MT ARTHUR COAL
ANNUAL ENVIRONMENTAL MANAGEMENT REPORT FY13

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Mining Operations Plan Commencement Date	1 July 2011
Mining Operations Plan Completion Date	31 December 2013
AEMR Commencement Date	1 July 2012
AEMR Completion Date	30 June 2013
Name of Leaseholder	Hunter Valley Energy Coal Pty Ltd
Reporting Officer Name	Sarah Withell
Reporting Officer Title	Head of Health, Safety and Environment
Reporting Officer Signature	
Date	24 September 2013

1 Introduction

Mt Arthur Coal is an open cut coal mine located approximately 5 kilometres south west of Muswellbrook in the Upper Hunter Valley in New South Wales (NSW). Owned entirely by BHP Billiton, Mt Arthur Coal comprises both mature and new operations that are operated 24-hours, seven days a week, excluding Christmas Day and Boxing Day.

This Annual Environmental Management Report (AEMR) details Mt Arthur Coal's environmental and community performance for the period from 1 July 2012 to 30 June 2013. This report addresses mining and related operations for the Mt Arthur Coal complex, which includes the Mt Arthur Coal Open Cut Consolidation Project and the Mt Arthur Coal Underground Project. No underground operations are currently taking place. The open cut operational area is shown in Figure 1.

This AEMR is a statutory approval requirement and has been prepared in accordance with the NSW Department of Trade and Investment - Division of Resources and Energy (DRE) *EDG03 Guidelines to the Mining, Rehabilitation and Environmental Management Process* (2012) and with the Mt Arthur Coal Mine Open Cut Consolidation Project Approval (09_0062), referred to hereafter as the consolidation project approval. Table 1 provides a summary of the AEMR requirements.

This report was prepared in consultation with the DRE, NSW Department of Planning and Infrastructure (DP&I), Muswellbrook Shire Council (MSC), NSW Environment Protection Authority (EPA) and NSW Office of Water, and includes all additional reporting requirements requested.

The AEMR is distributed to a range of stakeholders that include government authorities, non-government organisations (NGOs), the Community Consultative Committee (CCC), libraries, local residents, other mines and BHP Billiton employees. The report is also available on the BHP Billiton website at www.bhpbilliton.com.

Table 1: AEMR requirements

Reference	Condition	AEMR section
EDG03 Guidelines	a) The current status of approvals leases and licences. b) A list of mine contacts. c) Actions arising from the previous AEMR review. d) Environmental risk management and control strategies.	Section 1
EDG03 Guidelines	For the previous 12 month period: a) Mining, mine development, and rehabilitation in relation to the Mining Operations Plan; b) Environmental performance in relation to the collective conditions of approvals, leases and licences; and c) Community relations and liaison.	a) Section 2 and 5 b) Section 3 and 1.1 c) Section 4.2
EDG03 Guidelines	It also looks to the next 12 months by: a) Proposing improvements in environmental performance and management systems; and b) Specifying environmental and rehabilitation targets to be achieved.	a) Section 3 b) Section 6

Reference	Condition	AEMR section
Condition 8 of Schedule 3 of the consolidation project approval	The Proponent shall: a) Implement best noise management practice, which includes implementing all reasonable and feasible noise mitigation measures; b) Ensure that the real-time noise monitoring and meteorological forecasting data are assessed regularly, and that mining operations are relocated, modified and/or suspended to ensure compliance with the relevant conditions of this approval; and c) Regularly investigate ways to reduce the operational, low frequency, rail and road traffic noise generated by the project, and report on these investigations in the Annual Review (see Condition 3 of Schedule 5), to the satisfaction of the Director-General.	Section 3.9
Condition 53 of Schedule 3 of the consolidation project approval	The Proponent shall: a) Minimise and monitor the waste generated by the project; b) Ensure that the waste generated by the project is appropriately stored, handled and disposed of; c) Manage on-site sewage treatment and disposal in accordance with the requirements of Council; and d) Report on waste management and minimisation in the Annual Review, to the satisfaction of the Director-General.	Section 3.16
Condition 3 of Schedule 5 of the consolidation project approval	By the end of 2010, and annually thereafter, the Proponent shall review the environmental performance of the project to the satisfaction of the Director-General. This review must: a) Describe the works that were carried out in the past year, and the works that are proposed to be carried out over the next year; b) Include a comprehensive review of the monitoring results and complaints records of the project over the past year, which includes a comparison of these results against the • Relevant statutory requirements, limits or performance measures/criteria; • Monitoring results of previous years; and • Relevant predictions in the Environment Assessment; c) Identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance; d) Identify any trends in the monitoring data over the life of the project; e) Identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and f) Describe what measures will be implemented over the next year to improve the environmental performance of the project.	Section 3
Commitment 11 of Appendix 3 of the consolidation project approval	Water at Mt Arthur Coal will continue to be managed in accordance with best practice and the reduce, reuse, recycle principles. Development of modern tailings storage facilities and possible modifications to coal preparation processes to reduce water usage on site will continue to be developed and assessed, and water use and reduction initiatives will be reported annually in the Annual Review.	Section 2.8
Commitment 27 of Appendix 3 of the consolidation project approval	Mt Arthur Coal will monitor the proportion of its additional employees ('new employees') needed for the Consolidation Project that are recruited from outside the local area (defined as Muswellbrook, Upper Hunter and Singleton Local Government Areas) and will report on this in its Annual Reviews for the Project. If the proportion of employees recruited from outside the local area excessively differs from the 20 per cent level forecast in the EA, that is 30 per cent or above in-migrant new employees in any one calendar year, Mt Arthur Coal will review its recruitment program to encourage greater local recruitment and will publish in its next Annual Review the measures it proposes to adopt to achieve this, including the timeframe for their implementation and how their effectiveness would be monitored.	Section 2.11

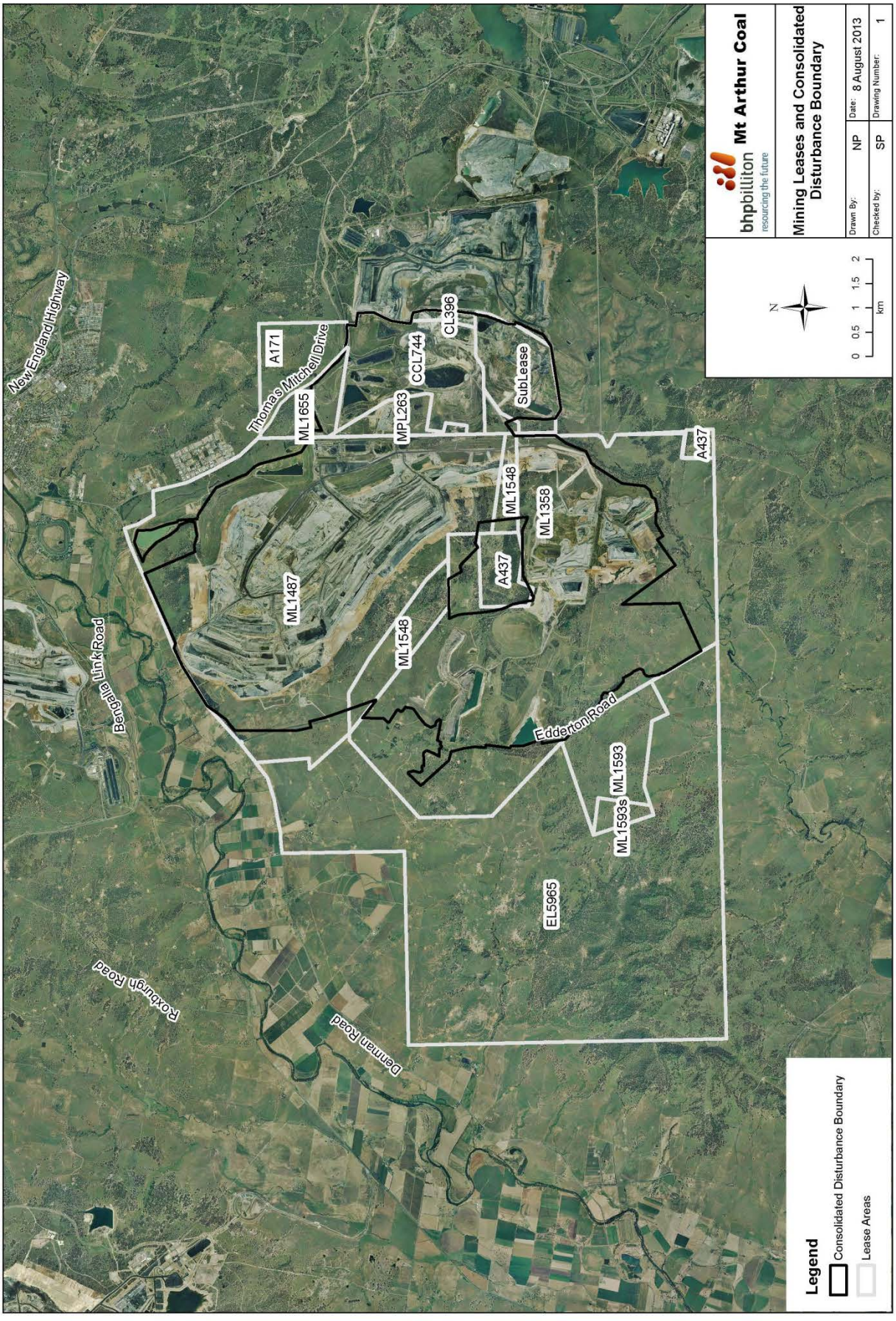


Figure 1: Location of the Mt Arthur Coal disturbance boundary

1.1 Consents, Leases and Licences

Mt Arthur Coal has a large number of statutory approvals that regulate activities on site. Each of these approvals has conditions that are derived from a range of aspects, including the nature and size of the operation, the diversity and sensitivities of local land use and the environment, the existing cumulative level of impact from mining and other industries, the close proximity to large residential areas and the comprehensive regulatory approvals process in NSW. Details on Mt Arthur Coal's existing statutory approvals as at 30 June 2013 are provided in Table 2.

1.1.1 Project Approvals

The granting of the consolidation project approval in 2010 enabled improved compliance management and streamlined internal and external auditing with a focus on practical improvement initiatives. The surrender of the Bayswater No. 3 development consent (210/93) was accepted by the DP&I on 20 May 2013, ultimately resulting in two current approvals for the complex: one for open cut and surface facilities, and one for the underground project.

The Mt Arthur Coal Open Cut Modification Project Environmental Assessment was completed and lodged with the DP&I on 28 February 2013. The assessment has been prepared to support a request to modify the consolidation project approval under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The modification project includes the continuation of open cut mining operations at Mt Arthur Coal for an additional four years. Approval for the modification project is anticipated during the next reporting period.

1.1.2 Mining Leases

Mt Arthur Coal currently holds 11 mining and exploration leases and licences as listed in Table 2 and shown on Figure 1, as well as two additional subleases, Drayton subleases CL 395 and CL 229. Mt Arthur Coal is currently investigating opportunities to consolidate all mining leases into a single mining lease, with the exception of the Drayton subleases CL 395 and CL 229.

Applications for the renewal of mining purpose lease (MPL) 263 and exploration licence authorisation (ELA) 171 were submitted to the DRE in 2010. The MPL 263 draft conditions were received in October 2011 and the renewal is expected to be received during the next reporting period. Draft conditions for ELA 171 were received in January 2013, however, the application is still pending. An application for the renewal of exploration licence 5965 was submitted in June 2012 and draft conditions were received in February 2013. This application is also pending.

1.1.3 Environment Protection Licence

Mt Arthur Coal applied for a licence variation to environment protection licence (EPL) 11457 on 13 August 2012 to ensure consistency with the operation's current development consent (09_0062). The notice of variation of licence was issued by the EPA on 21 March 2013.

1.1.4 Environment Protection and Biodiversity Conservation Act Approvals

The *Environment Protection and Biodiversity Conservation* (EPBC) *Act 1999* is federal legislation administered by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) that protects nationally significant flora, fauna and ecological communities.

On 30 April 2012, Mt Arthur Coal was granted approval EPBC 2011/5866 with conditions from SEWPAC to undertake the development of five new open cut extension areas, as a controlled action, within the designated areas. The controlled action commenced on 21 May 2012, with approximately 1 hectare of vegetation cleared for the construction of a dual substation facility. Mt Arthur Coal is preparing an Annual

EPBC Compliance Report covering the period 21 May 2012 to 21 May 2013 to be published on the BHP Billiton website.

Table 2: Mt Arthur Coal's existing statutory approvals as at 30 June 2013

Description	Issue date	Expiry date
Development consents or project approvals issued by the DP&I		
Mt Arthur Coal Mine Open Cut Consolidation Project	24/09/10	30/06/2022
Mt Arthur Coal Mine Underground Project	2/12/08	31/12/2030 (01/10/2016 if not physically commenced)
Mining leases and exploration licences issued by the DRE		
CCL 744	03/07/1989	21/01/2028
CL 396	03/05/2003	03/02/2024
ML 1358	21/09/1994	21/09/2015
ML 1487	13/06/2001	12/06/2022
ML 1548	31/05/2004	31/05/2025
ML 1593	30/04/2007	29/04/2028
ML 1655	03/03/2011	03/03/2032
MPL 263	17/10/1990	**
ELA 171	18/10/1979	**
ELA 437	04/03/1991	04/03/2015
EL 5965	15/07/2002	**
EPL issued by the EPA		
EPL 11457	9/10/01 (last updated on 21/03/13)	Not specified
EPBC approval issued by the SEWPAC		
EPBC 2011/5866	30/4/12	30/06/2022

** Application for renewal submitted to DRE, draft conditions have been received and renewal is pending.

1.1.5 Mining Operations Plan

Mt Arthur Coal has an approved mining operations plan (MOP) in place that covers a two year period from 1 July 2011 to 30 June 2013. On 18 December 2012, Mt Arthur Coal requested a six month extension to the current MOP period, from 30 June 2013 to 31 December 2013, to better align with changes proposed under the modification project. This extension was accepted by the DRE on 4 January 2013. No amendments were made to the MOP during the reporting period.

1.2 Mine Contacts

During the reporting period there were a number of important changes to the organisational structure at Mt Arthur Coal. The former general manager of Mt Arthur Coal, Michael White, was appointed General Manager, Open Cut Operations, which is responsible for all mining, planning, earth moving and equipment maintenance processes up to and including delivery of coal to the run-of-mine facility. Mark van den Heuvel was appointed General Manager, Mt Arthur Coal Handling and Processing Plant (CHPP) and Infrastructure, which is responsible for all coal processing, marketing interface and transportation of coal to the domestic and export markets, including maintenance for the CHPP and all fixed and non-process infrastructure. These changes took effect on 15 April 2013.

During the reporting period Mt Arthur Coal's Health, Safety and Environment Manager Wayne McMillan, resigned and this role is currently being recruited. Contact details for Mt Arthur Coal's general managers and health, safety and environment team can be found in Table 3.

Table 3: Mt Arthur Coal management contact details

Name and role	Phone contact details
Michael White, General Manager, Mt Arthur Coal Open Cut Operations	(02) 6544 5800
Mark van den Heuvel, General Manager, Mt Arthur Coal CHPP and Infrastructure	(02) 6544 5800
Vacant, Health, Safety and Environment Manager - Execution	(02) 6544 5800
Rebecca Harcus, Acting Superintendent Environment - Execution	(02) 6544 5800

1.3 Actions Required at Previous AEMR Review

A review of compliance against legal requirements is required on an annual basis during the preparation of the AEMR. During the reporting period, Mt Arthur Coal achieved a high level of compliance against approval conditions and legislation applicable to the operation. Mt Arthur Coal maintains regular communication with government agencies to ensure that improved levels of effective assessment and reporting continue.

The DRE conducted a review of the 2012 Interim AEMR, including attending a site meeting at Mt Arthur Coal on 5 November 2012. DRE noted that the cumulative total of completed rehabilitation reported in the 2012 Interim AEMR showed a reduction of 20 hectares from the previous reporting period. While the DRE acknowledged the ongoing rehabilitation works being undertaken, it was noted that there is an expectation that the total rehabilitated area within the site will increase.

The DP&I also considered that the 2012 Interim AEMR generally satisfied the requirements for Annual Reviews in Condition 3, Schedule 5 of the consolidation project approval. No further actions were required.

1.4 Mt Arthur Coal Environmental Management System

Mt Arthur Coal has implemented a comprehensive environmental management system (EMS) that provides a framework to manage compliance with relevant legislation and statutory approvals and conforms to organisational objectives and community expectations.

Mt Arthur Coal's EMS is consistent with the international standard 14001:2004 and is based on a 'plan, do, check and act' cycle that encourages continual improvements in performance. It uses a suite of procedures for key activities that have the potential to generate environmental and social impacts. These procedures are continually reviewed, communicated to employees and audited for compliance.

An annual surveillance audit was not undertaken during the reporting period as ISO14001 certification was not renewed in April 2013. Although no longer certified, Mt Arthur Coal will continue to implement and maintain its EMS, generally in accordance with ISO14001 requirements.

1.5 Legal Compliance and Other Requirements Review

Mt Arthur Coal has a system to identify, manage, assess and report legal compliance against requirements. This system includes EMS procedures, checklists, inspections and audits. Legal compliance is monitored on a continual basis from analysis of monitoring and other data, maintenance of

compliance checklists and a system of regular audits and inspections. As part of this system, areas of non-compliance are promptly identified and actioned.

Inspections may also be conducted on an ad-hoc basis by government authorities to assess, among other matters, performance against legal and other requirements. In particular, scheduled and non-scheduled inspections of Mt Arthur Coal's operations have been undertaken by government regulators throughout the reporting period.

Consistent with EMS procedures, any changes to legal requirements such as new approvals or changes to legislation are monitored. These changes may be identified from research, industry contact and correspondence from NGOs, government notifications, subscriptions, media articles and legal advice. Mt Arthur Coal's EMS framework and procedural and training documentation is also reviewed on an ongoing basis and is updated as required to reflect changes in legal requirements. During the reporting period, required changes were made to the EMS documentation to ensure consistency with the changing legislative and approval requirements.

1.5.1 Independent Environmental Audit

The Mt Arthur Coal Independent Environmental Audit 2012 report was accepted by the DP&I in December 2012 as generally satisfying the requirements of Condition 9 of Schedule 5 of the consolidation project approval. The DP&I endorsed the recommendations made by the independent environmental auditor and Mt Arthur Coals' proposed action in relation to those recommendations. As requested by DP&I, the recommendations and an update on their implementation have been documented in Table 1A in Appendix 1.

1.5.2 Website Audit

In preparation for the FY13 AEMR, a website audit for compliance against Condition 11 of Schedule 5 of the consolidation project approval was undertaken and results are provided in Table 4. Mt Arthur Coal achieved a high level of compliance against approval conditions.

Table 4: Results of the Mt Arthur Coal website audit

Consolidation project approval reference	Website requirement	Compliant	Comments
Condition 11 of Schedule 5	A copy of all current statutory approvals for the project	Yes	A copy of the Mt Arthur Coal Mine Open Cut Consolidation Project Approval 09_0062 and the Mt Arthur Underground Project Approval 06_0091 are available. A copy of Mt Arthur Coal's EPBC 2011/5866 and variation are also available.
Condition 11 of Schedule 5	A copy of the current environmental management strategy and associated plans and programs	Yes	All management plans and strategies required by the consolidation project approval that are approved by DP&I are available. Pollution reduction programs (PRP) that have been approved under the operation's EPL are also available.
Conditions 8 and 11 of Schedule 5	A summary of the monitoring results of the project, which have been reported in accordance with the various plans and programs approved under the conditions of this approval	Yes	Mt Arthur Coal environmental monitoring data since April 2012 is available in a format specific to the EPL. Monitoring results since September 2010 are also available through the documents titled 'CCC Meeting - Monitoring Results' on a bimonthly basis.
Schedule 5, Condition 11	A complaints register, which is to be updated on a monthly basis	Yes	Monthly reports of community complaints since November 2010 are available.

Consolidation project approval reference	Website requirement	Compliant	Comments
Condition 11 of Schedule 5	A copy of the minutes of CCC meetings	Yes	Mt Arthur Coal CCC meeting minutes, agenda and monitoring results presented in the CCC reports since September 2010 are available.
Condition 11 of Schedule 5	A copy of any Annual Reviews (over the last five years)	Yes	Annual Environmental Management Reports since 2008 are available.
Condition 11 of Schedule 5	A copy of any Independent Environmental Audit, and the Proponent's response to the recommendations in any audit	Yes	The Mt Arthur Coal Independent Environmental Audit 2012 and Mt Arthur Coal's Response to Independent Environmental Audit Recommendations 2012 is available.
Condition 11 of Schedule 5	Any other matter required by the Director-General	N/A	N/A
Condition 16 (c) of Schedule 3	A suitable system to enable the general public and surrounding landowners and tenants to get up-to-date information on the proposed blasting schedule on site	Yes	The current week's blast schedule and the preceding week's actual record of blasts are published on the website every week.
Condition 46 of Schedule 3	The amount of coal transported from the site in each calendar year and the number of coal haulage train movements generated by Mt Arthur Coal mine (on a daily basis)	Yes	The Mt Arthur Coal Annual Coal Transport Report 2012 is available.

2 Operations During the Reporting Period

2.1 Exploration

Exploration activities are conducted in accordance with Mt Arthur Coal's EMS, exploration procedure and regulatory approval conditions. During the reporting period, Mt Arthur Coal conducted exploration drilling activities in mining leases 1358 and 1487 to further define coal seam geology and geotechnical parameters of the resource, as well as gas composition testing for fugitive emissions reporting. During the reporting period, 28 boreholes were drilled totalling 10,192 metres. Environmental assessments were conducted for each drill site prior to drilling to minimise impacts.

The rehabilitation and sealing of completed boreholes was completed, with rehabilitated sites monitored in accordance with Mt Arthur Coal's procedures. Boreholes that are yet to be grouted or that require additional testing have been secured with borehole caps.

During the reporting period there were no material variations from the MOP related to exploration activities.

2.2 Land Preparation

Clearing of vegetation is undertaken in accordance with Mt Arthur Coal's biodiversity and rehabilitation management plan (BRMP) and the land management procedure. Prior to clearing vegetation and felling trees, pre-clearance surveys were undertaken to identify potential habitat features and determine the presence of fauna. Consistent with EMS procedures, felling of habitat trees is delayed for a minimum of 24 hours to encourage the natural movement of fauna from these areas to surrounding undisturbed vegetation. Felling is also conducted outside of breeding seasons where possible.

Identified habitat trees are felled in a controlled manner (soft-felled) to minimise the likelihood of injury or death to fauna that could possibly be inhabiting trees. Any fauna found is inspected and relocated as required by Mt Arthur Coal or local wildlife carers.

During the reporting period, 36,282 bank cubic meters of topsoil was stripped ahead of advancing mining areas. Topsoil was recovered using excavators, dozers and trucks or scrapers, and either placed directly onto reshaped areas or stockpiled. Soil quality varies across site, but generally soils were of duplex texture profile, weakly structured and low in nutrients and organic material. Shallow gravelly soils were also prevalent on hill crests and steeper ridges. Between zero to 300 millimetres of topsoil was recovered during stripping. Once established, topsoil stockpiles were trimmed, planted with a pasture-based vegetative cover and recorded in the mine planning database.

During the reporting period there were no material variations from the MOP related to land preparation activities.

2.3 Construction

In line with the growth of the operation, construction of both mining and infrastructure to support the open cut development continued during the reporting period. Work was completed to increase the industrial area dam capacity to cater for increased water storage capacity. Work was also undertaken to construct a new heavy vehicle wash bay and minor infrastructure, including water reticulation pipelines, and erect new perimeter fencing.

The construction of a flood levy and low permeability barrier along the area of connection of mining at Mt Arthur Coal and the Hunter River alluvium commenced in late June 2013, and is scheduled for

completion during the next reporting period. The construction will run approximately 1,350 metres along the southern side of Denman Road on the Mt Arthur Coal mining lease, to the east of the Edderton Road intersection. The flood levy will be 3 to 5 metres high and the low permeability barrier will be 10 to 15 metres below the existing ground level.

During the reporting period there were no material variations from the MOP related to construction works on site.

2.4 Mining

Mining occurs in distinct stages that are described below and illustrated in Figure 2. Holes are drilled into overburden and safely loaded with explosives. The overburden is then blasted to fracture the rock and enable more efficient removal of this material. Many controls are applied during blast design, drilling and firing to reduce the potential for impacts on the environment, buildings, power lines and the community.

Hydraulic excavators and electric rope shovels remove and load blasted overburden into large haul trucks of nominal 350-tonne and 206-tonne capacities. These trucks transport the material to emplacement, or dump, areas generally within the mine void.

After removing the overburden above the coal seams, the coal is mined using hydraulic excavators and loaders with the assistance of dozers. Haul trucks of nominal 157-tonne capacity then transport the coal to Mt Arthur Coal's CHPP for processing.

During the reporting period, coal was mined from the Bengalla, Bayswater, Broonie, Clanricard, Edinglassie, Edderton, Glen Munro, Mt Arthur, Piercefield, Ramrod Creek, Transition, Unnamed, Vaux, Woodlands Hill, Wynn and Warkworth coal seams. Approximately 22.7 million tonnes of run-of-mine coal was mined from the combined open cut operations, which is in line with the 23 million tonnes that was planned for FY13 in the MOP. This is also in accordance with the 32 million tonnes of maximum extraction allowed from the open cut mining operations in the consolidation project approval. Table 5 provides a summary of Mt Arthur Coal's mine performance figures for FY13.

During the reporting period there were no material variations from the MOP related to mining activities.

Table 5: Mine performance figures for FY13

Category	Unit	This reporting period (July 2012 to June 2013)	Estimated for next reporting period (July 2013 to June 2014)
Topsoil stripped	bcm	36,282	240,000
Topsoil used/spread	bcm	282,258	180,000
Overburden	bcm	107,276,942	113,133,479
Run-of-mine coal mined	tonnes	22,721,393	24,402,594
Product (saleable) coal	tonnes	18,010,705	19,017,657
Washery reject	tonnes	4,987,616	5,388,201

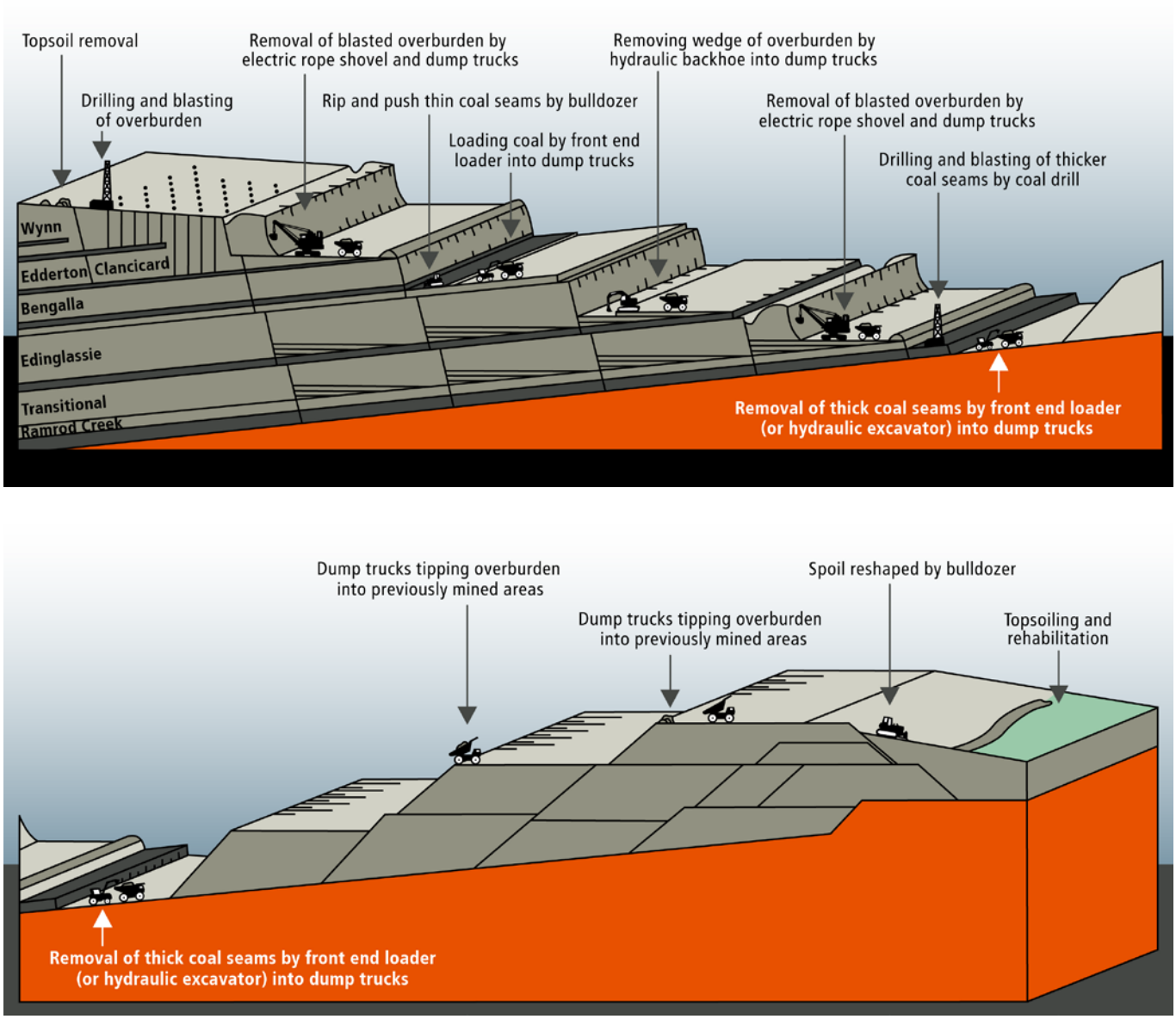


Figure 2: Mining sequence from topsoil removal to rehabilitation

2.5 Mineral Processing

After crushing to size and processing to remove impurities, coal is stockpiled prior to transport from site. During the reporting period approximately 18 million tonnes of total saleable product was produced by Mt Arthur Coal, which is generally in line with the 16.1 million tonnes that was planned for FY13 in the MOP.

Approximately 17.4 million tonnes of export product coal was transported by rail to the Port of Newcastle and approximately 1.2 million tonnes by conveyor to the Bayswater Power Station. Consistent with the consolidation project approval, no product coal was transported from site by public road and all train movements were recorded.

During the reporting period there were no material variations from the MOP related to coal processing activities.

2.6 Overburden Management

As previously mentioned, overburden is transported to emplacement areas generally within the mine void, performing a secondary function of reforming all previously mined areas. Suitable overburden material with generally inert qualities and low propensity to spontaneous combustion and acid water generation is used in the emplacement and shaping for final rehabilitation.

During the reporting period 107.3 million bank cubic meters of overburden was stripped, which is in line with the 107.1 million bank cubic meters that was planned for FY13 in the MOP.

During the reporting period there were no material variations from the MOP related to overburden management activities.

2.7 Coal Stockpiles

Run-of-mine coal extracted by the approved open cut operations is delivered by truck to either the hopper bins that feed into the CHPP or to the raw coal stockpiles. At the end of the reporting period the run-of-mine stockpile inventory was 169,677 tonnes.

During the reporting period there were no material variations from the MOP related to coal stockpiling activities.

2.8 Water Management

Mt Arthur Coal's water management system includes monitoring surface and ground water sites according to an approved monitoring program. Surface water monitoring sites include creeks, mostly ephemeral, and dams that surround the mining area, while ground waters are representative of the aquifers found below the natural surface.

In addition to water quality monitoring, Mt Arthur Coal also regularly monitors the water balance for the operation to assist forecasting and modelling for different climatic and site scenarios. A series of flow meters and surveyed volumes are utilised to monitor the use and transfer of water between key water storages. All flow meters were calibrated during the reporting period and water storages were surveyed on a weekly and monthly basis to ensure the accuracy of water volume data. A schematic overview of the site's water management system can be found in Appendix 2.

Mt Arthur Coal uses a forecasting quantitative water model to predict the mine water balance in advance of the mining operation and provide a snapshot of available water at a given point in time based on a number of variables. Model predictions are then used to assist in operational planning and determination of future water quantity requirements.

During the reporting period the site quantitative water model used for monthly reporting was reconfigured to align with the Minerals Council of Australia Water Accounting Framework. An overview of key inputs and outputs for Mt Arthur Coal's water balance for the reporting period is provided in Table 6. A breakdown of Mt Arthur Coal's water usage for tasks within the system is also provided in Figure 3.

In line with predictions in the Mt Arthur Coal Consolidation Project Environmental Assessment prepared in November 2009, referred to hereafter as the consolidation environment assessment, the majority of the operation's water supply during the reporting period was sourced from catchment runoff, as shown in Table 6. The second largest water input to site was pumping from the Hunter River drawn in the form of water access licences. Water sourced from the Hunter River increased in comparison to previous years, predominantly due to decreased rainfall and localised catchment runoff. Mt Arthur Coal continued to source water from the MSC treated effluent scheme to reduce the demand from other external sources.

Based on water inputs and outputs for the reporting period the site water balance was positive 2,552 ML. Table 7 provides a surface water inventory for the reporting period.

Mt Arthur Coal did not discharge any water to the Hunter River from its licensed discharge point under the Hunter River Salinity Trading Scheme (HRSTS) during the reporting period, in contrast with the 2011 and 2012 Interim AEMR reporting periods. This was predominately due to significantly warmer, drier weather conditions experienced during this reporting period.

During the reporting period Mt Arthur Coal used approximately 7,166 megalitres (ML) of water for coal handling and processing, dust suppression, potable consumption and use in the industrial area. Similar to results in recent years, the CHPP was the main consumer of water at Mt Arthur Coal as shown in Figure 3. Water consumption at the CHPP increased very slightly in comparison to the previous reporting period as a result of an increase in amount of run-of-mine coal being washed. Water consumption at the CHPP is expected to stabilise during the next reporting period as large scale operational expansions have been put on hold due to the current economic climate.

During the reporting period Mt Arthur Coal implemented a number of initiatives relating to site water management including:

- continuing to upgrade the integrated reticulation network to enable efficient management of water resources across the site;
- initiating a Site Water Management Committee focused on water security and water efficiency across the mine site;
- implementing a tailing decant water project that commenced in October 2012 to increase water reuse at the site and effectively reduce the need to pump water from the Hunter River;
- continuing to investigate water saving opportunities; and
- reviewing available water storage options and supply rates for use at site.

During the reporting period there were no material variations from the MOP related to water management activities.

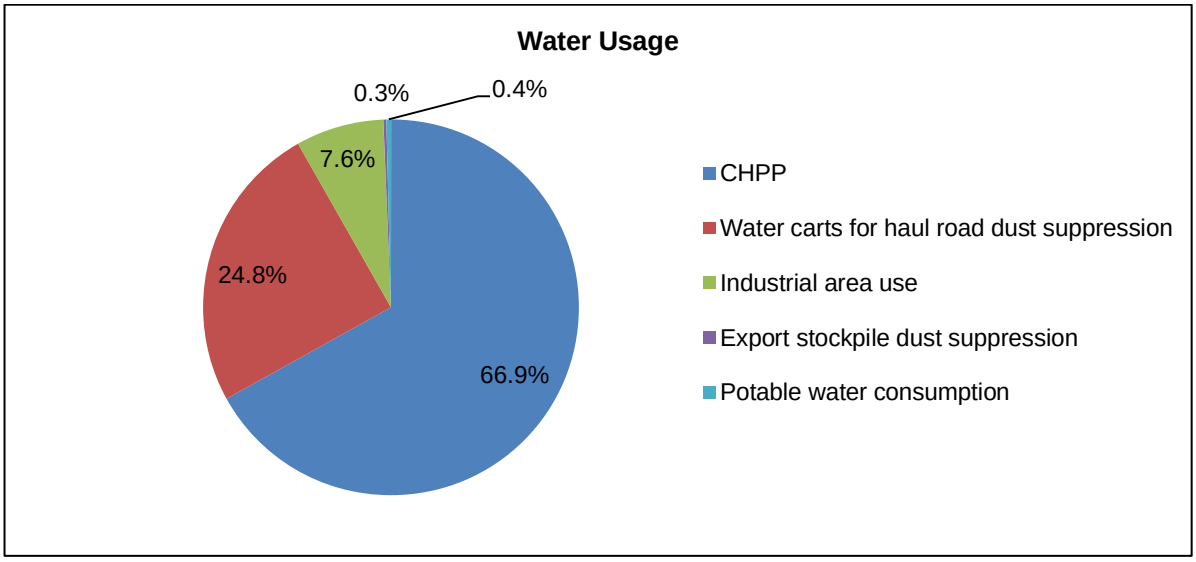


Figure 3: Composition of Mt Arthur Coal water usage for FY13

Table 6: Mt Arthur Coal's site water balance for the reporting period

Input-output	Element	Sub-element	Volume of water in quality category			Sub-element total ML
			One ML	Two ML	Three ML	
Inputs	Surface water	Precipitation and runoff^	559	3,926	0	4,485
		Rivers and creeks (pumped from Hunter River)	2,790	0	0	2,790
	Groundwater	Aquifer interception (inflow to the open cut areas)	0	501	0	501
		Ore entrainment	0	1,793	0	1,793
	Third party water	Contract/municipal (potable water)	28	0	0	28
		Waste water (treated effluent from Council)	0	0	662	662
	Total inputs		3,378	6,220	662	10,259
Outputs	Surface water	Discharge (to Hunter River under HRSTS)	0	0	0	0
	Other	Evaporation	3,476	0	0	3,476
		Entrainment	0	0	2,978	2,978
		Other (define)*	0	54	1,199	1,253
	Total outputs		3,476	54	4,176	7,707

^ Precipitation is assumed to be water quality category 1, while runoff is assumed to be water quality category 2.
* Includes losses from Underground and Industrial Area as well as seepage from tailings storage to Drayton Void.

Table 7: Mt Arthur Coal surface water inventory

Mine water storage	Volume held at the start of the reporting period ML	Volume held at the end of the reporting period ML	Full storage capacity ML
Environmental dam	464	687	1,296
Main dam	619	572	1,075
CHPP dirty water dam	227	287	500
Drayton void	1,996*	1,883	2,276
Belmont void	1,256	1,256	2,281
McDonalds void	3,089	2,625	4,040

* 1,000 ML of existing water stored to be kept in reserve for Drayton Coal Mine.

2.9 Hazardous Material Management

Mt Arthur Coal has an existing hazardous materials management procedure to ensure all risks associated with the use of hazardous materials are managed in accordance with occupational, health and safety procedures, relevant standards and legislation.

