



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

Annual Environmental Management Report for the Rocglen Coal Mine (ML 1620)

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

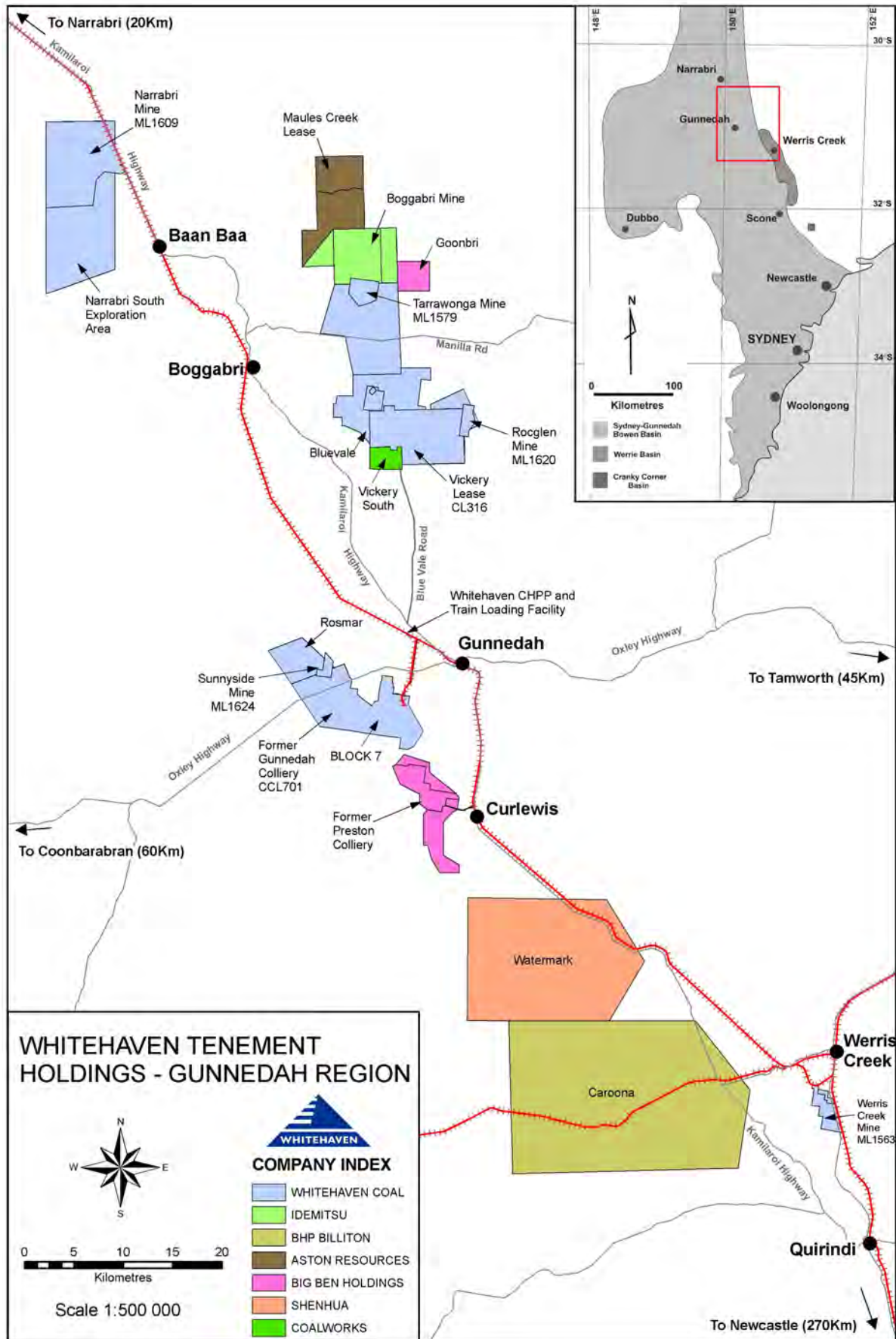


Figure 1 - Locality Plan

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)	6 th April 2001 (Renewed 15 th August 2003 and 11 th November 2008)	5 th April 2013	Approval for exploration			
Minister for Planning	Project Approval (PA) 06_0198	15 th April 2008	10 th June 2020	Approval for the mine			
Department of Environment and Climate Change* ³	Environment Protection Licence No. 12870 (Appendix 2)	31 st July 2008	Nil Anniversary date: 31 st July Next review: 18 th August 2014	Approval granted for Mining for Coal and Coal Works to 2 Mtpa.			
Department of Primary Industries* ¹	ML 1620	10 th June 2008	9 th 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				12 th May 2009	11 th May 2014	700ML aquifer interference
	90BL254758 90BL255249				18 th Jan 2010 18 th Jan 2010	17 th Jan 2015 17 th Jan 2015	120ML total allocation - mining (low security)
Minister for Planning	Project Approval (PA) 06_0198 - MOD 1 (Appendix 1)	27 th May 2010	10 th 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 m³ 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 m³ 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 m³, 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.

