Oct/09	6.2	13.8	20.6	18	39	66	0.0	0	3.1	8
08/Oct/09	3.1	13.9	22.4	20	45	77	0.0	0	3.3	10.3
09/Oct/09	7.7	15.6	22.3	21	46	73	0.0	0.9	5.6	13
10/Oct/09	8.6	17.0	23.8	24	45	72	0.0	0.4	4.4	12.5
11/Oct/09	15.3	18.1	23.7	36	54	80	0.8	1.3	4.0	9.8
12/Oct/09	9.6	20.4	28.6	26	54	88	0.4	0	2.5	7.6
13/Oct/09	13.8	20.7	26.8	19	39	77	0.0	0	3.9	9.4
14/Oct/09	11.7	19.0	23.4	23	32	49	0.0	0.4	4.3	9.4
15/Oct/09	5.9	17.5	26.3	20	38	71	0.0	0	3.3	7.6
16/Oct/09	6.7	15.1	22.3	17	41	81	0.0	0	3.3	7.6
17/Oct/09	4.3	14.7	24	21	38	62	0.0	0	1.5	5.8
18/Oct/09	8.8	17.7	25.6	20	40	70	0.0	0	2.1	7.6
19/Oct/09	10.6	20.1	27.7	25	42	70	0.0	0	1.5	7.2
20/Oct/09	10.9	21.6	30.5	22	38	61	0.0	0	1.5	5.4
21/Oct/09	12.6	24.1	33.6	16	32	57	0.0	0	1.5	4.9
22/Oct/09	15.4	26.2	34.6	15	27	45	0.0	0	2.8	10.7
23/Oct/09	16.8	27.6	34.9	15	29	57	0.2	0	3.6	9.8
24/Oct/09	14.8	24.5	34.2	6	25	52	0.0	0	2.4	7.6
25/Oct/09	8.2	21.4	31.8	13	32	77	0.2	0	2.0	13.4
26/Oct/09	15.2	16.5	18.8	65	83	94	39.4	0.9	9.1	15.6
27/Oct/09	13.1	19.3	26.5	48	71	91	0.4	1.3	5.9	13.4
28/Oct/09	14	21.5	28.8	33	62	89	0.0	0.4	2.7	8.9
29/Oct/09	17.7	22.7	28.7	36	59	78	0.0	0.4	3.3	10.3
30/Oct/09	14.7	20.9	28	38	70	95	0.0	0	1.6	7.6
31/Oct/09	5.8	22.5	30.1	29	61	96	0.0	0	2.6	7.2
Average	**11.0**	**19.6**	**27.0**	**26**	**48**	**76**		**0.2**	**3.2**	**8.9**
Maximum	**19.3**	**27.6**	**34.9**	**65**	**83**	**96**	**39.4**	**1.3**	**9.1**	**15.6**
Minimum	**3.1**	**13.8**	**18.8**	**6**	**25**	**45**	**0.0**	**0.0**	**1.5**	**4.5**
Total							**42.6**			

Note: Weather data for 1 October 2009 not available due to battery failure

Daily Summary **November 2009**

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/09	14.2	23.4	31	21	46	81	0.0	0	2.7	9.4
02/Nov/09	15.4	24.5	33.3	25	46	72	0.0	0	1.3	4
03/Nov/09	17.2	27.3	35.6	14	36	74	0.0	0	2.2	6.7
04/Nov/09	17.3	26.9	35.1	21	34	66	0.0	0	2.5	6.7
05/Nov/09	17.8	22.9	30.6	18	51	77	0.0	0	2.8	11.2
06/Nov/09	17.8	19.9	23.2	60	74	92	2.4	0.4	**6.3**	**17**
07/Nov/09	15.3	**18.5**	**22.7**	**67**	**83**	92	**7.0**	0.4	3.6	8.9
08/Nov/09	14.5	21.3	28.8	38	69	**94**	0.8	0.4	4.4	13.4
09/Nov/09	16.8	23.6	29.9	32	57	86	0.0	0	3.5	7.6
10/Nov/09	**13.2**	22.6	29.8	**11**	38	76	0.0	0	1.9	7.2
11/Nov/09	14.6	23.7	33	18	41	71	0.0	0	1.9	6.7
12/Nov/09	14.7	26.2	35.2	17	39	78	0.0	0	1.7	4.5
13/Nov/09	19	26.0	34.3	28	53	88	1.2	0	4.8	11.6
14/Nov/09	14.8	24.2	32.6	20	51	87	0.0	0	2.0	5.4
15/Nov/09	16.3	27.1	36.6	17	38	67	0.0	0	1.3	4.5
16/Nov/09	21.6	31.3	40.8	**11**	28	52	0.0	0	2.2	6.3
17/Nov/09	24.7	32.5	40.7	**67**	**83**	92	0.0	0	3.8	9.4
18/Nov/09	18.3	28.6	38.5	15	41	74	0.0	0	2.7	8.9
19/Nov/09	21.4	32.2	41.2	15	32	63	0.0	0	2.1	5.8
20/Nov/09	26.9	34.7	**41.9**	16	33	56	0.0	0.4	2.8	8.5
21/Nov/09	27.4	**35.4**	41.4	16	**27**	45	0.0	0.4	3.7	7.2
22/Nov/09	**28.2**	34.7	41.1	14	27	**44**	0.0	0	4.8	8.5
23/Nov/09	20.3	28.8	38.1	22	44	75	2.6	0	4.7	13.4
24/Nov/09	18.2	25.5	33.4	29	56	80	0.4	**0.9**	4.4	10.3
25/Nov/09	22.3	28.5	36.2	20	45	66	0.0	0	2.4	6.3
26/Nov/09	24.3	29.6	36.9	18	36	59	0.0	0	3.2	8
27/Nov/09	21.7	27.1	34.4	24	58	92	3.4	0	2.7	6.7
28/Nov/09	22.8	23.3	24.1	49	51	54	0.0	0	**0.2**	**0.9**
29/Nov/09	-	-	-	-	-	-	-	-	-	-
30/Nov/09	-	-	-	-	-	-	-	-	-	-
Average	**19.2**	**26.8**	**34.3**	**26**	**47**	**73**		**0.1**	**3.0**	**8.0**
Maximum	**28.2**	**35.4**	**41.9**	**67**	**83**	**94**	**7.0**	**0.9**	**6.3**	**17.0**
Minimum	**13.2**	**18.5**	**22.7**	**11**	**27**	**44**	**0.0**	**0.0**	**0.2**	**0.9**
Total							**17.8**			