All hazardous substances and dangerous goods stored and used at Mt Arthur Coal are maintained in a register (ChemAlert) with their associated material safety data sheets. To maintain the integrity of the hazardous materials management system, all work areas are inspected by supervisors on an ongoing basis as part of their general area inspections and safety observations. Handling, transportation and disposal of hazardous materials are undertaken in accordance with relevant standards and approvals.

During the reporting period there were no material variations from the MOP related to hazardous materials management activities.

2.10 Other Infrastructure Management

In February 2012, Mt Arthur Coal received approval from the DRE for the expansion of the existing tailings storage facility for the continued emplacement of coal fines (tailings). The project involves the construction of two cross valley embankments and a series of rim embankments constructed from mine spoil. The initial stages of work commenced in late June 2012 and continued throughout the reporting period. This project is expected to be completed during the next reporting period.

During the reporting period an evaluation of the old Bayswater Main Dam was completed. This included a review of the area's potential future use and an assessment of the risk of offsite water discharge and damage to infrastructure in the unlikely event of a dam failure. On the basis of this review it was decided to decommission the dam. Removing the main dam as the focal point of Mt Arthur Coal's site water network involves re-routing the water supply and changing the water transfer system and storages used. This project will continue during the next reporting period and aims to provide a flexible water network system that can transfer between most site storages for maximum practical capacity and water security.

During the reporting period there were no material variations from the MOP related to infrastructure management activities.

2.11 Employment Details

Mt Arthur Coal monitors the residential location of existing employees to compare against predictions made in the consolidation environmental assessment. As shown in Figure 4, approximately 78 per cent of Mt Arthur Coal's employees reside in the local government areas (LGAs) of Muswellbrook, Upper Hunter and Singleton, as at 30 June 2013. This is consistent with predictions in the consolidation environmental assessment.

As at 30 June 2013 Mt Arthur Coal employed 1,636 permanent and fixed-term contract employees and approximately 606 contractors on a full-time equivalent basis. This was a 7.5 per cent increase in the number of permanent and fixed-term employees (see Figure 5) and a 2.3 per cent reduction in the number of contractors when compared to 30 June 2012. Growth at Mt Arthur Coal slowed down during the reporting period, due to the current economic climate in the industry. However, production continued to increase as planned.

During the reporting period approximately 49 per cent of Mt Arthur Coal's new employees were recruited from the local area, defined as the Muswellbrook, Upper Hunter and Singleton LGAs. Whilst this is lower than the local recruitment figure forecast in the consolidation environmental assessment, the decrease in local recruitment is primarily due to the current economic climate in the industry and the resulting difficult market circumstances that have impacted on the resourcing of candidates. During the reporting period there was a decrease in the number of operational roles advertised, with functional roles filled from within BHP Billiton wherever possible.

Local residency is one of the factors considered when recruiting new employees and contractors. This approach ensures that local communities benefit from Mt Arthur Coal's operations. Recruitment opportunities were provided to local residents during the reporting period and will continue to be provided during the next reporting period. In an attempt to encourage greater local recruitment, Mt Arthur Coal is reviewing its recruitment program, improving the monitoring of candidates location of residence and advertising Mt Arthur Coal's location as Hunter Valley in all recruitment advertisements.

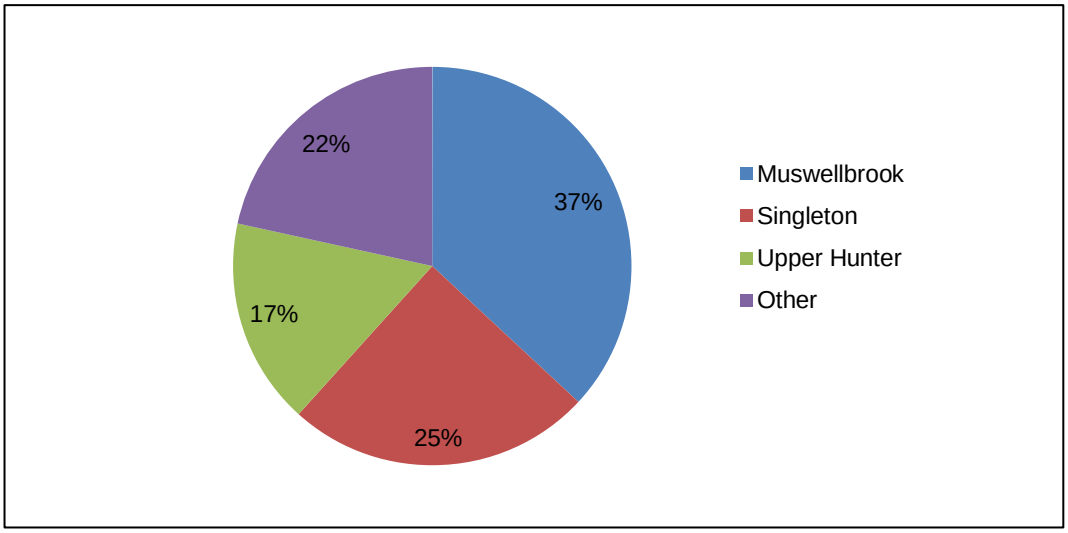


Figure 4: Residential locations of Mt Arthur Coal employees as at 30 June 2013

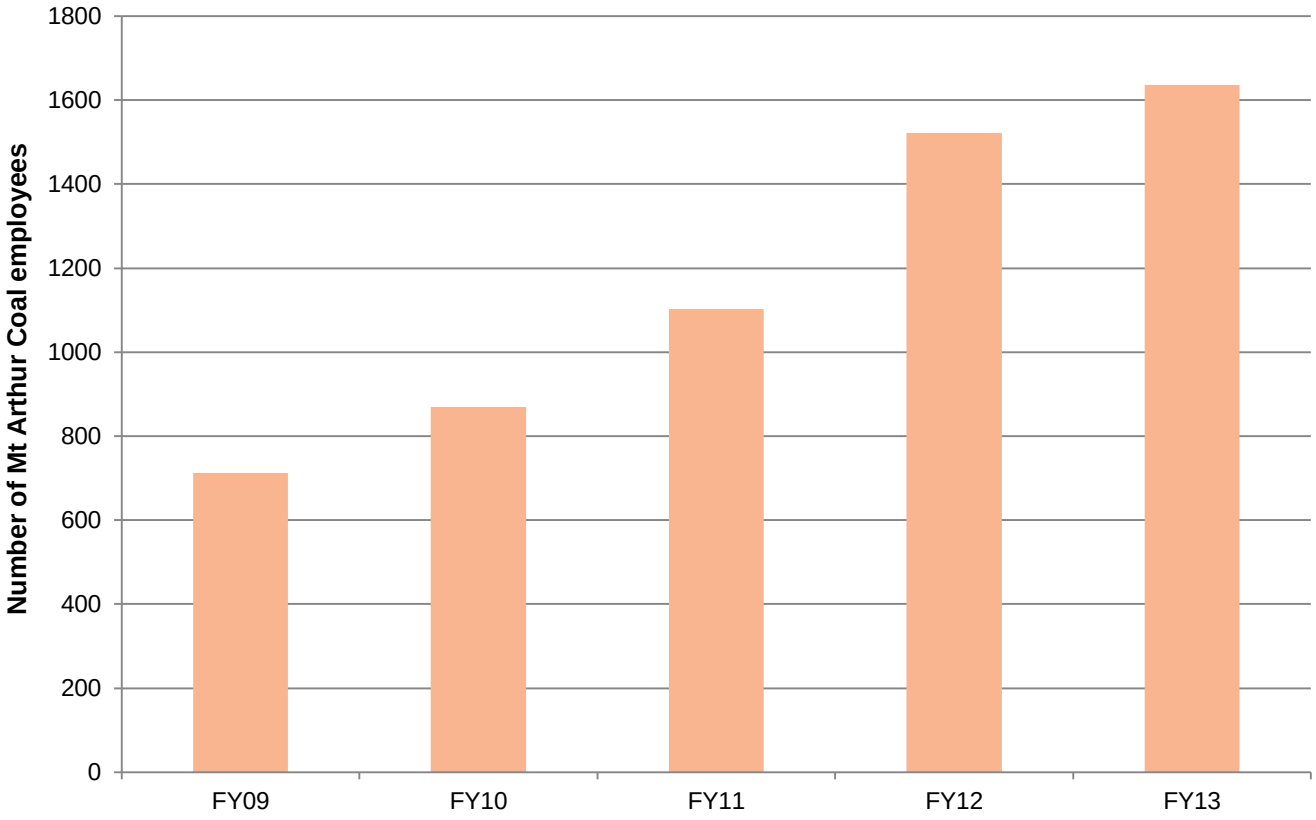


Figure 5: Mt Arthur Coal employee numbers from FY09 to FY13

3 Environmental Management and Performance

Mt Arthur Coal is committed to delivering the highest standards of environmental performance to meet or exceed legal and other requirements. This commitment extends to using leading practice initiatives to minimise the impact of our operations on the environment and community.

The implementation and effectiveness of the control strategies for risks identified in the MOP, previous AEMR's and management plans are outlined in the following section, as detailed below.

- Environmental management:
  - the adequacy of the proposed control strategies to manage risks associated with operations during the reporting period;
  - variations from proposed control strategies implemented during the reporting period and the reasons for them; and
  - the works carried out during the reporting period and proposed to be carried out over the next reporting period.

- Environmental performance:
  - monitoring results and complaints records during the reporting period, including a comparison of these results against the:
    - relevant statutory requirements, limits or performance measures/criteria;
    - monitoring results of previous years;
    - relevant predictions in the consolidation environmental assessment;
  - performance outcomes;
  - long-term trends in monitoring data; and
  - discrepancies between the predicted and actual impacts of the operation and analysis of the potential cause of any significant discrepancies.

- Reportable incidents:
  - incident reporting as required by conditions of lease, licence or risk management and monitoring strategies;
  - incidents which led to non-compliance with conditions of a mining lease, development consent or other licence over the reporting period and description of what actions were or are being taken to ensure compliance; and
  - reference to incident report documents previously provided to DP&I or another agency.

- Further improvements:
  - initiatives proposed for the next reporting period to improve or further assure acceptable performance.

3.1 Air Quality

3.1.1 Environmental Management

Air quality at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-MTP-040 Air Quality and Greenhouse Gas Management Plan; and
- MAC-ENC-PRO-057 Air Quality Monitoring Program.

The above documents were approved by DP&I on 27 May 2013.

In addition, air quality is managed by an extensive monitoring network and a series of alarming systems based on real-time monitoring data. The dust monitoring network consists of depositional dust gauges,

fine particle monitors that operate on a set schedule and real-time fine particulate monitors that operate continuously. The coupling of operational procedures and monitoring allows Mt Arthur Coal to take a proactive approach to dust management.

During the reporting period Mt Arthur Coal investigated the suitability of air quality monitoring locations at sensitive receiver locations. The investigation findings were approved by the DP&I and resulted in the relocation or decommissioning of a number of air quality monitors, as discussed below for each type of monitor.

Dust deposition gauges record dust fallout, which can be derived from mining or non-mining activities, and provide a useful measure of changing air quality. Compliance with air quality criteria is demonstrated through depositional dust monitoring by investigating the spatial representation of wind and operational activities for the monitoring period.

Depositional dust monitoring is carried out in accordance with Australian Standard 3580.10.1:2003 *Determination of particulates – Deposited matter – Gravimetric method* and analysed for insoluble solids and ash residue. Depositional dust samples are collected on a 30 day (plus or minus two days) basis from six statutory depositional dust gauges surrounding Mt Arthur Coal. In accordance with the approved monitoring program, several depositional dust gauges used for internal management purposes were decommissioned in June 2013. The locations of all depositional dust monitoring sites at Mt Arthur Coal are shown in Figure 6.

Fine dust particles (i.e. less than 10 microns in size and referred to as PM_{10}) are monitored using high volume air samplers (HVAS) fitted with a size selective inlet. These monitors operate for 24-hours every six days in accordance with Australian Standard 3580.9.6:2003 *Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM_{10} high volume sampler with size-selective inlet – Gravimetric method*. In accordance with the approved monitoring program, three statutory HVAS units were decommissioned in June 2013.

In addition to the HVAS monitors, five statutory real-time dust monitors, referred to as tapered element oscillating microbalance samplers (TEOMs) were used to record PM_{10} levels on a continuous basis during the reporting period. In accordance with the approved monitoring program, DC01 was decommissioned in June 2013 and an additional statutory monitor will be installed during the next reporting period. Another statutory real-time PM_{10} TEOM monitoring station will be installed to the east of the operation during the next reporting period.

The locations of all HVAS and TEOM monitoring sites at Mt Arthur Coal are shown in Figure 7.

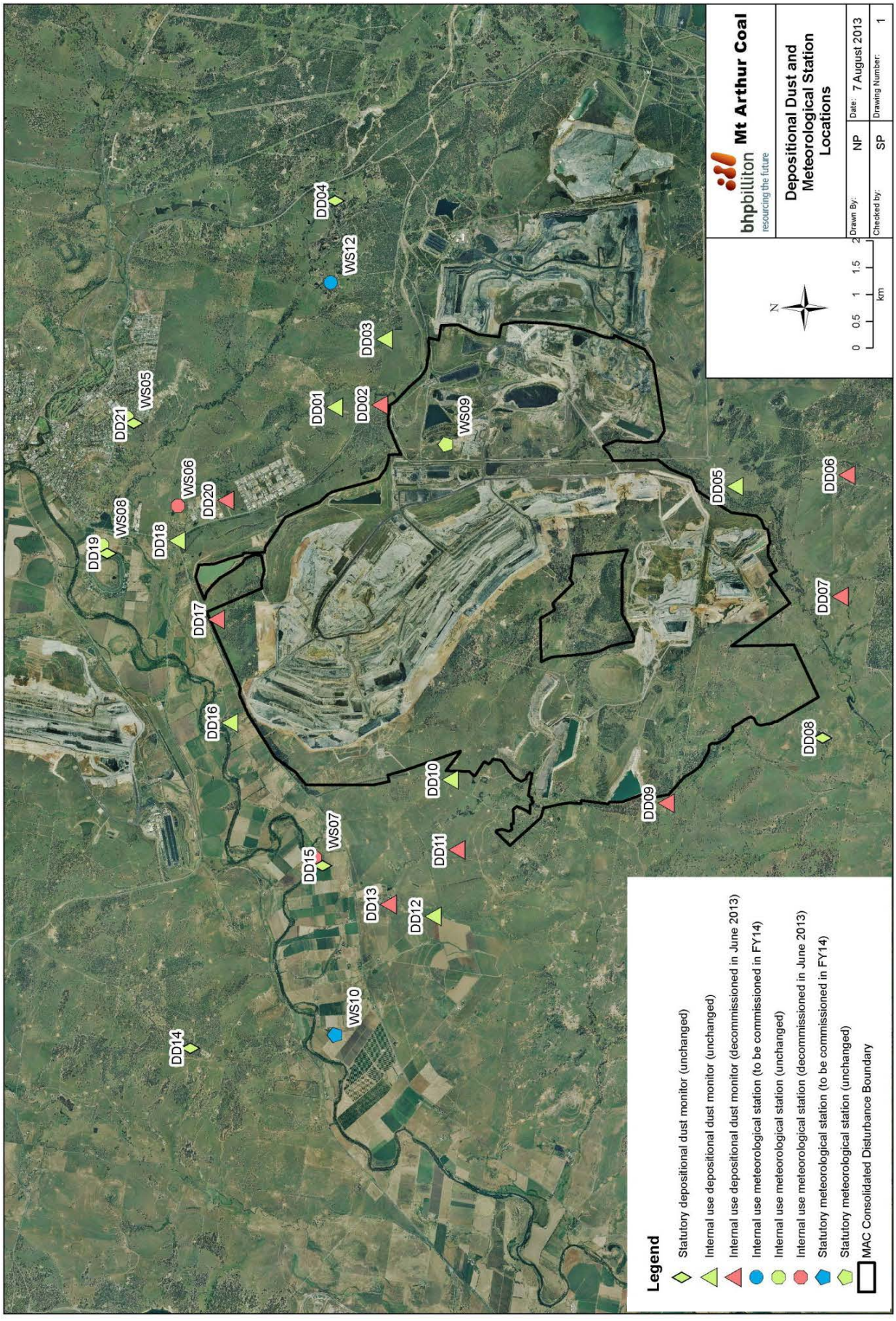


Figure 6: Mt Arthur Coal's depositional dust and meteorological monitoring locations

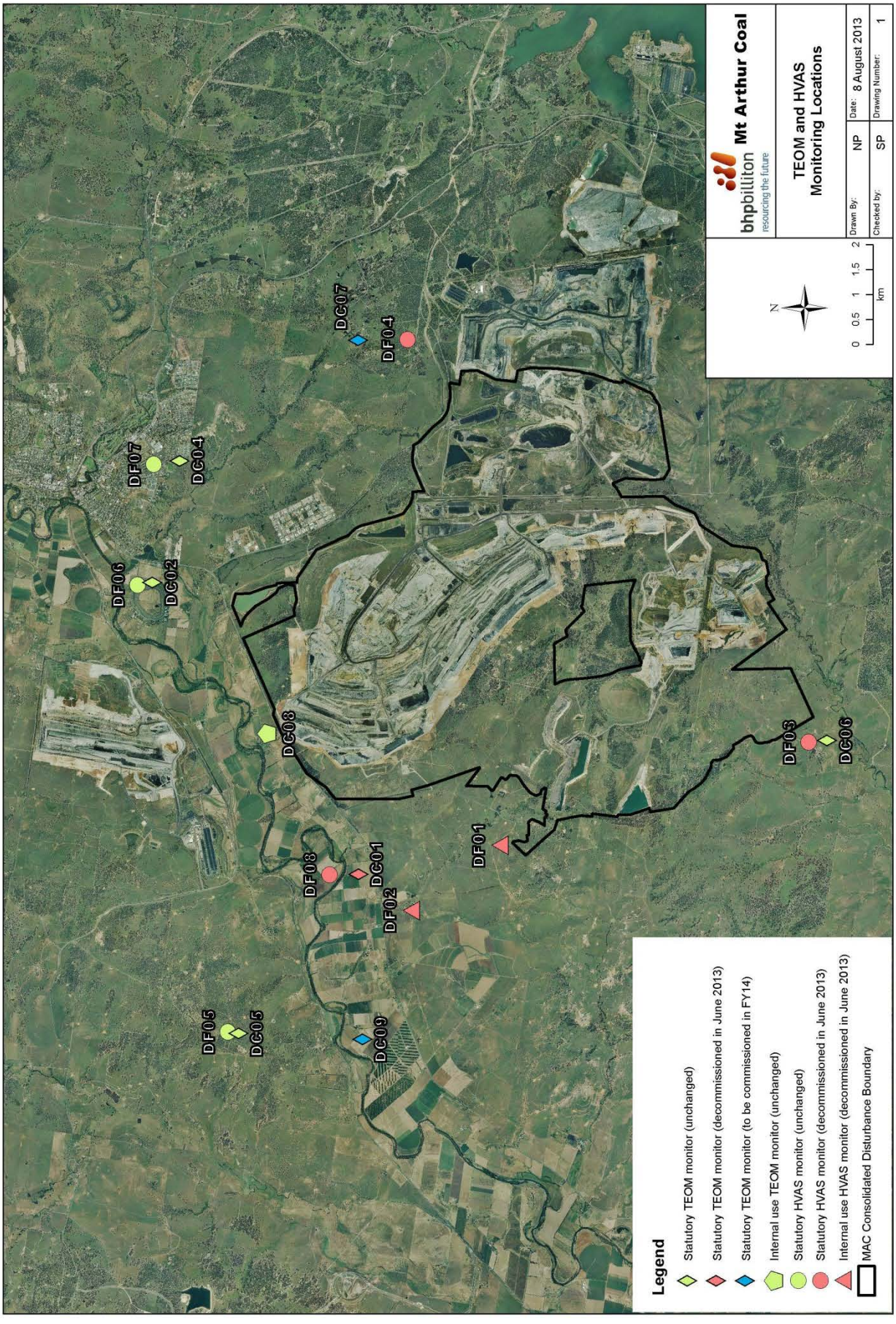


Figure 7: Mt Arthur Coal's HVAS and TEOM monitoring locations

During the reporting period many controls were applied to reduce the potential for the generation and movement of dust from Mt Arthur Coal's operation area. These controls, which will also continue to be applied during the next reporting period, include:

- deploying up to ten water carts across site;
- utilising dedicated water carts for contractor operations;
- using dust suppressants on haul roads;
- maintaining a short message service alarming system for strong winds and high dust levels;
- changing dumping strategies to low areas during strong winds;
- avoiding tipping into strong headwinds where possible;
- restricting blasting to suitable weather conditions;
- maintaining auto-start for stockpile sprays in windy conditions;
- progressively rehabilitating mine surfaces;
- seeding topsoil stockpiles where applicable;
- maintaining enclosed coal loading and transfer areas and associated sprays; and
- aerial seeding exposed overburden where practicable.

During the reporting period Mt Arthur Coal aerial seeded a pasture mix onto approximately 55 hectares of exposed overburden not yet ready for final rehabilitation. Similar to previous years, the results continue to be encouraging, with germination across the area without the need for cultivation or irrigation and in the absence of topsoil.

Mt Arthur Coal continued the use of dust suppressants on haul roads following the success of the program in 2011. This involved the use of a non-hazardous liquid polymer (water extender), which is added to the water cart using an automated dosing system. It is then sprayed onto haul roads to improve water penetration, bind fine dust particles and consolidate haul road surfaces.

During the reporting period Mt Arthur Coal continued to be a signatory to the Upper Hunter Air Quality Monitoring Network (UHAQMN), which was established in October 2010 by the NSW Government in partnership with the coal and power industries. The network now continuously measures dust particles in the air at up to 14 sites throughout the region. The collected data is provided to the community and industry through the Office of Environment and Heritage website.

Mt Arthur Coal also participated in the Upper Hunter Mining Dialogue environment workshops. The initiative was established by the NSW Minerals Council to provide a forum for collaboration between community, government, consultants and mining companies to focus on air quality across the region.

3.1.2 Environmental Performance

Depositional Dust Gauges

A summary of the results from the statutory depositional dust monitoring sites, together with pictorial representation of the trends in terms of insoluble solids, ash content and annual average criteria are provided in Appendix 3.

Depositional dust gauge data capture rates for the reporting period were 100 per cent at all statutory sites, with the exception of DD08 in September 2012. This gauge was reported as having a broken funnel and, as a result, the sample was unable to be analysed.

In accordance with the consolidation project approval, the criterion for the maximum total deposited dust level is 4 grams per square metre per month (g/m^2/month) over an annual averaging period. The criterion for the maximum increase in deposited dust levels due to Mt Arthur Coal's operations over an annual averaging period at any one dust gauge is 2 g/m^2/month.

For the duration of the reporting period all depositional dust gauges remained below the assessment criterion. The annual average depositional dust results for the reporting period were generally slightly higher than the annual average deposited dust results from FY11 and FY12, as shown in Table 8. This change is expected with the increase in operations at the northern end of the mine.

Table 8: Comparison of annual average deposited dust results

Site name	Site reference	FY13 annual average g/m^2/month	FY12 annual average g/m^2/month	FY11 annual average g/m^2/month
Antiene	DD04	1.9	1.7	2.1
Edderton Homestead	DD08	2.0	1.3	1.0
Roxburgh Road	DD14	1.9	1.5	1.3
Denman Road West	DD15	3.6	2.7	1.8
Sheppard Avenue	DD19	3.4	2.8	2.9
South Muswellbrook	DD21	2.2	1.7	1.6

As part of the consolidation environmental assessment an air quality assessment was completed in 2009 for open cut operations at Mt Arthur Coal. Air dispersion modelling was completed for representative periods, including the 2011 calendar year, using meteorological data from April 2007 to March 2008. This modelling was based on an operating capacity of 16.7 million tonnes of run-of-mine coal per annum.

The predictions for 2011 remain representative for this reporting period. The consolidation environmental assessment predicted that no exceedances of the maximum total deposited dust level or maximum increase in deposited dust levels would occur for 2011. Monitoring results for the reporting period support the predicted results.

Figure 8 uses dust isopleths from Mt Arthur Coal's monitoring sites to illustrate the depositional dust profile surrounding the mine based on the averages of the reporting period. It is important to note that this figure only uses Mt Arthur Coal data and not data from other dust monitoring sources. The EPA criteria for dust deposition (4 g/m^2/month) relates to an annual average.

Contamination by bird droppings, insects and vegetation is a common issue for depositional dust monitoring systems. During this reporting period there were a number of contaminated results recorded at the statutory dust deposition sites, as detailed in Table 9. A depositional dust gauge is deemed contaminated by an independent monitoring contractor or a National Association of Testing Authority (NATA) accredited laboratory. Results found to be contaminated are excluded from the annual average calculation.

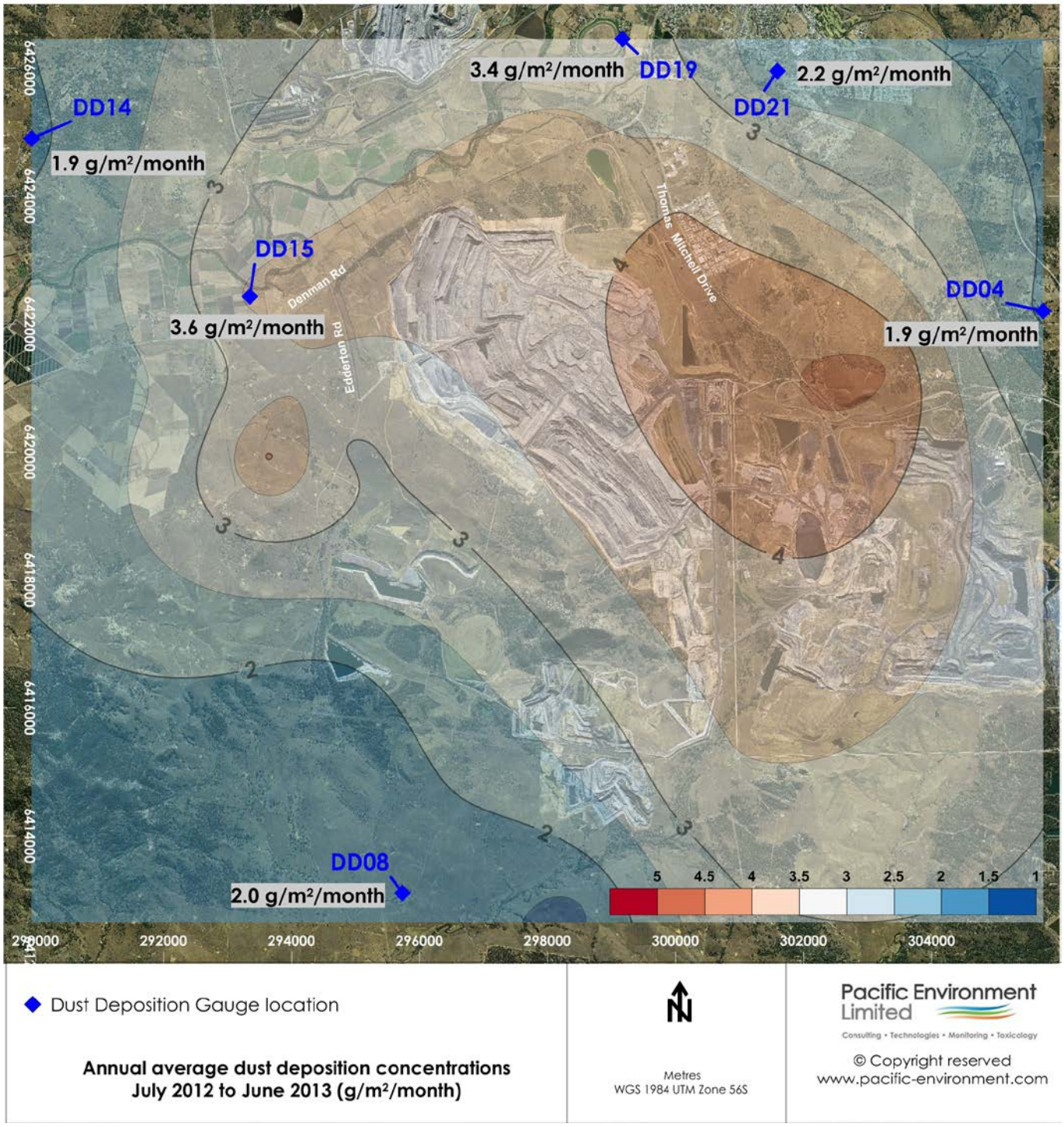


Figure 8: Annual depositional dust concentration

Table 9: Summary of contaminated depositional dust results

Month	Site reference	Source of sample contamination
December 2012	DD04	Independent contractor determined that the sample was contaminated with insects and vegetation.
January 2013	DD04	Independent contractor determined that the sample was contaminated with bird droppings, vegetation and insects.
	DD19	Independent contractor determined that the sample was contaminated with insects.

High Volume Air Samplers

A summary of the results from the statutory HVAS PM_{10} monitoring sites for the reporting period is provided in Table 10. HVAS data capture rates for the reporting period were 100 per cent at all statutory sites. In accordance with the consolidation project approval, the PM_{10} short term 24-hour impact assessment criteria is 50 micrograms per cubic metre (µg/m^3) and the long-term annual impact assessment criteria is 30 µg/m^3 over an annual averaging period.

The short term 24-hour impact assessment criteria of 50 µg/m^3 was exceeded 16 times on nine different days at statutory HVAS monitoring sites during the reporting period, including air emissions from all sources. An investigation into each of these events was undertaken which involved determining the wind direction for the monitoring period, and then using the difference between monitoring results recorded up and downwind of Mt Arthur Coal's activities to ascertain the operation's contribution. Regional air quality trends at the time and localised influences or events were also considered during the investigations. On all occasions, results of the investigation showed that Mt Arthur Coal's contribution was less than 50 µg/m^3. The investigation findings for each of the elevated PM_{10} results during the reporting period are shown in Table 11.

During the reporting period Mt Arthur Coal's statutory HVAS monitors remained below the long-term annual impact assessment criteria. However, annual averages were slightly higher for each monitor when compared to results from FY12 and FY11. This change is expected with the increase in operations at the northern end of the mine.

As part of the consolidation environmental assessment an air quality assessment was completed in 2009 for open cut operations at Mt Arthur Coal. Air dispersion modelling was completed for representative periods, including the 2011 calendar year, which is consistent with the FY13 production profile. The annual average HVAS PM_{10} results from air dispersion modelling for 2011 have been compared with actual monitored data for FY13, FY12 and FY11. Table 12 provides a summary of this data. The monitored data is below the predicted cumulative annual average PM_{10} concentrations at all sites, with the exception of DF04. The elevated annual average result at DF04 is primarily due to a high result on 9 January 2013. As shown in Table 11 Mt Arthur Coal's contribution to this exceedance was approximately 5 per cent.

The 2011 predicted annual average PM_{10} contours compared with the annual average concentration measured at each HVAS monitor is shown in Figure 3A in Appendix 3. With the exception of DF04, the measured concentrations of monitoring results at all locations in FY13 were between 6 and 19 per cent lower than the predicted cumulative results from the 2011 modelling.

Table 10: Summary of HVAS PM10 results

Site name	Site reference	Minimum 24-hour result µg/m^3	Maximum 24-hour result µg/m^3	Reporting period annual average µg/m^3
Edderton Homestead^	DF03	<1	46	15.3
Pistol Club^	DF04	4	129*	24.5
Roxburgh Road	DF05	<1	89*	18.8
Sheppard Avenue	DF06	2	79*	26.9
South Muswellbrook	DF07	4	63*	20.6
Denman Road West^	DF08	2	83*	22.7

^ Excludes June 2013 as these monitors are no longer a requirement of the air quality monitoring program, approved 27 May 2013 and were decommissioned in June 2013.
* These results, which include air emissions from all sources, were all investigated as they exceeded the short term 24-hour impact assessment criteria of 50 µg/m^3. Investigations found that Mt Arthur Coal's contribution to these results was less than 50 µg/m^3 on all occasions.

Table 11: Elevated HVAS PM_{10} results

Date of event	Site name	Site reference	Recorded result µg/m^3	Mt Arthur Coal's contribution µg/m^3	Explanation of results
5/09/2012	Sheppard Avenue	DF06	64.0	0.0	This monitor is located to the north north-east of the operation. Wind direction was predominately from the north north-west on this day. This monitor was not located downwind of Mt Arthur Coal's operations at any time during the day.
11/09/2012	Denman Road West	DF08	52.0	11.3	This monitor is located west north-west of the operation. Wind direction was predominately from the north north-west on this day. During approximately 22 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
11/09/2012	Sheppard Avenue	DF06	58.0	4.2	This monitor is located to the north north-east of the operation. Wind direction was predominately from the north north-west on this day. During approximately 7 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
17/09/2012	Sheppard Avenue	DF06	79.0	5.7	This monitor is located near Muswellbrook Racecourse to the north north-east of the operation. Wind direction was predominately from the north north-west on this day. During approximately 7 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. A race meet was held at Muswellbrook Racecourse on this day.
22/11/2012	Roxburgh Road	DF05	51.0	43.0	This monitor is located north west of the operation. Wind direction was predominately from the south east on this day. During approximately 84 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
22/11/2012	Denman Road West	DF08	59.0	44.3	This monitor is located west north-west of the operation. Wind direction was predominately from the south east on this day. During approximately 75 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
22/11/2012	Pistol Club	DF04	51.0	0.0	This monitor is located east of the operation. Wind direction was predominately from the south east on this day. This monitor was not located downwind of Mt Arthur Coal's operations at any time during the day.
16/12/2012	Pistol Club	DF04	52.0	38.5	This monitor is located east of the operation. Wind direction was predominately from the west south-west on this day. During approximately 74 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
9/01/2013	Pistol Club	DF04	129.0	6.7	This monitor is located east of the operation. Wind direction was predominately from the south east after 1 pm on this day. During approximately 5 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. The UHAQMN suggests that PM_{10} results were elevated throughout the region on this day.

Date of event	Site name	Site reference	Recorded result µg/m^3	Mt Arthur Coal's contribution µg/m^3	Explanation of results
9/01/2013	Constable	DF05	89.0	37.1	This monitor is located north west of the operation. Wind direction was predominately from the south east after 1 pm on this day. During approximately 46 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. The UHAQMN suggests that PM_{10} results were elevated throughout the region on this day.
9/01/2013	Sheppard Avenue	DF06	68.0	0.7	This monitor is located to the north north-east of the operation. Wind direction was predominately from the south east after 1 pm on this day. During approximately 1 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. The UHAQMN suggests that PM_{10} results were elevated throughout the region on this day.
9/01/2013	South Muswellbrook	DF07	63.0	1.3	This monitor is located north east of the operation. Wind direction was predominately from the south east after 1 pm on this day. During approximately 2 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. The UHAQMN suggests that PM_{10} results were elevated throughout the region on this day.
9/01/2013	Denman Road West	DF08	83.0	34.1	This monitor is located west north-west of the operation. Wind direction was predominately from the south east after 1 pm on this day. During approximately 46 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. The UHAQMN suggests that PM_{10} results were elevated throughout the region on this day.
15/04/2013	Sheppard Avenue	DF06	59.0	2.5	This monitor is located to the north north-east of the operation. Wind direction was predominately from the north west on this day. During approximately 4 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
3/05/2013	Sheppard Avenue	DF06	62.0	7.1	This monitor is located near Muswellbrook Racecourse, to the north north-east of the operation. Wind direction was predominately from the north west on this day. During approximately 11 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. A race meet was held at Muswellbrook Racecourse on this day.
21/05/2013	Sheppard Avenue	DF06	51.0	0.0	This monitor is located to the north north-east of the operation. Wind direction was predominately from the north north-west on this day. This monitor was not located downwind of Mt Arthur Coal's operations at any time during the day.

Table 12: Comparison of predicted and actual annual average HVAS PM10 results

Site name	Site reference	Predicted from all sources[1] µg/m^3	FY13 actual annual average^ µg/m^3	FY12 actual annual average µg/m^3	FY11 actual annual average µg/m^3
Edderton Homestead	DF03	19	15	12	13
Pistol Club	DF04	22	24*	17	19
Roxburgh Road	DF05	20	19	16	15
Sheppard Avenue	DF06	29	27	20	19
South Muswellbrook	DF07	24	21	17	19
Denman Road West	DF08	25	23	19	21

[1] Air dispersion model results for 2011 from 2009 consolidation environmental assessment.
* The main reason for this exceedance is the inclusion of the highly elevated result of 129.0 on 9 January 2013 at the Pistol Club. Mt Arthur Coal's contribution to this exceedance was approximately 5 per cent.
^ FY13 data for DF03, DF04 and DF08 includes the period 1 July 2012 to 31 May 2013, as these monitors were decommissioned in June 2013 as per the approved air quality monitoring program.

Tapered Element Oscillating Microbalance Samplers

A summary of the results from the statutory real-time PM_{10} TEOM monitoring sites for the reporting period is provided in Table 13. TEOM data capture rates for the reporting period were 100 per cent at all statutory sites with the following exceptions:

- Denman Road West (DC01) did not record data for five days in September 2012 due to a filter error;
- South Muswellbrook (DC04) did not record data for four days in May 2013 due to erroneous readings following a filter change;
- Roxburgh Road (DC05) did not record data for one day in September 2012 due to a power failure;
- Edderton Homestead (DC06) did not record data for 23 days in February and March 2013 due to a switching valve failure; and
- Edderton Homestead (DC06) did not record data for 39 days in May and June 2013 due to a temperature sensor fault.

During the reporting period the short term 24-hour impact assessment criteria of 50 µg/m^3 was exceeded 17 times on 15 different days at statutory TEOM monitoring sites, including air emissions from all sources. An investigation into each of these events was undertaken, including using wind directional data to ascertain the operation's contribution, and assessing regional air quality trends and localised influences or events at the time. On all occasions, results of the investigation showed that Mt Arthur Coal's contribution was less than 50 µg/m^3. The investigation findings for each of the elevated PM_{10} result during the reporting period are shown in Table 14.

During the reporting period Mt Arthur Coal's statutory TEOM monitoring sites remained below the long-term annual impact assessment criteria. However, annual averages were slightly higher for each monitor when compared to results from FY12 and FY11. This change is expected with the increase in operations at the northern end of the mine.