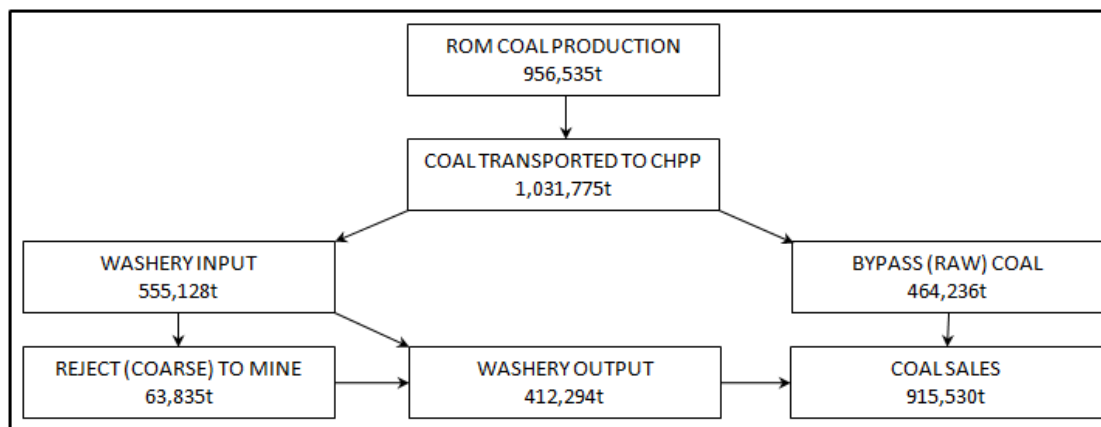
During the reporting period, all Rocglen coal was transported to the Whitehaven Siding CHPP with 54% washed and 49% bypassed (unwashed) for despatch to domestic and export markets.

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 banded 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 (18,350m³) with volumes ranging from 13,082 tonnes (9,690m³) and 142,290 tonnes (105,400m³).

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 90thile 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 90th percentile 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 Draggie 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 56.4mm 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 Draggie 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 Draggie 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 Draggie Creek to obtain a sample, and on this occasion water depth was only enough to submerge 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 Draggie 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 Draggie 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).