Note: Weather data for the period 29 - 30 November 2009 not available due to battery failure

Daily Summary **December 2009**

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/09	24.4	24.7	24.7	34	34	34	0.0	2.2	2.7	3.1
02/Dec/09	-	-	-	-	-	-	-	-	-	-
03/Dec/09	-	-	-	-	-	-	-	-	-	-
04/Dec/09	-	-	-	-	-	-	-	-	-	-
05/Dec/09	-	-	-	-	-	-	-	-	-	-
06/Dec/09	-	-	-	-	-	-	-	-	-	-
07/Dec/09	-	-	-	-	-	-	-	-	-	-
08/Dec/09	-	-	-	-	-	-	-	-	-	-
09/Dec/09	-	-	-	-	-	-	-	-	-	-
10/Dec/09	-	-	-	-	-	-	-	-	-	-
11/Dec/09	-	-	-	-	-	-	-	-	-	-
12/Dec/09	-	-	-	-	-	-	-	-	-	-
13/Dec/09	-	-	-	-	-	-	-	-	-	-
14/Dec/09	-	-	-	-	-	-	-	-	-	-
15/Dec/09	-	-	-	-	-	-	-	-	-	-
16/Dec/09	-	-	-	-	-	-	-	-	-	-
17/Dec/09	-	-	-	-	-	-	-	-	-	-
18/Dec/09	-	-	-	-	-	-	-	-	-	-
19/Dec/09	23.6	28.8	32.7	17	23	28	0.0	0	2.6	4.9
20/Dec/09	19.2	26.0	32.8	26	49	71	0.0	1.8	4.8	8
21/Dec/09	20.7	27.0	34.5	24	45	64	0.0	0	3.5	13.4
22/Dec/09	17.4	21.9	28.4	39	73	94	23.8	0	4.7	16.5
23/Dec/09	16.9	27.2	35.7	18	50	92	0.0	0	2.9	10.7
24/Dec/09	23.1	29.0	35	26	40	56	0.0	0	2.7	6.3
25/Dec/09	24.1	28.7	33.7	30	49	75	0.0	0	3.5	7.2
26/Dec/09	20.7	22.5	24.7	74	89	95	7.6	0	3.1	7.2
27/Dec/09	20.8	23.7	29	68	87	96	50.0	0	2.7	8.5
28/Dec/09	20.5	22.6	25.4	77	89	96	21.4	0	2.9	6.3
29/Dec/09	21.2	23.4	25.6	70	82	93	0.6	0	4.3	10.7
30/Dec/09	19.3	21.3	24.1	74	87	94	4.2	1.3	4.5	8
31/Dec/09	19.8	22.6	24.9	65	79	93	0.0	0	2.3	4.9
Average	**20.8**	**24.9**	**29.4**	**46**	**63**	**77**		**0.4**	**3.4**	**8.3**
Maximum	**24.4**	**29.0**	**35.7**	**77**	**89**	**96**	**50.0**	**2.2**	**4.8**	**16.5**
Minimum	**16.9**	**21.3**	**24.1**	**17**	**23**	**28**	**0.0**	**0.0**	**2.3**	**3.1**
Total							**107.6**			

Note: Weather data for the period 2 - 18 December 2009 not available due to data being overwritten