As part of the consolidation environmental assessment an air quality assessment was completed in 2009 for open cut operations at Mt Arthur Coal. Air dispersion modelling was completed for representative periods, including the 2011 calendar year, which is consistent with the FY13 production profile. The annual average TEOM PM_{10} results from air dispersion modelling for 2011 have been compared with

actual monitored data for FY13, FY12 and FY11. Table 15 provides a summary of this data. The monitored data is below the predicted cumulative annual average PM_{10} concentrations at all sites. The 2011 predicted annual average PM_{10} contours compared with the annual average concentration measured at each TEOM monitor is shown in Figure 3B in Appendix 3. The measured concentrations of monitoring results at all locations in FY13 were between 7 and 26 per cent lower than the predicted cumulative results from the 2011 modelling.

Table 13: Summary of TEOM PM_{10} results

Site name	Site reference	Minimum 24-hour result µg/m^3	Maximum 24-hour result µg/m^3	Reporting period annual average µg/m^3
Denman Road West^	DC01	1.2	56.0*	18.6
Sheppard Avenue	DC02	0.0	109.1*	21.6
South Muswellbrook	DC04	2.1	47.4	19.1
Roxburgh Road	DC05	3.2	51.9*	18.6
Edderton Homestead	DC06	0.6	42.1	17.0

^ Excludes June 2013 as this monitor is no longer a requirement of the air quality monitoring program, approved 27 May 2013 and was decommissioned in June 2013.
* These results, which include air emissions from all sources, were all investigated as they exceeded the short term 24-hour impact assessment criteria of 50 µg/m^3. Investigations found that Mt Arthur Coal's contribution to these results was less than 50 µg/m^3 on all occasions.

Table 14: Elevated TEOM PM_{10} results

Date of event	Site name	Site reference	Recorded result µg/m^3	Mt Arthur Coal's contribution µg/m^3	Explanation of results
4/09/2012	Sheppard Avenue	DC02	89.4	2.2	This monitor is located near Muswellbrook Racecourse, to the north north-east of the operation. Wind direction was predominantly from the north north-west on this day. During approximately 1 per cent of the day this monitor was located downwind of Mt Arthur Coal's operation. A race meet was held at Muswellbrook Racecourse on this day.
7/09/2012	Sheppard Avenue	DC02	57.2	0.0	This monitor is located to the north north-east of the operation. Wind direction was predominantly from the north north-west on this day. This monitor was not located downwind of Mt Arthur Coal's operations at any time during the day.
1/10/2012	Sheppard Avenue	DC02	59.2	15.9	This monitor is located near Muswellbrook Racecourse, to the north north-east of the operation. Wind direction was predominantly from the north north-west on this day. During approximately 10 per cent of the day this monitor was located downwind of Mt Arthur Coal's operation. A race meet was held at Muswellbrook Racecourse on this day.
20/10/2012	Sheppard Avenue	DC02	55.8	4.2	This monitor is located to the north north-east of the operation. Wind direction was predominantly from the north north-west on this day. During approximately 6 per cent of the day this monitor was located downwind of Mt Arthur Coal's operation.

Date of event	Site name	Site reference	Recorded result µg/m^3	Mt Arthur Coal's contribution µg/m^3	Explanation of results
26/10/2012	Sheppard Avenue	DC02	53.8	0.5	This monitor is located to the north north-east of the operation. Wind direction was predominantly from the north north-west on this day. During approximately 1 per cent of the day this monitor was located downwind of Mt Arthur Coal's operation.
1/11/2012	Sheppard Avenue	DC02	67.5	6.1	This monitor is located to the north north-east of the operation. Wind direction was predominantly from the north north-west on this day. During approximately 8 per cent of the day this monitor was located downwind of Mt Arthur Coal's operation.
6/11/2012	Sheppard Avenue	DC02	109.1	8.3	This monitor is located near Muswellbrook Racecourse, to the north north-east of the operation. Wind direction was predominantly from the north north-west on this day. During approximately 14 per cent of the day this monitor was located downwind of Mt Arthur Coal's operation. A race meet was held at Muswellbrook Racecourse on this day.
7/11/2012	Sheppard Avenue	DC02	78.2	26.6	This monitor is located to the north north-east of the operation. Wind direction was predominantly from the north west on this day. During approximately 16 per cent of the day this monitor was located downwind of Mt Arthur Coal's operation.
22/11/2012	Denman Road West	DC01	51.7	42.2	This monitor is located to the west north-west of the operation. Wind direction was predominantly from the south south-east on this day. During approximately 75 per cent of the day this monitor was located downwind of Mt Arthur Coal's operation.
18/12/2012	Sheppard Avenue	DC02	62.0	9.5	This monitor is located near Muswellbrook Racecourse, to the north north-east of the operation. Wind direction was predominantly from the north west on this day. During approximately 14 per cent of the day this monitor was located downwind of Mt Arthur Coal's operation. A race meet was held at Muswellbrook Racecourse on this day.
9/01/2013	Denman Road West	DC01	56.0	45.5	This monitor is located west north-west of the operation. Wind direction was predominately from the south east after 1 pm on this day. During approximately 46 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. The UHAQMN suggests that PM_{10} results were elevated throughout the region on this day.
9/01/2013	Sheppard Avenue	DC02	56.1	0.4	This monitor is located to the north north-east of the operation. Wind direction was predominantly from the south east after 1 pm on this day. During approximately 1 per cent of the day this monitor was located downwind of Mt Arthur Coal's operation. The UHAQMN suggests that PM_{10} results were elevated throughout the region on this day.
12/01/2013	Sheppard Avenue	DC02	59.6	0.0	This monitor is located to the north north-east of the operation. Wind direction was predominantly from the north west on this day. This monitor was not located downwind of Mt Arthur Coal's operations at any time during the day.

Date of event	Site name	Site reference	Recorded result µg/m^3	Mt Arthur Coal's contribution µg/m^3	Explanation of results
17/01/2013	Sheppard Avenue	DC02	66.4	0.8	This monitor is located near Muswellbrook Racecourse, to the north north-east of the operation. Wind direction was predominantly from the south east on this day. During approximately 1 per cent of the day this monitor was located downwind of Mt Arthur Coal's operation. A race meet was held at Muswellbrook Racecourse on this day.
30/04/2013	Denman Road West	DC01	54.6	34.2	This monitor is located west north-west of the operation. Wind direction was predominately from the south east. During approximately 66 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
30/04/2013	Roxburgh Road	DC05	51.9	36.3	This monitor is located north west of the operation. Wind direction was predominately from the south east. During approximately 71 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
4/05/2013	Denman Road West	DC01	50.2	34.7	This monitor is located west north-west of the operation. Wind direction was predominately from the north west until 6 pm when it changed to the south east. During approximately 24 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.

Table 15: Comparison of predicted and actual annual average TEOM PM_{10} results

Site name	Site reference	Predicted cumulative[1] µg/m^3	FY13 actual annual average^ µg/m^3	FY12 actual annual average µg/m^3	FY11 actual annual average µg/m^3
Denman Road West	DC01	25	19	13	14
Sheppard Avenue	DC02	29	22	16	17
South Muswellbrook	DC04	24	19	13	14
Constable	DC05	20	19	10	3
Edderton	DC06	19	17	15	18

[1] Air dispersion model results for 2011 from 2009 consolidation environmental assessment.
^ FY13 data for DC01 includes the period 1 July 2012 to 31 May 2013, as this monitor was decommissioned in June 2013 as per the approved air quality monitoring program.

Total Suspended Particulates

TEOM PM_{10} monitoring data is used to calculate annual average total suspended particulate (TSP) levels. PM_{10} can account for between 24 and 52 per cent of TSP depending on the source of the particulate, as detailed in the *National Pollutant Inventory Emission Estimation Technique Manual for Mining, Version 3.1* (Commonwealth of Australia, 2012). Based on the relative contribution of dust sources at a surface mine the PM_{10} contribution to TSP is conservatively estimated to be 40 per cent at Mt Arthur Coal, in accordance with the approved air quality monitoring program.

In accordance with the consolidation project approval, the TSP long-term annual impact assessment criteria is 90 µg/m^3 over an annual averaging period.

TSP results were inferred by multiplying the annual average PM_{10} results by 2.5. During the reporting period Mt Arthur Coal remained below the TSP long-term annual impact assessment criteria at all statutory sites, as shown in Table 16. The highest annual average TSP result was 54.1 µg/m^3 at DC02. TSP results for FY13 are generally slightly higher than results for FY12 and FY11. This change is expected with the increase in operations at the northern end of the mine.

Table 16: Summary of TSP results

Site name	Site reference	FY13 annual average µg/m^3
Denman Road West^	DC01	46.4
Sheppard Avenue	DC02	54.1
South Muswellbrook	DC04	47.8
Roxburgh Road	DC05	46.5
Edderton Homestead	DC06	42.6

^ FY13 data for DC01 includes the period 1 July 2012 to 31 May 2013, as this monitor was decommissioned in June 2013 as per the approved air quality monitoring program.

3.1.3 Reportable Incidents

All elevated results listed in Table 11 and Table 14 were reported to the DP&I together with the results of the investigations that showed Mt Arthur Coal's contribution was less than the short term 24-hour impact assessment criteria of 50 µg/m^3.

Mt Arthur Coal received a penalty notice from the EPA on 23 August 2012 regarding excessive dust generation from two operating drill rigs (105 and SMW210) during a site inspection on 18 July 2012. The drilling activity was ceased immediately. An investigation revealed a check valve on the water injection system was not operational on drill 105 and the water injection system on drill SMW210 was faulty. On the day of the inspection, all real-time air quality monitors were below regulatory limits. Both drill rigs were repaired before being returned to service and drilling procedures were amended to emphasise drilling operations to cease if dust suppression equipment is faulty.

Mt Arthur Coal also received a warning letter from the DP&I on 6 September 2012 regarding excessive dust generation observed during a site inspection on 5 September 2012. Operations were ceased following the site inspection and Mt Arthur Coal undertook an internal investigation to identify improvement opportunities.

3.1.4 Further Improvements

On 27 May 2013, Mt Arthur Coal submitted draft monitoring programs for Pollution Reduction Programs U1 and U2 to the EPA for approval, as required by EPL 11457 as varied on 21 March 2013. The scope of the two PRPs is as follows:

- U1 Particulate Matter Control Best Practice Implementation – Wheel Generated Dust:
  - achieve and maintain a dust control efficiency of 80 per cent or more on all active haul roads; and
  - implement a monitoring program to assess compliance with the above requirement.
- U2 Particulate Matter Control Best Practice Implementation – Disturbing and Handling Overburden under Adverse Weather Conditions:
  - alter or cease the use of equipment on overburden and loading and dumping of overburden during adverse weather conditions; and
  - implement a monitoring program to assess compliance with the above requirement.

The U3 Particulate Matter Control Best Practice Implementation – Trial of Best Practice Measures for Disturbing and Handling Overburden PRP has also been incorporated into EPL 11457 as varied on 21 March 2013. Mt Arthur Coal will submit a report to satisfy the requirements of this PRP U3 during the next reporting period. In addition Mt Arthur Coal is progressing with the assessment and implementation of dust management projects identified in The Coal Mine Particulate Matter Control Best Practice PRP, as incorporated into EPL 11457 on 8 August 2011, which has since been removed.

During the next reporting period Mt Arthur Coal intends to trial a predictive dust model. This model will be integrated into mine planning and will facilitate increased operational preparation and contingency planning to appropriately manage dust during forecasted adverse weather conditions.

Mt Arthur Coal will be assessing the need for additional near-field, real-time air quality monitoring equipment during the next reporting period. This equipment would be used for internal management purposes and inform operational changes in response to air quality conditions. Two new real-time air quality monitors will also be installed during the next reporting period.

3.2 Erosion and Sediment

3.2.1 Environmental Management

Erosion and sediment at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-PRO-060 Erosion and Sediment Control Plan;
- MAC-ENC-PRO-061 Surface Water Monitoring Program; and
- MAC-ENC-PRO-063 Surface and Ground Water Response Plan.

The above documents were approved by DP&I on 20 August 2012.

The management system includes a comprehensive set of both proactive and reactive control measures designed to minimise the impact of sediment on water sources. The primary management measure for erosion and sediment is the control of initial ground disturbance and timely land rehabilitation following disturbance. Where disturbance is unavoidable, erosion and sediment control structures are established.

3.2.2 Environmental Performance

In accordance with the erosion and sediment control plan, the impact assessment criteria applicable to Mt Arthur Coal are based on the 90th percentile of baseline total suspended solids (TSS) results for samples collected as part of the surface water monitoring program.

TSS results remained relatively low during the reporting period with the exception of SW18 in January 2013. Non-routine samples were taken at other particular sediment controls or clean water dams to understand quality parameters. Water management features were also routinely inspected after significant storm events and maintained to ensure they are performing to design and preventing impacts on downstream waters.

During the reporting period monitoring of riparian vegetation was undertaken on a quarterly basis at specified sampling points on watercourses, in accordance with the surface water monitoring program. Channel stability was monitored using photographic logging of erosional and depositional features. These photographs showed no evidence of erosion or sedimentation.

3.2.3 Reportable Incidents

An exceedance of the TSS trigger level at sampling point SW18 occurred in January 2013 and was reported to DP&I. In accordance with the surface and ground water response plan, an internal investigation was undertaken which included a review of water quality results at nearby locations, monthly monitoring field sheets, on-site meteorological data and changes in land use near SW18. The investigation findings revealed that the 15 milligrams per litre (mg/L) trigger level did not adequately capture the natural variations in water quality resulting from a range of meteorological and hydrological conditions experienced on site. No remedial action was proposed. However, Mt Arthur Coal committed to reviewing the trigger levels during the next review of its surface water monitoring program.

In accordance with the *Protection of the Environment Operations* (POEO) *Act 1997*, Mt Arthur Coal notified relevant authorities of a potential pollution incident that occurred on 12 February 2013 by an existing rail culvert on Ramrod Creek. The potential pollutant was suspended solids. Site preparation commenced to repair the existing rail culvert along Ramrod Creek without adequate sediment controls in place. Works were suspended when the potential incident was recognised on 13 February 2013 and relevant authorities were immediately notified. The creek was not flowing at the time, all water was contained and water samples downstream of the area indicated low suspended solids. An investigation revealed that internal approval processes had not been followed for the proposed works. As a result improvements to Mt Arthur Coal's internal ground disturbance approval process were implemented.

Mt Arthur Coal did not receive any government fines or penalties related to erosion and sediment during the reporting period.

3.2.4 Further Improvements

Consistent with commitments made in the consolidation environmental assessment, water from all disturbed areas will continue to be collected in drainage structures and sediment dams. This water will either be recycled in the mine water management system or allowed to leave site following settlement of sediment. Sediment dams capturing runoff from areas of pre-strip and rehabilitation will be designed in accordance with the provisions for sediment retention basins in the *Managing Urban Stormwater Guidelines* (Landcom, 2004).

3.3 Surface Water

3.3.1 Environmental Management

Surface water at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-MTP-034 Site Water Management Plan;
- MAC-ENC-PRO-061 Surface Water Monitoring Program;
- MAC-ENC-PRO-059 Site Water Balance; and
- MAC-ENC-PRO-063 Surface and Ground Water Response Plan.

The above documents were approved by DP&I on 20 August 2012.

Water quality upstream and downstream of Mt Arthur Coal's operation is monitored by an independent consultant at nine statutory monitoring sites, as required. The monitoring sites include Mt Arthur Coal's licensed discharge point, which is only monitored during a discharge event. Mt Arthur Coal monitors a further nine surface water sites for internal management purposes only. The location of the surface water monitoring sites is shown in Figure 9. Additional non-routine water samples were taken during the reporting period, including from the oil and water separator, wash plant, wash bay and clean water areas and to ensure acceptable water quality following rainfall events. Analysis of all water samples collected is undertaken by a NATA accredited laboratory.

Mt Arthur Coal's site water management plan aims to minimise any adverse impacts on receiving waters downstream of Mt Arthur Coal, including Saddlers Creek, Quarry Creek, Ramrod Creek, Fairford Creek and Whites Creek, all of which drain directly into the Hunter River. The plan also outlines measures for managing water on site. Mt Arthur Coal's approved surface water monitoring program has established impact assessment criteria. Impact assessment criteria can be described as trigger values which, if activated, would lead to a response in terms of more intensive monitoring, investigation and if required, remedial action.

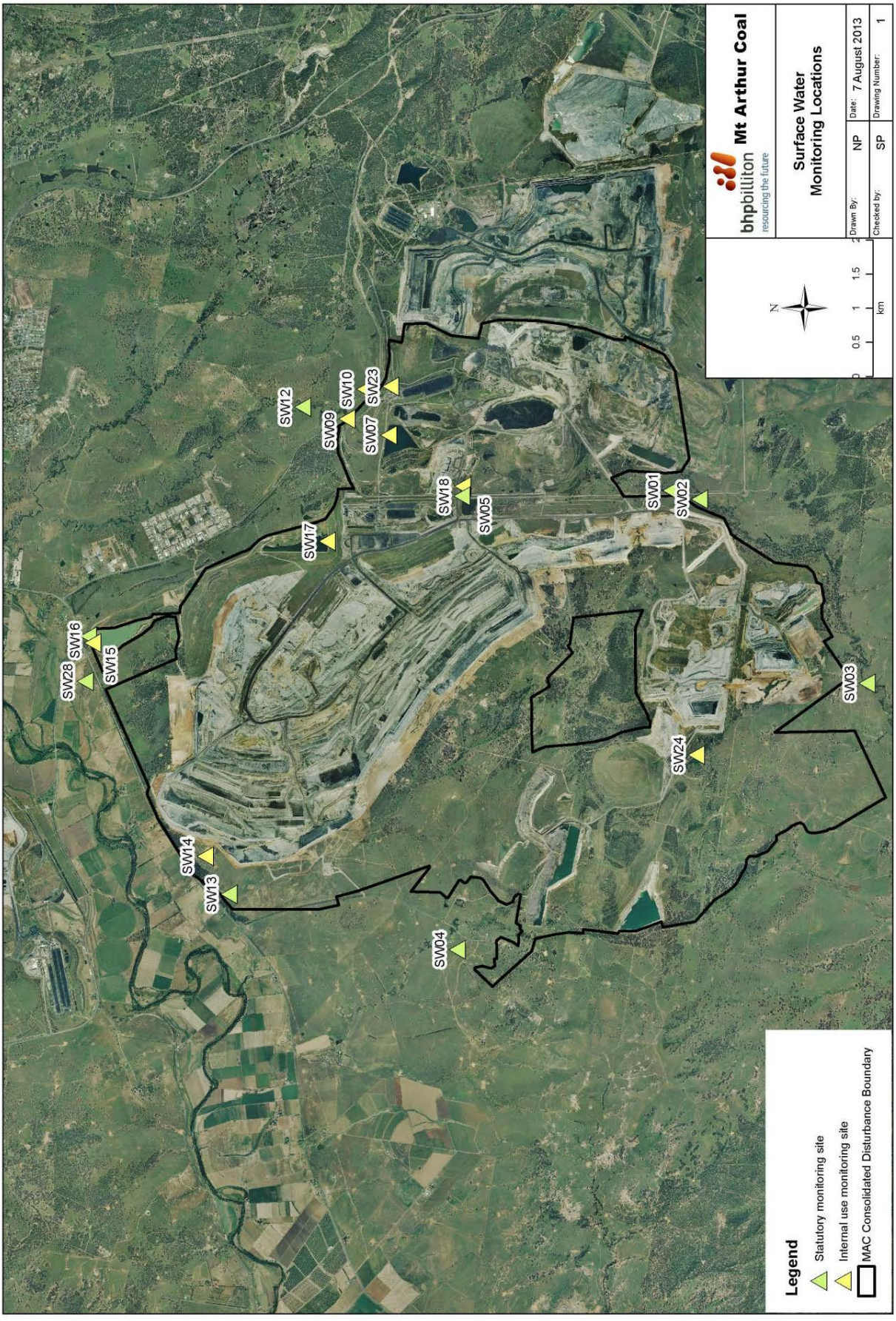


Figure 9: Mt Arthur Coal's surface water monitoring locations

During the reporting period Mt Arthur Coal installed a real-time surface water monitoring station, downstream of the mine in Saddlers Creek, approximately one kilometre downstream of surface water monitoring site SW03. This station will be incorporated into the surface water monitoring program and will continuously monitor flows, conductivity and turbidity on Saddlers Creek.

3.3.2 Environmental Performance

A summary of the surface water quality data for statutory sites during the reporting period is provided in Table 17, with a comparison against data from FY12 and FY11. Plots of surface water quality data for the statutory sites during the reporting period is provided in Appendix 4.

In accordance with the surface water monitoring program, the trigger value for electrical conductivity (EC) is triggered if the recorded value at a monitoring site is greater than the 90th percentile of baseline data for three consecutive readings. Potential hydrogen (pH) is triggered if the recorded value at a monitoring site is outside the range 6.5 to 9.0 for three consecutive months.

Table 17: Summary of surface water quality monitoring results

FY13	pH	EC µS/cm
Minimum	7.24	1,900
Maximum	9.05	11,400
Average	8.07	7,121
FY12	**pH**	**EC µS/cm**
Minimum	6.64	213
Maximum	9.08	9,950
Average	8.02	5,436
FY11	**pH**	**EC µS/cm**
Minimum	6.85	1,360
Maximum	9.20	11,800
Average	7.95	5,417

Surface water pH measured at individual statutory sites remained relatively constant during the reporting period and within the impact assessment trigger levels of 6.5-9.0 for three consecutive months. The pH results for FY13 were generally consistent compared with FY12 and FY11.

Surface water EC results were generally slightly higher during the reporting period in comparison to results from FY12, but maximum concentrations were generally consistent with results from FY11. During the reporting period EC trigger values were exceeded on six occasions.

Water quality parameters in natural watercourses surrounding the mine including Saddlers Creek (SW01, SW02 and SW03), Quarry Creek (SW04), Ramrod Creek (SW12) and Whites Creek (SW15 and SW18) were subject to normal variations in response to the ephemeral nature of the creeks, local geology and weather conditions. Fairford Creek (SW13) was unable to be sampled during the reporting period as the watercourse was dry. Table 18 shows the data captures rates for each surface water site during the reporting period. Additional non-routine surface water sampling was undertaken along these creeks following heavy rainfall events to ensure localised runoff and stream quality was acceptable.
The monitoring data collected during the reporting period continued to indicate that there are no adverse impacts from mining on surface water quality around the mine site.

Table 18: Surface water data capture rates

Watercourses	Saddlers Creek			Quarry Creek	Ramrod Creek	Fairford Creek	Whites Creek	
Site reference	SW01	SW02	SW03	SW04	SW12	SW13	SW15	SW18
Data capture rate	50%^	58%^	100%	100%	92%#	0%*	92%^	100%

^ Watercourse was too low to sample
# Unable to gain access to sample due to a vehicular accident on Thomas Mitchell Drive
* Watercourse was dry

3.3.3 Reportable Incidents

Mt Arthur Coal reported six exceedances of EC trigger values during the reporting period to DP&I. In accordance with the surface and ground water response plan an internal investigation was undertaken, which included a review of water quality results at nearby locations, monthly monitoring field sheets, on-site meteorological data and changes in land use. These exceedances and the investigation findings are summarised in Table 19.

Table 19: Surface water quality exceedances

Site name	Site reference	Elevated months	Elevated recorded results	Investigation results
Saddlers Creek	SW03	September 2012	EC: 8,490 µS/cm	The investigation revealed that there were no changes to land use near SW03 and water at SW03 was stagnant over this period. Meteorological records showed high temperatures combined with lower than average rainfall preceding and during the period of concern, indicating that EC levels were likely to have increased as a result of a reduced influx of fresh water combined with an increase in evaporation levels.
		October 2012	EC: 9,410 µS/cm	
		November 2012	EC: 8,880 µS/cm	
Whites Creek Diversion	SW15	September 2012	EC: 4,980 µS/cm	The investigation revealed that there were no changes to land use near SW15 and water at SW15 was stagnant over this period. Meteorological records showed high temperatures combined with lower than average rainfall preceding and during the period of concern, indicating that EC levels were likely to have increased as a result of a reduced influx of fresh water combined with an increase in evaporation levels.
		October 2012	EC: 6,490 µS/cm	
		November 2012	EC: 9,100 µS/cm	
Whites Creek Upstream	SW18	August 2012	EC: 4,180 µS/cm	The investigation revealed that there were no changes to land use near SW18 and water at SW18 was stagnant over this period. Meteorological records showed high temperatures combined with lower than average rainfall preceding and during the period of concern, indicating that EC levels were likely to have increased as a result of a reduced influx of fresh water combined with an increase in evaporation levels.
		September 2012	EC: 4,360 µS/cm	
		October 2012	EC: 4,620 µS/cm	
		November 2012	EC: 4,900 µS/cm	
Whites Creek Upstream	SW18	December 2012	EC: 5,420 µS/cm	The investigation revealed that there were no changes to land use near SW18 and water at SW18 was stagnant over this period. Meteorological records showed high temperatures combined with lower than average rainfall preceding and during the period of concern, indicating that EC levels were likely to have increased as a result of a reduced influx of fresh water combined with an increase in evaporation levels.
		January 2013	EC: 6,390 µS/cm	
		February 2013	EC: 5,380 µS/cm	
Whites Creek Diversion	SW15	April 2013	EC: 5,560 µS/cm	The investigation revealed that there were no changes to land use near SW15 and water at SW15 was stagnant over this period. Trigger levels will be reassessed during the next review of the surface water monitoring program to
		May 2013	EC: 6,870 µS/cm	

Site name	Site reference	Elevated months	Elevated recorded results	Investigation results
		June 2013	EC: 6,760 µS/cm	better capture the natural variations in water quality on site and additional internal water quality monitoring will also be undertaken along the Whites Creek diversion.
Whites Creek Upstream	SW18	April 2013	EC: 5,020 µS/cm	The investigation revealed that there were no changes to land use near SW18 and water at SW18 was stagnant over this period. Trigger levels will be reassessed during the next review of the surface water monitoring program to better capture the natural variations in water quality on site and additional internal water quality monitoring will also be undertaken along the Whites Creek diversion.
		May 2013	EC: 4,860 µS/cm	
		June 2013	EC: 5,150 µS/cm	

In accordance with the POEO Act, Mt Arthur Coal notified relevant authorities of a pollution incident that occurred on 7 February 2013 at Mt Arthur Coal's Hunter River pumping station. Grout, an inert material consisting of cement, fly ash and water, was pumped under the existing concrete slab to stabilise existing pump infrastructure. During pumping, grout surfaced on the Hunter River bank face, moved down to the water's edge, solidified on contact with the water and was contained in a confined area. Work ceased and relevant authorities were immediately notified. The estimated quantity of grout that surfaced on the bank was approximately 0.3 cubic metres. Water samples collected both upstream and downstream indicated no change in water quality. Shortly after the incident, preliminary recovery of solidified grout was carried out, with remaining areas to be recovered in conjunction with further planned works in the area.

Mt Arthur Coal received a penalty notice from the EPA on 31 October 2012 regarding an incident that occurred during the previous reporting period. The incident involved an exceedance of the total allowable discharge of salt during a HRSTS event (block 2012-069) in March 2012 from Mt Arthur Coal's licenced discharge point. It was noted that the exceedance did not result in any exceedance of the HRSTS salinity goals in the Hunter River. The cause for this breach was found to be an incorrect calculation of the salt discharge limit. A peer review and approval system is now in place to minimise the risk of error.

Mt Arthur Coal also received an official caution from the EPA on 31 October 2012 regarding insufficient credits to authorise discharges in March 2012 (blocks 2012-068 to 2012-070 inclusive). The cause of this breach was found to be historic name changes resulting in a technical mismatch between the EPL licensee and the HRSTS credit holder. HRSTS credits were transferred between Mt Arthur Coal HRSTS member entities to address this issue.

3.3.4 Further Improvements

Mt Arthur Coal will continue to use site water collected in both in-pit and out-of-pit storages prior to the use of higher quality water from the Hunter River. Where plans indicate that there would be sufficient water stored on site, water allocations for the Hunter River will continue to be offered to leaseholders and near neighbours as a temporary transfer. Mt Arthur Coal will also continue to investigate water saving opportunities.

3.4 Groundwater

3.4.1 Environmental Management

Groundwater at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-MTP-034 Site Water Management Plan;
- MAC-ENC-PRO-062 Ground Water Monitoring Program; and
- MAC-ENC-PRO-063 Surface and Ground Water Response Plan.

The above documents were approved by DP&I on 20 August 2012.

Surrounding groundwater aquifers are monitored by an independent consultant as required at 44 statutory monitoring sites. Analysis of all water samples is undertaken by a NATA accredited laboratory. The location of the groundwater monitoring sites is displayed in Figure 10.

Mt Arthur Coal's site water management plan aims to minimise any adverse impacts on aquifers in proximity to the operation, including the two major aquifer areas, the hard rock coal measures and the shallow alluvial deposits associated with the Hunter River. The plan also outlines measures for managing water at the operation.

Mt Arthur Coal's approved groundwater monitoring program has established impact assessment criteria. Impact assessment criteria can be described as triggers values that, if exceeded, would lead to a response in terms of more intensive monitoring, investigation and ultimately if required remedial action.

Monitoring of water levels and water quality parameters is undertaken on a bi-monthly basis at monitoring bores, which generally consist of a small diameter observation well lined with plastic pipe. Chemical speciation is undertaken on all bores twice yearly, and permeability testing is undertaken during installation of new monitoring bores to determine local groundwater flow conditions.

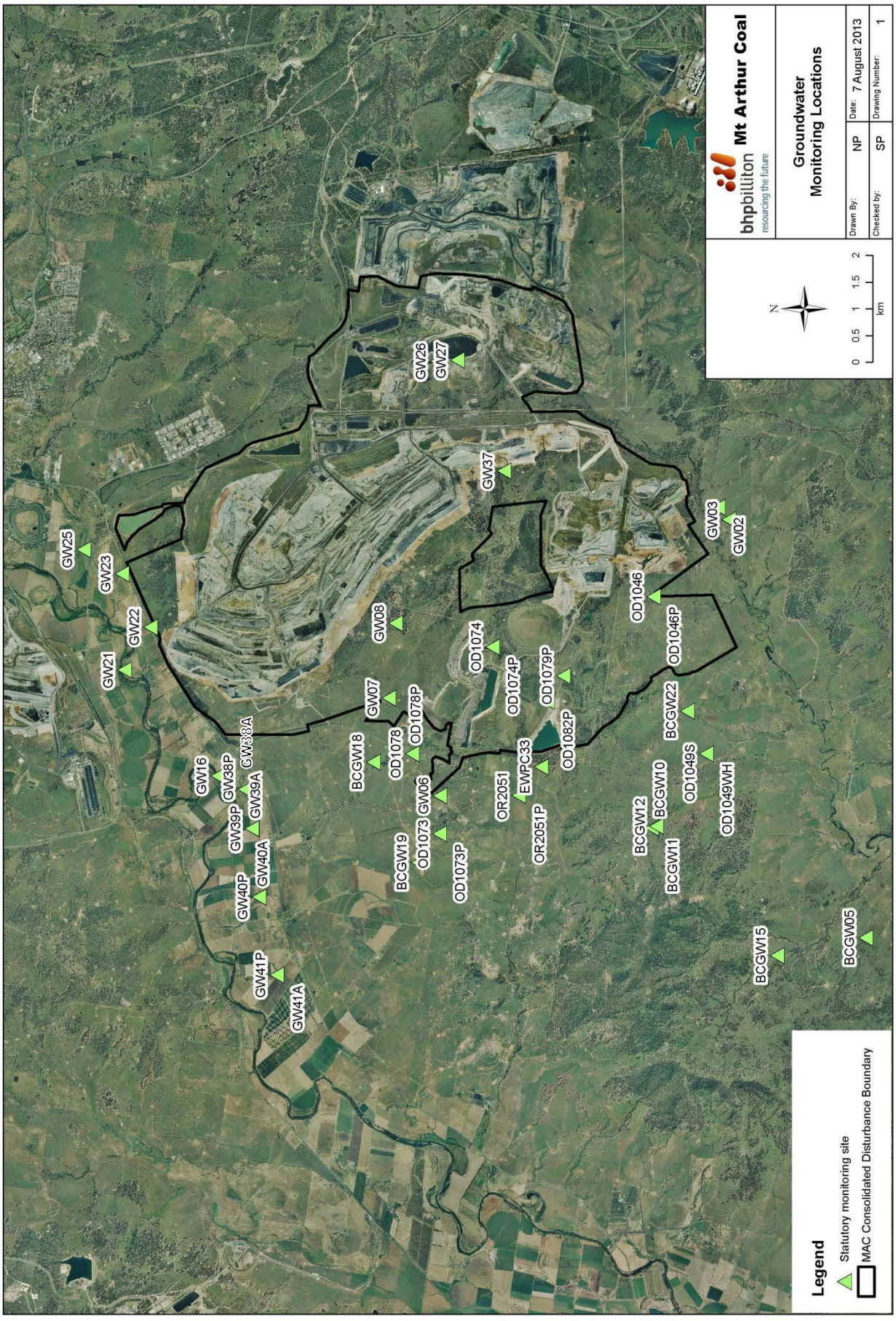


Figure 10: Mt Arthur Coal's groundwater monitoring locations

3.4.2 Environmental Performance

A summary of the groundwater quality data for each key aquifer during the reporting period is provided in Table 20 with a comparison against data from FY12 and FY11. Plots of groundwater quality data during the reporting period for all statutory sites are provided in Appendix 5.

In accordance with the groundwater monitoring program, the trigger value for EC is triggered if the recorded value at a monitoring site is greater than the 90th percentile of baseline data for three consecutive readings. The pH is triggered if the recorded value at a monitoring site is outside the range 6.5 to 9.0 for three consecutive months.

Table 20: Summary of groundwater monitoring results

Aquifer	Sites	pH			EC µS/cm			Depth to water from top of casing metres		
FY13	**Site references**	**Min.**	**Max.**	**Ave.**	**Min.**	**Max.**	**Ave.**	**Min.**	**Max.**	**Ave.**
Saddlers Creek Alluvial	GW2, GW3	7.49	8.08	7.79	3,320	4,520	4,027	5.57	8.16	7.15
Hard Rock Groundwater (north west)	GW6, GW7, GW8	6.82	7.24	7.00	4,550	5,590	4,988	23.00	70.80	35.05
Hunter River Alluvial	GW16, GW21, GW22, GW23, GW25	6.56	7.62	7.10	876	6,440	4,013	5.92	51.43	24.77
West Cut Groundwater	GW26, GW27	6.39	6.98	6.59	4,950	7,230	6,071	36.40	38.53	37.45
FY12	**Site references**	**Min.**	**Max.**	**Ave.**	**Min.**	**Max.**	**Ave.**	**Min.**	**Max.**	**Ave.**
Saddlers Creek Alluvial	GW2, GW3	7.50	8.23	7.84	3,430	4,390	3,838	5.69	9.06	7.05
Hard Rock Groundwater (north west)	GW6, GW7, GW8	5.99	7.32	6.94	3,720	5,310	4,401	23.24	94.64	48.73
Hunter River Alluvial	GW16, GW21, GW22, GW23, GW25	6.99	7.65	7.27	836	5,980	3,569	8.49	51.49	21.56
West Cut Groundwater	GW26, GW27	5.85	7.08	6.69	2,445	6,540	4,388	36.43	38.76	37.63
FY11	**Site references**	**Min.**	**Max.**	**Ave.**	**Min.**	**Max.**	**Ave.**	**Min.**	**Max.**	**Ave.**
Saddlers Creek Alluvial	GW2, GW3	7.30	8.40	7.81	3,410	4,210	3,841	6.52	9.77	8.1
Hard Rock Groundwater (north west)	GW6, GW7, GW8	6.40	7.61	7.08	2,820	5,580	4,783	23.56	82.74	46.15
Hunter River Alluvial	GW16, GW21, GW22, GW23, GW25	6.26	7.80	7.22	636	6,680	4,080	8.37	57.10	23.63
West Cut Groundwater	GW26, GW27	4.90	7.00	6.53	3,170	5,420	4,684	30.45	42.78	39.57

Groundwater pH measured at all individual statutory sites fluctuated depending on the locality, ranging between 6.39 and 12.78, with an average of 7.70 across all statutory sites. This is generally consistent with the results from FY12 (ranging between 5.39 and 12.37, with an average of 7.61 across all sites) and FY11 (ranging between 4.90 and 12.10, with an average of 7.58 across all sites). Results were within the impact assessment criteria of 6.5-9.0 for three consecutive months at most sites, with the exception of those listed in Table 22.

Groundwater EC ranged between 876 and 15,150 microsiemens per centimetre (µS/cm), with an average of 5,276 across all statutory sites. This is generally consistent with the results from FY12 (ranging between 687 and 13,770, with an average of 4,431 across all sites) and FY11 (ranging between 580 and 13,810, with an average of 4,784 across all sites). There were a number of exceedances of the EC trigger value during the reporting period.

Groundwater depth at each bore remained relatively stable for all piezometers. Similar to the previous year, negative groundwater drawdown (rise in water level) is concentrated around the advancing Macleans, Windmill and Huon Pit faces. Negative drawdown was also evident to the west of the Belmont and McDonalds water storage voids with GW6 recording a -0.56m drawdown.

Overall groundwater drawdown during FY13 ranged between -0.56 m and 10.01 m. This is a much wider range compared to previous years, such as in FY11 where groundwater drawdown ranged between -1.40 m and 0.22 m. The range observed during FY13 is similar to that of FY10, where groundwater drawdown ranged between -4.35 m and 6.93 m. These results are consistent with changes in water level as a result of active mining and in line with current approvals and modelled predictions in the consolidation environmental assessment. Groundwater drawdown for the reporting period is shown in Figure 5A in Appendix 5.

Data capture rates fell below 100 per cent at eight of the 44 groundwater sites, as discussed in Table 21.

The monitoring data collected during the reporting period continued to indicate that there are no adverse impacts from mining on groundwater around the mine site.

Table 21: Groundwater data capture rates

Site	Data capture rate per cent	Comments
GW26	83.3	No safe access to the site in August 2012 due to construction works on the tailings storage facility.
OD1046-PIEZO	83.3	Unable to sample this site in June 2013 as the piezometer was blocked.
BCGW15	66.7	There were access issues to this site in October 2012 and June 2013 as conditions were too wet.
GW27	50.0	No safe access to the site in August 2012, February 2013 and June 2013 due to construction works on the tailings storage facility.
GW8	0.0	Water level was too deep to sample during the reporting period (greater than 100m).
GW37	0.0	There was no access to this site during the reporting period.
OD1074-PIEZO	0.0	The well at this site was blocked during the reporting period.
OR2051-PIEZO	0.0	The well at this site was blocked during the reporting period.