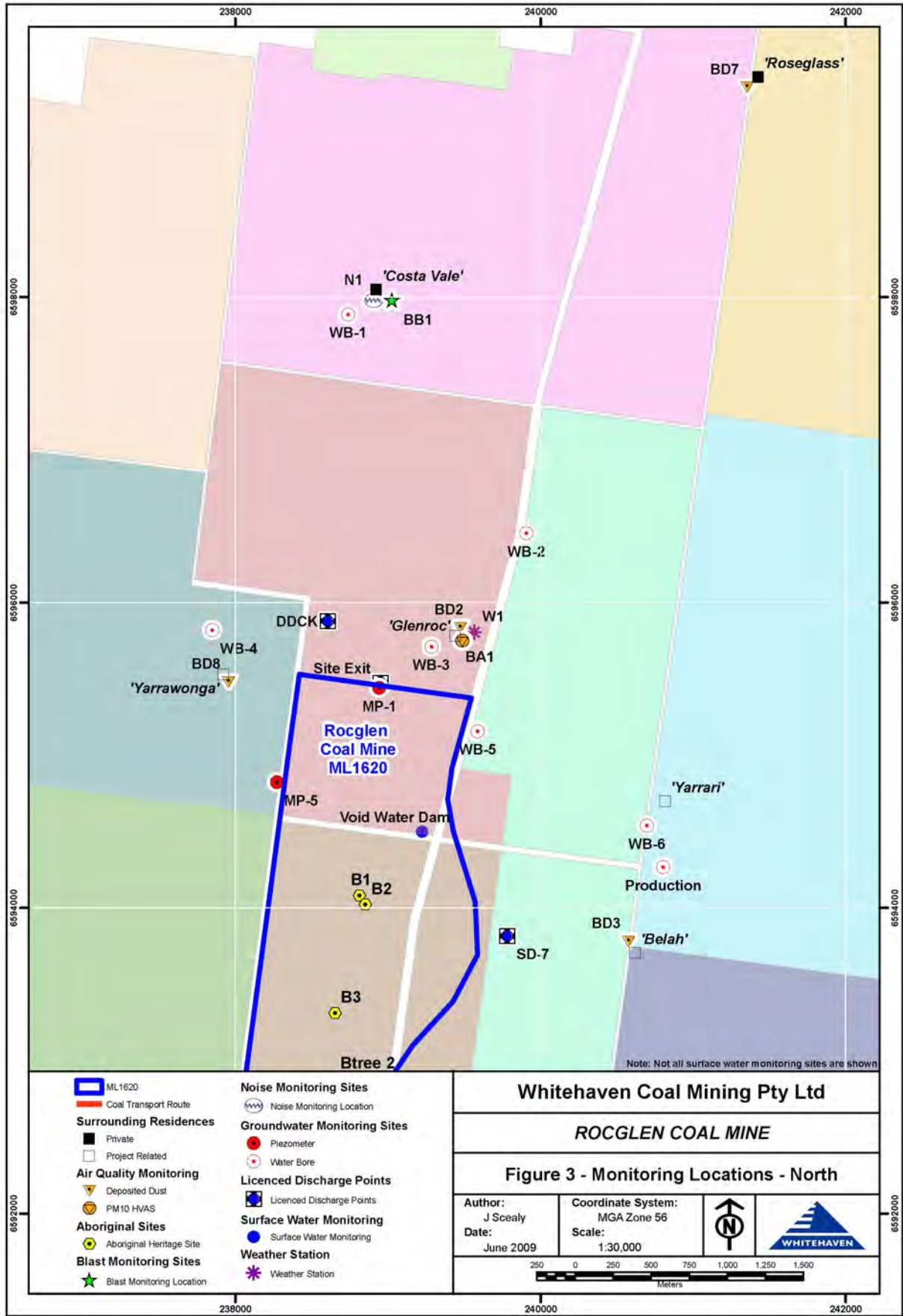


Figure 3 - Monitoring Locations - North

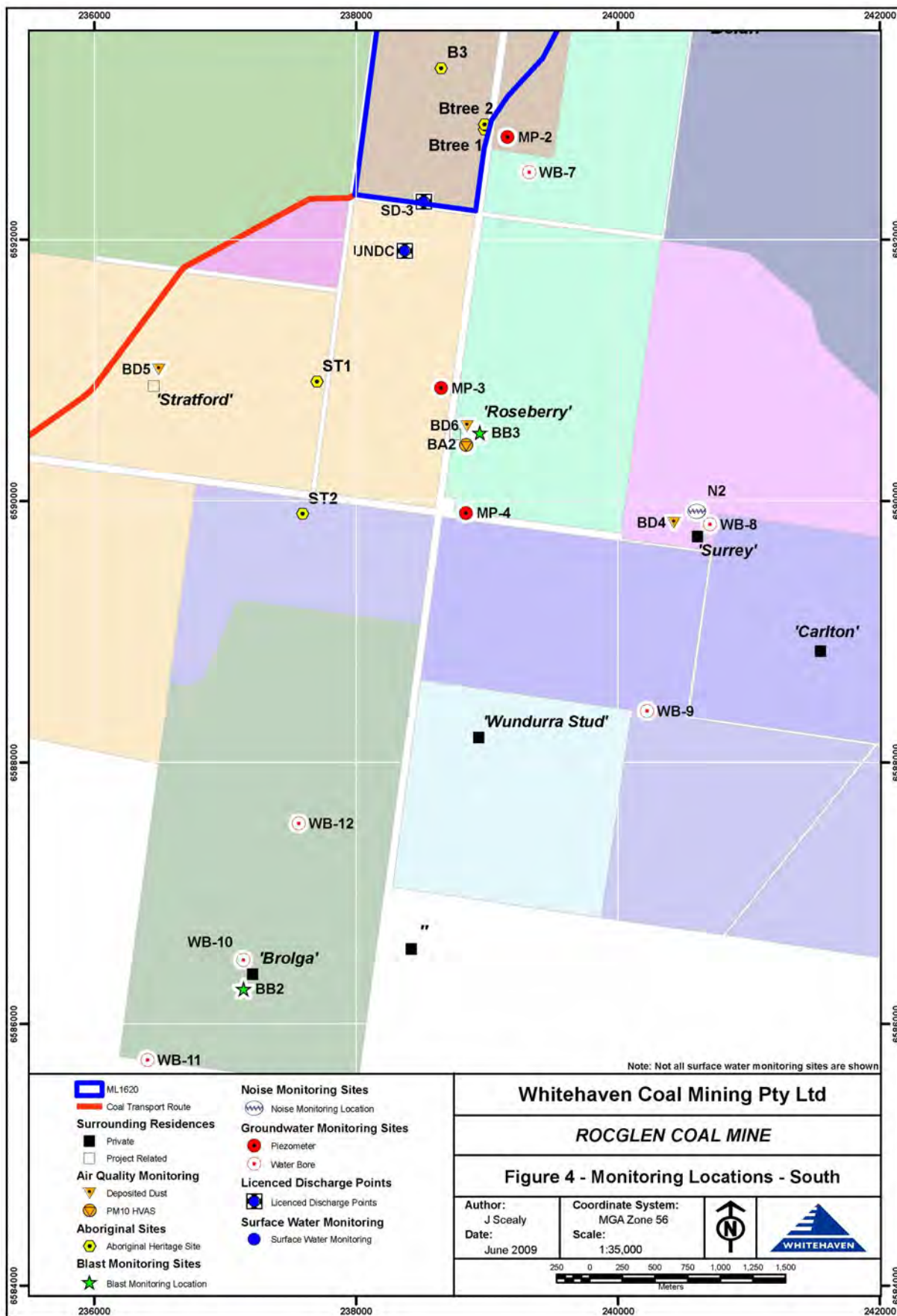


Figure 4 - Monitoring Locations - South

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/m²/month.
- Mean annual dust deposition (all sources) – 4g/m²/month.
- Mean annual TSP (all sources) concentration – 90 µg/m³.
- Mean annual PM₁₀ particulate level – 30 µg/m³.
- 24 hour average PM₁₀ particulate level – 50 µg/m³.

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

3.1.2 Control Procedures

In order to satisfy the criteria identified above, 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	Yarrowonga	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 (PM₁₀) 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 PM₁₀ 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.

PM₁₀ 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 µg/m³ was generally achieved during the reporting period with the exception of the dates and results detailed in Table 7.

Table 7 - PM₁₀ Exceedances

Date	Glenroc	Roseberry
21 st October 2009	-	68 µg/m ³
20 th November 2009	-	53 µg/m ³
8 th December 2009	90 µg/m ³	101 µg/m ³
14 th December 2009	113 µg/m ³	68 µg/m ³
25 th January 2010	55 µg/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 ($53 \mu\text{g}/\text{m}^3$) 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 $50 \mu\text{g}/\text{m}^3$ 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 $24 \mu\text{g}/\text{m}^3$ to $325 \mu\text{g}/\text{m}^3$, 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.