Daily Summary **January 2010**

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/10	19.8	21.3	23.6	77	90	97	25.2	0.0	1.1	3.6
02/Jan/10	27.2	22.7	27.3	8	98	24	0.0	0.0	1.6	7.6
03/Jan/10	21.1	24.8	30.3	57	80	95	0.0	0.0	2.5	8.0
04/Jan/10	18.4	25.4	31.6	38	66	94	0.0	0.0	3.6	9.8
05/Jan/10	19.3	25.7	32.3	41	64	89	0.0	0.0	1.8	7.2
06/Jan/10	21.1	25.7	31.7	48	69	92	0.0	0.0	1.5	7.6
07/Jan/10	20.1	26.2	33.2	38	60	88	0.0	0.0	2.8	10.7
08/Jan/10	20.4	27.2	33.1	31	55	83	0.0	0.0	3.5	8.0
09/Jan/10	19.8	27.3	34.1	25	53	82	0.0	0.0	1.9	5.4
10/Jan/10	20.3	28.6	36.5	29	52	82	0.0	0.0	2.2	8.0
11/Jan/10	22.0	29.4	36.4	24	52	83	0.0	0.0	2.1	4.9
12/Jan/10	22.3	29.7	35.9	34	54	82	0.0	0.0	1.3	5.4
13/Jan/10	24.7	30.9	37.4	29	50	77	0.0	0.0	2.7	12.5
14/Jan/10	20.7	27.7	35.0	31	58	93	21.6	0.0	4.7	15.6
15/Jan/10	20.8	26.4	32.1	44	68	93	0.0	0.4	2.7	9.4
16/Jan/10	22.1	25.8	32.4	45	67	86	0.0	0.0	2.2	9.8
17/Jan/10	19.1	25.9	33.4	35	65	93	0.0	0.0	2.2	6.3
18/Jan/10	13.3	20.8	26.4	26	43	83	0.0	0.0	3.1	7.6
19/Jan/10	9.3	18.3	26.0	25	47	80	0.0	0.0	2.2	6.3
20/Jan/10	10.6	21.4	31.9	16	46	79	0.0	0.0	1.0	4.5
21/Jan/10	14.8	25.9	35.6	17	41	75	0.0	0.0	0.8	3.1
22/Jan/10	18.2	29.1	37.3	21	43	70	0.0	0.0	1.2	4.5
23/Jan/10	19.5	29.2	36.6	24	40	64	0.0	0.0	1.2	3.1
24/Jan/10	20.1	28.5	37.3	25	50	82	0.0	0.0	2.0	4.9
25/Jan/10	19.8	28.9	37.3	20	48	85	0.0	0.0	1.9	5.4
26/Jan/10	22.9	30.4	37.3	20	37	60	0.0	0.0	2.2	6.3
27/Jan/10	22.2	29.1	34.5	29	45	89	6.6	0.0	2.9	10.3
28/Jan/10	-	-	-	-	-	-	-	-	-	-
29/Jan/10	-	-	-	-	-	-	-	-	-	-
30/Jan/10	-	-	-	-	-	-	-	-	-	-
31/Jan/10	-	-	-	-	-	-	-	-	-	-
Average	**19.6**	**26.4**	**33.2**	**32**	**57**	**81**		**0.0**	**2.2**	**7.3**
Maximum	**27.2**	**30.9**	**37.4**	**77**	**98**	**97**	**25.2**	**0.4**	**4.7**	**15.6**
Minimum	**9.3**	**18.3**	**23.6**	**8**	**37**	**24**	**0.0**	**0.0**	**0.8**	**3.1**
Total							**53.4**			

Note: Weather data for the period 28 - 31 January 2010 not available due to battery failure

Daily Summary **February 2010**

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/10	-	-	-	-	-	-	-	-	-	-
02/Feb/10	-	-	-	-	-	-	-	-	-	-
03/Feb/10	-	-	-	-	-	-	-	-	-	-
04/Feb/10	-	-	-	-	-	-	-	-	-	-
05/Feb/10	-	-	-	-	-	-	-	-	-	-
06/Feb/10	-	-	-	-	-	-	-	-	-	-
07/Feb/10	-	-	-	-	-	-	-	-	-	-
08/Feb/10	-	-	-	-	-	-	-	-	-	-
09/Feb/10	-	-	-	-	-	-	-	-	-	-
10/Feb/10	-	-	-	-	-	-	-	-	-	-
10/Feb/10	24.4	28.3	31.8	41	54	73	0.2	0.4	2.1	4.0
11/Feb/10	18.9	25.9	33.0	32	63	92	0.4	0.0	1.2	4.0
12/Feb/10	20.1	27.2	34.6	29	56	81	0.0	0.0	2.2	6.3
13/Feb/10	21.8	28.3	34.6	33	55	82	0.0	0.0	1.8	4.9
14/Feb/10	21.4	26.4	32.3	47	68	96	30.2	0.0	3.2	8.0
15/Feb/10	20.9	23.6	28.7	65	88	97	20.6	0.0	1.1	3.6
16/Feb/10	16.7	23.6	30.4	39	71	96	0.0	0.0	1.8	7.2
17/Feb/10	18.2	24.3	29.7	46	65	87	0.2	0.4	3.8	8.5
18/Feb/10	19.0	23.3	28.4	38	57	79	0.0	1.3	6.3	14.8
19/Feb/10	16.6	23.1	30.3	35	57	74	0.0	0.4	3.8	13.9
20/Feb/10	18.2	24.6	31.0	33	58	84	0.0	0.0	1.7	4.9
21/Feb/10	17.2	24.7	32.7	31	64	91	0.0	0.0	0.8	2.7
22/Feb/10	18.6	25.5	33.7	31	62	91	0.0	0.0	1.1	3.6
23/Feb/10	21.1	24.8	33.6	47	72	93	8.8	0.0	1.1	4.0
24/Feb/10	19.3	25.0	30.9	51	70	93	0.0	0.0	1.9	10.7
25/Feb/10	20.4	24.2	29.3	48	63	75	0.0	0.4	3.6	11.2
26/Feb/10	15.2	22.8	30.1	35	59	85	0.0	0.0	3.3	9.8
27/Feb/10	16.4	24.2	30.6	33	58	89	0.0	0.0	1.8	9.4
28/Feb/10	20.4	25.9	30.8	47	62	84	0.0	0.0	0.9	3.6
Average	**19.2**	**25.0**	**31.4**	**40**	**63**	**86**		**0.2**	**2.3**	**7.1**
Maximum	**24.4**	**28.3**	**34.6**	**65**	**88**	**97**	**30.2**	**1.3**	**6.3**	**14.8**
Minimum	**15.2**	**22.8**	**28.4**	**29**	**54**	**73**	**0.0**	**0.0**	**0.8**	**2.7**
Total							**60.4**			