3.4.3 Reportable Incidents

Mt Arthur Coal reported a number of exceedances of pH and EC trigger values during the reporting period to DP&I. In accordance with the surface and ground water response plan an internal investigation was undertaken which included a review of historic water quality results at nearby locations, monthly monitoring field sheets, on-site meteorological data and changes in land use. Mt Arthur Coal engaged a groundwater consultant to undertake the investigation.

The investigation findings noted that the data did not indicate that alluvial groundwater had been impacted by mining. The assessment generally considered that the fluctuations observed in the alluvial bores are part of a natural cycle that is influenced by the flushing of salts from the soil profile was not captured in the baseline data used to develop the impact assessment criteria.

Following the investigation Mt Arthur Coal committed to recalculating impact assessment criteria for all groundwater sites to include all valid historic data and an additional 12 months of data to account for such cyclical variations that may not have been previously captured. The exceedances and investigation findings are summarised in Table 22.

Mt Arthur Coal did not receive any government fines or penalties related to groundwater during the reporting period.

Table 22: Groundwater quality exceedances

Site references	Elevated months in FY13	Parameter	Investigation results
GW2, GW3, GW6, GW7, GW22, OD1078, OD1078-PIEZO, OD1079-PIEZO, OD1082-PIEZO, GW38A, GW38P, GW39A, GW39P, GW40A, GW40P, GW41A, GW41P, BCGW10, EWPC33, OD1049-SURFACE, OD1049-WH, OD1073-PIEZO	August, October, December 2012	EC	The investigation revealed that the data did not indicate that alluvial groundwater levels had been impacted by mining. Some fluctuations in EC were potentially related to the construction of the bore. Some fluctuations were also considered to be a part of a natural cycle, not captured in baseline data, which is influenced by the flushing of salts from the soil profile. In consultation with DP&I, trigger levels will be reassessed during the next review of the groundwater monitoring program to account for such cyclical variations that may not have been captured.
OD1079-PIEZO, OD1049-WH	August, October, December 2012	pH	The investigation revealed that the data did not indicate that alluvial groundwater levels had been impacted by mining. The elevated results were considered to be cement grout invading the coal seam during bore construction.
OD1046-PIEZO	October, December 2012, February 2013	EC	The investigation revealed that the data did not indicate that alluvial groundwater levels had been impacted by mining. The increasing salinity levels at this bore may be due to poor bore development. In consultation with DP&I, trigger levels will be reassessed during the next review of the groundwater monitoring program.
GW26, OD1046-PIEZO	October, December 2012, February 2013	pH	The investigation revealed that the data did not indicate that alluvial groundwater levels had been impacted by mining. The elevated results OD1046-PIEZO were considered to be cement grout invading the coal seam during bore construction. The elevated results GW26 were considered to be consistent with baseline results and were not indicative of mining impacts.
GW26, BCGW05	December 2012, February, April 2013	EC	The investigation revealed that the results at GW26 may reflect a localised impact from nearby earthworks. The location of BCGW05 in relation to Mt Arthur Coal operations and other groundwater monitoring bores suggested that it was not impacted by mining activities.
OD1078, OD1078-PIEZO, OD1082-PIEZO, GW39A, GW40A, GW41A, BCGW10, BCGW11, OD1049-SURFACE	February, April, June 2013	EC	The investigation revealed that the data did not indicate that alluvial groundwater levels had been impacted by mining. Similar to previous findings, fluctuations in EC were considered to be a result of natural variations or bore construction. In consultation with DP&I, trigger levels will be reassessed during the next review of the groundwater monitoring program.
OD1079-PIEZO, OD1082-PIEZO, OD1049-WH	February, April, June 2013	pH	The investigation revealed that the data did not indicate that alluvial groundwater levels had been impacted by mining. The pH levels were found to be consistent with historic baseline results for OD1079-PIEZO and OD1049-WH. It was recognised that groundwater levels at OD1082-PIEZO may be impacted by nearby mining voids. In consultation with DP&I, trigger levels will be reassessed during the next review of the groundwater monitoring program. In addition, consultants were engaged to complete an investigation into any potential impacts from the Belmont and McDonalds voids.

3.4.4 Further Improvements

During the next reporting period, Mt Arthur Coal will continue to monitor hydro-geomorphological conditions and evidence of any groundwater ingress as operations progress towards the Hunter River alluvials. A low permeability barrier along the area of connection of mining and the Hunter River alluvium is scheduled for completion during the next reporting period. Subsequent additional monitoring and management requirements will be implemented post-construction in accordance with DP&I approval requirements.

Specialised consultants are currently completing a full review of the Mt Arthur Coal's ground water monitoring program including an evaluation of bore construction details and a review of the adequacy of current impact assessment criteria. Recommendations are expected to be incorporated into the monitoring program in consultation with DP&I during the next reporting period.

3.5 Contaminated Land and Hydrocarbon Contamination

3.5.1 Environmental Management

Contaminated land at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-PRO-028 Storage of Fuels and Chemicals;
- MAC-ENC-PRO-029 Spill Response;
- MAC-ENC-PRO-043 Environmental Emergency Response;
- MAC-ENC-PRO-074 Contaminated Land Management; and
- MAC-STE-PRO-013 Hazardous Materials Management Procedure.

Hydrocarbons and other hazardous substances are kept in designated storage compounds designed and managed in accordance with relevant standards and procedures. Monitoring and inspection programs are maintained for these facilities to ensure hazardous materials and wastes are being adequately stored and disposed and that any spills or leaks are promptly reported and managed.

3.5.2 Environmental Performance

Every person employed or contracted by Mt Arthur Coal has a responsibility to take all reasonable steps to prevent harm to the environment occurring from a hazardous substance spill. Should the spill constitute a reportable event under the POEO Act, Mt Arthur Coal will report the event to the relevant authorities.

During the reporting period, all spills were controlled and contained immediately using emergency spill kits or earthmoving equipment to form a temporary bund. Any contaminated soil was recovered and treated in the bioremediation area.

A suitably qualified consultant was engaged to complete a Phase 2 Contamination Assessment for the former Bayswater No. 2 infrastructure area. This contamination assessment was completed during the reporting period and a draft remedial action plan (RAP) developed in accordance with the *Contaminated Land Management Act 1997* and applicable guidelines. This RAP will be finalised and submitted to DP&I prior to further development of the area.

An environmental response exercise was undertaken during the reporting period to assess site response against the requirements of the pollution incident response management procedure (PIRMP). The exercise simulated a vehicle rollover in a creek crossing, with release of fuel to water. The exercise indicated general compliance with the PIRMP, with key exercise observations used to develop the environmental work plan.

3.5.3 Reportable Incidents

Mt Arthur Coal did not receive any government fines or penalties related to contaminated land or hydrocarbon contamination during the reporting period and there were no related reportable incidents.

3.5.4 Further Improvements

The on-site bioremediation area will be relocated during the next reporting period.

3.6 Flora and Fauna

3.6.1 Environmental Management

Flora and fauna at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-PRO-012 Land Management; and
- MAC-ENC-MTP-044 Biodiversity and Rehabilitation Management Plan.

Mt Arthur Coal has a management strategy in place to limit impacts on native flora and fauna. The BRMP effectively manages habitat areas within and in the vicinity of the mine and associated offset areas reducing potential impacts and improving general habitat quality. The BRMP was approved by DP&I on 14 November 2012.

Each year Mt Arthur Coal undertakes flora and fauna monitoring to track progress against the management plan objectives. The monitoring program is aimed at tracking the condition of habitat areas over time and ensuring that the management plan's established performance indicators and project approval requirements are being met.

3.6.2 Environmental Performance

The annual flora and fauna monitoring program was undertaken in December 2012 by independent consultants. The annual survey assessed diversity and habitat condition across two remnant and two rehabilitation areas considered to be representative of the ecological communities found on site.

In addition to annual monitoring, a targeted survey of the ELA 171 area was also conducted in September 2012 for Pine Donkey Orchid (*Diuris tricolor*), which is listed as an endangered population under the *Threatened Species Conservation Act 1995* (TSC Act).

Flora

Two remnant sites, Mt Arthur North West Slopes and Maclean's Hill, were surveyed in 2012, as shown on Figure 11.

The Mt Arthur North West Slopes monitoring site exhibited a slight decline in terms of native species diversity and abundance since the 2009 monitoring, with 45 species detected in 2012, of which 36 were native and nine exotic. This compares to 44 native and six exotic species in 2009. In 2012, the mid and lower stratum vegetation showed signs of severe dieback, which can be directly attributed to the lack of rainfall during the preceding months. Monitoring in 2004, 2005 and 2006 indicated similar native species diversity to 2012, with native flora species ranging between 22 and 32 species.

An increase in exotic species was also observed, with Prickly Pear and Tiger Pear (*Opuntia stricta* and *Opuntia aurantiaca*) both recorded in the plot and surrounding areas. Both species are listed as class four noxious weeds under the *Noxious Weeds Act 1993* and are subject to relevant legislation and control measures.

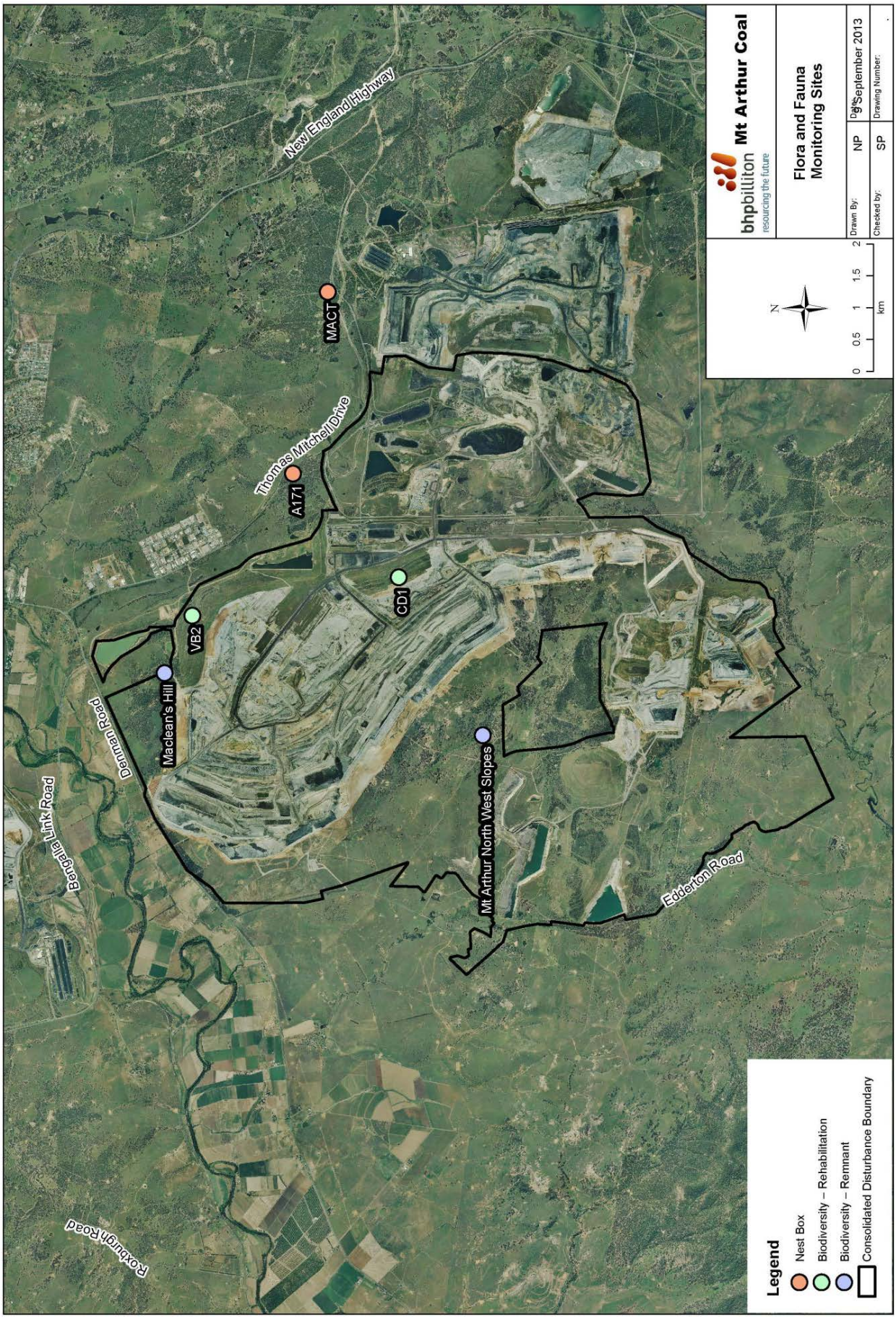


Figure 11: Flora and fauna monitoring locations

Three Tiger Orchid (*Cymbidium canaliculatum*) plants were recorded opportunistically approximately 100 metres to the west of the site and appeared to be in good health despite the lack of recent rainfall. Tiger Orchid (*Cymbidium canaliculatum*) forms part of an Endangered Population in the Hunter Valley and as such is listed under the TSC Act.

Monitoring at the Maclean's Hill monitoring site recorded 31 species, including 23 native and eight exotic species. This is a slight decline in native species diversity from previous monitoring surveys (2004, 2005, 2006 and 2009), which recorded between 26 and 33 native species. Dry conditions preceding the 2012 monitoring survey are likely to have contributed to this decline.

Weed exotic species presence is consistent with previous monitoring surveys. African Boxthorn (*Lycium ferocissimum*) and Creeping Pear (*Opuntia humifusa*) were recorded within the plot and in the surrounding area. Both are listed as class four noxious weeds under the *Noxious Weeds Act 1993* and are subject to relevant legislation and control measures.

Two rehabilitation sites, Maclean's Hill Visual Bund site VB2 (VB2) and overburden dump site CD1 (CD1), were also surveyed in 2012, as shown on Figure 11.

Rehabilitation site VB2 was established in 2004, with a high proportion of exotic species intended to rapidly colonise the area and stabilise the soil. Monitoring at VB2 in 2012 showed low structural and species diversity, with 16 species recorded, including nine native and seven exotic species. This compares to 17 native species and eight exotic species recorded in 2009, with dry conditions contributing to the decline in native species diversity. The current vegetation is dominated by Spotted Gum (*Corymbia maculata*), with evidence of natural dieback in the Acacia species (*Acacia parramattensis* and *Acacia falcate*). Ground cover was dominated by the exotic grass species Paspalum (*Paspalum dilatatum*).

Rehabilitation site CD1 was established in 2007-2008. Species and structural diversity is still relatively low, with 28 species recorded in 2012, including 15 native and 13 exotic species. However, this is an increase in native species diversity, compared to ten native (and 14 exotic) species recorded in 2010. Tree species, dominated by Spotted Gum (*Corymbia maculata*), Grey Box – White Box intergrades (*Eucalyptus albens/moluccana*) and Narrow-leaved Ironbark (*Eucalyptus crebra*), are approximately five metres in height. A less dense understory is dominated by *Acacia parramattensis*, *Acacia falcata* and *Myoporum montanum*. Ground cover is dominated by the exotic grass species Paspalum (*Paspalum dilatatum*).

Mt Arthur Coal's 2012 targeted survey for the endangered population of Pine Donkey Orchid (*Diuris tricolor*) identified 12 clumps. This is a decrease of 21 clumps since the 2011 survey when 33 clumps were found. A decrease in individual plants was also recorded, with 20 plants recorded in 2012, compared with 155 plants in 2011.

Forty-five of the previously recorded 53 clumps did not have flowering *Diuris tricolor* present in 2012, however, five new clumps were located. The *Diuris tricolor* located during 2012 were at peak flowering, with full open flowers, few buds and some withering flowers and leaves.

As shown in Table 23, results have been highly variable since monitoring commenced in 2007. Survey results indicate that individuals do not flower each consecutive year, but may lie dormant in wait of favourable environmental conditions. It is likely that fluctuations in clump size and individuals recorded each year are related to prevailing weather conditions and recent rainfall.

While at present there does not appear to be any significant threats to *Diuris tricolor*, weeds will continue to be managed in the ELA 171 area in accordance with Mt Arthur Coal's management plan.

Table 23: *Diuris tricolor* survey results since 2007

Survey year	Number of *Diuris tricolor* clumps recorded
2012	12
2011	33
2010	25
2009	4
2008	19
2007	8

Fauna

During the 2012 monitoring, 51 fauna species were recorded, consisting of 31 birds, 14 mammals, four reptiles and two amphibians. This represented a decline in fauna species diversity, compared with 76 species recorded in 2011. Dry climatic conditions are likely to have been a major contribution to this decline, especially in the number of amphibians recorded.

Thirty fauna species were recorded at the Mt Arthur North West Slopes site during the 2012 survey, including 29 native and one introduced species. This is consistent with recent monitoring results when compared to 27 species in both 2009 and 2006 and 31 species in 2005. One threatened fauna species, the Eastern Bent-wing Bat (*Miniopterus schreibersii oceanensis*) was recorded in 2012. This species was also recorded during the 2004, 2005 and 2006 monitoring surveys, indicating that the site still provides foraging habitat for this species.

In 2012, 36 fauna species were recorded at the Maclean's Hill remnant vegetation site, including 34 native and two introduced species. This is comparable with the mean species diversity for the site, which is 31 species. Two threatened fauna species were recorded at the Maclean's Hill monitoring site in 2012, being the Speckled Warbler (*Chthonicola sagittatus*) and the Eastern Bent-wing Bat (*Miniopterus schreibersii oceanensis*), which are both listed as vulnerable under the TSC Act. Both these species have been recorded during previous fauna monitoring surveys at this site, suggesting that the habitat quality of the site has remained largely unchanged.

At the VB2 rehabilitation site, 19 fauna species were recorded in 2012, including 17 native and two introduced species. This is an increase in native diversity from 14 native species recorded in 2009. No threatened fauna species were recorded within VB2 during the 2012 fauna monitoring. One common micro-bat species, the Southern Free-tail Bat (*Mormopterus planiceps*), was recorded during 2012, which is the first record of a micro-bat species at VB2. Similarly, one common frog species, the Dwarf Tree Frog (*Litoria fallax*), was recorded, which is the first amphibian recorded at this site since monitoring began in 2009.

During 2012, 10 fauna species were recorded at the CD1 rehabilitation site, including eight native and two introduced species. This is a slight increase in native species from the seven species recorded in 2009. The low diversity of species recorded in the rehabilitated areas is considered to result from the low habitat value provided by the predominantly immature trees that comprise the vegetation at this site. Fauna species diversity is expected to rise as the site vegetation matures and habitat complexity increases.

The annual monitoring surveyed two nest box sites, A171 and Mt Arthur Coal Terminal (MACT), in 2012, as shown on Figure 11. The results of the nest box monitoring revealed a relatively high occupancy rate in the nest boxes that were still in habitable condition. Over half the nest boxes observed within MACT and A171 showed signs of degradation and disrepair. Of the 23 functioning nest boxes located at the two sites, 13 were either occupied or showed signs of previous occupation. In total, only two species were

observed utilising the nest boxes, being the Common Brushtail Possum (*Trichosurus vulpecula*) in ten boxes and the threatened Squirrel Glider (*Petaurus norfolcensis*) in one box.

Other Activities

Wild dog and fox management activities continued on land owned by Mt Arthur Coal during the reporting period with wild dog and fox baiting programs being undertaken during February and May 2013. Results from the February 2013 program indicated that baits were taken from 51 of the 62 (82 per cent) baiting locations, with 79 baits taken overall. The May 2013 program saw baits taken from 47 of the 65 (72 per cent) baiting locations, with 80 baits taken overall. This shows a general increase of baiting locations where baits were taken from previous programs, as shown in Table 24.

Table 24: Baiting results from feral animal control programs

Program date	Number of baiting locations where baits were taken	Percentage of baits taken
May 2013	47	72
February 2013	51	82
May 2012	41	61
February 2012	22	19
May 2011	42	38

Habitat trees, or hollow bearing trees, were recovered during vegetation clearing ahead of mining and placed amongst established woodland rehabilitation as habitat features. Approximately 130 trees were also provided to the NSW Department of Primary Industries – Fisheries during the reporting period for construction of fish habitat structures in the Hunter River.

Additional signage and fencing was also installed to further control access to designated conservation and offset areas.

3.6.3 Reportable Incidents

Mt Arthur Coal did not receive any government fines or penalties related to flora and fauna during the reporting period and there were no related reportable incidents.

3.6.4 Further Improvements

A stand-alone biodiversity management plan is being developed from the existing BRMP to separately detail the measures Mt Arthur Coal has implemented to protect and enhance biodiversity features and values on site and within off-site offset areas. A draft plan was submitted to SEWPAC during the reporting period and is expected to be finalised during the next reporting period.

3.7 Weed Management

3.7.1 Environmental Management

Weed management at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-PRO-012 Land Management; and
- MAC-ENC-MTP-044 Biodiversity and Rehabilitation Management Plan.

Areas of weed impact are continually monitored through regular inspections conducted by Mt Arthur Coal and local land managers. Monitoring is assisted by feedback from mining personnel, contractors and

lessees to identify areas of weed infestation. A geographic information system database also assists to record land management data, including previous weed treatment areas, to monitor and program future remediation works.

An annual weed assessment was conducted in December 2012 and the results were used to guide priority of weed treatment for the remainder of the reporting period. Weed control programs at Mt Arthur Coal target weeds that are locally declared under the *Noxious Weeds Act 1993*, including African boxthorn, Mother-of-millions, various ground cactus species and St Johns Wort.

3.7.2 Environmental Performance

Mt Arthur Coal targeted approximately 1,043 hectares of land for treatment during the reporting period. Priority areas for treatment included the mine site boundary, topsoil stockpiles, rehabilitation areas and selected offset and conservation areas. Weed treatment primarily targeted Mother-of-millions, African Boxthorn, St John's Wort and Prickly Pear. Observations during the weed treatment program and follow up inspections indicate that treatment has largely been effective.

3.7.3 Reportable Incidents

Mt Arthur Coal did not receive any government fines or penalties related to weed management during the reporting period and there were no related reportable incidents.

3.7.4 Further Improvements

During the next reporting period, Mt Arthur Coal will engage a land management consultant to conduct an annual weed assessment. Weed management priorities will be revised based on the outcomes of the assessment. The weed control program will also be expanded to cover all biodiversity offset areas.

3.8 Blasting

3.8.1 Environmental Management

Blast management at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-MTP-015 Blast Management Plan;
- MAC-ENC-PRO-055 Blast Monitoring Program; and
- MAC-ENC-MTP-024 Road Closure Management Plan.

The blast management plan and monitoring program were revised and submitted to DP&I for review and approval during the reporting period and were approved on 27 May 2013. A blast fume management strategy was developed during the reporting period to reduce the quantities of visible blast fume generated and reduce the potential of any fume generated leaving the Mt Arthur Coal lease boundary.

The blast management plan details the relevant blasting and vibration impact assessment criteria and compliance procedures and controls related to open cut blasting activities. During the year, all statutory blast monitors were calibrated in accordance with relevant Australian standards.

In accordance with the approved monitoring program two blast monitors, BP05 and BP06 were decommissioned in June 2013. To better represent residences on privately-owned land, these monitors will be replaced with two additional statutory blast monitors (BP10 and BP11) during the next reporting period. The locations of Mt Arthur Coal's statutory blast monitor are shown in Figure 12.

Prior to each blast, a pre-blast environmental assessment was carried out to gauge the severity of the possible impacts on the surrounding community and the environment. The assessment includes a review

of wind speed and direction, the strength of temperature inversions, if present, and the location and size of the blast. During the reporting period, 107 blasts were delayed at Mt Arthur Coal due to unfavourable weather conditions, which is more than half of the blasts.

Mt Arthur Coal is committed to reducing the impacts of blasting on the community and its near-neighbours by implementing a range of mitigation measures, many of which exceed statutory requirements. Blasts have been designed to minimise the effects of air blast overpressure noise and ground vibration on blast-sensitive features and the neighbouring community. Some of the measures undertaken during the reporting period to reduce blasting impacts included:

- modelling potential impacts prior to blasting;
- using appropriate stemming material in the blast hole;
- controlling blast charges;
- undertaking pre-blasting environmental assessments;
- implementing a blast fume management strategy;
- notifying other mines and nearest residents of proposed blast times;
- extensively using electronic initiation systems to manage vibration;
- advertising planned blast times on the BHP Billiton website;
- delaying blasts where weather conditions represented an unacceptable risk of off-site impacts;
- modifying blasting methods to ensure compliance with environmental limits; and
- undertaking periodic structural inspections of blast-sensitive structures.

Blasting activities can only be undertaken between 9 am and 5 pm Monday to Saturday, inclusive. No blasting is allowed on Sundays, public holidays or at any other time without written approval from regulatory authorities.

During the reporting period Mt Arthur Coal commissioned specialist consultants to undertake a review of the operation’s blast monitoring systems and to develop a verification audit process for the system. The review found that the monitors were set in a dynamic mode which meant the capture period at each monitor was calculated based on the distance of each monitor in the network to the trigger source. This had the potential to impact data reliability if the trigger source was too distant from the location. As a result of the finding, all blast monitors were changed to manual mode to ensure complete capture of data. Mt Arthur Coal notified the EPA and DP&I of this change.

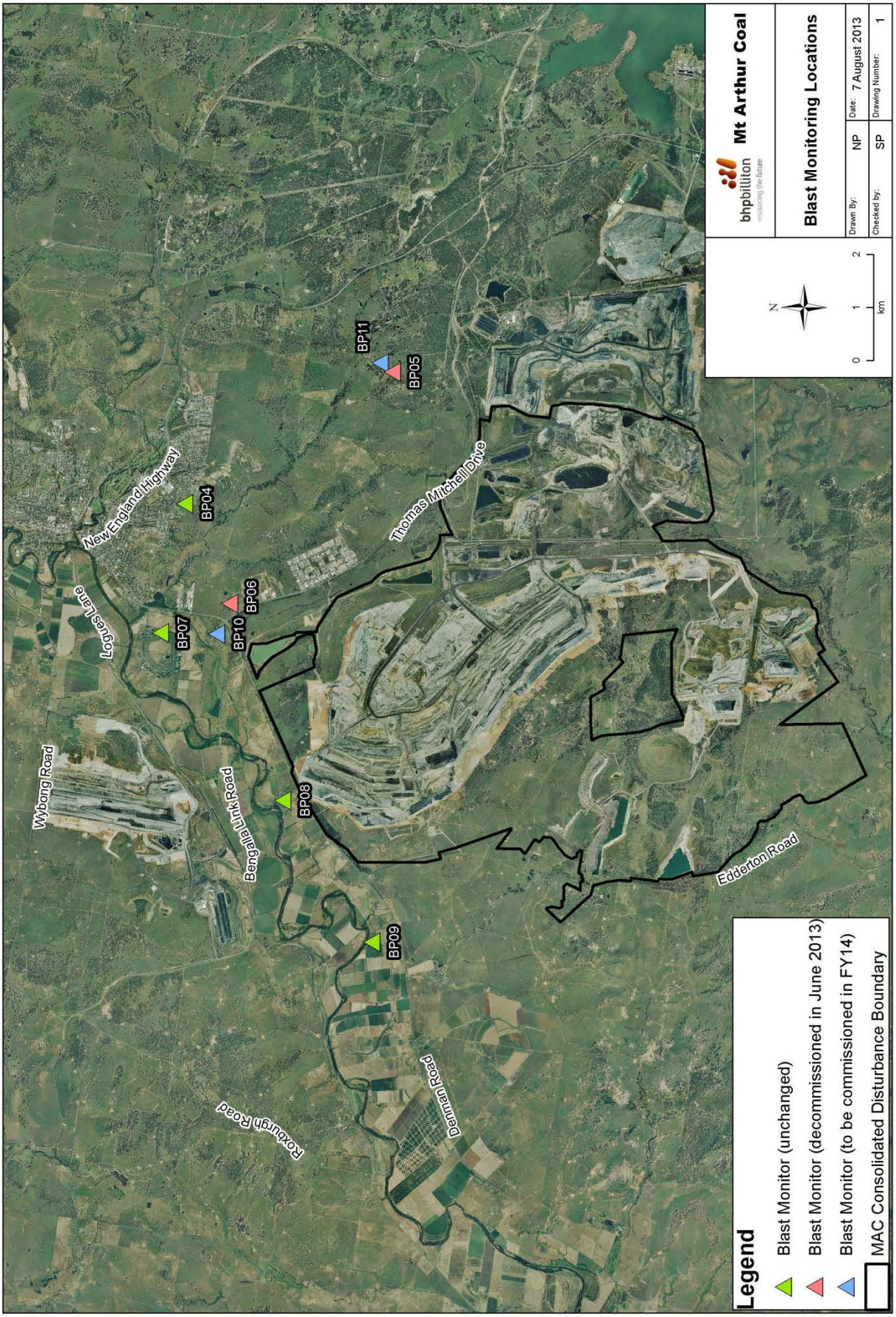


Figure 12: Mt Arthur Coal's blast monitoring locations

3.8.2 Environmental Performance

A summary of the results from the statutory blast monitoring sites for the reporting period is provided in Appendix 6. Blast data capture rates for the reporting period were 100 per cent at all statutory sites with the following exceptions:

- BP07 recorded a blast capture rate of 98.9 per cent for the reporting period following a failure to record ground vibration and overpressure noise data for two blasts on 28 March 2013, due to a bad sector on the monitor's compact flash card; and
- BP04 recorded a blast capture rate of 99.7 per cent for the reporting period following an invalid overpressure noise result recorded in January 2013, as described in Section 3.8.3.

In accordance with the consolidation project approval, ground vibration is limited to 10 millimetres per second (mm/s) and overpressure noise limited to 133 decibels (linear) at BP08. At all other sensitive receptors, ground vibration is limited to 10 mm/s and overpressure noise is limited to 120 decibels (linear). Ground vibration and overpressure are also limited to 5 mm/s and 115 decibels (linear) respectively for 95 per cent of blasts at all sites except BP08.

There were 180 blast events during the reporting period. In accordance with the consolidation project approval, Mt Arthur Coal limited blasts to less than two blasts a day, 12 blasts a week and four blasts a week with a maximum instantaneous charge of greater than 1,500 kilograms, averaged over a 12 month period.

The average overpressure noise recorded was 94.8 decibels (linear) for the six statutory monitoring sites. Comparison with FY12 data (96.8 decibels (linear)) shows a slight decrease, however, comparison with FY11 data (93.8 decibels (linear)) shows relatively consistent results. The highest overpressure noise result of 128.7 decibels (linear) was recorded on 14 January 2013 at the South Muswellbrook monitor (BP04).

The average ground vibration recorded was 0.34 mm/s for the six statutory monitoring sites, which is lower than the average of 0.44 mm/s recorded in FY12 and of 0.51 mm/s in FY11. The highest ground vibration result of 7.42 mm/s was recorded on 23 April 2013 at the Denman Road West monitor, BP09.

Eleven blasts were recorded above the overpressure noise threshold limit of 115 decibels (linear) during the reporting period. Mt Arthur Coal remained below the 5 per cent limit criteria of 115 decibels (linear) at each statutory monitor.

Two blasts were recorded above the 5 mm/s threshold limit for ground vibration during the reporting period, both at BP09, in March and April 2013. On 27 March 2013 monitor BP09 recorded a ground vibration result of 5.13 mm/s, which resulted in three blast vibration complaints from local residents. On 23 April 2013 monitor BP09 recorded a ground vibration result of 7.42 mm/s, which resulted in eight complaints and one enquiry from local residents. Mt Arthur Coal remained below the 5 per cent limit criteria of 5 mm/s at each statutory monitor for the reporting period.

Results generally reflected predictions made in consolidation environmental assessment. Mt Arthur Coal will continue to modify blasting methods to ensure compliance with environmental limits.

3.8.3 Reportable Incidents

Mt Arthur Coal reported an exceedance of the maximum overpressure limit of 120 decibels (linear) at BP04 on 14 January 2013 to the DP&I and EPA. An investigation revealed that the elevated result of 128.7 decibels (linear) was invalid due to meteorological conditions impacting on the appropriate functioning of the equipment. To address this issue Mt Arthur Coal reviewed the adequacy of the blast monitor windshields with the service provider and added inspection of these windshields to the annual maintenance regime.

Two blasts at BP08 recorded results above the 10 mm/s maximum limit for ground vibration in February and March 2013. Investigations revealed that both of these elevated results (10.52 mm/s and 10.98 mm/s, respectively) were invalid. The first was invalid because the monitor was damaged at the time, and the second because the plastic cover mounted over the geophone to protect it from irrigation and local disturbances was thought to have been touching the geophone, producing the elevated result. Both these invalid results were replaced with suitable data from a nearby monitor owned by Bengalla (5.73 mm/s and 6.55 mm/s, respectively) to complete the blast dataset for BP08 for the reporting period. Both exceedances were reported to DP&I and it was agreed that the Bengalla data adequately reflected Mt Arthur Coal's blasts.

In accordance with the site's blast fume management strategy, Mt Arthur Coal notified DP&I following a blast on 30 January 2013 which received a fume rating of 4C. It was noted that the fume stayed low in the pit and did not leave site. An investigation revealed the cause of the fume was attributed to heavy rainfall experienced prior to firing the shot. The sleep time on the shot was seven days. Two actions resulting from the investigation to address this issue were to review options for making shots fume-proof and review the blast fume management strategy.

Mt Arthur Coal did not receive any government fines or penalties related to blasting during the reporting period.

3.8.4 Further Improvements

In accordance with the approved monitoring program blast monitors BP10 and BP11 will be installed during the next reporting period.

3.9 Noise

3.9.1 Environmental Management

Noise management at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-MTP-032 Noise Management Plan; and
- MAC-ENC-PRO-056 Noise Monitoring Program.

The above documents were revised and submitted to DP&I for review during the reporting period and were approved on 27 May 2013.

Mt Arthur Coal has a range of management strategies in place to limit impacts of noise. The operation's noise management plan details the relevant noise impact assessment criteria, compliance procedures and controls relating to mining activities. Prepared to fulfil the requirements of the consolidation project approval and the conditions of EPL 11457, the management plan ensures:

- all relevant statutory requirements and BHP Billiton policies and standards are met;
- the impact of noise from mining operations on the community and environment are managed and minimised;
- an effective response mechanism to deal with issues and complaints is maintained; and
- the results of noise monitoring comply with applicable criteria.

Noise management controls include a range of mine planning, operational and engineering measures such as separate day and night dumps, testing the sound power of mobile equipment, considering seasonal influences on noise impacts during mine planning and real-time monitoring and alarming systems. These controls were applied during the reporting period and revised as appropriate.

Mt Arthur Coal uses some of the world's quietest mining equipment fitted with a variety of sound suppression features to reduce noise. Some of the equipment was developed by Mt Arthur Coal in collaboration with equipment manufacturer Liebherr to help reduce the impact of operational noise from the mine site on nearby residents and landowners. Mt Arthur Coal regularly tests the noise emitted from each of its trucks, excavators and other mobile equipment to ensure it is below the site's maximum noise limits. Results from sound power level monitoring of the fleet are used to generate maintenance plans where necessary, and also to identify any equipment that is to be restricted in the areas in which it can operate.

To adequately sample the noise environment, attended monitoring is undertaken by an independent consultant on a monthly basis at eight statutory monitoring locations as shown in Figure 13. During the reporting period attended noise monitoring commenced at location NP13 in July 2012 and at NP14, NP15 and NP16 in June 2013. Attended noise monitoring was discontinued at locations NP08, NP09 and NP11 in June 2013 to reflect changes in the recently approved monitoring program.

Attended monitoring involves an acoustic consultant listening and measuring dominant noise sources at various locations for a period of time. Attended monitoring is only conducted at night under worst case conditions when atmospheric conditions can allow noise to travel further from the source.

Received levels from various noise sources are noted during attended monitoring and particular attention is paid to the extent of Mt Arthur Coal's contribution. At each monitoring location, the mine's $L_{Aeq\ (15min)}$, which is the average noise energy over a 15 minute period, and $L_{A1\ (1min)}$ (in the absence of any other noise), which is the highest noise level generated for 0.6 seconds during one minute, is measured. When Mt Arthur Coal was measurable and where meteorological conditions resulted in criteria applying (in accordance with the consolidation project approval), a low frequency assessment was conducted in accordance with the NSW Industrial Noise Policy and Broner methods.

The impact assessment includes consideration of mining activity and atmospheric conditions during each measurement. Wind speed and estimated temperature inversion conditions may result in regulatory criteria not being applicable in accordance with the NSW Industrial Noise Policy. The assessment and investigation process for exceedances undertaken by Mt Arthur Coal is described in the noise monitoring program.

Mt Arthur Coal also has four directional real-time monitors at various locations surrounding the site. These monitors are configured to provide statistical noise data summaries every 15 minutes and this information is used for proactive management rather than statutory purposes. In accordance with the approved monitoring program, real-time monitors NC01 and NC03 were decommissioned in June 2013 and a new directional real-time monitor was installed to the north west of the operation.

During the reporting period Mt Arthur Coal engaged acoustic consultants to complete noise modelling for winter 2013 to determine the likely change in the acoustic environment at locations around the operation. The noise modelling enables Mt Arthur Coal to compare the likely extent of acoustic environment changes in winter 2013 to the same period in 2012 and allows modifications to the mine plan to be enacted if required to minimise noise impacts.