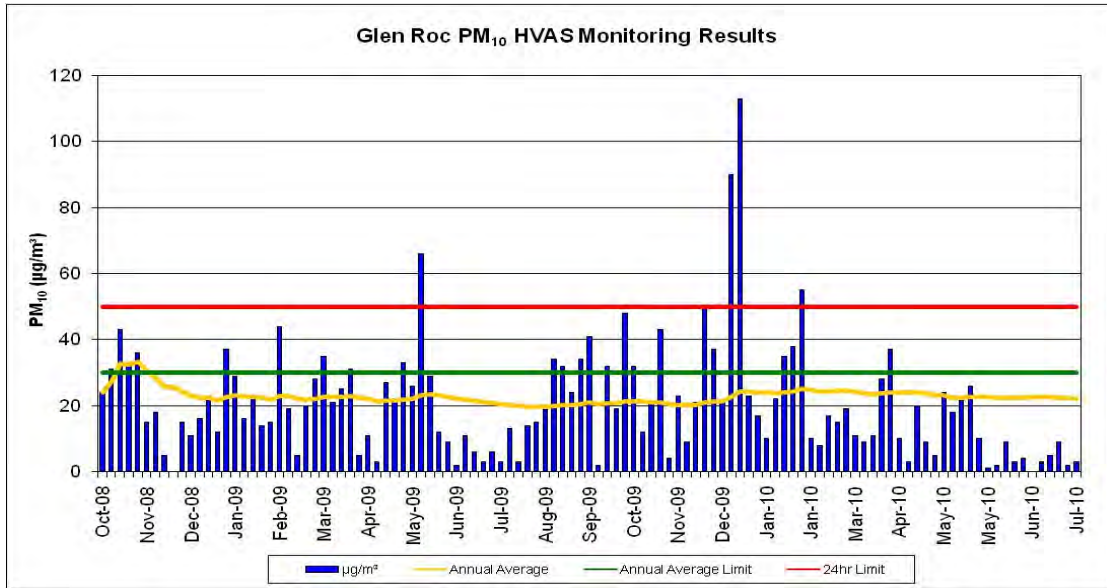


Figure 5 - Glenroc HVAS PM₁₀ Data

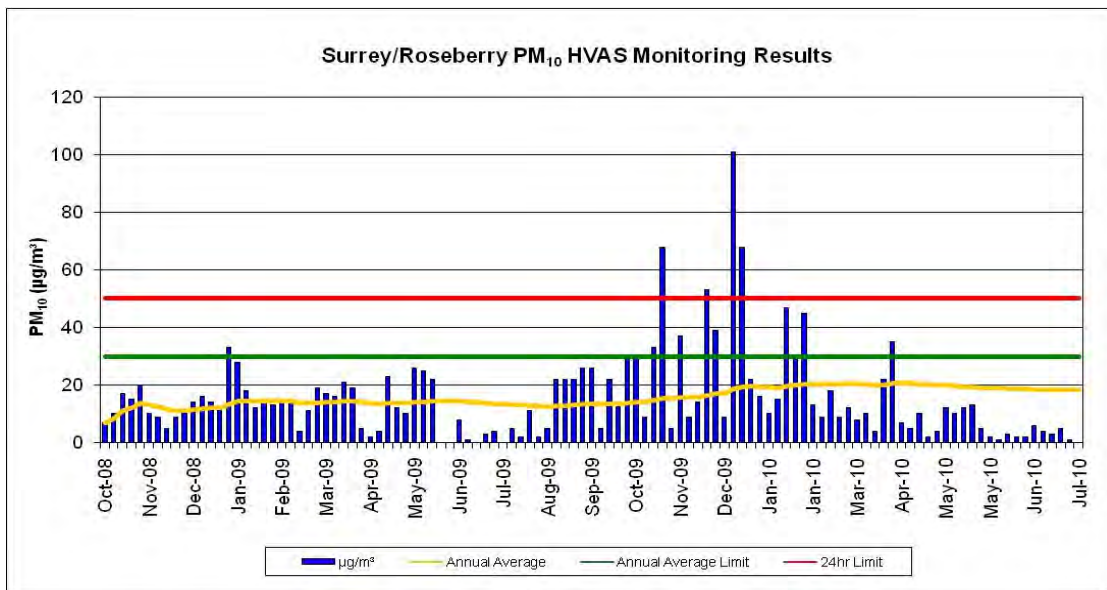


Figure 6 – Surrey/Roseberry HVAS PM₁₀ Data

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	"Yarrowonga"	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	"Yarrowonga"	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 “Yarrowonga” 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 $L_{Aeq}(15\text{minute})$ noise emission criterion of 35 dB(A) at all times (day, evening and night time periods); and*
- (b) an $L_{A1}(1\text{ minute})$ 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 <i>L_{Aeq}(15 minute)</i>	Evening <i>L_{Aeq}(15 minute)</i>	Night <i>L_{Aeq}(15 minute)</i>	Night <i>L_{A1}(1 minute)</i>
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.