Note: Weather data for the period 1 - 10 February 2010 not available due to battery failure

Daily Summary **March 2010**

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/10	18.3	21.4	24.7	61	81	96	9.2	0.0	3.8	8.0
02/Mar/10	17.7	19.9	22.3	55	62	71	0.2	1.8	6.5	14.8
03/Mar/10	16.1	22.2	28.7	47	63	82	0.0	0.9	5.1	8.5
04/Mar/10	17.4	24.6	32.7	36	59	81	0.0	0.0	2.1	4.9
05/Mar/10	19.9	21.5	24.4	59	82	96	3.8	0.0	1.7	5.4
06/Mar/10	17.9	23.6	30.1	59	81	98	1.0	0.0	1.3	4.9
07/Mar/10	21.0	24.7	30.5	50	76	96	0.6	0.0	1.7	5.4
08/Mar/10	20.5	24.6	29.4	60	75	87	0.2	0.0	2.4	5.8
09/Mar/10	14.1	21.7	28.4	33	64	95	0.6	0.0	1.1	4.0
10/Mar/10	13.3	20.6	28.5	38	70	97	0.0	0.0	2.0	8.0
11/Mar/10	17.2	21.3	26.8	42	64	83	0.0	3.1	6.3	13.4
12/Mar/10	16.8	21.5	27.6	35	53	65	0.0	1.8	5.8	13.4
13/Mar/10	14.8	20.7	27.5	35	62	82	0.0	1.3	5.2	13.0
14/Mar/10	12.9	21.2	28.6	35	62	94	0.0	0.9	3.6	8.9
15/Mar/10	17.0	21.6	27.7	40	58	79	0.0	0.0	1.6	4.0
16/Mar/10	14.8	22.9	29.3	24	52	87	0.0	0.0	3.3	8.5
17/Mar/10	14.5	23.0	30.8	24	50	82	0.0	0.0	2.3	6.7
18/Mar/10	15.3	24.0	31.8	18	45	84	0.0	0.0	2.2	7.6
19/Mar/10	13.3	22.8	30.8	29	52	82	0.0	0.0	1.2	4.5
20/Mar/10	13.6	23.6	34.2	22	51	88	0.0	0.0	1.6	6.3
21/Mar/10	14.6	24.3	33.1	27	52	87	0.0	0.0	1.4	5.4
22/Mar/10	15.6	24.6	34.1	26	52	83	0.0	0.0	1.5	4.5
23/Mar/10	17.7	24.4	32.2	28	56	85	0.0	0.0	1.7	4.0
24/Mar/10	14.3	23.8	32.7	25	52	85	0.0	0.0	1.7	9.8
25/Mar/10	17.4	25.1	32.3	31	53	80	0.0	0.0	1.7	8.0
26/Mar/10	16.7	24.4	32.2	31	54	81	0.0	0.0	1.1	4.5
27/Mar/10	16.4	25.4	33.4	27	51	81	0.0	0.0	1.7	7.2
28/Mar/10	22.0	26.6	32.9	34	51	69	0.0	0.0	1.1	4.9
29/Mar/10	18.5	24.7	30.2	41	57	81	0.0	0.0	1.1	3.6
30/Mar/10	18.2	20.1	23.8	64	86	97	16.8	0.0	2.0	4.5
31/Mar/10	16.7	17.9	21.1	84	95	98	0.0	0.0	1.3	4.5
Average	**16.6**	**22.9**	**29.4**	**39**	**62**	**86**		**0.3**	**2.5**	**7.0**
Maximum	**22.0**	**26.6**	**34.2**	**84**	**95**	**98**	**16.8**	**3.1**	**6.5**	**14.8**
Minimum	**12.9**	**17.9**	**21.1**	**18**	**45**	**65**	**0.0**	**0.0**	**1.1**	**3.6**
Total							**32.4**			

Daily Summary **April 2010**

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	14.2	19.3	26.2	36	70	95	0.0	0	2.2	5.8
02/Apr/10	11.9	19.6	27.1	32	63	92	0.0	0	2.3	5.4
03/Apr/10	15.9	21.0	26.9	33	58	78	0.0	0	2.7	10.3
04/Apr/10	16.1	20.2	26.2	38	56	70	0.0	0.9	3.6	6.3
05/Apr/10	15.9	20.3	26.6	47	63	81	0.0	0	1.7	6.3
06/Apr/10	17.3	20.3	26.4	46	72	95	13.6	0	3.3	7.2
07/Apr/10	19.1	20.1	20.7	73	77	88	0.4	0	3.2	5.4
08/Apr/10	-	-	-	-	-	-	-	-	-	-
09/Apr/10	-	-	-	-	-	-	-	-	-	-
10/Apr/10	-	-	-	-	-	-	-	-	-	-
11/Apr/10	-	-	-	-	-	-	-	-	-	-
12/Apr/10	-	-	-	-	-	-	-	-	-	-
13/Apr/10	-	-	-	-	-	-	-	-	-	-
14/Apr/10	-	-	-	-	-	-	-	-	-	-
15/Apr/10	-	-	-	-	-	-	-	-	-	-
16/Apr/10	-	-	-	-	-	-	-	-	-	-
17/Apr/10	-	-	-	-	-	-	-	-	-	-
18/Apr/10	-	-	-	-	-	-	-	-	-	-
19/Apr/10	-	-	-	-	-	-	-	-	-	-
20/Apr/10	-	-	-	-	-	-	-	-	-	-
21/Apr/10	20	23.5	28.3	32	47	58	0.0	1.3	3.6	6.7
22/Apr/10	12.6	20.4	28.9	35	63	94	0.0	0	0.9	4
23/Apr/10	10.9	19.7	29.4	33	62	94	0.0	0	0.6	2.7
24/Apr/10	12.8	20.6	29.2	34	60	89	0.0	0	1.4	5.4
25/Apr/10	10	17.3	22.4	57	77	95	9.0	0	1.2	6.7
26/Apr/10	5.7	13.0	21.6	41	75	97	0.2	0	1.2	4
27/Apr/10	4.7	13.8	21.6	44	74	97	0.2	0	0.7	2.7
28/Apr/10	7.3	14.8	24.7	27	70	97	0.2	0	0.9	3.6
29/Apr/10	7.4	14.3	23.8	37	71	94	0.0	0	0.8	4
30/Apr/10	6.3	14.6	23.2	36	69	96	0.0	0	1.8	5.4
Average	**12.2**	**18.4**	**25.5**	**40.1**	**66.3**	**88.8**		**0.1**	**1.9**	**5.4**
Maximum	**20.0**	**23.5**	**29.4**	**73.0**	**77.1**	**97.0**	**13.6**	**1.3**	**3.6**	**10.3**
Minimum	**4.7**	**13.0**	**20.7**	**27.0**	**47.2**	**58.0**	**0.0**	**0.0**	**0.6**	**2.7**
Total							**23.6**			