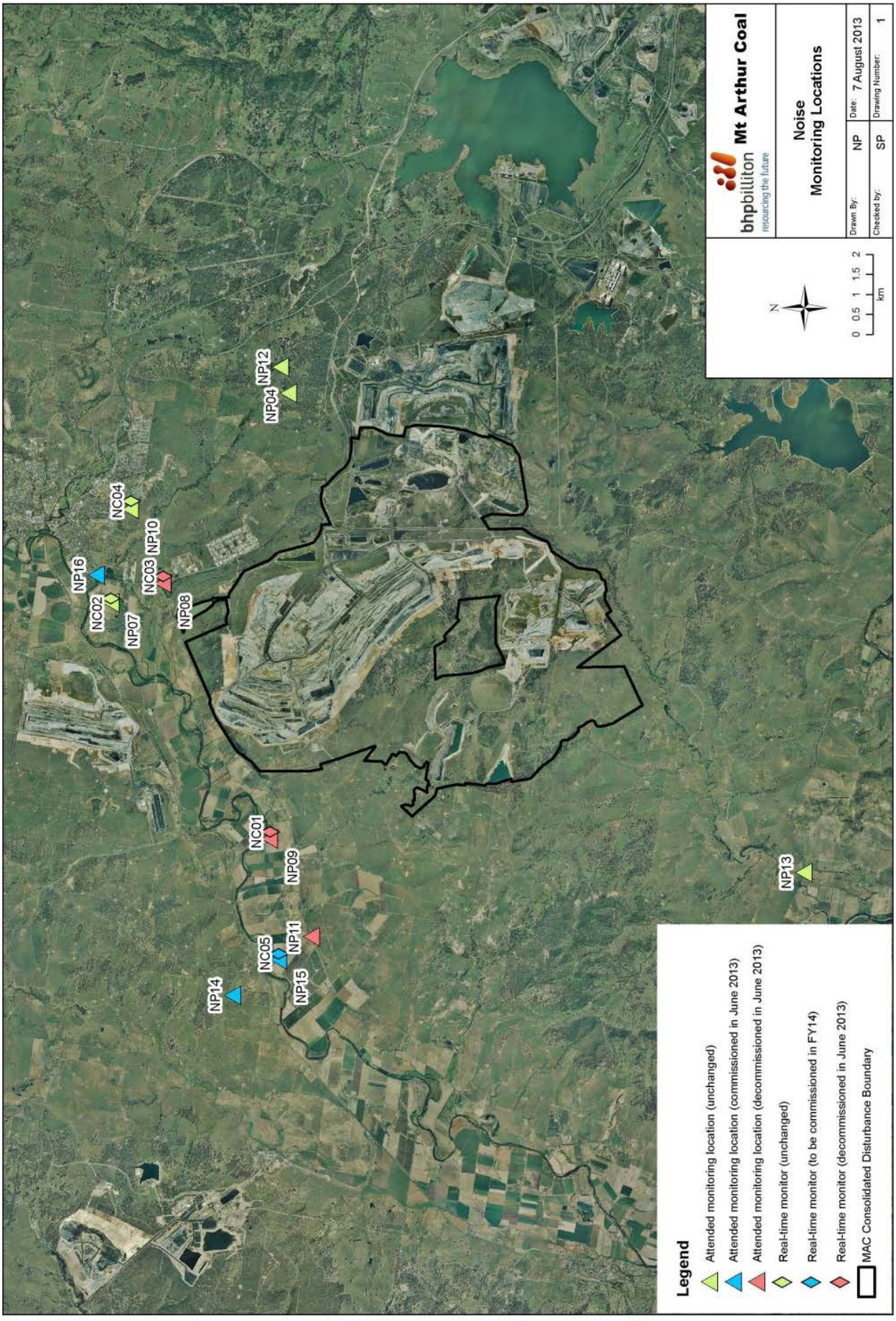


Figure 13: Mt Arthur Coal's noise monitoring locations

3.9.2 Environmental Performance

An analysis of periodic attended noise monitoring results indicates Mt Arthur Coal's operations did not exceed the $L_{Aeq\ (15min)}$ or $L_{A1\ (1min)}$ statutory limit during the reporting period, with the exception of $L_{Aeq\ (15min)}$ results for NP07 and NP10 in April 2013. A summary of results from Mt Arthur Coal's attended noise monitoring is provided in Table 25.

A noise impact assessment was completed in 2009 as part of the consolidation environmental assessment. Noise modelling was completed for 2011, 2016 and 2022 predicting maximum noise levels under prevailing night conditions for each receiver. The predictions for 2011 remain representative for this reporting period and the monitoring results for the period support the predicted results in the consolidation environmental assessment. The predicted noise levels at Mt Arthur Coal for 2011 are shown in Table 25.

Table 25: $L_{Aeq\ (15min)}$ and $L_{A1\ (1min)}$ attended noise monitoring results

$L_{Aeq\ (15min)}$	NP04	NP07	NP08^	NP09^	NP10	NP11	NP12	NP13	NP14	NP15	NP16
Representative residential assessment zone	A	B & C	B	D	E	D & F	G	N/A	D	D & F	B
Noise impact assessment criteria (Intrusive criteria) ($L_{Aeq\ (15min)}$)	38	39	N/A	N/A	39	35	39	N/A	35	35	37
Land acquisition criteria ($L_{Aeq\ (15min)}$)	43	44	N/A	N/A	44	40	44	N/A	40	40	42
Predicted noise level for 2011 for each monitoring location	38	37	N/A	N/A	37	35	38	N/A	33	35	37
24-26 July 2012	36	IA	IA	36	IA	30	35	IA	-	-	-
22-23 August 2012	NM	NM	IA	IA	IA	NM	IA	<25	-	-	-
25–26 September 2012	IA	NM	31	38	IA	<30	IA	IA	-	-	-
25–26 October 2012	NM	IA	IA	IA	33	IA	NM	IA	-	-	-
15-16 November 2012	IA	32	26	33	NM	29	NM	<20	-	-	-
16-17 December 2012	IA	33	31	33	28	25	IA	NT	-	-	-
10-11 January 2013	IA	IA	29	35	IA	30	IA	<25	-	-	-
24-25 February 2013	IA	IA	IA	NM	IA	IA	IA	25	-	-	-
14-15 March 2013	IA	<30	32	32	IA	29	IA	IA	-	-	-
23-24 April 2013	33	**40**	45	31	**41**	IA	36	IA	-	-	-
30-31 May 2013	NM	IA	37	NM	NM	NM	IA	IA	-	-	-
June 2013 (conducted 3-4 July 2013)*	38	NM	-	-	NM	-	38	25	<30	IA	IA
$L_{A1\ (1min)}$	**NP04**	**NP07**	**NP08^**	**NP09^**	**NP10**	**NP11**	**NP12**	**NP13**	**NP14**	**NP15**	**NP16**
Representative residential assessment zone	A	B & C	B	D	E	D & F	G	N/A	D	D & F	B
Noise impact assessment criteria ($L_{A1\ (1min)}$)	45	45	N/A	N/A	45	45	45	N/A	45	45	45
24-26 July 2012	43	IA	IA	40	IA	42	NM	IA	-	-	-
22-23 August 2012	NM	NM	IA	IA	IA	30	IA	26	-	-	-
25-26 September 2012	IA	NM	33	44	IA	30	IA	IA	-	-	-
25–26 October 2012	38	IA	IA	IA	35	IA	37	IA	-	-	-

$L_{Aeq\ (15min)}$	NP04	NP07	NP08^	NP09^	NP10	NP11	NP12	NP13	NP14	NP15	NP16
15-16 November 2012	IA	40	27	34	NM	35	NM	20	-	-	-
16-17 December 2012	IA	35	33	44	29	30	IA	NT	-	-	-
10-11 January 2013	IA	IA	32	40	IA	37	IA	IA	-	-	-
24-25 February 2013	IA	IA	IA	NM	IA	IA	IA	NM	-	-	-
14-15 March 2013	IA	32	38	38	IA	34	IA	IA	-	-	-
23-24 April 2013	35	42	52	35	43	IA	40	IA	-	-	-
30-31 May 2013	NM	IA	40	35	30	<25	IA	IA	-	-	-
June 2013 (conducted 3-4 July 2013)*	40	NM	-	-	40	-	40	26	30	IA	IA

^ Monitoring locations NP08 and NP09 are located on land owned by Mt Arthur Coal and therefore the criterion is not applicable. These locations were decommissioned in June 2013.
* June 2013 monitoring delayed due to unsuitable weather conditions.
NT – Not available due to difficulties gaining access.
NM – Mt Arthur Coal's operations were audible but not measurable.
IA – Mt Arthur Coal's operations were inaudible.
N/A – Predicted noise levels were not applicable as monitored on land owned by Mt Arthur Coal.
Note: Noise emission limits do not apply for winds greater than 3 metres per second (at a height of 10 metres), or temperature inversion conditions greater than or equal to 4 degrees Celsius per 100 metres.

Low frequency assessment was carried out in accordance with the INP and Broner methods when Mt Arthur Coal was measurable and where meteorological conditions resulted in criteria applying (in accordance with the consolidation project approval). As there were no exceedances of the low frequency criteria as detailed in Table 26, no further low frequency assessment was required. There were no measurements where Mt Arthur Coal was measureable and criterion applied in August and September 2012 and January, March and May 2013.

Table 26: Low frequency noise monitoring results

Location	Date	Mt Arthur Coal only L_{Aeq}[1] dB	L_{Ceq} Criterion[2] dB	L_{Ceq} (less than 250 Hertz)[3,6] dB	INP L_{Ceq} Criterion[4] dB	Total L_{Ceq} minus L_{Aeq}[5,6] dB	Comment
NP4	25 July 2012	36	60	57	15	**19**[7]	Mt Arthur Coal and frogs
NP11	24 July 2012	30	60	53	15	**23**	Mt Arthur Coal only
NP12	25 July 2012	35	60	**64**[7]	15	**18**[7]	Mt Arthur Coal and road traffic
NP10	26 October 2012	33	60	53[7]	15	**18**[7]	Mt Arthur Coal and road traffic
NP7	15 November 2012	32	60	53	15	**15**	Mt Arthur Coal
NP11	15 November 2012	29	60	47	15	**19**	Mt Arthur Coal
NP7	16 December 2012	33	60	52	15	14	Mt Arthur Coal and road traffic
NP11	16 December 2012	25	60	**73**[7]	15	12	Mt Arthur Coal and road traffic
NP13	24 February 2013	25	60	50	15	8	Mostly frogs and insects, low level Mt Arthur Coal
NP4	23 April 2013	32	60	56	15	**17**[7]	Road traffic
NP7	24 April 2013	40	60	57	15	**17**[7]	Road traffic
NP9	23 April 2013	31	60	50	15	14	Road traffic and pump noise
NP10	24 April 2013	41	60	58	15	**17**	Primarily Mt Arthur Coal
NP12	24 April 2013	36	60	57	15	14	Road traffic
NP4	4 July 2013 (for June 2013)	38	60	59	15	**20**[7]	Mt Arthur Coal and road traffic

Location	Date	Mt Arthur Coal only L_{Aeq}[1] dB	L_{Ceq} Criterion[2] dB	L_{Ceq} (less than 250 Hertz)[3,6] dB	INP L_{Ceq} Criterion[4] dB	Total L_{Ceq} minus L_{Aeq}[5,6] dB	Comment
NP12	4 July 2013 (for June 2013)	38	60	59	15	**19**[7]	Mt Arthur Coal and road traffic
NP13	3 July 2013 (for June 2013)	25	60	50	15	**21**[7]	Mostly road traffic

Notes: 1. Mt Arthur Coal only $L_{Aeq\ (15min)}$ provided as a guide.
2. Night L_{Ceq} criterion as detailed in Broner (2010).
3. These are measured C-weighted noise levels (at frequencies less than 250 Hertz) and are not always the result of activity at Mt Arthur Coal. Guidance on this is provided in the Comments column.
4. Low frequency criterion as detailed in the INP.
5. This is the total measured C-weighted noise level less the total measured A-weighted noise level and are not always the result of activity at Mt Arthur Coal. Guidance on this is provided in the Comments column.
6. Bolded results are those greater than the relevant criterion.
7. Not considered an exceedance due to other noise sources occurring during the measurement.

3.9.3 Reportable Incidents

Mt Arthur Coal reported two attended noise monitoring exceedances in April 2013, at NP07 and NP10, to DP&I. On 24 April 2013 attended noise monitoring levels at NP07 and NP10 recorded an $L_{Aeq\ (15min)}$ of 40 decibels (dB) and 41 dB, respectively. Investigations for NP07 revealed that an exhaust, fan and transmission continuum from Mt Arthur Coal was audible throughout the measurement and generated the site only $L_{Aeq\ (15min)}$ of 40 dB. Dozer tracks and reverse alarms were also noted. This resulted in a 1 dB exceedance of the $L_{Aeq\ (15min)}$ night impact assessment criterion for this location. Investigations for NP10 revealed that an engine, fan and track noise continuum from Mt Arthur Coal was audible throughout the measurement and generated the site only $L_{Aeq\ (15min)}$ of 41 dB. This resulted in a 2 dB exceedance of the $L_{Aeq\ (15min)}$ night impact assessment criterion for this location.

Further monitoring was completed on 28 April 2013 at NP07 and NP10 to determine if sustained noise was audible and an $L_{Aeq\ (15min)}$ of 36 dB and 37 dB, was recorded respectively. In accordance with the NSW Industrial Noise Policy, both results were not considered a non-compliance as the noise level did not exceed the statutory limit by more than 2 dB. Additional monitoring also showed that the elevated noise levels were not sustained.

Mt Arthur Coal did not receive any government fines or penalties related to noise during the reporting period.

3.9.4 Further Improvements

During the next reporting period Mt Arthur Coal intends to trial a predictive noise model. This model will facilitate increased operational preparation and contingency planning to appropriately manage noise during forecasted adverse weather conditions.

An independent noise consultant will be engaged during the next reporting period to undertake sound power level surveys on heavy equipment.

3.10 Visual Amenity and Lighting

3.10.1 Environmental Management

Visual amenity and lighting management at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-PRO-071 Visual Assessment Procedure;
- MAC-PRD-PRO-073 Procedure for Lighting Plant Movement and Setup; and

- MAC-ENC-PRO-077 Light Management Procedure.

During the reporting period Mt Arthur Coal developed a visual assessment procedure to monitor the growth and development of the operation's overburden emplacement areas and maintain compliance against modelled predictions in the consolidation environmental assessment. The visual assessment procedure involves taking photographs from six locations along public roads surrounding Mt Arthur Coal on a quarterly basis, which are compared against modelled predictions in the consolidation environmental assessment.

Mt Arthur Coal has also developed a light management procedure to mitigate, control and reduce the impact of lighting on the surrounding area. The procedure is to be used in conjunction with the procedure for lighting plant movement and setup, which stipulates where lights can be directed within operational areas to minimise the impact on sensitive locations including South Muswellbrook, Racecourse Road, Roxburgh Road, Thomas Mitchell Drive, Denman Road and Edderton Road.

Mt Arthur Coal's mine plan is regularly reviewed by operational supervisors and mining engineers to implement measures to reduce the visibility of the operation off site, including designing overburden dumps to create visual bunds and barriers to the operation and planning day and night dumps to keep lighting impacts to a minimum. Regular inspections of lighting plants and their setup are conducted to ensure potential offsite impacts are minimised. Risk assessments for new or modified mining activities also include a review or modelling of visual amenity where applicable.

3.10.2 Environmental Performance

Landscaped areas, including earth bunds and tree screens installed along Edderton Road, Denman Road and Thomas Mitchell Drive continue to successfully screen the Mt Arthur Coal operation, although site areas can be seen from parts of Denman Road, Roxburgh Road and elevated areas around Muswellbrook. These landscaped areas and other visual screens are inspected quarterly in accordance with the visual assessment procedure and corrective actions implemented where necessary.

The results of the quarterly inspections showed that locations to the east of Mt Arthur Coal have large areas of rehabilitated overburden dumps, which show reduced visual contrast with the surrounding region, with only a small visual impact due to active mining activities. From locations to the north and west of Mt Arthur Coal, a large contrast between mining activity and the surrounding region is visible due to the activity on the low wall overburden dumps. For all locations the shape and size of the overburden dumps are within the predicted model shown in the consolidation environmental assessment for the modelled years 2011 and 2016.

During the reporting period Mt Arthur Coal undertook additional tree planting of tubestock propagated from native seed collected on site along sections of Thomas Mitchell Drive to improve the existing screening.

In addition, Mt Arthur Coal continued to purchase new mobile light-emitting diode (LED) lighting plants to reduce its impact on the environment and the community. The new lighting system uses high-powered, long-lasting LED lights that reduce the amount of glare and light spillage, effectively minimising the amount of potential light visible off site. The plants are more energy efficient in comparison to the older system, reducing fuel consumption and greenhouse gas emissions by 50 per cent.

3.10.3 Reportable Incidents

Mt Arthur Coal did not receive any government fines or penalties related to lighting or visual amenity during the reporting period and there were no related reportable incidents.

3.10.4 Further Improvements

Lighting from Mt Arthur Coal will continue to be implemented in accordance with the EMS and managed to minimise impacts on the local community whilst maintaining the minimum level necessary for operational and safety needs.

3.11 Aboriginal Cultural Heritage

3.11.1 Environmental Management

Aboriginal cultural heritage at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-MTP-042 Aboriginal Heritage Management Plan.

The above document was approved by DP&I on 20 August 2012.

Mt Arthur Coal operates within an area that is rich in both Aboriginal and European cultural heritage. Through its cultural heritage program Mt Arthur Coal assesses and manages significant heritage features that occur on its land. Mt Arthur Coal has implemented a management plan that provides the framework to identify, assess, monitor, conserve and manage Aboriginal cultural heritage. The management plan assists Mt Arthur Coal to mitigate the impacts of its operations on Aboriginal cultural heritage, comply with the requirements of the *National Parks and Wildlife Act 1974*, EP&A Act and the consolidation project approval and continue its active partnership with the Aboriginal community.

3.11.2 Environmental Performance

During the reporting period salvage works were undertaken in pre-strip areas in advance of the active pit by registered archaeologists in consultation with attending representatives from the Aboriginal community. These salvage works covered an area of approximately 500 hectares. This included one area of subsurface salvage works. Mudstone and silcrete artefacts were the most common raw material type salvaged during the reporting period. The most common artefact types were flakes, flake fragments and cores.

Mt Arthur Coal also operates in accordance with the belief that Aboriginal cultural heritage extends beyond the preservation of artefacts and significant sites to include the continuation of cultural heritage. Examples of the continuation and celebration of Aboriginal cultural heritage at Mt Arthur Coal during the reporting period include key strategies and initiatives such as the Aboriginal Employment and Development Strategy, Reconciliation Action Plan and NSW Energy Coal Diversity Plan.

During the reporting period, a new role of Advisor Aboriginal Programs was created within the business. The position has brought extensive experience and knowledge about traditional Aboriginal lore and cultural practice to Mt Arthur Coal along with skills in cultural education, community engagement and development. Since the commencement of this role the Advisor Aboriginal Programs has supported and driven key initiatives related to Aboriginal cultural heritage and diversity.

3.11.3 Reportable Incidents

Mt Arthur Coal did not receive any government fines or penalties related to Aboriginal cultural heritage during the reporting period and there were no related reportable incidents.

3.11.4 Further Improvements

In a workshop held in May 2013, Aboriginal stakeholders agreed that a temporary Keeping Place and interpretive display is the most appropriate way to manage salvaged cultural material until a more

permanent solution is identified. Both the keeping place and the interpretative display will be established during the next reporting period and managed with the assistance of Aboriginal stakeholders.

During the next reporting period Mt Arthur Coal plans to celebrate Aboriginal cultural heritage during the 2013 National Aborigines and Islanders Day Observance Committee (NAIDOC) celebration, which will include an acknowledgement of country, smoking ceremony and traditional dance. Internal cultural respect training will also be developed and delivered at Mt Arthur Coal.

3.12 European Cultural Heritage

3.12.1 Environmental Management

European cultural heritage at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-MTP-046 European Heritage Management Plan;
- MAC-ENC-MTP-048 Edinglassie and Rous Lench Conservation Management Plan - Volume 1;
- MAC-ENC-MTP-049 Edinglassie and Rous Lench Conservation Management Plan - Volume 2; and
- MAC-ENC-PRG-004 Edinglassie and Rous Lench Heritage Management Program.

The above documents were approved by DP&I on 18 September 2012.

As previously discussed, Mt Arthur Coal operates within an area that is rich in both Aboriginal and European cultural heritage. Through its cultural heritage program Mt Arthur Coal assesses and manages significant heritage features that occur on its land. Mt Arthur Coal has implemented several management plans that provide the framework to identify, assess, monitor, conserve and manage European cultural heritage. The two State-significant historic heritage items with possible impacts from the Mt Arthur Coal operation are the Edinglassie and Rous Lench homesteads.

The European heritage management plan assists Mt Arthur Coal to coordinate and manage the European heritage items affected or potentially affected by its operations, comply with the requirements of the *Heritage Act 1977* and the consolidation project approval and mitigate impacts of its operations on European cultural heritage.

3.12.2 Environmental Performance

During the reporting period Mt Arthur Coal inspected all of its historic homesteads and related buildings located on freehold land to ensure properties were maintained to an acceptable standard. Maintenance measures included pest control, wastewater management, lawn and garden maintenance, drainage improvement and minor structural repairs. Three of the four heritage-listed homesteads continue to be tenanted as part of the strategy to preserve their condition and ensure security and ongoing maintenance of these valued structures.

3.12.3 Reportable Incidents

Mt Arthur Coal did not receive any government fines or penalties related to European cultural heritage during the reporting period and there were no related reportable incidents.

3.12.4 Further Improvements

All heritage structures are planned to remain in situ during the next reporting period with no impacts predicted from the current mine plan. Inspections and maintenance measures will continue to be implemented during the next reporting period to conserve all historic homesteads and related buildings owned by Mt Arthur Coal.

During the next reporting period, Mt Arthur Coal plans to purchase another historic homestead in the local area located along Denman Road, known as Balmoral. This homestead will be managed under the operation's European heritage management plan, which will be revised during the next reporting period.

3.13 Spontaneous Combustion

3.13.1 Environmental Management

Spontaneous combustion at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-PRG-002 Spontaneous Combustion Control Program.

Mt Arthur Coal has implemented a spontaneous combustion control program to prevent, monitor, control and report outbreaks of spontaneous combustion. Mt Arthur Coal inspects the Bayswater No. 2 and Drayton sublease areas, as well as any reported spontaneous combustion outbreaks in active mining areas, each month to monitor elements such as surface cracking, visible smoke, odour and the location of new and existing outbreaks. A monthly summary report is produced with a calculation of the total area affected and a map showing the areas of combustion.

Spontaneous combustion at Mt Arthur Coal is predominantly confined to old mining areas at Bayswater No. 2 and the Drayton sublease area. This is a result of the higher levels of carbon and sulphuric material in the coal seams mined in these Greta measures in comparison to those mined in the different Wittingham measures at the former Bayswater No. 3 and Mt Arthur North mining areas. During the reporting period mine plans were developed to conduct the treatment required to manage spontaneous combustion outbreaks.

A thermal imagery scan flight to monitor spontaneous combustion was undertaken on 7 August 2012 following the successful trial of airborne thermal scanning in 2011. The airborne scanning confirmed the areas of spontaneous combustion indicated by the monthly visual inspections.

3.13.2 Environmental Performance

During the reporting period there was a 33 per cent decrease in the amount of area affected by spontaneous combustion. This decrease occurred for a number of reasons including the strategic emplacement of overburden to seal and cap spontaneous combustion outbreaks and the warmer weather conditions during some monthly surveys that limited the identification of spontaneous combustion areas.

An area of approximately 3,800 square metres (m^2) was affected by spontaneous combustion at the start of the reporting period. A total of 2,064 m^2 was treated during the period by the emplacement of overburden over areas affected by spontaneous combustion. The majority of the treatment works were conducted in February and March 2013, resulting in 1,135 m^2 of spontaneous combustion being extinguished primarily by the strategic emplacement of overburden in sublease CL 229. During November and December 2012 treatment works also extinguished 434 m^2 of spontaneous combustion as part of the extension of the tailings storage facility. In addition, a total of 160 m^2 was naturally extinguished during the reporting period. A summary of the spontaneous combustion recorded for the period is presented in Table 27.

Similar to previous reporting periods, monitoring during the period revealed a low spontaneous combustion hazard around the site. All areas affected by spontaneous combustion during the monitoring period were classified as minor and evident in the form of occasional steam or smoke, posing a low risk to both employees and the environment, with the exception of two areas. These areas included spontaneous combustion in sublease CL 229 that was classified as moderate due to its size and one small area in the Huon Pit where low open flames were observed. The moderate spontaneous

combustion area in sublease CL 229 was fully extinguished by treatment works in February and March 2013, as mentioned earlier. The spontaneous combustion outbreak in Huon Pit was reported in June 2013 and works have been scheduled to contain this outbreak.

Table 27: Summary of spontaneous combustion at Mt Arthur Coal

Month Year	Area affected at start of month m^2	Area naturally extinguished m^2	Area treated m^2	New or recurring areas m^2	Area affected at end of month m^2
July 2012	3,800	6	77	16	3,733
August 2012	3,733	24	119	25	3,615
September 2012	3,615	65	131	0	3,419
October 2012	3,419	0	100	382	3,701
November 2012	3,701	0	209	50	3,542
December 2012	3,542	13	225	0	3,304
January 2013	3,304	36	62	263	3,469
February 2013	3,469	4	241	50	3,274
March 2013	3,274	0	894	0	2,380
April 2013	2,380	0	0	10	2,390
May 2013	2,390	2	0	79	2,467
June 2013	2,467	10	6	101	2,552
Total	3,800	160	2,064	976	2,552

3.13.3 Reportable Incidents

Mt Arthur Coal did not receive any government fines or penalties related to spontaneous combustion during the reporting period and there were no related reportable incidents.

3.13.4 Further Improvements

In accordance with the approved mine operations plan, overburden material will continue to be emplaced over much of the current emplacement areas at Bayswater No. 2. This will be carried out in alignment with the design of the extension of the existing tailings storage facility, which is planned to encompass most of this area, and will ultimately treat a significant portion of identified spontaneous combustion areas.

Mt Arthur Coal will continue to undertake airborne thermal scanning on an annual basis as a best practice method for monitoring spontaneous combustion.

3.14 Bushfire

3.14.1 Environmental Management

Bushfire at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-PRO-076 Bushfire Prevention Procedure; and
- MAC-STE-PRO-010 Emergency Procedure – Bushfires.

The above procedures document fire prevention and control measures to reduce the risk of bushfire ignition on Mt Arthur Coal owned land and to protect the operations from bushfire.

3.14.2 Environmental Performance

During the reporting period there were no bushfires at Mt Arthur Coal. Specific prevention and fire suppression control measures are implemented in order to protect remnant vegetation communities as well as Mt Arthur Coal infrastructure. Preventative measures include fuel load assessment and reduction programs, the establishment and maintenance of fire breaks and the prevention of ignition sources. Fire suppression and control is achieved through on-site fire fighting equipment, including a rescue truck and water carts, facilitated by a network of roads and vehicle access trails, which provide access to all areas of Mt Arthur Coal owned land. Mt Arthur Coal also maintained a trained emergency response team on each shift, and fire extinguishers are fitted in vehicles and buildings.

In September 2012, Mt Arthur Coal completed a joint inspection of the train load-out facility and rail loop with a representative of the NSW Rural Fire Service to assess fuel load and fire risk around these facilities. The inspection indicated that the asset protection zone surrounding the train load-out and rail loop were adequately reducing the risk of fire impact on these facilities.

3.14.3 Reportable Incidents

Mt Arthur Coal did not receive any government fines or penalties related to bushfire during the reporting period and there were no related reportable incidents.

3.14.4 Further Improvements

Mt Arthur Coal will continue to ensure that bushfire prevention and control measures are implemented across the site. During the next reporting period, Mt Arthur Coal will extend the bushfire risk assessment program to cover off-site biodiversity offset areas.

3.15 Greenhouse Gas and Energy

3.15.1 Environmental Management

Greenhouse gas and energy at Mt Arthur Coal are managed in accordance with the:

- MAC-ENC-MTP-040 Air Quality and Greenhouse Gas Management Plan.

Mt Arthur Coal maintains an active greenhouse gas and energy efficiency management program to effectively measure and minimise greenhouse gas emissions whilst providing a platform to meet future legislative requirements. Mt Arthur Coal undertakes regular reviews and monitoring of greenhouse gas emissions and energy efficiency initiatives to ensure that greenhouse gas emissions per tonne of product coal are kept to the minimum practicable level.

Mt Arthur Coal has been working towards technological solutions to reduce greenhouse gas emissions and increase energy efficiency. Regular monitoring of fuel, electricity consumption and fugitive gas emissions is an important aspect of greenhouse gas and energy abatement and enables progressive assessment and prioritisation of actions to support operational growth and change. During the reporting period Mt Arthur Coal continued greenhouse gas and energy consumption monitoring with the use of a centralised database to assist with monthly tracking and reporting of key emission sources.

A key focus during the reporting period was to ensure the operation complied with the regulations under the *National Greenhouse and Energy Reporting* (NGER) *Act 2007*. The NGER Act provides a single national framework for reporting and disseminating information related to greenhouse gas emissions, greenhouse gas projects, energy consumption and energy production of corporations. Mt Arthur Coal's data capture and reporting strategy assists in ensuring that all Scope 1 and Scope 2 emission sources defined in the regulation are monitored using a consistent approach.

As required under the Federal Government's *Energy Efficiency Opportunities* (EEO) *Assessment Act 2006* Mt Arthur Coal continued to investigate potential projects to mitigate, substitute, reduce or eliminate energy consumption.

3.15.2 Environmental Performance

During the reporting period Mt Arthur Coal undertook substantial work to improve the measurement of fugitive emissions reportable under the NGER legislation. Mt Arthur Coal moved to reporting fugitive emissions using the higher order NGER Method 2 during the reporting period, where previously Method 1 had been used. This involved drilling and gas composition testing in order to collect sufficient coal seam gas data for the site to define a site specific fugitive emissions factor for reporting purposes.

Greenhouse gas results for the reporting period were substantially different to previous financial years, as fugitive emissions from the mine site were significantly reduced using Method 2 NGER calculations. Fugitive emissions have historically been the largest contributor to Scope 1 greenhouse gas emissions from Mt Arthur Coal.

Scope 1 emissions accounted for approximately 84 per cent, while Scope 2 emissions, resulting from the use of off-site generated electricity, accounted for the remaining 16 per cent of all greenhouse gas emissions from Mt Arthur Coal. Approximately 95 per cent of Scope 1 emissions resulted from diesel and biodiesel combustion, while approximately 5 per cent resulted from fugitive emissions during the coal mining process. Emissions from combusted oils and grease and from the onsite wastewater treatment plant were negligible (less than 0.5 per cent of total emissions generated) for the reporting period.

In comparison, in recent financial year's Scope 1 emissions have generally accounted for over 90 per cent of all greenhouse gas emissions from Mt Arthur Coal. In recent financial year's approximately 70 to 75 per cent of Scope 1 emissions resulted from fugitive emissions during the coal mining process, while approximately 25 to 30 per cent resulted from diesel and biodiesel combustion.

During the reporting period approximately 93 per cent of energy used at Mt Arthur Coal was attributed to diesel and biodiesel use in mobile and stationary equipment, while electricity use accounted for the majority of the remaining energy used. This is consistent with results from the previous few financial years.

Mt Arthur Coal continued to utilise a 5 per cent biodiesel blend to fuel mobile plant and vehicles. This use of biodiesel reduced GHG emissions from fuel at Mt Arthur Coal by approximately 19 kilotonnes of equivalent carbon dioxide emissions during the reporting period in comparison to using straight diesel. An investigation to increase the proportion of biodiesel in the fuel blend was undertaken but was found to be unfeasible due to contradictions with manufacturers' guidelines.

Energy efficiency projects implemented during the reporting period include the retrofitting of drill compressor technology on existing drills and the incorporation of the technology on new drills. Lighting upgrades on fixed and mobile lighting plants continued during the period.

3.15.3 Reportable Incidents

Mt Arthur Coal did not receive any government fines or penalties related to greenhouse gas or energy during the reporting period and there were no related reportable incidents.

3.15.4 Further Improvements

Mt Arthur Coal will continue to investigate potential projects to mitigate, substitute, reduce or eliminate energy consumption in accordance with EEO legislation. The preliminary analysis of a number of potential projects to reduce energy use is scheduled for the next reporting period. This analysis will

determine the feasibility and priority of these projects and guide their implementation over the second five year EEO cycle.

3.16 Waste Management

3.16.1 Environmental Management

Waste at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-PRO-033 Waste Handling and Disposal.

Mt Arthur Coal's waste management system has been designed to meet both legislative and BHP Billiton requirements that seek to minimise the generation of waste and maximise reuse and recycling. This system consolidates the disposal, tracking and reporting of all waste generated on site.

To ensure the waste management system is working effectively and remains appropriate for the changing needs of the operation, regular inspections and monitoring is conducted. During the reporting period Mt Arthur Coal's waste contractor conducted weekly site inspections of all areas where wastes were being generated and stored.

3.16.2 Environmental Performance

During the reporting period Mt Arthur Coal's mining and related activities generated approximately 5,674 tonnes of waste that was sent off site for management, which was approximately a 28 per cent decrease on the previous financial year's results. The recyclable component of the waste produced and sent off site for management was 84 per cent, as displayed in Figure 14. This is a slightly lower recyclable component compared with results from FY12 (90 per cent) and FY11 (91 per cent). However, this is largely due to the substantial reduction in the total volume of waste produced that was sent off site for management, which changed the composition of waste produced and sent off site for management.

In previous financial years the largest contributor to total waste that was sent off site for management has been effluent. In December 2012 Mt Arthur Coal completed an upgrade of the onsite effluent treatment plant and commenced treatment of non-sewered holding tank wastes on site, such as from in-pit crib huts. As a result, effluent waste taken to Hunter Water facilities for treatment reduced compared to previous financial years, with almost half the effluent generated at Mt Arthur Coal being treated on site during the period.

Similar to previous financial years, the largest contributors to total waste that was sent off site for management were:

- waste oil (34 per cent);
- effluent (24 per cent);
- scrap steel (17 per cent); and
- general waste (15 per cent).

With the exception of general waste, all of the abovementioned waste generated at Mt Arthur Coal and sent off site for management was recycled.

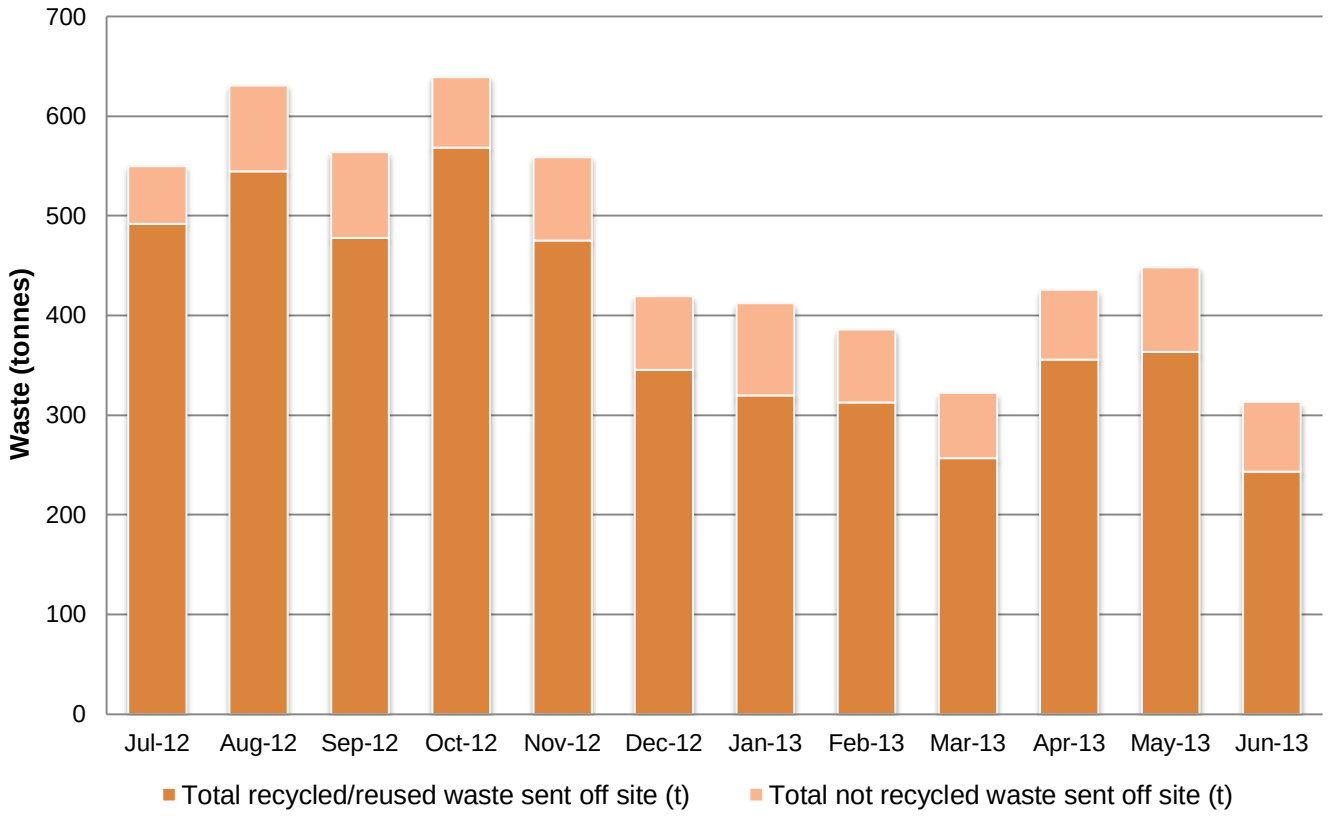


Figure 14: Waste disposal from Mt Arthur Coal

3.16.3 Reportable Incidents

Mt Arthur Coal did not receive any government fines or penalties related to waste during the reporting period and there were no related reportable incidents.

3.16.4 Further Improvements

General awareness through toolbox talks and other site communications will continue during the next reporting period to ensure Mt Arthur Coal achieves high levels of compliance in the areas of waste segregation and tracking.

3.17 Public Safety

3.17.1 Environmental Management and Performance

In late 2011, Mt Arthur Coal started the installation of a security fence around the perimeter of its site to ensure no unauthorised access to mining areas. The fence is being installed on land owned by Mt Arthur Coal along the general alignment of the existing fence line. The fence will meet BHP Billiton's safety and asset protection standards as well as Mt Arthur Coal's legislative requirements under the *Coal Mine Health and Safety Act 2002*. Direct neighbours and relevant stakeholders were informed of the project in writing in December 2011. During the reporting period Mt Arthur Coal installed the security fence along part of Thomas Mitchell Drive.

3.17.2 Reportable Incidents

Mt Arthur Coal did not receive any government fines or penalties related to public safety during the reporting period and there were no related reportable incidents.

3.17.3 Further Improvements

A number of boom gates will be installed during the next reporting period to restrict unauthorised or unintentional access to the active mining area.

3.18 Meteorological Data

3.18.1 Environmental Management

Meteorological monitoring at Mt Arthur Coal is managed in accordance with the:

- MAC-ENC-PRO-057 Air Quality Monitoring Program.

Mt Arthur Coal's statutory real-time meteorological station located at the mine's industrial area (WS09) is an essential component of the operation's environmental monitoring system. At the station, wind speed, wind direction, temperature, rainfall, solar radiation and humidity data is collected at 15 minute intervals and relayed in real-time using radio telemetry.

The data allows employees at Mt Arthur Coal to assess prevailing weather conditions and modify the mine's operation where necessary to best suit the current conditions. It also plays a vital role in the pre-blast environmental assessment to minimise likely impacts on the community.

In accordance with the approved monitoring program, a second statutory real-time meteorological station will be installed during the next reporting period. This station will be located off site at the Wellbrook site (WS10) and will also comply with the Australian Standard 2923-1987 *Ambient Air – Guide for measurement of horizontal wind for air quality applications* and the NSW Industrial Noise Policy.