<i>Day</i> <i>L_{Aeq}(1 hour)</i>	<i>Evening</i> <i>L_{Aeq}(1 hour)</i>	<i>Night</i> <i>L_{Aeq}(1 hour)</i>	<i>Location</i>
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 $L1_{(1 \text{ min})}$ 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 $L1_{(1 \text{ min})}$ 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 $L1_{(1 \text{ min})}$ 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)_{L_{Aeq}(15 min)} day, evening and night criterion or the $L1_{(1 \text{ min})}$ 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), $L_{eq(1\text{ hour})}$ at residence 1 and 38.8 dB(A), $L_{eq(1\text{ hour})}$ at residence 2. Both measurements are below the daytime criterion of 60 dB(A) $L_{eq(1\text{ hour})}$.
- 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), $L_{eq(1\text{ hour})}$. This is below the daytime criterion of 60 dB(A) $L_{eq(1\text{ hour})}$.

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), $L_{eq(1\text{ hour})}$ at residence 1 and 45 dB(A), $L_{eq(1\text{ hour})}$ at residence 2, which is below the 60 dB(A) $L_{eq(1\text{ hour})}$ 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), $L_{eq(1\text{ hour})}$. This is below the daytime criterion of 60 dB(A) $L_{eq(1\text{ hour})}$.

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).

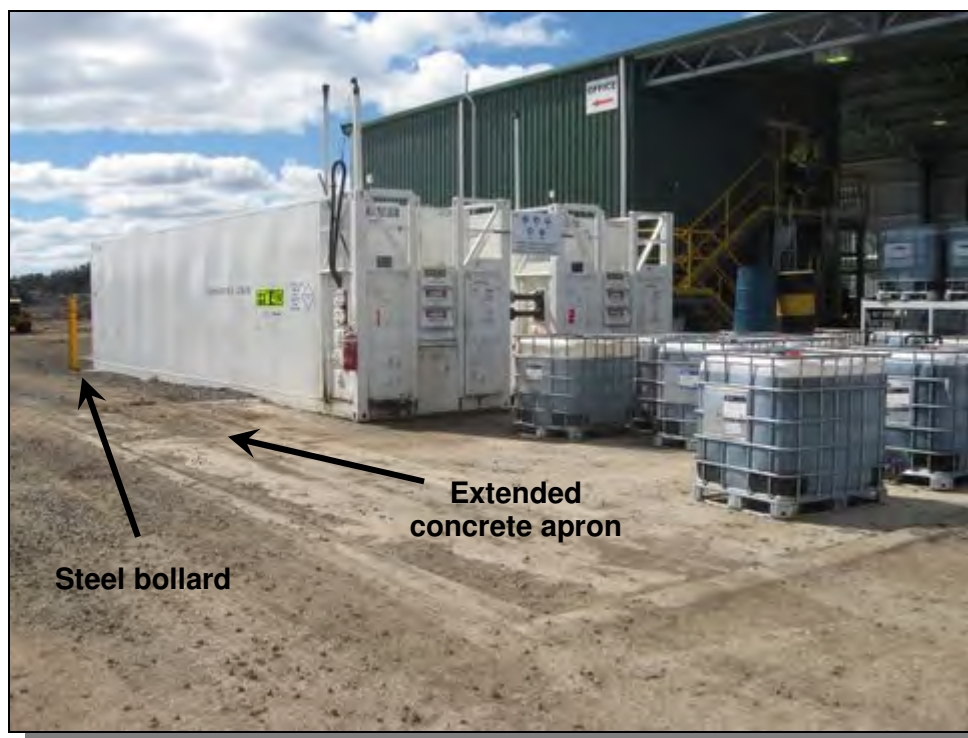


Plate 3 - Extended Concrete Apron at Refuelling Bay

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 CO₂ and non CO₂ gases are as follows.

Table 10 - GHG Emissions - Diesel Fuel

	Diesel Fuel Usage kL	Emission Factor T CO ₂ -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 CO₂.

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 CO₂ were emitted during the reporting period.

Summary

A summary of calculated total CO₂ equivalent tonnes/year for the reporting period is provided in Table 11.

Table 11 - GHG Emissions Summary

Source	Calculated Total CO₂ 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.