Note: Weather data for the period 8 - 20 April 2010 not available due to battery failure

Daily Summary **May 2010**

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	8.9	17.5	27.1	34	67.0	93	0	0	0.9	2.2
02/May/10	8.8	17.1	27.4	34	68.8	96	0	0	0.9	3.6
03/May/10	12.4	18.9	26.2	37	65.2	90	0	0	1.6	5.4
04/May/10	11.6	19.1	25.2	37	58.6	90	0	0	2.0	6.7
05/May/10	5.7	14.9	25.2	37	69.2	97	0	0	2.4	7.6
06/May/10	1.8	10.1	20.6	26	66.3	96	0	0	0.8	3.1
07/May/10	2.8	11.4	22.3	23	63.5	94	0	0	0.9	3.1
08/May/10	2.6	12.0	23.9	22	62.9	96	0	0	0.8	2.7
09/May/10	4.3	13.6	24.9	29	60.3	87	0	0	0.7	2.7
10/May/10	4.8	14.3	25.3	31	61.8	92	0	0	0.5	3.1
11/May/10	7.4	15.5	25.7	31	61.6	90	0	0	1.3	4.9
12/May/10	1.8	10.3	18.7	25	55.9	91	0	0	1.2	4.5
13/May/10	-0.5	9.1	19.6	24	57.7	95	0	0	0.8	2.7
14/May/10	1.8	10.2	21	35	63.2	93	0	0	0.7	3.6
15/May/10	2.6	11.6	21.3	33	64.3	96	0	0	1.1	5.4
16/May/10	5.6	14.7	23.1	25	53.1	81	0	0	1.5	4.9
17/May/10	9.2	12.7	17.9	42	70.8	92	0.2	0	0.9	5.4
18/May/10	4	11.4	18.8	45	74.9	97	0	0	1.6	4.5
19/May/10	3.2	12.2	20.8	45	73.2	97	0	0	1.9	4.9
20/May/10	7.8	13.3	20.5	49	72.2	93	0	0	0.6	2.2
21/May/10	9.6	14.3	21.8	40	69.3	88	0	0	1.2	5.4
22/May/10	4.2	12.3	19.9	47	72.5	97	0	0	2.2	6.3
23/May/10	5.3	13.3	22.1	40	68.5	96	0	0	1.3	3.6
24/May/10	11.1	15.7	20	53	68.8	83	0	0	0.8	3.6
25/May/10	12.3	16.3	20.5	68	80.2	93	5.4	0	1.5	4
26/May/10	11.8	13.7	15.8	74	88.8	96	4.6	0	2.1	5.4
27/May/10	10.8	15.0	21	53	80.9	97	0	0	2.3	8
28/May/10	9.4	15.6	20.8	53	73.5	92	0.2	0	1.9	9.4
29/May/10	11.6	14.2	16.7	77	88.5	95	11	0.4	2.5	6.3
30/May/10	9.8	11.3	13	76	88.5	94	0.2	0	2.8	5.8
31/May/10	11.3	13.5	17.7	62	87.3	97	1.8	0	1.2	3.1
Average	**6.9**	**13.7**	**21.4**	**42.2**	**69.6**	**93.0**		**0.0**	**1.4**	**4.6**
Maximum	**12.4**	**19.1**	**27.4**	**77.0**	**88.8**	**97.0**	**11.0**	**0.4**	**2.8**	**9.4**
Minimum	**-0.5**	**9.1**	**13.0**	**22.0**	**53.1**	**81.0**	**0.0**	**0.0**	**0.5**	**2.2**
Total							**23.4**			