Mt Arthur Coal has several other meteorological stations located on land surrounding the mine site, which are used for internal management purposes only. The locations of all of Mt Arthur Coal's meteorological monitoring stations are shown on Figure 6.

3.18.2 Environmental Performance

A summary of meteorological data recorded at WS09 during the reporting period is provided in Table 28, along with a comparison to monitoring results from FY11 and FY12. Monthly meteorological data from WS09 for the reporting period is provided in Appendix 7. Meteorological data capture rates for the reporting period were 100 per cent at WS09 with the following exceptions:

- 2 metre temperature data could not be recorded for a period of ten days during July 2012 due to a fault with the temperature sensor. The sensor has since been replaced; and
- wind speed and wind direction data was not reading correctly for a period of 17 days in December 2012 due to a fault with the sensor. The sensor has since been repaired.

Table 28: Summary of meteorological results from WS09

Parameter	Units	FY13	FY12	FY11
Total rainfall	mm	542.6	783.2	405.5^
Maximum monthly rainfall	mm	135.4 (recorded in January 2013)	162.2 (recorded in November 2011)	126.8 (recorded in June 2011)
Minimum monthly rainfall	mm	4.2 (recorded in October 2012)	10.8 (recorded in July 2011)	0.7 (recorded in August 2010)^
Maximum monthly temperature	°C	42.6 (recorded in January 2013)	34.6 (recorded in January 2012)	41.5 (recorded in January 2011)
Minimum monthly temperature	°C	0.0 (recorded in July 2012)	0.9 (recorded in July 2011)	-0.4 (recorded in May 2011)

^ Issues with the rain gauge from July 2010 to January 2011 inclusive may have led to some inaccuracies with FY11 rain data.

Similar to previous years, wind direction at Mt Arthur Coal during the reporting period was predominantly from the south east, with the second most common winds being from the north north-west, as shown in Figure 15.

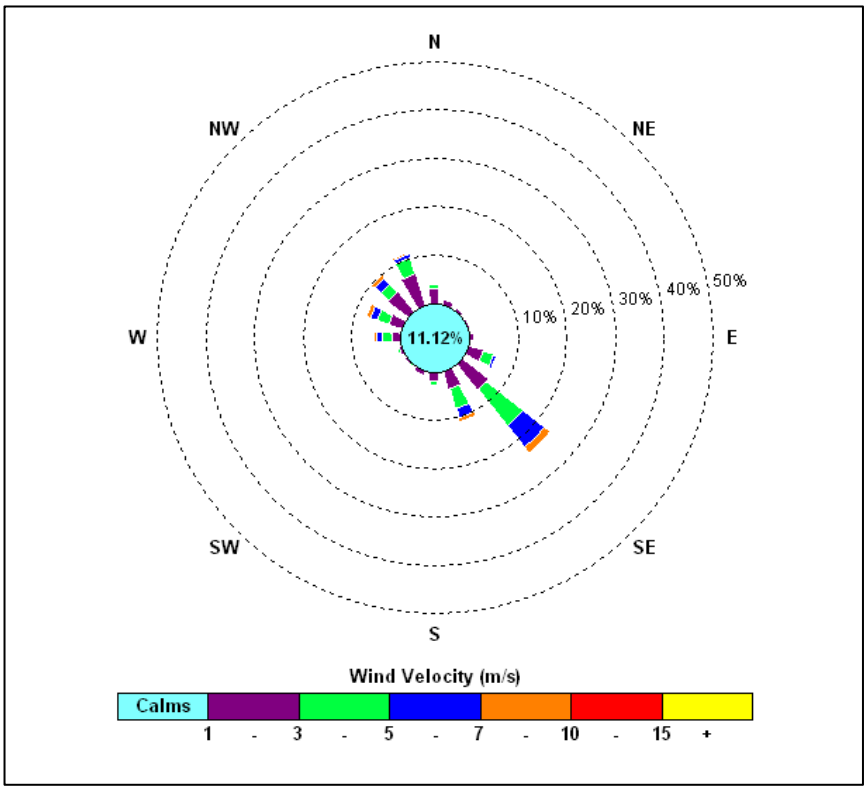


Figure 15: Mt Arthur Coal annual wind rose for FY13

3.18.3 Reportable Incidents

Mt Arthur Coal did not receive any government fines or penalties related to meteorological data during the reporting period and there were no related reportable incidents.

3.18.4 Further Improvements

Mt Arthur Coal will install a second statutory real-time meteorological station during the next reporting period.

4 Community Relations

Mt Arthur Coal is committed to minimising the impacts of its operations and is an active participant and contributor to sustainable development programs that benefit local people. The operation also has comprehensive community engagement and investment programs to identify and respond to evolving local community needs and issues.

4.1 Environmental Complaints

As part of its EMS, Mt Arthur Coal has a procedure for receiving, investigating, responding to and reporting complaints received from the community. The operation invites feedback about its activities through a free-call 24-hour Community Response Line (1800 882 044), which is advertised in the local phone directory and newspapers, in the Community Matters newsletter and at www.bhpbilliton.com.

When a complaint is received it is investigated immediately and any necessary action is taken to address the issue. When requested, the caller is advised of the investigation outcomes and the action taken. To minimise the potential of the issue reoccurring, observations and learnings from complaint investigations are incorporated into the operation's mine planning and environmental management processes.

Complaint details are recorded in a database that is regularly reviewed by the operation to identify opportunities for further improvements. In accordance with consolidation project approval requirements, Mt Arthur Coal also provides summary reports to CCCs and government agencies and posts a monthly complaints summary at www.bhpbilliton.com.

During the reporting period, Mt Arthur Coal received 235 complaints from community members and near neighbours. A comparison of complaints received during the reporting period against previous financial years is shown in Figure 16 and a complete register of complaints can be found in Appendix 8.

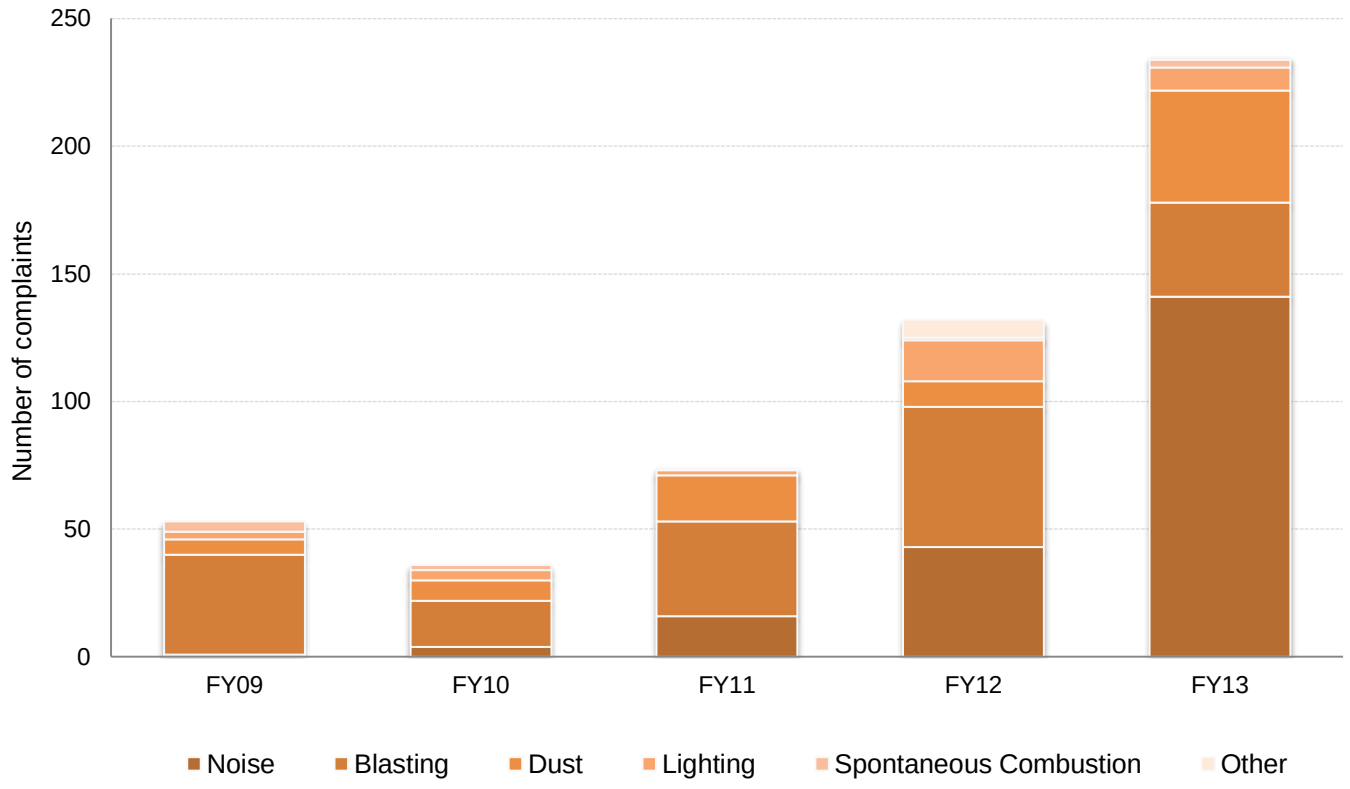


Figure 16: Comparison of complaints received during current and previous financial years

During the reporting period, 60 per cent or 141 of the total complaints received related to noise. In comparison, 33 per cent or 43 of the total complaints received by Mt Arthur Coal in FY12 related to noise. Of the complaints received in FY13, 118 were related to machinery and low frequency noise at a single location. Eleven noise complaints were also made by anonymous callers through third parties such as the EPA and DP&I. Real-time noise monitoring at the time each complaint was received in FY13 showed that noise levels from mining operations were within internal benchmark monitoring levels on all but five occasions.

During the reporting period, 19 per cent or 44 of the total complaints received related to dust. Real-time air quality monitoring results were within statutory limits and appropriate control measures were in place at the time each complaint was received. In FY12 8 per cent or 10 of the total complaints received related to dust.

Real-time dust levels were elevated at the time 19 dust complaints were received, however the 24-hour average for the day remained within statutory limits. As shown in Figure 17, the majority of dust-related complaints were received during spring and summer, from September 2012 to January 2013, which correlates to the warmer, drier and windier months.

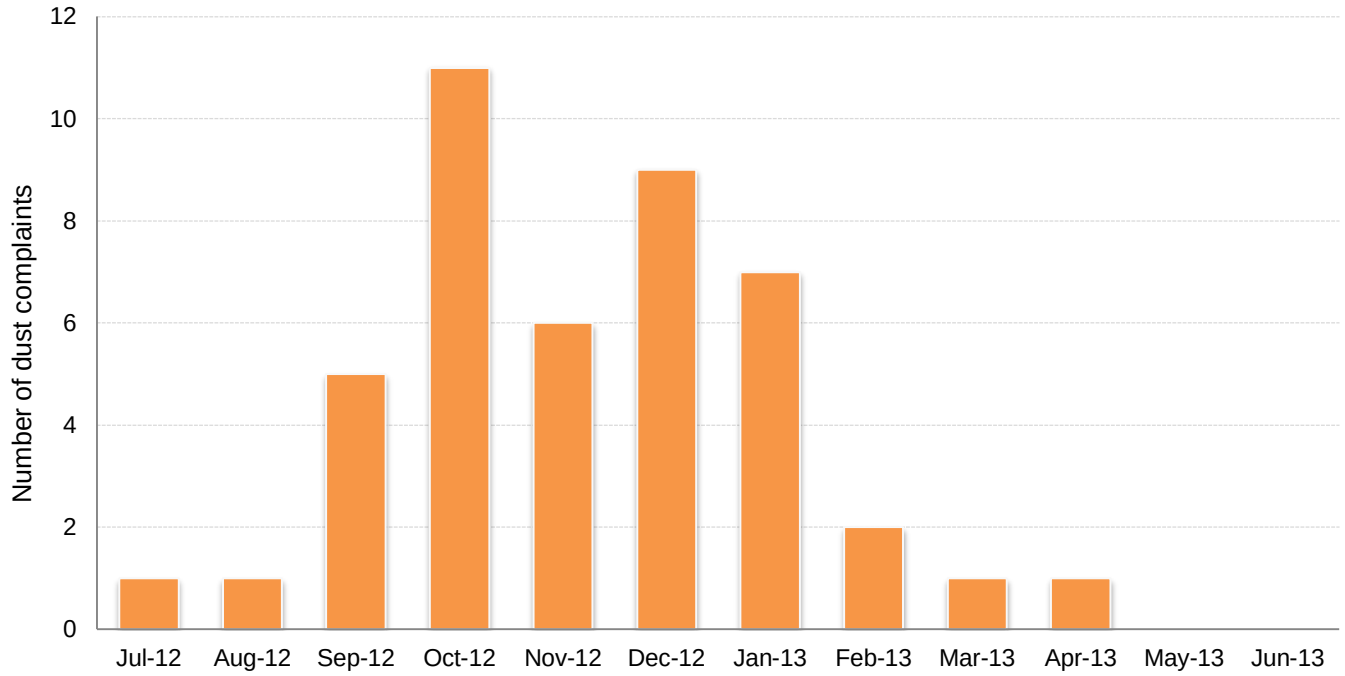


Figure 17: Trend of dust complaints received during FY13

Blasting activities, including blast vibration, overpressure noise, dust and fume and road closures, accounted for 16 per cent or 37 of the total complaints received during the reporting period, compared to 42 per cent or 55 complaints in FY12. Mt Arthur Coal recorded elevated blast vibration and blast overpressure noise results, however, investigations revealed that these elevated results were not valid for various reasons, as discussed in Section 3.8.3. On six occasions, more than one complaint was received about a single blast event. Two consecutive blasts on 23 April 2013 also received eight blast vibration complaints in total. Investigations verified that blast monitoring results on each occasion were within statutory limits.

Nine lighting complaints were received from residents on Roxburgh Road, Bengalla Road and Skelletar Stock Route during the reporting period. In cases where complaints were received at night, immediate action was taken to locate the light and, where possible, either redirect or relocate it to address the caller's concern.

Three complaints were received during the reporting period relating to spontaneous combustion. Where a spontaneous combustion outbreak was found within the pit, corrective action was taken immediately to contain and control the outbreak.

A complaint was also received during the reporting period regarding Mt Arthur Coal's consultation and engagement process for cultural heritage salvage works.

4.2 Community Liaison

Mt Arthur Coal has an industry-leading and comprehensive community engagement program that utilises multiple engagement strategies and communication tools. The program engages stakeholders across a diverse range of sectors including near-neighbours, local residents, regional industry and mining companies, community groups, NGOs and local, state and federal governments.

Engagement is the foundation for Mt Arthur Coal's investment planning process and allows all community stakeholders to have a voice in the way community development is understood and initiated.

4.2.1 Website and Media

Mt Arthur Coal provides the community access to information about the operation through the BHP Billiton website at www.bhpbilliton.com. Included on the site are project approval documents, blast schedules, coal transport information, CCC meeting minutes and documents, community complaint records, environmental monitoring information, environmental audits, environmental management plans and annual environmental management reports.

To inform the community about its operations, projects and community investment activities, Mt Arthur Coal also places advertisements in local newspapers and undertakes a range of other media activities.

Mt Arthur Coal's free-call 24-hour Community Response Line (1800 882 044) continued to operate during the reporting period to allow the community to contact the operation directly to ask questions or raise concerns about mining activities.

4.2.2 Community Consultative Committee

During the reporting period Mt Arthur Coal coordinated and participated in six Mt Arthur Coal CCC meetings as shown in Table 29.

Key items discussed during the year included:

- operational schedules, infrastructure, equipment upgrades, processing, transport and production results;
- environmental monitoring and results;
- community investment and engagement activities;
- community complaints and community perceptions project results;
- environmental management plans;
- expansion plans and approval timeframes; and
- the NSW Minerals Council Upper Hunter Mining Dialogue.

On 6 February 2013, Mt Arthur Coal's CCC was invited to visit Edinglassie and Rous Lench Homesteads and inspect the proposed location of the low permeability barrier along the area of connection between mining and the Hunter River alluvium. The CCC was also invited to observe a blast at the mine on 21 February 2013 and to observe a rehabilitation site at Bayswater No. 3 on 16 May 2013.

Mt Arthur Coal was also involved in two Mt Arthur Coal and Anglo Coal (Drayton Management) Joint CCC meetings during the reporting period to discuss issues surrounding rail movements, air quality and noise monitoring results relating to the joint rail loading facility. The dates of these meetings are provided in Table 29.

The CCCs were operated in accordance with the former Department of Planning's *Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects* and meetings were attended by Mt Arthur Coal and MSC representatives and local residents. All CCC meeting minutes and documents were posted on the BHP Billiton website.

Table 29: Mt Arthur Coal CCC meetings

Mt Arthur Coal CCC
1 August 2012
17 October 2012
5 December 2012
6 February 2013
17 April 2013
19 June 2013
Mt Arthur Coal and Anglo Coal (Drayton Management) Joint CCC
17 October 2012 (coordinated by Mt Arthur Coal)
21 February 2013 (coordinated by Anglo Coal)

4.2.3 Community Education

Site visits provide an opportunity for Mt Arthur Coal to educate the community and stakeholders about the scale and size of its mining operations and its EMS. During the reporting period Mt Arthur Coal conducted site visits for a number of stakeholders, including the NSW Minerals Council, a delegation from Columbia, students from the Graham (Polly) Farmer Foundation and the University of New England, and community representatives.

4.2.4 Community Perceptions Project

In November 2012, Mt Arthur Coal undertook a three-yearly Community Perceptions Project, which included a survey, a series of think tanks and other engagement activities. These activities were aimed at better understanding changes in community perceptions about the cumulative impacts of mining, awareness and effectiveness of Mt Arthur Coal's community engagement and investment activities and priorities for future investment.

Results from the project indicated that the community has perceived positive changes in mining impacts over the last two years, including access to employment, economic activity and community investment from the mining industry. Negative impacts included perceptions around cumulative impacts such as dust, traffic and the environment.

Overall, the respondents believed that Mt Arthur Coal's community investment projects provided benefits to the local community. Priorities for future investment included community health, education and childcare, and continuing collaborative efforts to address the impacts of mining.

Feedback from the project will be used in the next reporting period to help inform Mt Arthur Coal's community investment programs and engagement initiatives.

4.2.5 Community Investment

Mt Arthur Coal invests in projects across a range of quality of life areas including:

- community involvement and community life;
- level of social disadvantage;
- population health;
- community perceptions of environmental impact;
- housing affordability;
- level of homelessness;
- educational attainment;
- wealth distribution;
- employment access; and
- business growth and industry diversification.

During the reporting period Mt Arthur Coal contributed significantly to the local community, with funding ranging from $200 donations for school presentation evenings to millions of dollars over multiple years for significant community development projects. Table 30 lists the organisations, projects and events supported by Mt Arthur Coal during the reporting period.

Table 30: Community funding recipients for FY13

Organisation	Project or activity
Muswellbrook Preschool Kindergarten Inc.*	Preschool expansion project
Graham (Polly) Farmer Foundation*	Muswellbrook Partnerships for Success
Hunter Life Education*	School drug and alcohol program
Muswellbrook South Public School*	Warrae Wanni Pathways to School Program
Muswellbrook Shire Council and Upper Hunter Community Services Inc.*	Community development capacity and collaboration project
Upper Hunter Drug and Alcohol Service*	Social emotional wellbeing worker
Lifeline Hunter and Newcastle*	Mental health program
Muswellbrook PCYC*	Saturday youth program
Aberdeen Highland Games	2013 Aberdeen Highland Games
Black Coal Cup Fundraising Committee	2012 Black Coal Cup Charity Golf Day
Bursting with Energy Committee	2013 Bursting with Energy Expo
Denman Chamber of Commerce	Denman skate and BMX park project
Denman Chamber of Commerce	2013 Upper Hunter Food and Wine Affair
Department of Primary Industries – Fisheries	In-stream rehabilitation project
Edinglassie Rural Fire Service	Oxygen trauma kits
Mangoola Rural Fire Service	Thermal imaging equipment
Muswellbrook Amateur Theatrical Society	‘Oliver’ The Musical
Muswellbrook and District Camera Club	Photography exhibition
Muswellbrook and Upper Hunter Eisteddfod	2013 Muswellbrook and Upper Hunter Eisteddfod
Muswellbrook Chamber of Commerce and Industry Inc.	2012 business awards
Muswellbrook Eisteddfod Society	2012 event sponsorship
Muswellbrook Hospital Auxiliary	Hospital fundraising
Muswellbrook Out of School Hours	Healthy eating program
Muswellbrook Race Club	2012 Mt Arthur Coal Gold Cup
Muswellbrook South Public School	Breakfast club
Muswellbrook Women's and Children's Refuge	Child protection fun day

Organisation	Project or activity
NSW Mineral Council	2013 NSW Minerals Council OH&S Conference
Newcastle University	Engineering racing project
Outreach Global Care Christian Network	Multicultural ladies program
Run Beyond Survival Inc.	Multiple sclerosis charity fundraising
Upper Hunter Community Services Inc.	2013 Harmony Day celebrations
Upper Hunter Motoring Association	2012 event sponsorship
Wanaruah Local Aboriginal Land Council	2012 NAIDOC Week Awards dinner

* Mt Arthur Coal investment more than $50,000.

Central to Mt Arthur Coal's commitment to the local community is its voluntary planning agreement (VPA) with MSC, of which $500,000 is provided annually toward the Mt Arthur Coal Community Fund. Established under the EP&A Act, the VPA contributes to public amenities and services that may be impacted by the growth in mining operations.

In the reporting period, $500,000 was contributed from the Mt Arthur Coal Community Fund to the construction and installation of new play equipment and structures at Highbrook Park in Muswellbrook. This project is expected to be completed in during the next reporting period. Funds were also provided under the VPA to MSC for the Thomas Mitchell Drive upgrade project and for environmental monitoring and assessments.

4.2.6 Employee Participation

Mt Arthur Coal employees are encouraged to be involved in the operation's Corporate Citizenship Program and to support local organisations by volunteering their time at local community events. Mt Arthur Coal representatives also attend a number of community events sponsored through the Community Development Fund. Some of the events and activities supported and attended by Mt Arthur Coal employees during the reporting period are listed in Table 31.

Table 31: Events supported and attended by Mt Arthur Coal employees in FY13

Event
Clean Up Australia Day
Bursting with Energy Expo
Muswellbrook Public School Karoola Park Cross Country
Scone Horse Trials
Muswellbrook South Public School Breakfast Club
Denman Horse Trials
Scone Public School Food and Fireworks
Muswellbrook PCYC Christmas Appeal
Denman Sandy Hollow Junior Rugby League Home Games
Muswellbrook and Upper Hunter Eisteddfod 2012
Aberdeen Highland Games
Muswellbrook Spring Carnival Fun Run
Muswellbrook Gifted And Talented Students (GATS) Program
Upper Hunter Food and Wine Affair

The BHP Billiton Matched Giving Program financially matches the contributions made by employees to charity and not-for-profit organisations through volunteering, fundraising or personal donations. Each year, individual employees are entitled to claim up to $50,000 of matched funds through the program.

During the reporting period, Mt Arthur Coal employees donated more than $355,000 to more than 60 different charities and not-for-profit organisations through the Matched Giving Program. Significant matched-giving initiatives included:

- Westpac Rescue Helicopter Service;
- Muswellbrook PCYC;
- Singleton PCYC;
- Muswellbrook Hospital Auxiliary;
- Denman Lions Club; and
- Scone Public School P&C.

5 Rehabilitation

5.1 Buildings

Decommissioning of buildings and infrastructure located within the footprint of the expanded tailings dam continued during the reporting period. As part of the works, three disused tailings dams, known as SP1, SP2 and SP3, were capped, resulting in a 5 hectare decrease in the tailings area reported in Table 35. The demolition project for the old Bayswater facilities (workshops, CHPP and associated structures) commenced in 2012, and will continue over the next two years. Demolition works will occur in line with commitments within the consolidation environmental assessment and consolidation project approval.

Construction of the first aid facility and heavy vehicle wash bay, as discussed in the 2012 Interim AEMR, was also completed during the reporting period.

As discussed in Section 3.12, Mt Arthur Coal inspected all of its historic homesteads and related buildings to ensure properties were maintained to an acceptable standard.

5.2 Rehabilitation of Disturbed Lands

Rehabilitation of disturbed areas is an integral and progressive feature of mining. Mt Arthur Coal manages its rehabilitation activities in accordance with good land management practices and regulatory requirements, and ensures rehabilitated areas are compatible with the surrounding landscape and selected future land uses.

Rehabilitation of land is carried out in general accordance with Mt Arthur Coal's MOP, Rehabilitation Strategy and BRMP. Mt Arthur Coal also consolidated a number of redundant plans and procedures into the land management procedure during the reporting period.

Rehabilitation is designed to achieve a stable final landform compatible with the surrounding environment and to meet the landform commitments presented in the MOP. This consists of bulk reshaping of overburden dumps, using large bulldozers (i.e. Caterpillar D11 or equivalent), to slopes that average 10 degrees or less, and incorporating water management infrastructure to minimise the potential for erosion.

This infrastructure consists of contour diversion drains constructed at regular intervals down rehabilitated slopes to capture and divert surface water run-off into protective drop structures. These drains and drop structures report to sediment dams, which allow for the settling of suspended solids. Design and construction of the sediment dams is consistent with the 'Blue Book' (*Managing Urban Stormwater: Soils & Construction*, Volume 1, 4th Edition, 2004 and Volume 2E Mines and Quarries, 2008). Following bulk reshaping and drainage construction, the overburden surface is subject to a final trim and deep ripping in preparation for topsoil placement.

Topsoil stripped ahead of advancing mining (as discussed in Section 2.2) was either placed directly onto reshaped areas or stockpiled. Topsoil management at Mt Arthur Coal focuses on maintaining the quality of the topsoil resource as a rehabilitation growth medium. Activities undertaken during the reporting period included:

- prioritising direct placement of topsoil;
- restricting stockpile height to generally 3 metres or less, consistent with the MOP, to minimise compaction and anaerobic conditions within topsoil stockpiles;
- locating stockpiles so as to reduce the requirement for re-handling;
- establishing cover crops and spraying topsoil stockpiles to manage weeds;

- felling and mulching trees in situ on disturbance areas to increase organic content within the stockpiled soil;
- testing topsoil (where soil conditions are found to be clayey or susceptible to sealing and erosion) to determine the ameliorant requirements (i.e. gypsum); and
- applying ameliorants at the rate determined by soil testing or consultation with consultants.

Topsoil was placed and spread to an approximate depth of 300 millimetres. The newly spread topsoil surface was contour cultivated prior to sowing to provide a suitable environment that encourages water infiltration in the soil. Large rocks were removed from the ripped soil surface prior to sowing, except where the area has been designated specifically for habitat reclamation purposes. Gypsum was not required during the reporting period. However, it is expected that topsoil planned for use in rehabilitation during the next reporting period will benefit from the addition of gypsum.

The methodology for revegetation of rehabilitated areas was selected to support the designated post-mining land use, as presented in the MOP. During the reporting period, 65.9 hectares of rehabilitation was to grazing pasture classified as land capability class six. This classification is based on landform slopes of between 5 and 10 per cent and the placement of approximately 200 to 300 millimetres of topsoil material. Pasture rehabilitation areas were cultivated and broadcast sown with the pasture seed mix in a single pass using a tractor-mounted seeder box. The pasture seed mix used by Mt Arthur Coal during the reporting period is shown in Table 32.

Table 32: Mt Arthur Coal pasture seed mix

Species	Seed mix kg/ha
Couch	10
Lucerne	3
Green Panic	3
Seaton Park Sub-clover	3
Haifa White Clover	3
Kikuyu	3
Wimmera Rye	7
Perennial Rye	7
Phalaris	5
Shirohie Millet (summer)	10
Oats (winter)	10

The 28 hectares of woodland rehabilitation established during the reporting period (at VD1, CD1 and Saddlers North) was seeded with a seed mix targeting the establishment of Upper Hunter Box-Ironbark Woodland vegetation community. A review of rehabilitation seed mixes was undertaken during the reporting period to identify the key species required for inclusion in targeted vegetation community seed mixes.

The woodland seed mix was subsequently modified to consist of appropriate native tree and grass species as listed in Table 33. The seed mix also includes an exotic sterile cover crop to assist with initial slope stabilisation, as well as weed and dust control, while native vegetation establishes. Due to the wide range of seed size and weight, the woodland seed mix was broadcast sown in two passes with a tractor-mounted seeder box for smaller, lighter tree seed and air seeder for larger seed. The woodland seed mix used by Mt Arthur Coal during the reporting period is shown in Table 33.

Table 33: Mt Arthur Coal woodland seed mix

Species	Seed mix kg/ha
Narrow-leaved Ironbark	1.0
White Box	0.8
Grey Box	0.4
Spotted Gum	0.3
Red Gum	0.4
Kurrajong	0.3
Golden Wattle	1.0
Wiregrass	1.0
Barbed Wire Grass	0.5
Wallaby Grass	0.5
Bursaria spinosa	0.5
Austrostipa verticilata	0.5
Shirohie Millet (summer) or Oats (winter)	5.0

Within woodland rehabilitation areas drainage infrastructure is sown with the pasture seed mix to promote erosion control.

During the reporting period Mt Arthur Coal collected approximately 25.5 kilograms of seed from remnant native vegetation located on Mt Arthur Coal owned land. This seed was then used in direct-seeding or to develop tubestock for planting in rehabilitation and regeneration activities.

Under the consolidation project approval, Mt Arthur Coal has committed to rehabilitate 500 hectares of Box-Gum Grassy Woodland to provide large areas of habitat adjacent to the offset areas and enable connectivity for fauna and flora. As part of this commitment, approximately 7,000 tubestock seedlings were planted in existing rehabilitation and offset areas during the reporting period. This program is scheduled to continue in the next reporting period, with further tubestock planting proposed on rehabilitation area VD1.

Prior to vegetation clearing, pre-clearance surveys are undertaken, with support from qualified ecologists, to identify potential habitat features. Felled trees of potential habitat value, such as hollow-bearing or complex root/branch networks, are salvaged and relocated as ground habitat features. As discussed in Section 3.6.2 habitat trees were recovered during the reporting period and placed amongst established woodland rehabilitation and also used to construct fish habitat structures in the Hunter River. During the reporting period, large surface rocks raked clear of the Saddlers North rehabilitated area were placed in piles as habitat features amongst or adjacent to the remnant vegetation tree line.

During the reporting period Mt Arthur Coal completed 93.9 hectares of rehabilitation on areas of site as listed in Table 34. This exceeded the total rehabilitation proposed in the MOP for FY13 by 40.4 hectares. There were some minor variations in the locational distribution of rehabilitation, compared to what was proposed in the MOP for FY13 due to availability of emplacement areas to be reshaped. Approximately 18.5 hectares of rehabilitation was removed with the filling in of a main haul route (B-road) and approximately 2.3 hectares of rehabilitation was removed with the expansion of the tailings storage facility.

Table 34: Mt Arthur Coal rehabilitation undertaken in FY13

Location	FY13 MOP commitment hectares	Rehabilitated area hectares
VD1	25.9	8.0
CD1	15.0	8.0
SD2	9.0	29.4
Saddlers North	3.5	28.7
Belmont East	0.0	19.8
Total	53.4	93.9

The rehabilitation plan in Appendix 9 identifies the areas of rehabilitation completed prior to the reporting period, works undertaken during the reporting period, and the areas proposed for rehabilitation in the next reporting period, which are consistent with the current MOP. Additional information about rehabilitation activities undertaken during the period can be found in Table 35.

Progressive rehabilitation of shaped overburden areas during the next reporting period will continue to be undertaken in accordance with the sequence outlined in the relevant MOP. As part of the extension of the tailings storage facility, large volumes of inert overburden will be internally transported to cap the former mining areas at Bayswater No. 2 and Drayton void areas. This will have the benefit of capping historic overburden dumps that are susceptible to spontaneous combustion.

Maintenance activities will continue to play a major role in the success of rehabilitation at Mt Arthur Coal. These activities include slashing, fencing, weed spraying, soil management, minor earthworks repairs and feral animal control, as discussed in Section 3.6. A summary of these activities can be found in Table 36.

The aerial seeding program at Mt Arthur Coal also continued during the reporting period with approximately 55 hectares of exposed overburden not yet ready for final rehabilitation seeded with a pasture mix. Similar to previous years, the results continued to be encouraging, with germination across the area without the need for cultivation or irrigation and in the absence of topsoil.

The majority of the 65 hectare increase for the infrastructure area was associated with the tailings dam expansion project, as well as additional roads and laydown areas.

Table 35: Mt Arthur Coal rehabilitation summary

Domain	Area affected or rehabilitated hectares		
	Reporting period (July 2012 - June 2013)	Previous reporting period (January 2012 - June 2012)	Next reporting period (estimated) (July 2013 - June 2014)
A: MINE LEASE AREA			
A1 Mine lease area	8,475	8,464	8,475
B: DISTURBED AREAS			
B1 Infrastructure area	459	394	489
B2 Active mining areas	1,127	1,079	1,120
B3 Unshaped waste emplacement	1,403	1,386	1,397
B4 Tailings storage facility	73	78	80.7

Domain	Area affected or rehabilitated hectares		
B5 Shaped overburden emplacement	11	29.4	16
All disturbed areas	3,072	3,122.9	3,102.7
C: REHABILITATION PROGRESS			
C1 Total Rehabilitated area – except for maintenance	975	902^	1002
D: REHABILITATION ON SLOPES			
D1 10 to 18 degrees	22.9	22.9	24.0
D2 Greater than 18 degrees	0	0	0
E: SURFACE OF REHABILITATED LAND			
E1 Pasture and grasses	709	664	716
E2 Native forests or ecosystems	266	238	286
E3 Plantations and crops	0	0	0
E4 Other	0	0	0

^ This was incorrectly reported as 900 hectares instead of 902 hectares in the 2012 Interim AEMR report.

Table 36: Maintenance activities on rehabilitated land

Nature of treatment	Area affected or rehabilitated hectares			Comment, control strategies or treatment
	Reporting period (July 2012 - June 2013)	Previous reporting period (January 2012 - June 2012)	Next reporting period (estimated) (July 2013 - June 2014)	
Additional erosion control works	0	1	1.2	Drop structures planned for next reporting period.
Re-topsoiling	0	0	0	-
Soil treatment	0	0	17	Gypsum and organic material applied to assist rehabilitation program.
Pasture management	0	0	240	No grazing undertaken on rehabilitation. Area fenced for grazing for next reporting period.
Reseeding and replanting	15	10	20	4,000 tubestock planted along Thomas Mitchell Drive offset area and Saddlers Creek Conservation area. 3,000 tubestock planted on VD1 rehabilitation area.
Weed Control	1,043	100	500	Targeting Mother-of-millions, African Boxthorn, St John's Wort and Prickly Pear on buffer, rehabilitation and offset areas.
Feral animal control	3,700	4,000	3,500 to 4,000	Wild dog and fox baiting across Mt Arthur Coal buffer areas, Bayswater rehabilitation area and onsite offset areas.

5.3 Other Infrastructure

No other rehabilitation infrastructure was constructed during the reporting period. Engineering consultants were engaged to design rock-lined drop structures for rehabilitated areas at Saddlers North overburden dump (SD2) and CD1 overburden dump. These drop structure designs will be finalised in the next reporting period and incorporated into the rehabilitation program.

During the reporting period, 31 exploration drill sites were rehabilitated across land owned by Mt Arthur Coal. Exploration site rehabilitation consists of backfilling of sumps and allowing for backfill settlement. Following adequate settlement time, the disturbed sections of the exploration site (approximately 50 by 50 metres) are given a final trim, with any protective bunds or recovered topsoil being reinstated. For pasture areas (which accounted for all sites during this reporting period), the disturbed areas of the site are then hand-seeded with the pasture rehabilitation mix.

5.4 Rehabilitation Trials and Research

Methods to re-establish the five targeted vegetation communities were researched during the reporting period and, where appropriate, incorporated into the rehabilitation and regeneration programs. These five vegetation communities are:

- Upper Hunter White Box – Ironbark Grassy Woodland (UHWB);
- Central Hunter Box – Ironbark Woodland (CHBI);
- Central Hunter Ironbark – Spotted Gum Grey-Gum Box Forest (CHISG);
- Narrabeen Footslopes Slaty Box Woodland (NFSB); and
- Hunter Floodplain Red Gum Woodland Complex (HFRG).

Following consultation with ecological consultants, the seed mix used to establish woodland rehabilitation at Mt Arthur Coal was modified at the beginning of the reporting period to better reflect the species composition of UHWB. UHWB is one of the five vegetation communities being targeted for re-establishment across site rehabilitation and offset areas. The 28 hectares of woodland rehabilitation completed during the reporting period utilised the UHWB seed mix.

Targeted seed mixes have been refined for two of the other targeted communities, CHBI and CHISG, and will be used in future rehabilitation programs. Species composition of future tubestock planting programs (rehabilitation and regeneration) will be modified to reflect the final two targeted vegetation communities, NFSB and HFRG. The regeneration program targeting HFRG will be restricted to the Saddlers Creek conservation area, which provides suitable landform and drainage conditions. Future rehabilitation and regeneration programs targeting NFSB will be centred on rehabilitation adjacent to the northern and western footslopes of Mount Arthur.

During the reporting period Mt Arthur Coal continued supplementary replanting trials on VD1 to improve the ratio of tree to pasture cover, with the objective of re-establishing Box-gum Grassy Woodland. Approximately 15 hectares of established pasture rehabilitation was sprayed to control weeds, slashed, and had riplines established. Tubestock seedlings were then planted at approximately 300 stems per hectare, with guards and supplementary watering. The tubestock were developed from seed collected from Mt Arthur Coal owned land, and the species composition was targeted to reestablish Box-gum Grassy Woodland. These trial methods will be monitored and refined over future reporting periods, as the vegetation develops.

Work continued on the Future Landscapes Design Project during the period to assess the feasibility of designing and constructing rehabilitated overburden dumps that more closely mimic natural drainage patterns. The aim of the project is to establish landforms that provide greater long term geotechnical stability, and visual compatibility with the adjacent unmined landscape. This project will continue during the next reporting period.

During the reporting period initial preparations were made for a grazing trial on rehabilitated land between McDonalds pit and Belmont pit, including the establishment of perimeter fencing around the proposed trial area. This grazing trial will be further developed during subsequent reporting periods. It is expected that a component of this trial area will form part of an industry-wide rehabilitation grazing trial being coordinated by the NSW Minerals Council as part of the Upper Hunter Mining Dialogue. A broad-brush grazing suitability assessment of pasture rehabilitation across the Mt Arthur Coal mine site has been initiated and will be finalised during the next reporting period.