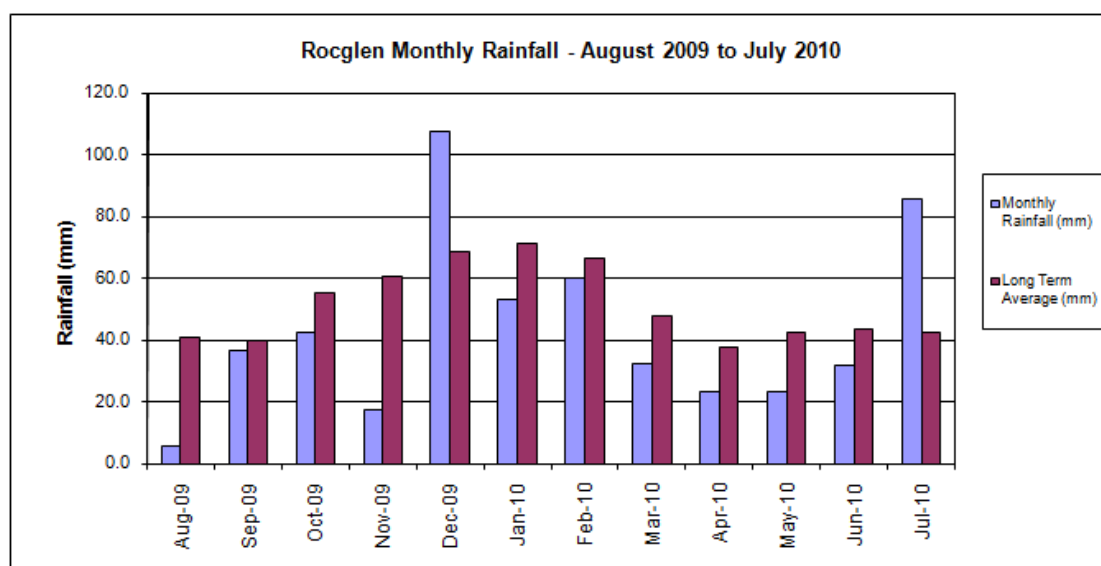


Figure 7 – Monthly Rainfall Data

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 than 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 11 th 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 Billynudge 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 12 th 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.

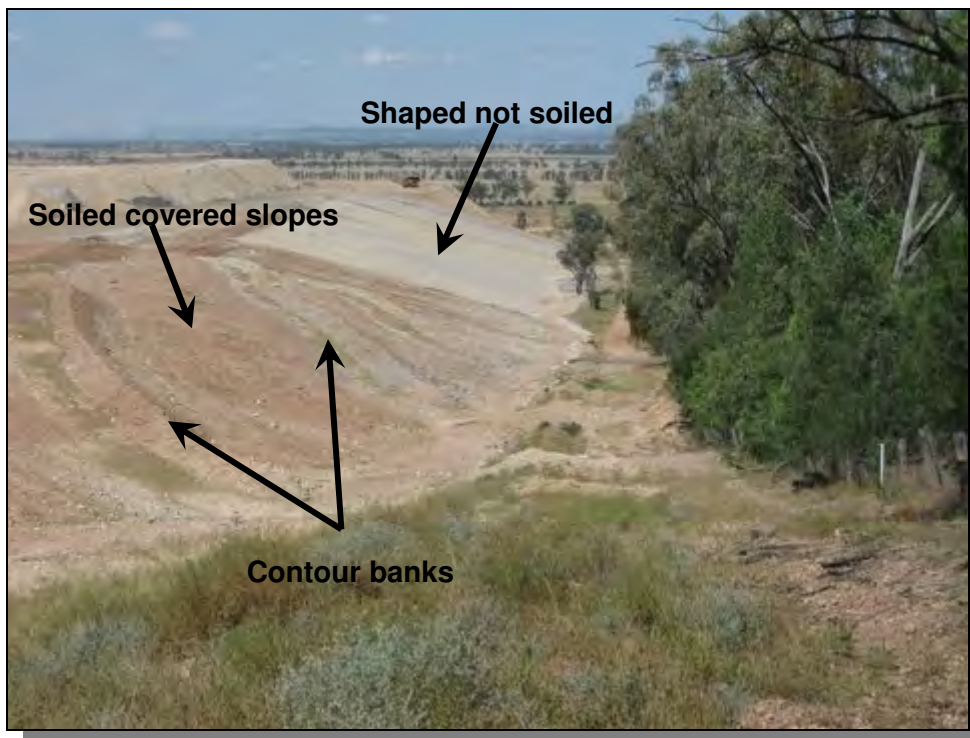


Plate 4 - Shaped Waste Emplacement and Contour Banks

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
C REHABILITATION PROGRESS			
C1 Total Rehabilitated area* (except for maintenance)	0	0	0
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

F1

F2

* 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.