Daily Summary **June 2010**

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	7.8	13.8	19.2	52	80.3	97	0.2	0	1.4	3.6
02/Jun/10	10.4	12.6	15.0	87	93.8	97	13.8	0	2.2	8.5
03/Jun/10	11.9	14.0	17.4	74	89.0	96	1.6	0	3.0	8
04/Jun/10	8.3	13.3	19.1	70	87.3	98	0	0	2.5	7.6
05/Jun/10	8.7	13.5	19.5	51	78.2	97	0	0	2.0	4.9
06/Jun/10	4.4	9.3	14.4	57	80.1	96	0	0	1.2	4.9
07/Jun/10	2.2	8.8	17.0	40	78.9	100	0	0	1.2	3.6
08/Jun/10	3.4	9.3	18.6	39	76.8	97	0	0	0.8	3.6
09/Jun/10	2.9	9.4	16.2	43	72.3	96	0	0	2.0	7.2
10/Jun/10	2.4	7.6	14.7	41	74.4	93	0	0	1.5	4.9
11/Jun/10	0.2	6.7	14.3	54	78.4	96	0	0	0.7	3.6
12/Jun/10	0.9	7.4	15.3	45	74.8	96	0	0	0.9	4
13/Jun/10	0.4	1.8	2.7	88	91.4	95	0	0	0.4	1.3
14/Jun/10	-	-	-	-	-	-	-	-	-	-
15/Jun/10	-	-	-	-	-	-	-	-	-	-
16/Jun/10	-	-	-	-	-	-	-	-	-	-
17/Jun/10	11.8	13.1	13.8	93	94.8	96	2.4	0	1.3	2.2
18/Jun/10	5.2	12.7	17.6	49	80.2	98	0.2	0	1.0	3.6
19/Jun/10	1.8	8.1	16.5	51	80.0	97	0	0	0.5	3.1
20/Jun/10	4.7	10.9	18.3	48	78.9	96	0	0	0.7	3.1
21/Jun/10	4.4	11.6	19.9	49	78.4	97	0.2	0	2.3	7.2
22/Jun/10	9.4	14.4	19.8	52	69.3	87	2.6	0	3.0	9.4
23/Jun/10	8.1	14.3	19.8	45	65.9	89	0	0.4	3.8	9.4
24/Jun/10	10.2	14.6	19.0	53	68.8	89	0.4	0	1.5	4
25/Jun/10	9.1	14.7	21.4	46	71.3	93	0	0	0.8	2.7
26/Jun/10	9.9	13.3	16.4	70	88.1	96	10.2	0	1.6	4.5
27/Jun/10	1.5	7.5	13.6	47	76.7	95	0	0	0.9	3.1
28/Jun/10	-1.3	5.0	13.0	47	80.6	97	0	0	0.7	3.1
29/Jun/10	-1.2	4.7	13.7	46	79.5	97	0.2	0	0.6	3.6
30/Jun/10	-2.7	4.0	12.9	44	79.5	96	0	0	0.5	3.1
Average	**5.0**	**10.2**	**16.3**	**54.9**	**79.5**	**82.0**		**0.0**	**1.4**	**4.7**
Maximum	**11.9**	**14.7**	**21.4**	**93.0**	**94.8**	**100.0**	**13.8**	**0.4**	**3.8**	**9.4**
Minimum	**-2.7**	**1.8**	**2.7**	**39.0**	**65.9**	**87.0**	**0.0**	**0.0**	**0.4**	**1.3**
Total							**31.8**			

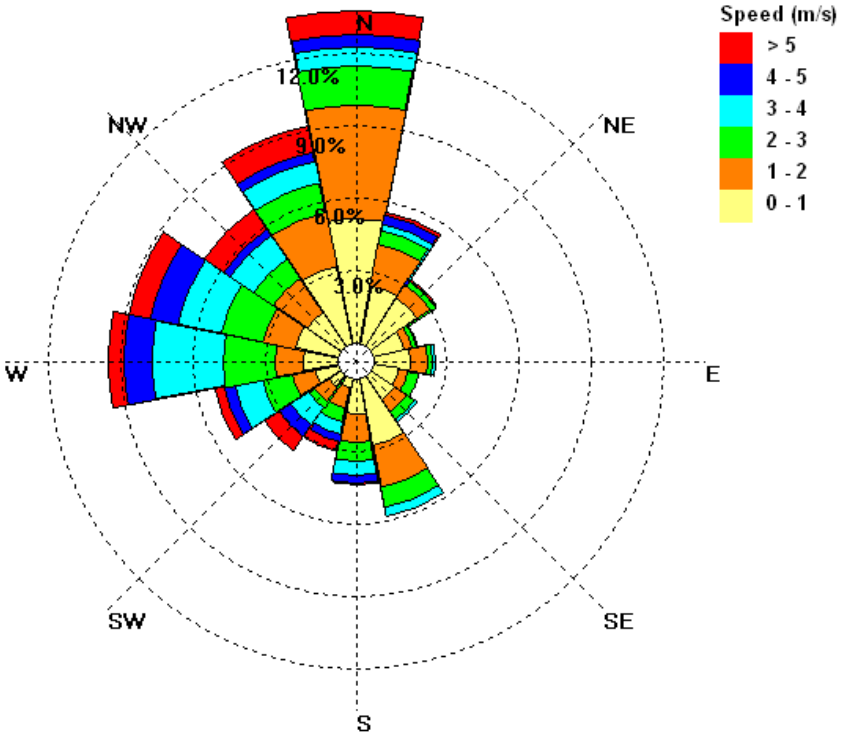
Note: Weather data for the period 14 -16 June 2010 not available due to battery failure