5.5 Further Development of the Final Rehabilitation Plan

The broad rehabilitation outcomes for Mt Arthur Coal are described in the site's rehabilitation strategy, which was developed to address Schedule 3, Condition 42 of the consolidation project approval. Whilst the rehabilitation strategy provides the overarching concepts for decision making on landscapes and land use for Mt Arthur Coal, the BRMP and land management procedure (developed during the reporting period) provide specific management actions required to achieve these outcomes.

Mt Arthur Coal is in the process of separating the rehabilitation and biodiversity aspects of the BRMP into separate documents, with the biodiversity management plan (BMP) currently being developed and the 2013 MOP (to be developed in the second half of 2013) to incorporate the rehabilitation planning information. Both these documents will detail information relevant to the final rehabilitation plan for Mt Arthur Coal.

Mt Arthur Coal lodged an application with the DP&I during the reporting period to modify its existing consolidation project approval. It is anticipated that a determination on this application will be made during the next reporting period. Following this determination, Mt Arthur Coal will subsequently revise its existing draft closure plan to reflect the long term mining and closure strategy resulting from the determination.

Further research was undertaken during the reporting period to expand the scope of the existing site rehabilitation monitoring program. This expanded program will ensure Mt Arthur Coal is collecting adequate information to prove the stability of post-mining landforms and success of selected post-mining land uses. Appropriate completion criteria, performance measures and progress indicators, as they relate to the land management and rehabilitation program, are also being developed as part of the expanded monitoring program. The monitoring program will be finalised during the next reporting period, and these rehabilitation indicators and criteria will be integrated into the BMP, MOP and revised draft closure plan.

6 Activities Proposed in the Next AEMR Period

Mt Arthur Coal is committed to delivering a high standard of environmental and social performance into the future and has established targets for the next reporting period. These targets will be closely monitored and an update on the status of each will be reported in the next AEMR.

In 2011 a number of targets were proposed on the basis of them being implemented across the complete 2012 calendar year period. Due to the realignment of the AEMR reporting period to the financial year, targets scheduled for completion during the period 1 July 2012 to 31 December 2012, together with any targets not completed during the previous Interim AEMR reporting period, have been carried forward into this reporting period.

Table 37 outlines a progress summary of Mt Arthur Coal's performance against targets set for the FY13 period.

Mt Arthur Coal has established the following targets for the next reporting period, FY14:

- complete and lodge an application for the new consolidated mining lease;
- continue investigating the practicality of a future landscapes design project at Mt Arthur Coal;
- continue investigating the feasibility of dust reduction projects identified in the PRP report;
- trial a predictive dust model to facilitate management of dust during forecasted adverse weather conditions;
- investigate the need for additional near-field, real-time air quality monitoring stations to be used for internal management purposes;
- install the following monitoring equipment:
    - o two statutory real-time PM_{10} TEOM monitoring stations
    - o two statutory blast monitoring stations
    - o one statutory real-time meteorological station
- review the recruitment program at Mt Arthur Coal to encourage greater local recruitment; and
- employ at least eight first-year apprentices from the local community.

Table 37: Mt Arthur Coal's performance against targets for FY13

Target	Status	Performance
In consultation with DP&I, surrender of the Bayswater No. 3 development consent DA 210/93	Completed	The DP&I accepted the surrender of the Bayswater No. 3 development consent (210/93) on 20 May 2013.
Review and update the site predictive water balance model simulation tool	Completed	Specialist consultants were commissioned to review and update the site predictive water balance model simulation tool. The final updated model and consultant's report were completed in February 2013.
Investigate the feasibility of dust reduction projects identified in the PRP report	In progress	Seven dust reduction projects were identified in the PRP report and assigned detailed evaluation completion timeframes ranging from March 2013 to December 2013. The following four projects were assigned completion dates within the reporting period: • Use of larger overburden trucks – complete; • Vegetative windbreaks – complete; • Wind screens/fences – complete; and • Vegetative ground cover – commenced but not yet complete. A further three projects were assigned completion dates in December 2013. These projects have also commenced but are not yet complete. The status of these projects will be updated during the next reporting period.
Continue investigating a rehabilitation trial on landform design	Completed	This project was incorporated into the more broadly scoped Future Landscapes Design Project, which was progressed during FY13.

Target	Status	Performance
Install a real-time noise monitor to assist in the management of noise impacts at nearby properties	In progress	This real-time noise monitor will be shared with AngloAmerican for Drayton mine. AngloAmerican and BHP Billiton have agreed on the location of the monitor in Antiene. The monitoring equipment has been purchased. The agreement between AngloAmerican and BHP Billiton has been drafted and will be signed during the next reporting period. This project is expected to be completed during the next reporting period.
Install a real-time surface water monitoring station downstream of Mt Arthur Coal in Saddlers Creek, but upstream from any water off-takes	Completed	A real-time surface water monitoring station was installed downstream of Mt Arthur Coal in Saddlers Creek in May 2013 and commenced real-time logging of data in June 2013.
Complete and lodge an environmental assessment for the Mt Arthur Coal Modification Project	Completed	The Mt Arthur Coal Open Cut Modification Environmental Assessment was completed and lodged with the DP&I on 28 February 2013. Approval is anticipated in late 2013.
Commence a review of the effectiveness of the complaints handling process	Completed	Coakes Consulting was engaged to undertake a review of Mt Arthur Coal's complaints handling procedure. The review was completed and findings provided to Mt Arthur Coal in March 2013.
Employ at least eight first-year apprentices from the local community	Completed	Mt Arthur Coal welcomed 16 new apprentices to its operations during the reporting period. The new recruits were selected from the suburbs of Muswellbrook, Denman, Scone, Rouchel, Singleton and Mitchells Flat as part of Mt Arthur Coal's commitment to employing and training local people for local jobs.

7 Acronyms

AEMR	Annual environmental management report
bcm	Bank cubic metres
BMP	Biodiversity management plan
BRMP	Biodiversity and rehabilitation management plan
CCC	Community consultative committee
CCL	Consolidated coal lease
CHBI	Central Hunter Box – Ironbark Woodland
CHISG	Central Hunter Ironbark – Spotted Gum Grey-gum Box Forest
CHPP	Coal handling preparation plant
CL	Coal lease
dB	Decibels
DECCW	Former NSW Department of Environment, Climate Change and Water
DP&I	NSW Department of Planning and Infrastructure
DRE	NSW Department of Trade and Investment - Division of Resources and Energy
EA	Environmental assessment
EC	Electrical conductivity
EEO	Energy efficiency opportunities
EL	Exploration licence
ELA	Exploration licence authorisation
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC	Environment Protection and Biodiversity Conservation
EPL	Environment protection licence
EMS	Environmental management system
FY	Financial year
ha	Hectares
HFRG	Hunter Floodplain Red Gum Woodland Complex
HRSTS	Hunter River Salinity Trading Scheme
HVAS	High volume air sampler
ISO	International Standards Organisation
ITP	Inspection and test plan
LED	Light-emitting diode
LGA	Local government area
$L_{Aeq\ (15min)}$	Average noise energy over a 15 minute period
$L_{A1\ (1min)}$	The highest noise level generated for 0.6 seconds during one minute

m	Metre
MACT	Mt Arthur Coal terminal
MCoA	Minister's Condition of Approval
mg/L	Milligrams per litre
ML	Megalitre
ML	Mining lease
m/s	Metres per second
mm	Millimetres
mm/s	Millimetres per second
MOP	Mining operations plan
MPL	Mining purpose lease
MSC	Muswellbrook Shire Council
m^2	Square metres
m^3	Cubic metres
NAIDOC	National Aborigines and Islanders Day Observance Committee
NATA	National Association of Testing Authority
NFSB	Narrabeen Footslopes Slaty Box Woodland
NGER	National Greenhouse and Energy Reporting
NGO	Non-government organisation
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
pH	Potential hydrogen
PIRMP	Pollution incident response management procedure
PM_{10}	Particulate matter less than 10 microns in size
PRP	Pollution reduction program
RAP	Remedial action plan
SEWPAC	Commonwealth Department of Sustainability, Environment, Water, Population and Communities
TEOM	Tapered element oscillating microbalance samplers
TSC Act	*Threatened Species Conservation Act 1995*
TSP	Total suspended particulate
TSS	Total suspended solids
UHAQMN	Upper Hunter Air Quality Monitoring Network
UHWB	Upper Hunter White Box – Ironbark Grassy Woodland
VPA	Voluntary planning agreement
W/m^2	Watts per square metre (solar radiation unit of measurement)
µS/cm	Microsiemens per centimetre
$µg/m^3$	Micrograms per cubic metre
^oC	Degrees Celsius

Appendix 1 – Independent Environmental Audit Outcomes

Table 1A: Independent environmental audit recommendations and their implementation

Audit report reference	Category	Recommendation	Mt Arthur Coal's response as at 30 November 2012	Further implementation of recommendation
Section 5.6.1 (page 26)	Erosion and Sediment Control	It is recommended that the Erosion and Sediment Control Plan be revised and the inclusion of reference to other relevant management plans/sections be inserted to demonstrate consistency with the components of *Managing Urban Stormwater: Soils and Construction, Volume 2E Mines and Quarries Appendix C*.	The Erosion and Sediment Control Plan will be reviewed to demonstrate consistency with the components of *Managing Urban Stormwater: Soils and Construction, Volume 2E Mines and Quarries Appendix C*. **Action assigned**.	Review undertaken and references to the Blue Book Volume 2E included in the Erosion and Sediment Control Plan.
Section 5.4.5 (page 22)	Air Quality	Although the Air Quality Management Plan and Air Quality Monitoring Program address each requirement in the Project Approval the following administrative matters (that have no direct bearing on environmental impact) are provided as suggestions for Mt Arthur Coal consideration only. Acting on these suggestions is not critical, but may improve Mt Arthur Coal Air Quality Management Plan:		
		• The reporting period for annual average air quality results should be standardised to the calendar year where possible.	Total suspended particulate (TSP) matter and particulate matter < 10ug/m^3 (PM_{10}) are assessed on a rolling annual averaging period. **No further action required**.	N/A
		• It is recommended that any one, or a combination of the following occur in relation to TSP compliance assessment:		
		o Formalise the approach using inferred TSP results based on measured PM_{10} data with the Department of Planning and Industry (DP&I), in consultation with the Office of Environment and Heritage (OEH);	This approach has since been formalised in the Mt Arthur Coal Air Quality Management Plan, approved by the Department of Planning and Infrastructure in June 2012. **Action completed**.	N/A
		o Conduct some limited monitoring for TSP; or	Limited monitoring for Total Suspended Particulate (TSP) matter will not be progressed at this stage, given the adequacy of the TSP inference method. **No further action required**.	N/A
		o Vary the MCoA to remove the TSP criterion.	At this stage, variation to the Minister's Condition of Approval will not be sought by Mt Arthur Coal in relation to removal of TSP impact assessment criterion. **No further action required**.	N/A

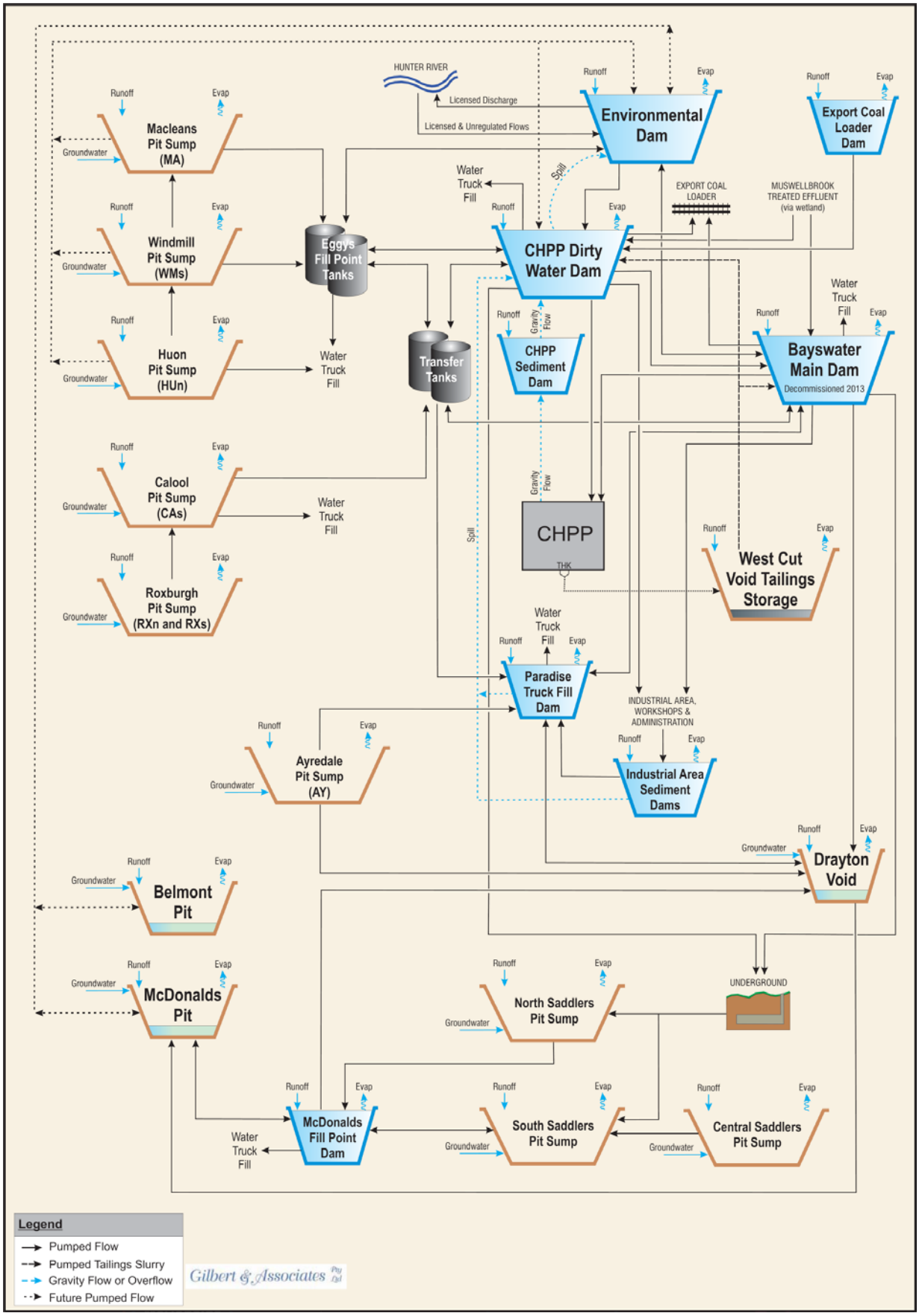
Audit report reference	Category	Recommendation	Mt Arthur Coal's response as at 30 November 2012	Further implementation of recommendation
		• The Mt Arthur Coal assessment approach for analysing 24-hour PM_{10} impacts could be improved by considering the temporal and spatial elements of the path that dust leaving the site may be subject to. This need only be done for extreme cases, which may warrant specialist assessment.	The audit found that Mt Arthur Coal's compliance assessment approach for 24 hour average PM_{10} particulate matter was adequate. Time-dependent dust path analysis may be considered for particular scenarios (e.g. low wind speed conditions). **No further action required**.	N/A
		• It would appear reasonable to investigate a better bird spike, an alternative perch for the birds or re-location of the DD05 gauge to a nearby site.	Following investigation, no reasonable alternative was identified to prevent contamination by bird droppings. **Action completed**.	N/A
		• Either the Air Quality Management Plan or the Mt Arthur Coal greenhouse gas and energy efficiency plan should make specific provision for reporting total site greenhouse gas emissions per tonne of product coal.	Reporting of greenhouse gas emissions is required by corporate and legislative requirements and meets the suggested metric (emissions relative to production output). **No further action required**.	N/A
		• The Air Quality Management Plan should:		
		o Refer to the Mt Arthur Coal greenhouse gas and energy efficiency plan;	The Air Quality Management Plan has been amended to include greenhouse gas management aspects and is now entitled Air Quality and Greenhouse Gas Management Plan. **Action completed**.	N/A
		o Include a reference to, or insert, the detailed baseline data into the Air Quality Management Plan;	Reference to detailed baseline air quality data has been included in the Plan. **Action completed**.	N/A
		o Provide further detail on a specific procedure, or set of relevant performance metrics against which to assess the effectiveness of management actions; and	Performance measures are detailed in the Air Quality and Greenhouse Gas Management Plan and include compliance with air quality standards and number of complaints. **Action completed**.	N/A
		o Incorporate a program for investigating and implementing ways to improve performance over time.	Improvement programs and targets are presented in the Mt Arthur Coal annual environmental management report. **No further action required**.	N/A
Section 5.7.3 (page 29)	Noise	It is recommended that the noise monitoring assessment procedure and/or apparatus for attended noise measurements be revised / updated to incorporate temporal analysis so that noise contributions from individual sources (including all intermittent and continuous mine-related sources, regardless of frequency) may be more specifically quantified / identified.	The temporal analysis method is currently undertaken as part of the attended noise monitoring program. The methodology in the attended monitoring report will be updated to provide a more detailed description of this approach. **Action assigned**.	The attended monitoring reports have been amended to include the following statement: *Time variations of noise sources in each measurement, their temporal characteristics, are taken into account via statistical descriptors.*

Audit report reference	Category	Recommendation	Mt Arthur Coal's response as at 30 November 2012	Further implementation of recommendation
Section 5.9.4 (page 41)	Rehabilitation	General improvements to topsoil stockpile management could be achieved by implementing the following actions:		
		• Test the topsoil to determine the chemical and biological amelioration requirements of the topsoil;	Topsoil testing will be undertaking prior to topsoil stockpiling. **Action assigned**.	Program to sample topsoil was implemented during the reporting period.
		• Monitor for weed establishment and spray any weeds that have established on the stockpiles;	A weed monitoring program is in place to identify areas of weed infestation. Weed spraying is routinely scheduled as part of the site's weed monitoring and management program. **No further action required**.	N/A
		• Shape the stockpiles with a maximum batter grade of 1(v):3(h);	Erosion control will be managed by revegetation and stockpile location selection. **No further action required**.	N/A
		• Apply ameliorants (gypsum, compost, etc) and rip into the topsoil at the time of stockpiling; and	Ameliorants will be applied at time of placement not at the time of stockpiling. **No further action required**.	N/A
		• Protect any long term stockpiles by Hydro-seeding with non-invasive grass species and protect the surface stability with hydro-mulching.	Direct seeding of non-invasive pasture grasses will continue to be applied to topsoil stockpiles. **No further action required**.	N/A
Section 5.9.4 (page 42)	Rehabilitation	Recommended suggestions to improve rehabilitation outcomes are:		
		• Mt Arthur Coal develop detailed completion criteria for all rehabilitation types using a modified LFA process that considers agricultural production, stability, drainage and other aspects not addressed by LFA;	Completion criteria for all rehabilitation domains have been provided in the Rehabilitation and Biodiversity Management Plan. **Action completed**.	N/A
		• Rehabilitating areas should be compared with analogue areas with similar vegetation types, slope, soil type and land use etc. This process will be important for demonstrating rehabilitation success and identifying areas requiring maintenance or improvement;	Biodiversity and Rehabilitation Management Plan requires rehabilitation areas to be compared to a reference/analogue site. **Action completed**.	N/A
		• Consider undertaking spoil erosion modelling and develop a waste dump landform design that avoids the concentration of flow and the need for diversion banks and drop structures;	Biodiversity and Rehabilitation Management Plan includes a requirement for spoil erosion modelling. The majority of rehabilitation slopes at Mt Arthur Coal do not demonstrate excessive erosion. However, for erosive spoil types Mt Arthur Coal is continuing erosion modelling and development of alternative landform designs. **Action completed**.	N/A

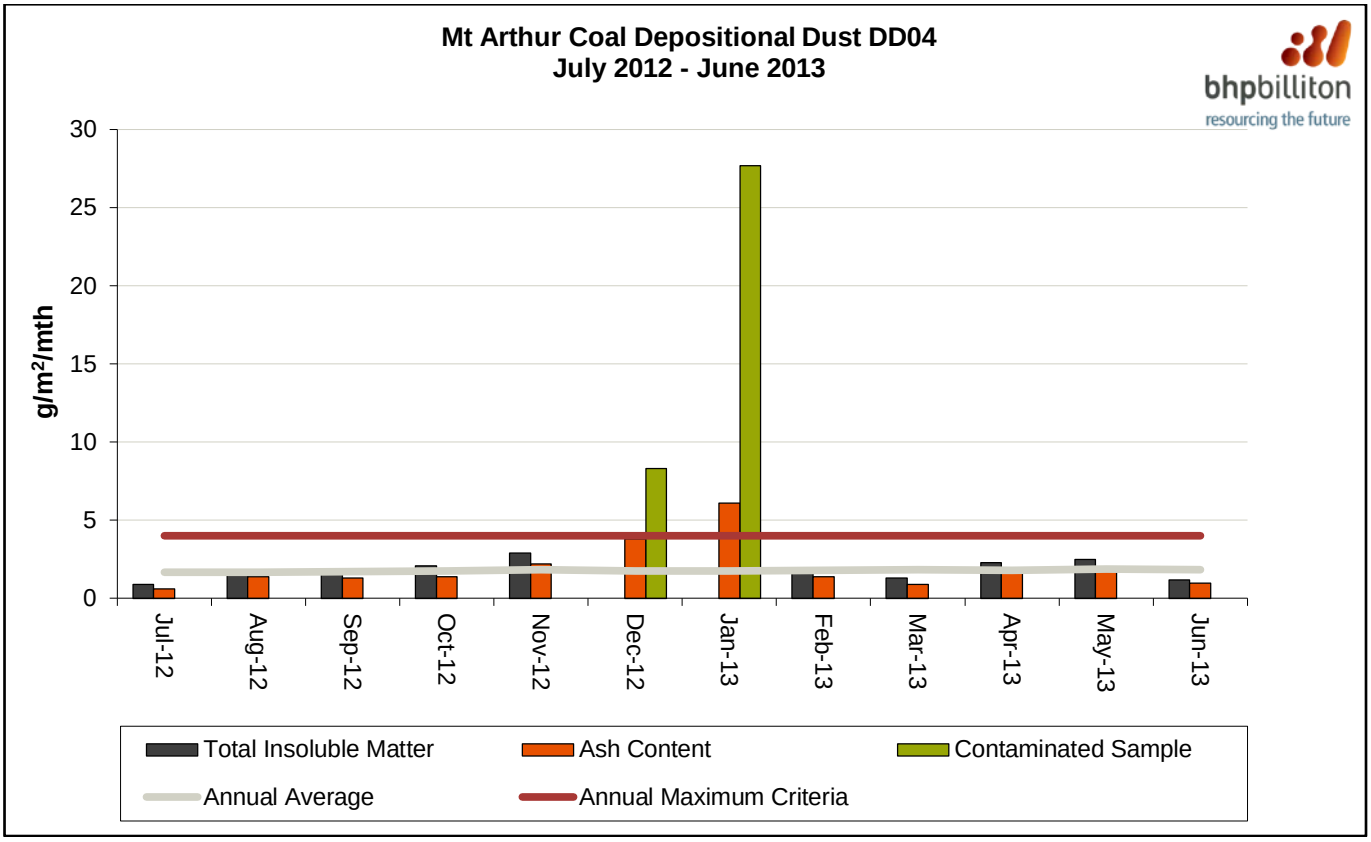
Audit report reference	Category	Recommendation	Mt Arthur Coal's response as at 30 November 2012	Further implementation of recommendation
		• Consider removing contour banks from already vegetated areas to minimise potential for future tunnel erosion/ gully erosion; and	Removal of existing contour banks on already vegetated areas may be considered in future if rehabilitation monitoring indicates that vegetation cover on adjacent slopes is providing sufficient erosion protection. **No further action required**.	N/A
		• If Mt Arthur Coal propose to continue using diversion banks (channel banks), ensure that they are designed in accordance with Table 6.1 of Volume 2E of the Blue Book. Ensure that they are correctly laid out using survey equipment and then checked prior to and following the application of topsoil.	Contour banks are currently designed and constructed to meet the requirements of *Managing Urban Stormwater: Soils and Construction, Volume 2E Mines and Quarries Appendix C*. **No further action required**.	N/A
		• Design and construction details should be recorded using an inspection and test plan form (ITP).	Design and construction details will be documented and retained. **Actioned assigned**.	Rehabilitation inspection form drafted during reporting period. To be included in the Rehabilitation Monitoring Procedure planned for completion during next reporting period.
Section 5.9.4 (page 42)	Rehabilitation	To improve rehabilitation outcomes on the VD1 spoil dump, it is suggested that the following actions be considered:		
		• The most practical way to establish native tree and shrub species on the spoil dumps is direct seeding with a compost blanket;	Current method for remedial establishment of native trees and shrubs in selected area is using tubestock in combination with a weed spraying program as required and surface ripping as ground preparation. **No further action required**.	N/A
		• Weed infested topsoil should be either stripped and buried or covered with 0.5m to 1m on non-dispersive mine spoil. The soil would then need to be ameliorated and contour ripped, then direct seeded with non-invasive cover crop species and native tree, shrub and grass species and with a 15mm to 50mm thick compost blanket. Compost needs to be of a high quality. Normally wetting agents, guar glues and microbial inoculants are applied at the same time to provide optimum growing conditions. (This approach has been used successfully on other coal mines in the Hunter Valley and construction sites in NSW and	Incorporated as part of abovementioned remedial measures. **No further action required**.	N/A

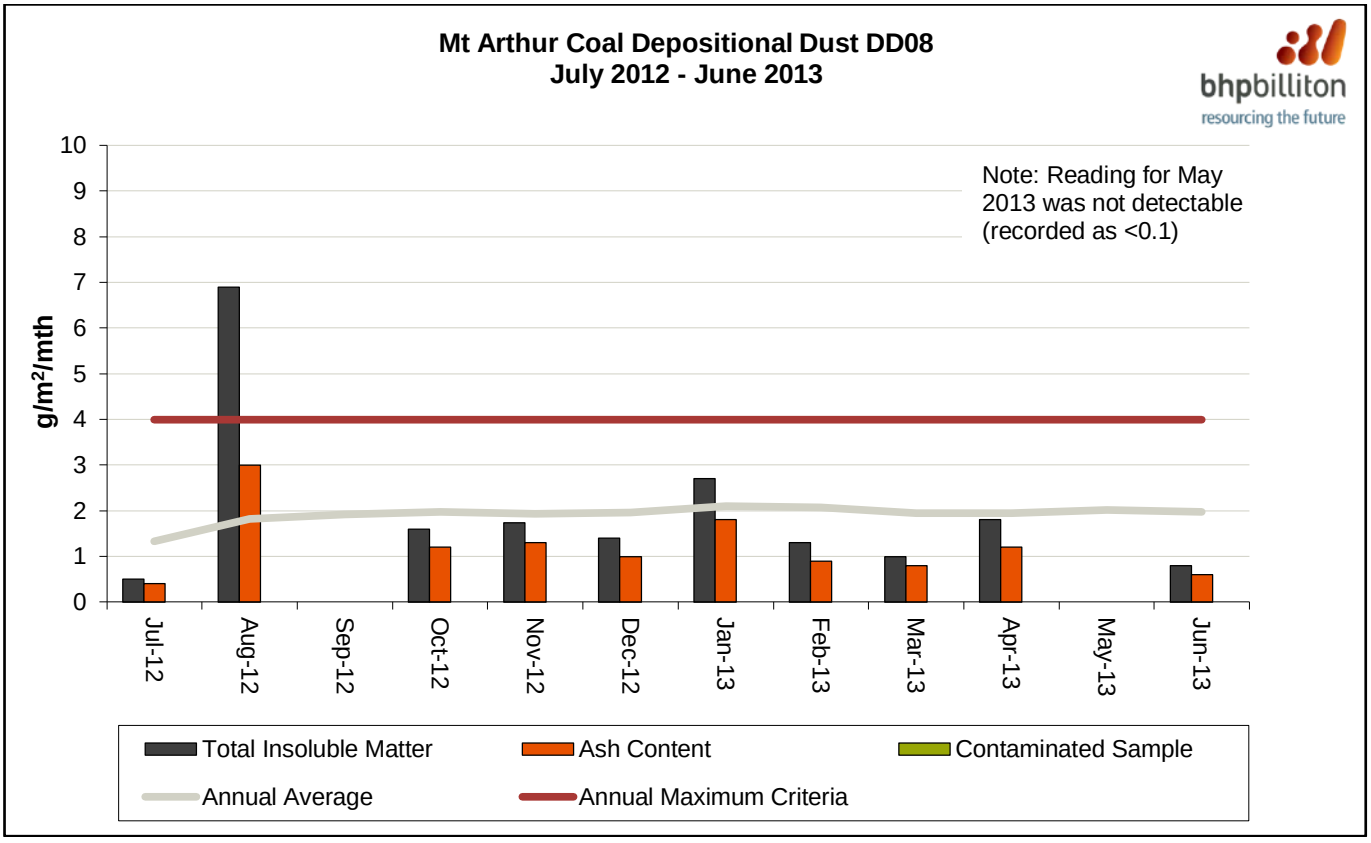
Audit report reference	Category	Recommendation	Mt Arthur Coal's response as at 30 November 2012	Further implementation of recommendation
		Queensland); and • It was noted that construction of the dump had not been completed. This remaining area would be the ideal location to trial this approach.	Refer to abovementioned remedial approach. **No further action required**.	N/A
Section 5.9.4 (page 42)	Rehabilitation	General actions suggested to improve rehabilitation areas across the Mt Arthur Coal Complex site (particularly to apply to the steep cut batter behind the Mt Arthur Administrative Office) are: • Test the soil for physical, chemical and biological parameters and determine amelioration requirements prior to reuse for rehabilitation; • Install a lined drain (if necessary) at the top of the slope well away from the edge of the batter to prevent overland flow discharging over the batter; • Remove the topsoil from the batter and roughen the subsoil using the teeth on an excavator bucket; • Apply the soil ameliorants and seed with an Eco-blanket (high quality compost blanket applied with a bark blower truck); and • Irrigate until the cover crop establishes.	The area to which this recommendation relates is not final rehabilitation, and has been temporarily revegetated. The area will be reshaped and revegetated as part of final rehabilitation. **No further action required**.	N/A

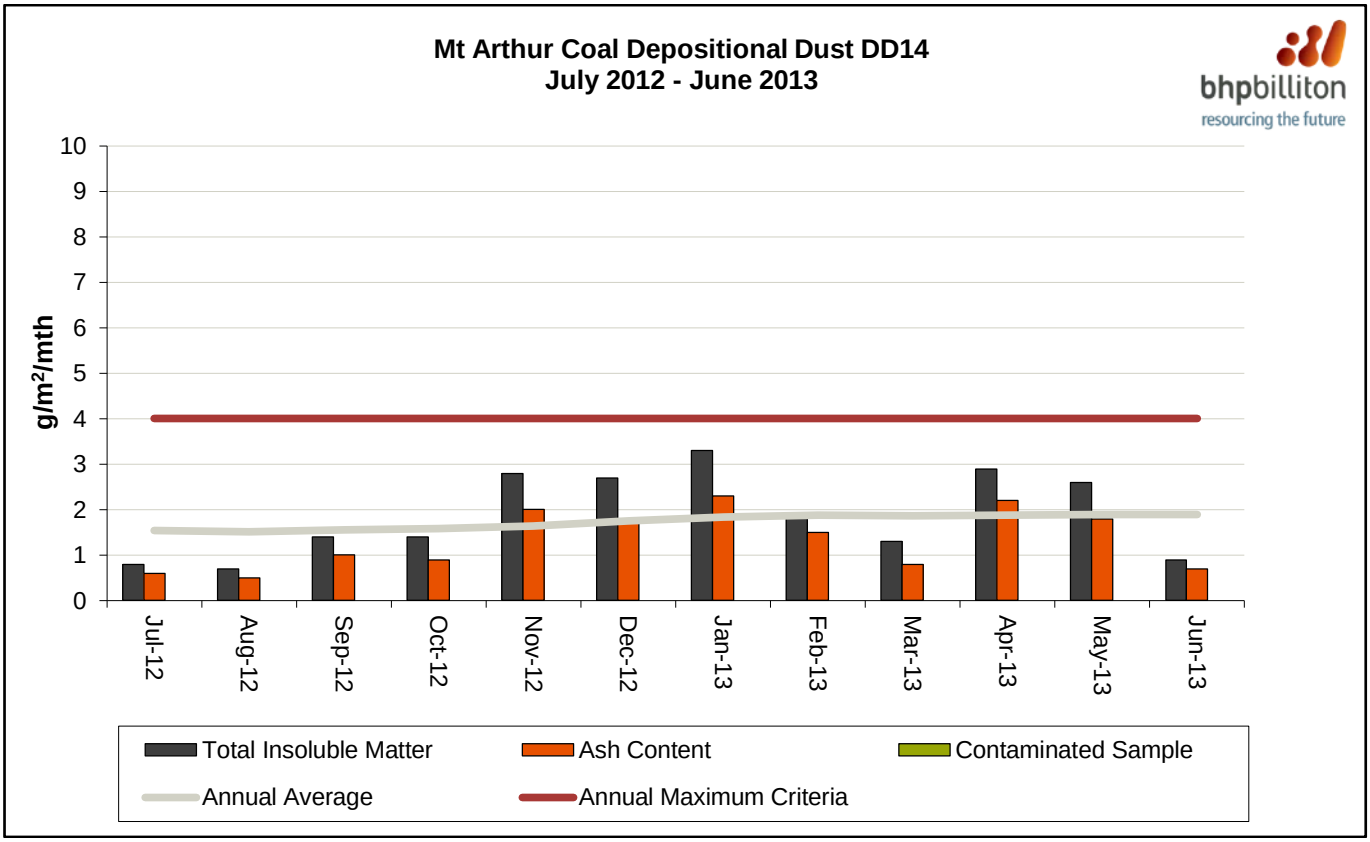
Appendix 2 - Overview of Surface Water Management System

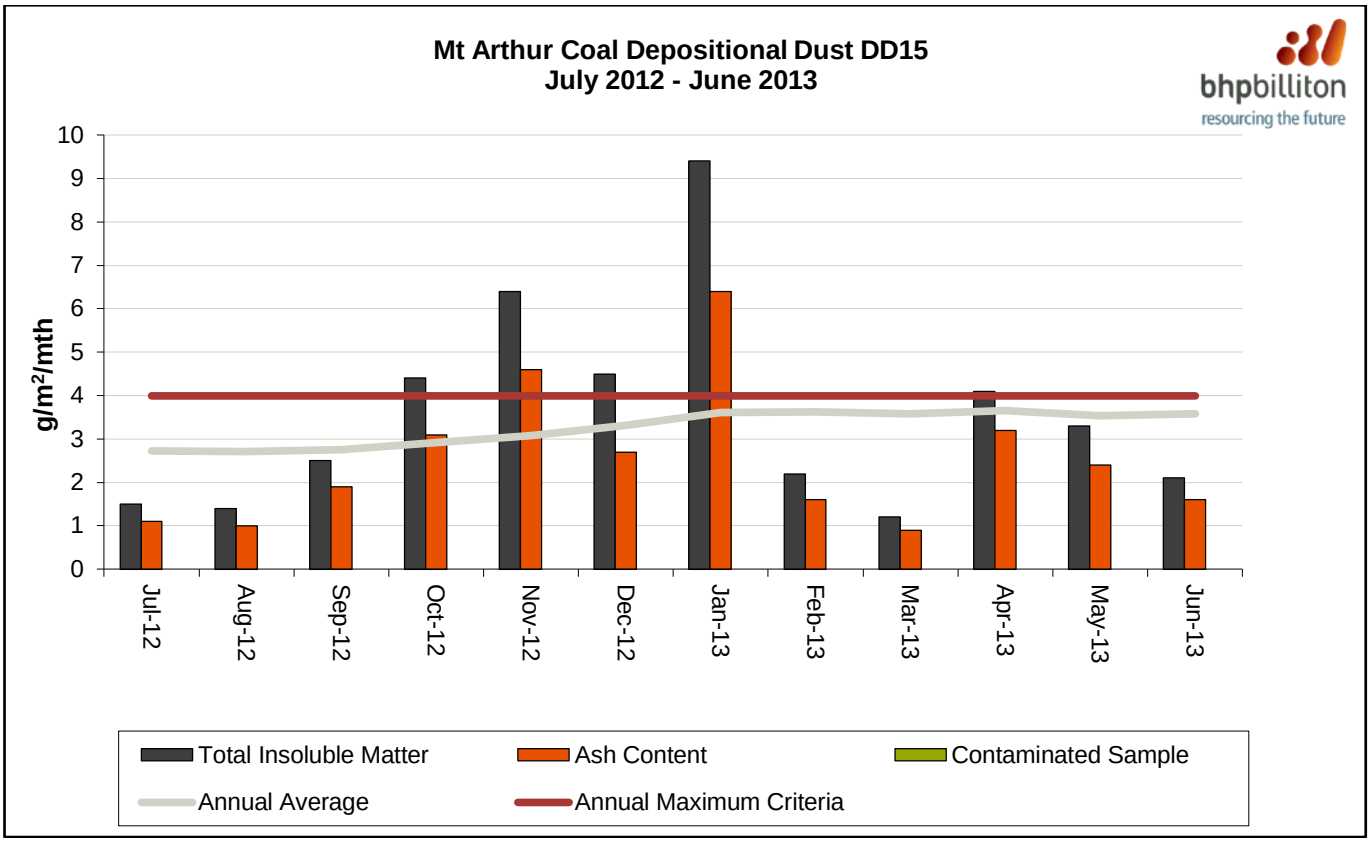


Appendix 3 - Air Quality Monitoring Results






Mt Arthur Coal Depositional Dust DD14
July 2012 - June 2013
bhpbilliton
resourcing the future
g/m²/mth
0
1
2
3
4
5
6
7
8
9
10
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Total Insoluble Matter
Ash Content
Contaminated Sample
Annual Average
Annual Maximum Criteria