Daily Summary **July 2010**

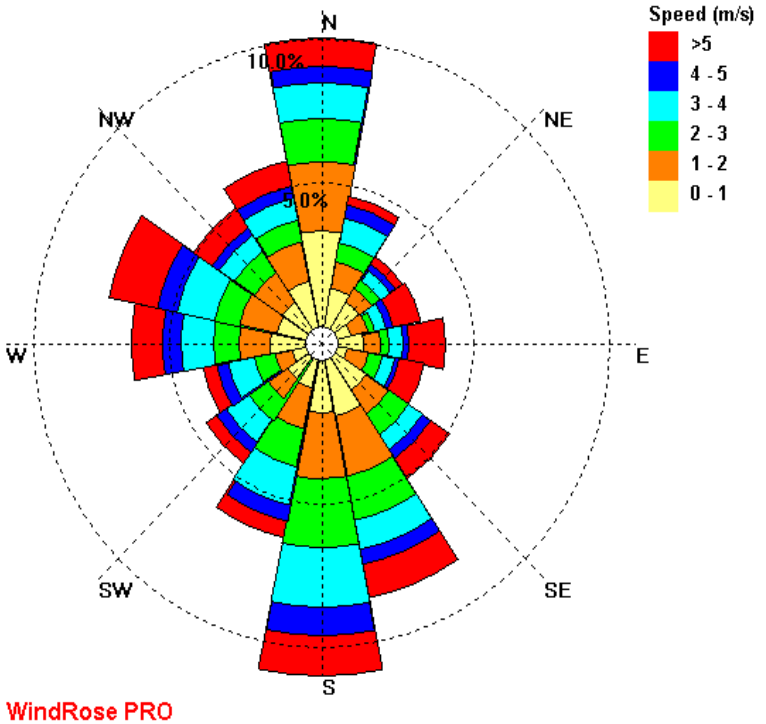
Date	Min Temp (°C)	Ave Temp (°C)	Max Temp (°C)	Min RH (%)	Ave RH (%)	Max RH (%)	Rain (mm)	Min WS (m/s)	Ave WS (m/s)	Max WS (m/s)
01/Jul/10	-0.3	6.7	14.1	48	77.1	95	0	0	0.60	3.1
02/Jul/10	6.8	7.9	9.3	82	90.4	96	2.8	0	0.8	3.6
03/Jul/10	1.2	7.5	13.3	53	82.5	96	0	0	1.4	5.4
04/Jul/10	-1.1	6.6	16.1	54	81.3	100	0.2	0	1.3	5.4
05/Jul/10	1.6	10.2	18.3	43	75.4	97	0	0	0.7	2.2
06/Jul/10	6	12.1	16.7	49	77.9	97	6	0	2.0	5.8
07/Jul/10	4.3	8.7	12.2	74	86.6	95	0	0	0.9	4
08/Jul/10	7.1	12.1	18.3	46	78.1	95	0	0	3.3	7.6
09/Jul/10	5.4	12.0	18.7	45	71.3	96	0	0	2.9	5.8
10/Jul/10	7.6	13.6	21.2	40	67.9	86	0	0	1.7	4
11/Jul/10	11.8	15.0	18.3	59	76.4	90	0	0	1.0	3.1
12/Jul/10	10.8	14.0	18.5	76	89.5	97	0.6	0	1.0	4
13/Jul/10	9.9	15.9	21.4	59	79.6	100	0	0	1.8	5.4
14/Jul/10	8.2	13.7	17.5	48	75.5	94	10.8	0	3.9	8.5
15/Jul/10	3.4	9.9	15	47	70.6	87	0	0	2.4	5.8
16/Jul/10	0.2	6.2	15.2	48	79.9	97	0	0	1.3	4.5
17/Jul/10	1.1	8.0	17.7	44	76.7	96	0	0	0.7	2.7
18/Jul/10	0.7	10.1	20.6	42	75.7	97	0	0	1.0	5.4
19/Jul/10	7.7	10.5	13.3	79	90.0	97	8.8	0	1.0	4.9
20/Jul/10	3.9	9.0	14.7	60	87.6	98	0.2	0	0.6	2.2
21/Jul/10	0.5	7.8	15.2	51	79.5	97	0.2	0	1.8	6.3
22/Jul/10	3.9	9.6	15.7	33	66.8	96	0	0	2.6	10.3
23/Jul/10	2.4	9.8	17.4	51	72.7	93	0	0	2.1	4.9
24/Jul/10	2.8	10.5	17.6	50	75.0	95	0	0	0.7	2.7
25/Jul/10	5.1	11.3	18.3	49	75.9	95	0	0	0.9	2.7
26/Jul/10	3	11.0	18.7	40	74.0	100	0	0	2.2	5.4
27/Jul/10	8	14.3	20.3	37	61.8	82	0	0.4	3.5	7.6
28/Jul/10	10.6	12.8	15.8	70	90.2	97	23.2	0	1.4	4
29/Jul/10	9.2	13.1	17.6	86	95.0	98	1.4	0	0.7	2.2
30/Jul/10	9.9	15.1	19.9	67	88.6	97	13.6	0	0.9	3.6
31/Jul/10	7.9	14.3	17.8	71	90.8	97	17.8	0	1.8	6.3
Average	**5.1**	**10.9**	**16.9**	**54.9**	**79.4**	**95.3**		**0.0**	**1.6**	**4.8**
Maximum	**11.8**	**15.9**	**21.4**	**86.0**	**95.0**	**100.0**	**23.2**	**0.4**	**3.9**	**10.3**
Minimum	**-1.1**	**6.2**	**9.3**	**33.0**	**61.8**	**82.0**	**0.0**	**0.0**	**0.6**	**2.2**
Total							**85.6**			

Rocglen Seasonal Windroses

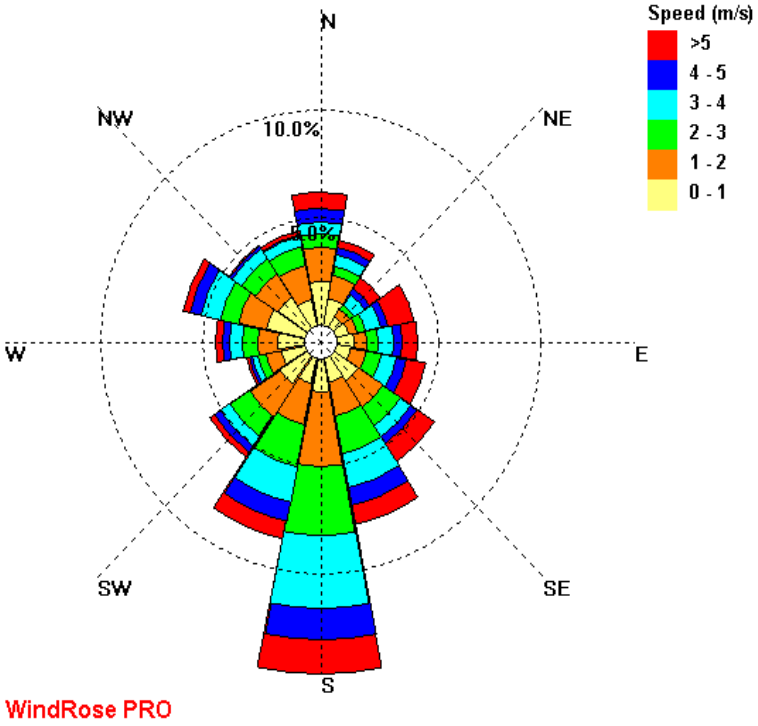
Winter 2009 (August 2009)



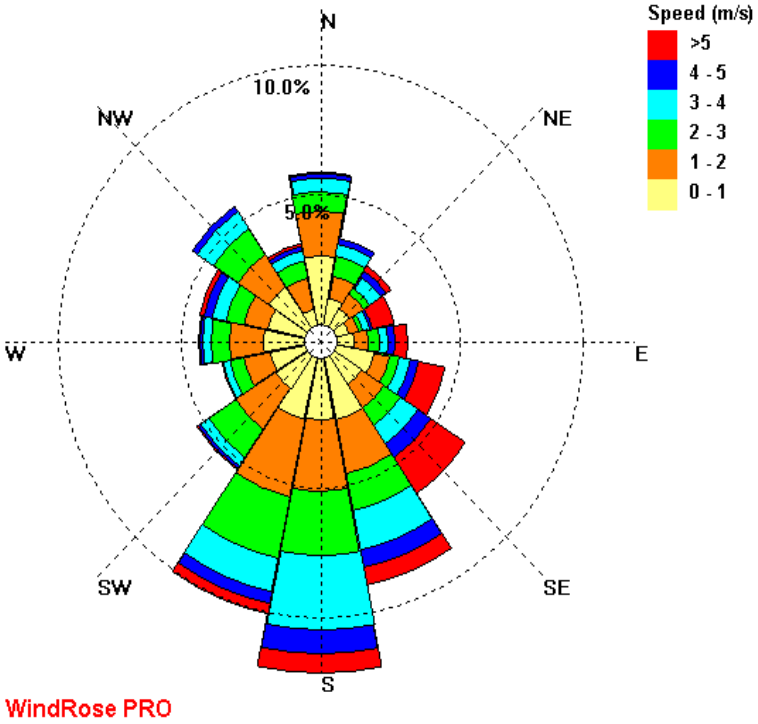
Spring 2009 (September 2009 – November 2009)



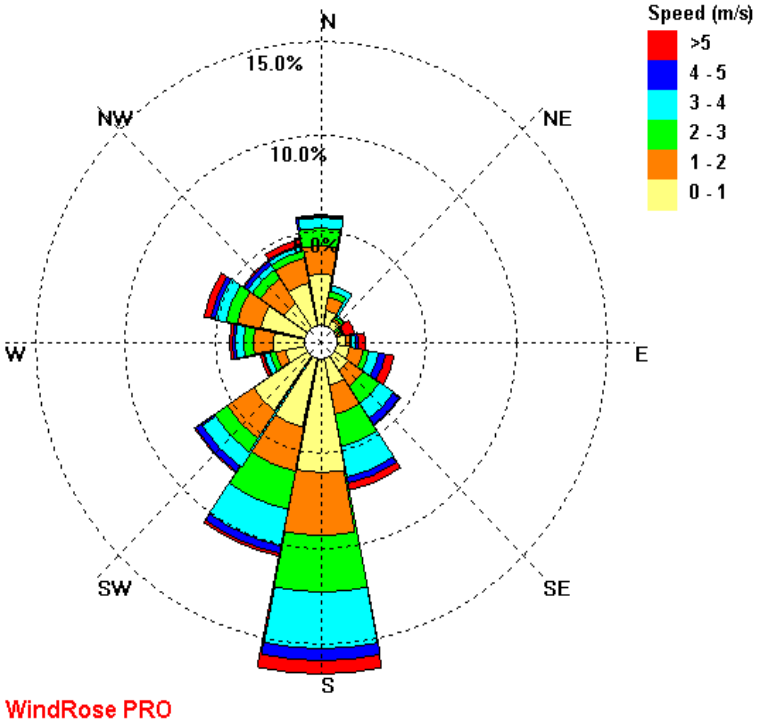
Summer 2009/2010 (December 2009 – February 2010)



Autumn 2010 (March 2010 – May 2010)



Winter 2010 (June 2010 – July 2010)



Annual Windrose (August 2009 – July 2010)