Mt Arthur Coal Depositional Dust DD15
July 2012 - June 2013
bhpbilliton
resourcing the future
g/m²/mth
0
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2
3
4
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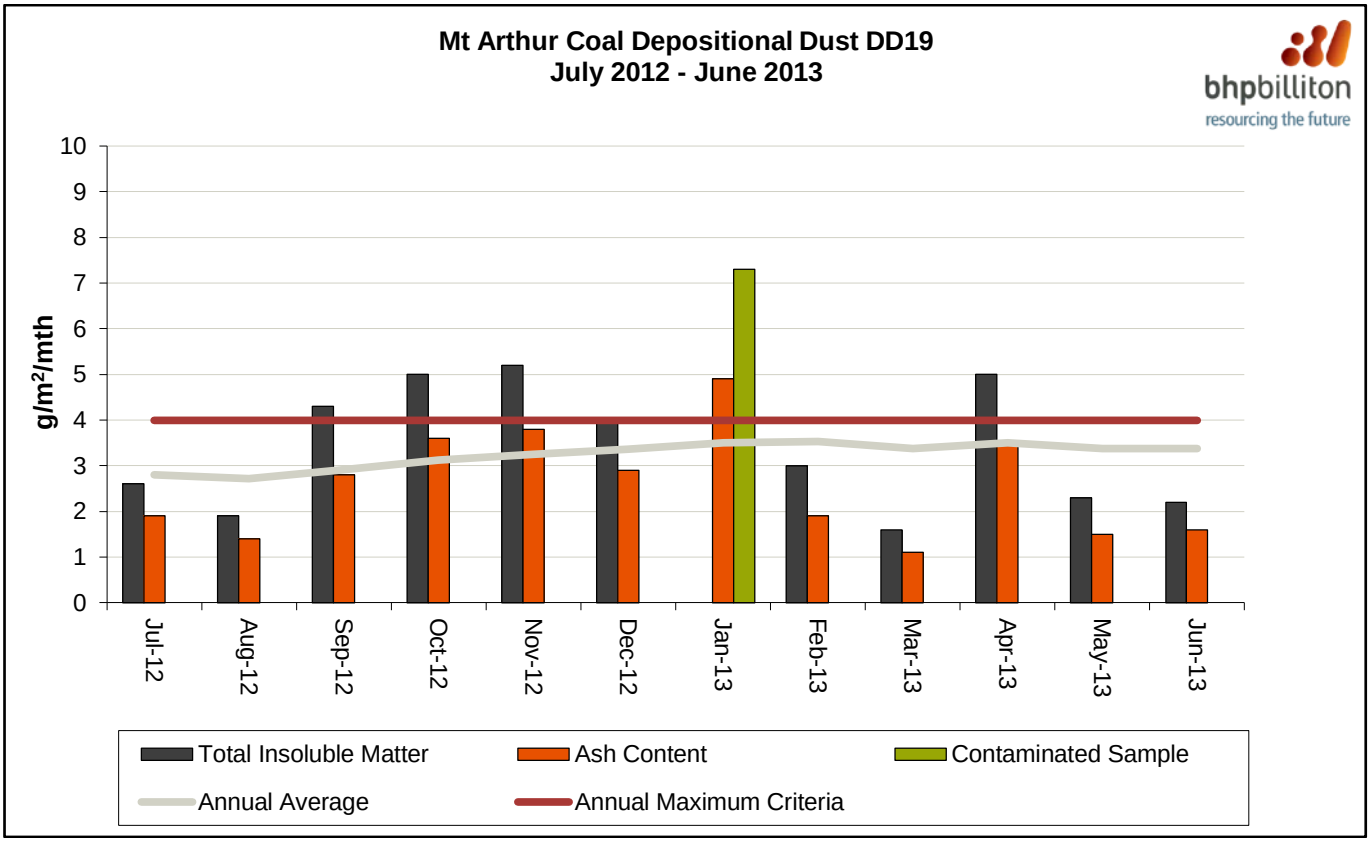
6
7
8
9
10
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Total Insoluble Matter
Ash Content
Contaminated Sample
Annual Average
Annual Maximum Criteria


Mt Arthur Coal Depositional Dust DD19
July 2012 - June 2013
bhpbilliton
resourcing the future
g/m²/mth
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2
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6
7
8
9
10
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
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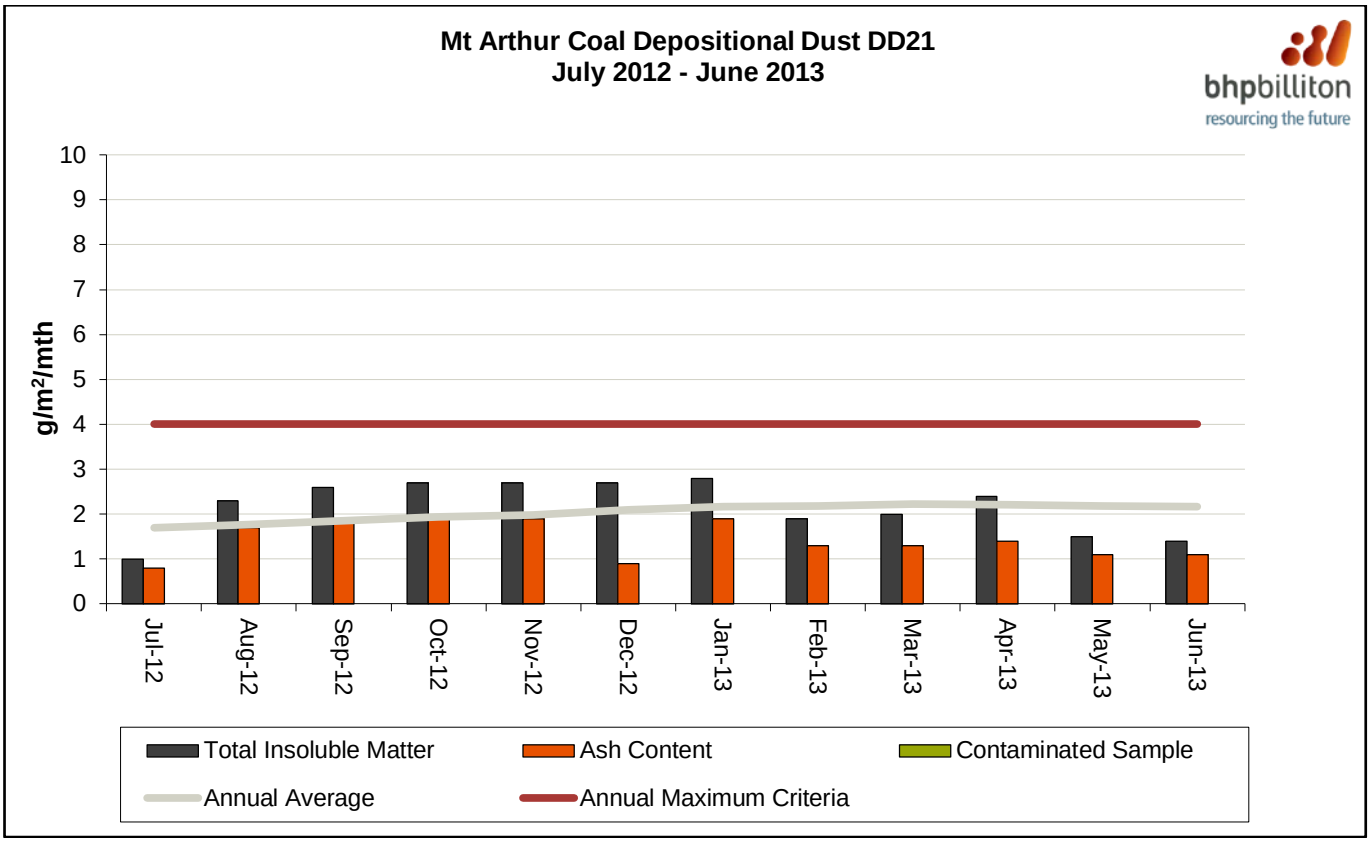
Apr-13
May-13
Jun-13
Total Insoluble Matter
Ash Content
Contaminated Sample
Annual Average
Annual Maximum Criteria


Mt Arthur Coal Depositional Dust DD21
July 2012 - June 2013
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resourcing the future
g/m²/mth
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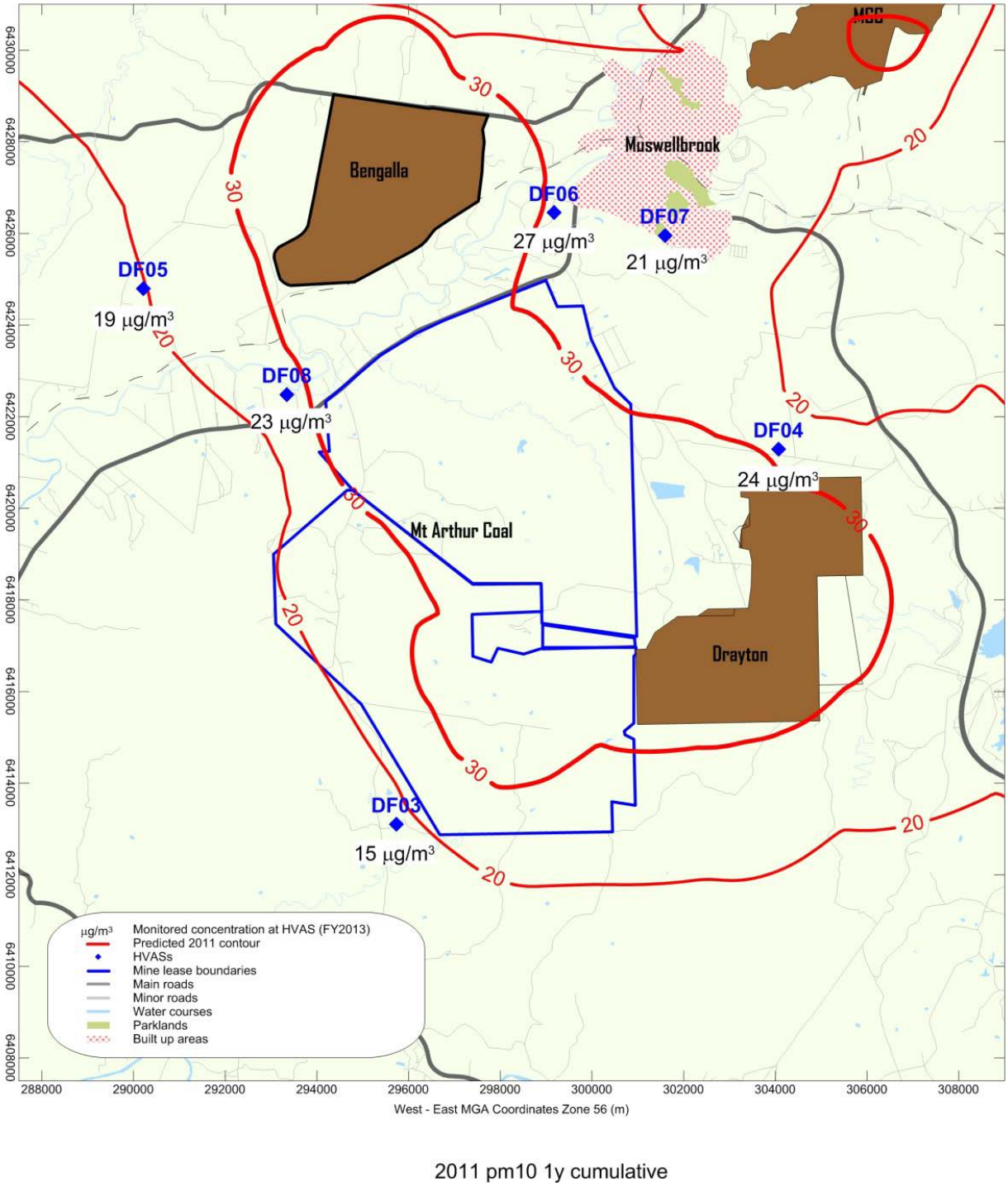
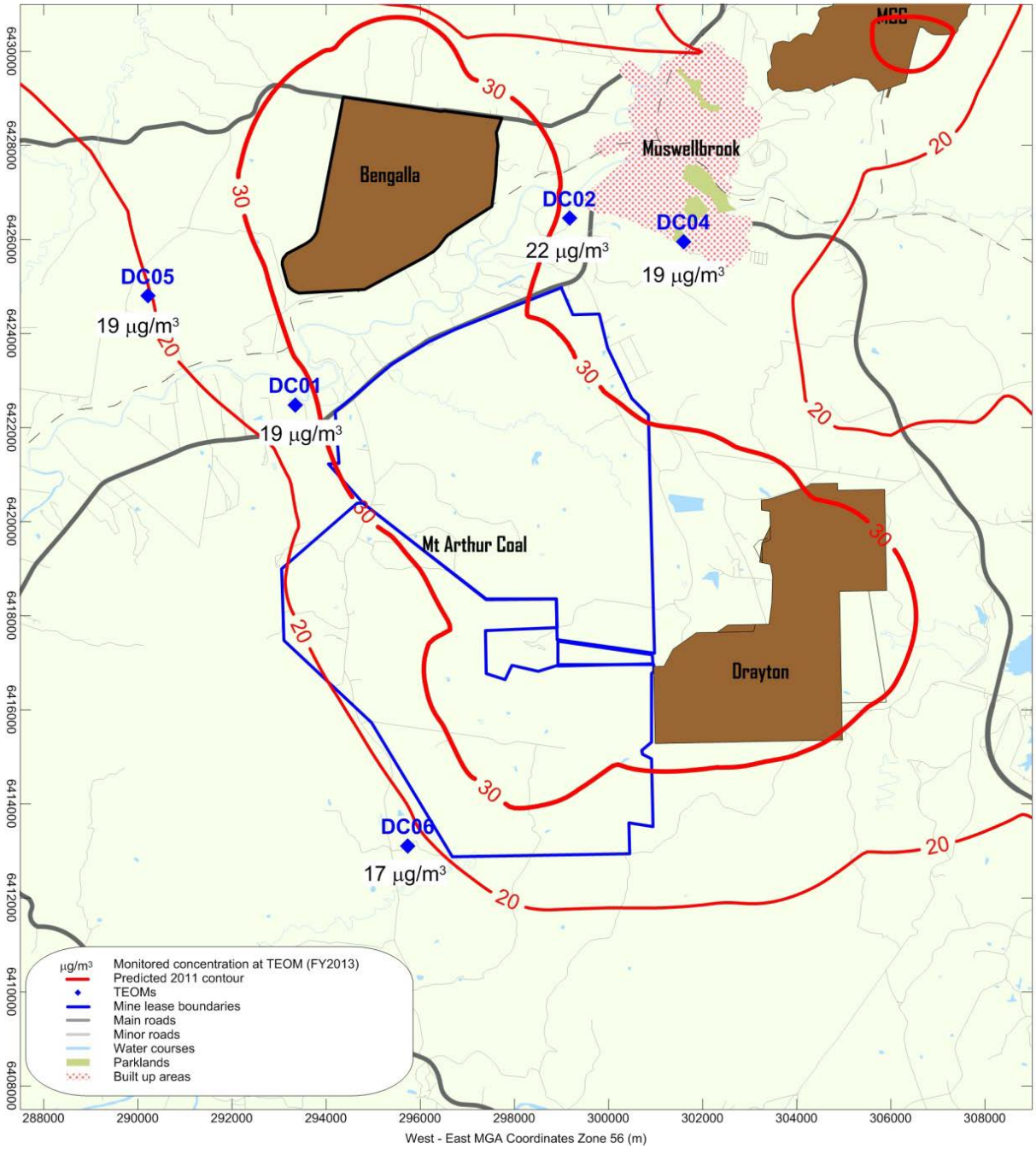
6
7
8
9
10
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Total Insoluble Matter
Ash Content
Contaminated Sample
Annual Average
Annual Maximum Criteria



2011 pm10 1y cumulative

Species: PM_{10}	**Averaging Time:** Annual	**Percentile:** Maximum	**Scenario:** MAC 2011 Project and other sources	**Location:** MAC Mine
Model Used: ISCMOD	**Units:** $\mu g/m^3$	**Assessment criteria:** 30 mg/m^3	**Met Data:** Macleans Hill 2007-2008	**Plot:** J Cox

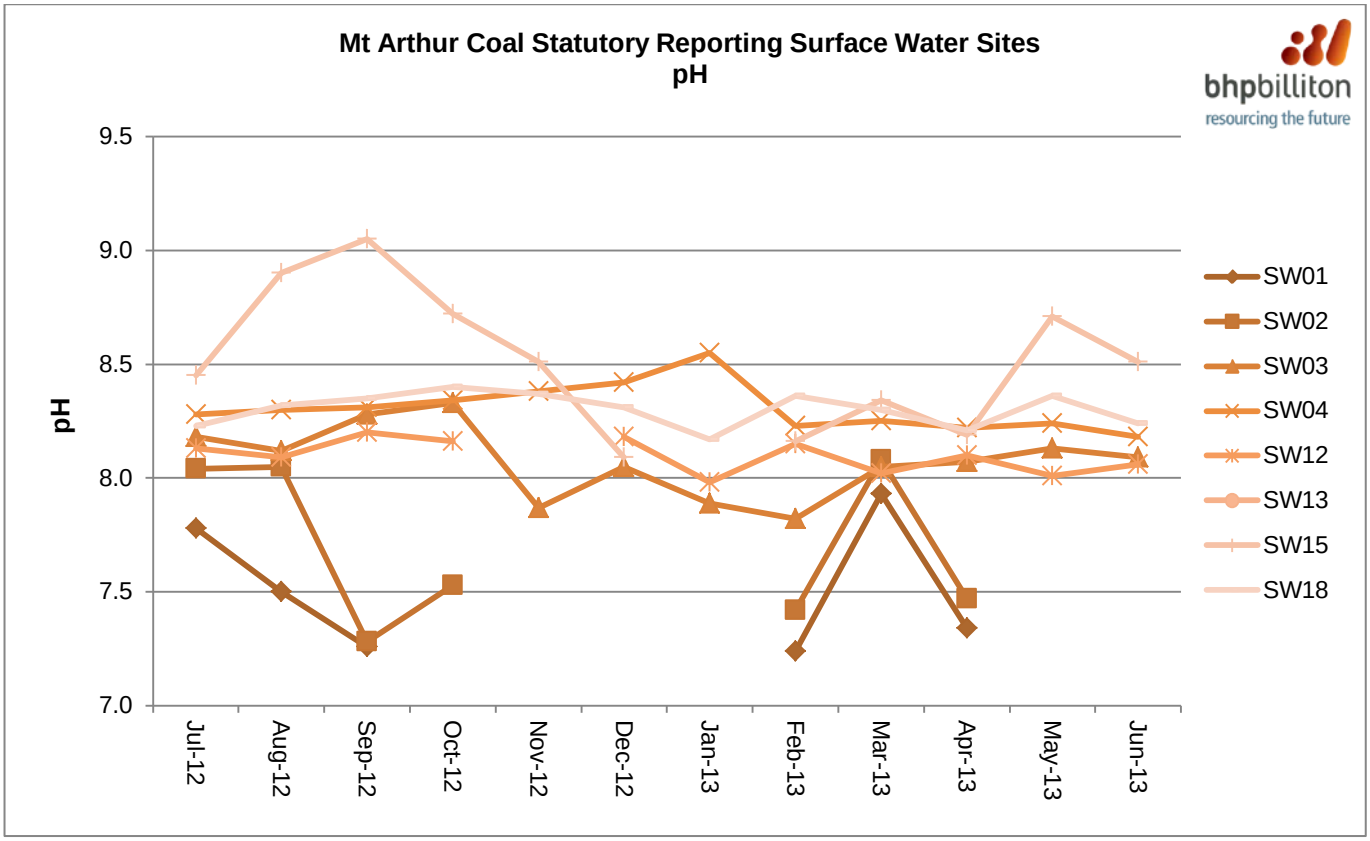
Figure 3A: Predicted annual average PM_{10} concentrations due to emissions from the Project and other sources in 2011 compared with FY13 measured concentrations – HVAS

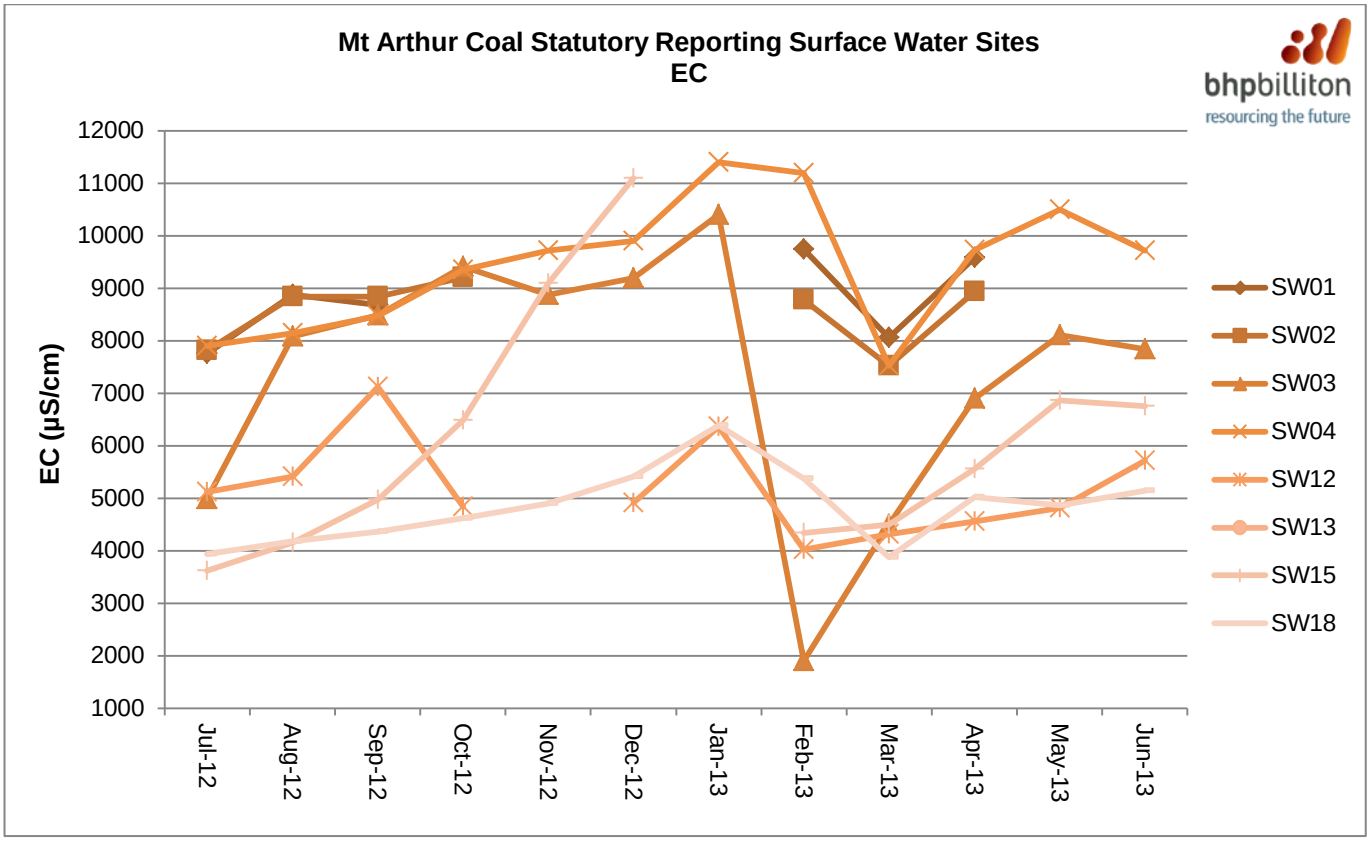


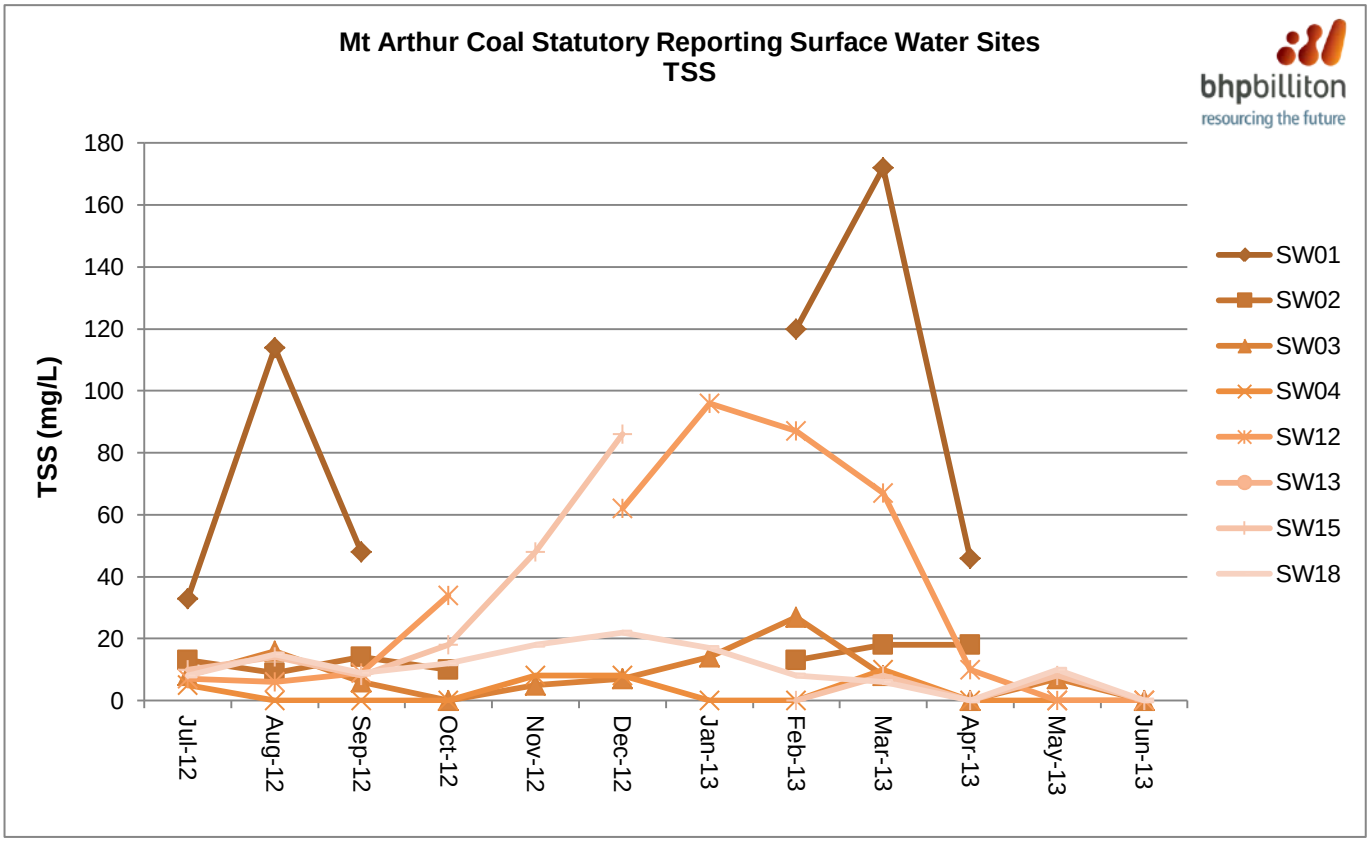
Species: PM_{10}	**Averaging Time:** Annual	**Percentile:** Maximum	**Scenario:** MAC 2011 Project and other sources	**Location:** MAC Mine
Model Used: ISCMOD	**Units:** $\mu g/m^3$	**Assessment criteria:** 30 mg/m^3	**Met Data:** Macleans Hill 2007-2008	**Plot:** J Cox

Figure 3B: Predicted annual average PM10 concentrations due to emissions from the Project and other sources in 2011 compared with FY13 measured concentrations – TEOMs

Appendix 4 - Surface Water Quality Monitoring Results






Mt Arthur Coal Statutory Reporting Surface Water Sites
TSS
bhpbilliton
resourcing the future
TSS (mg/L)
180
160
140
120
100
80
60
40
20
0
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
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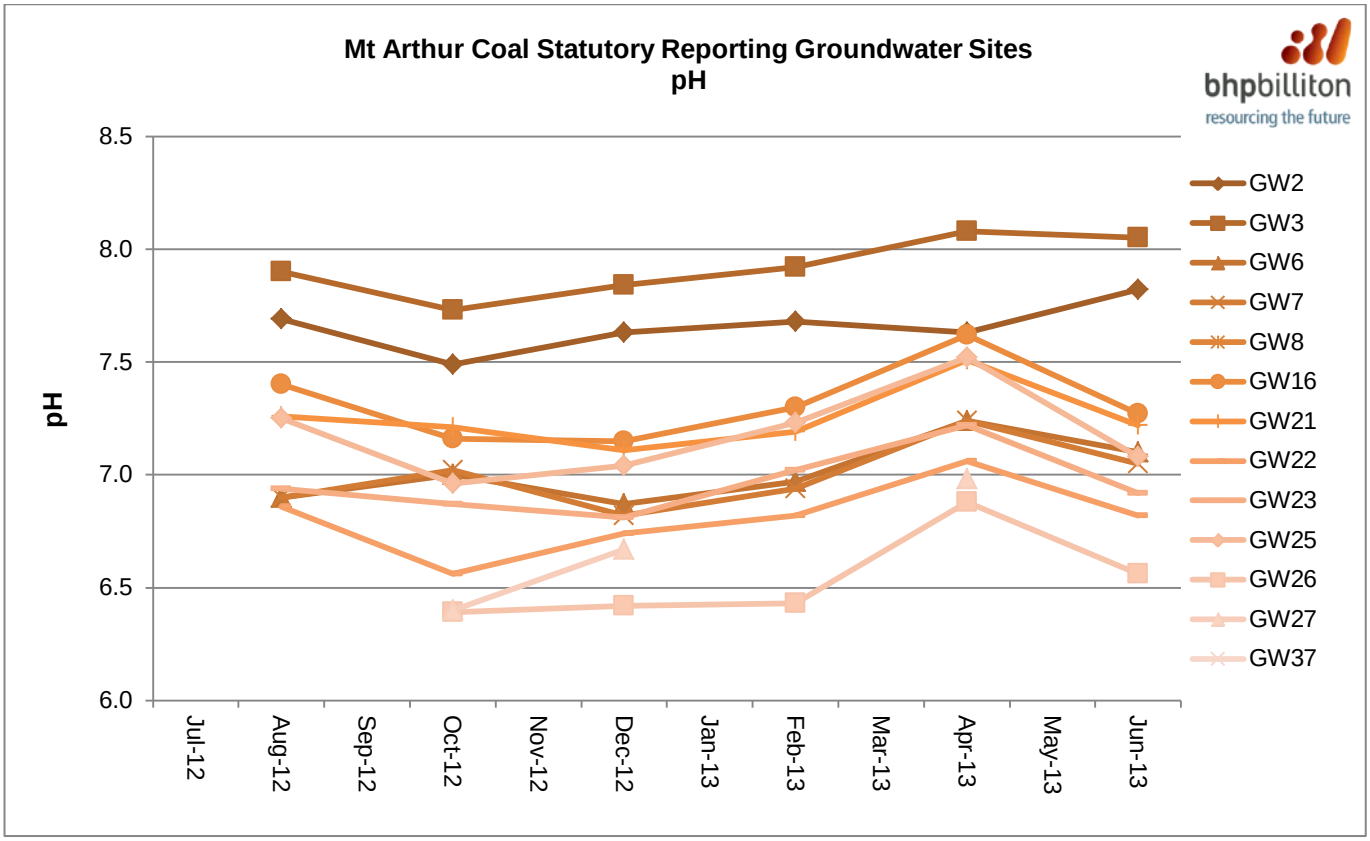
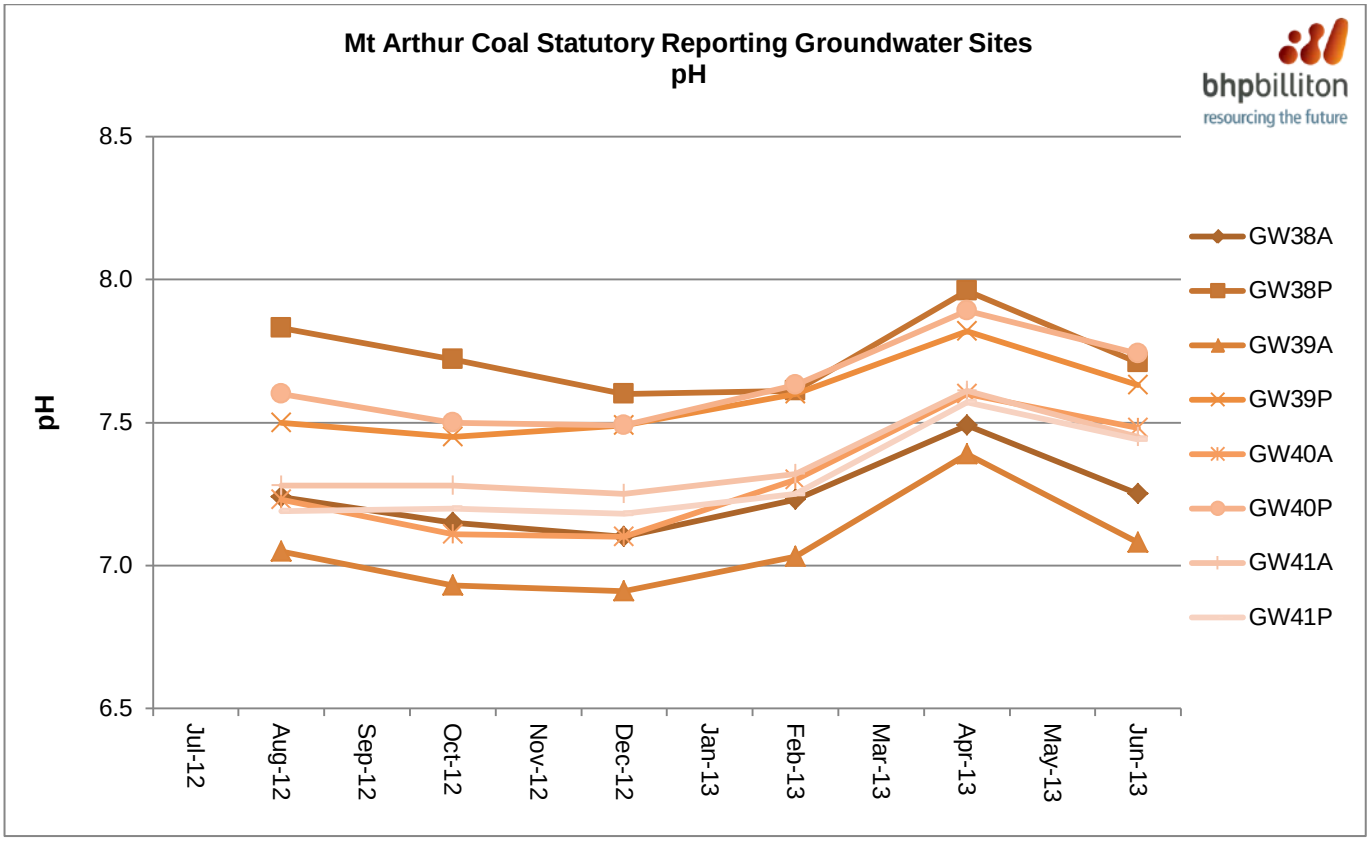
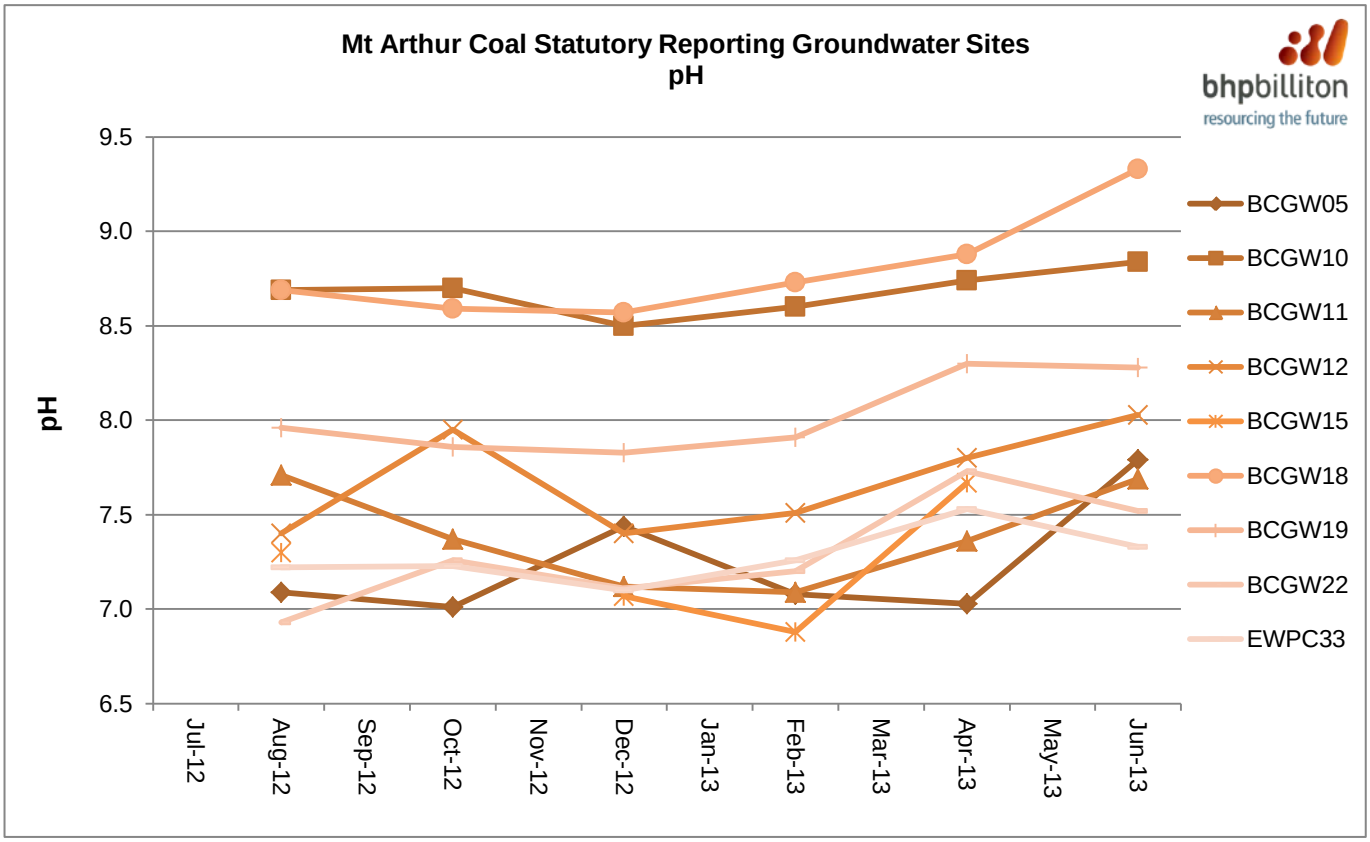
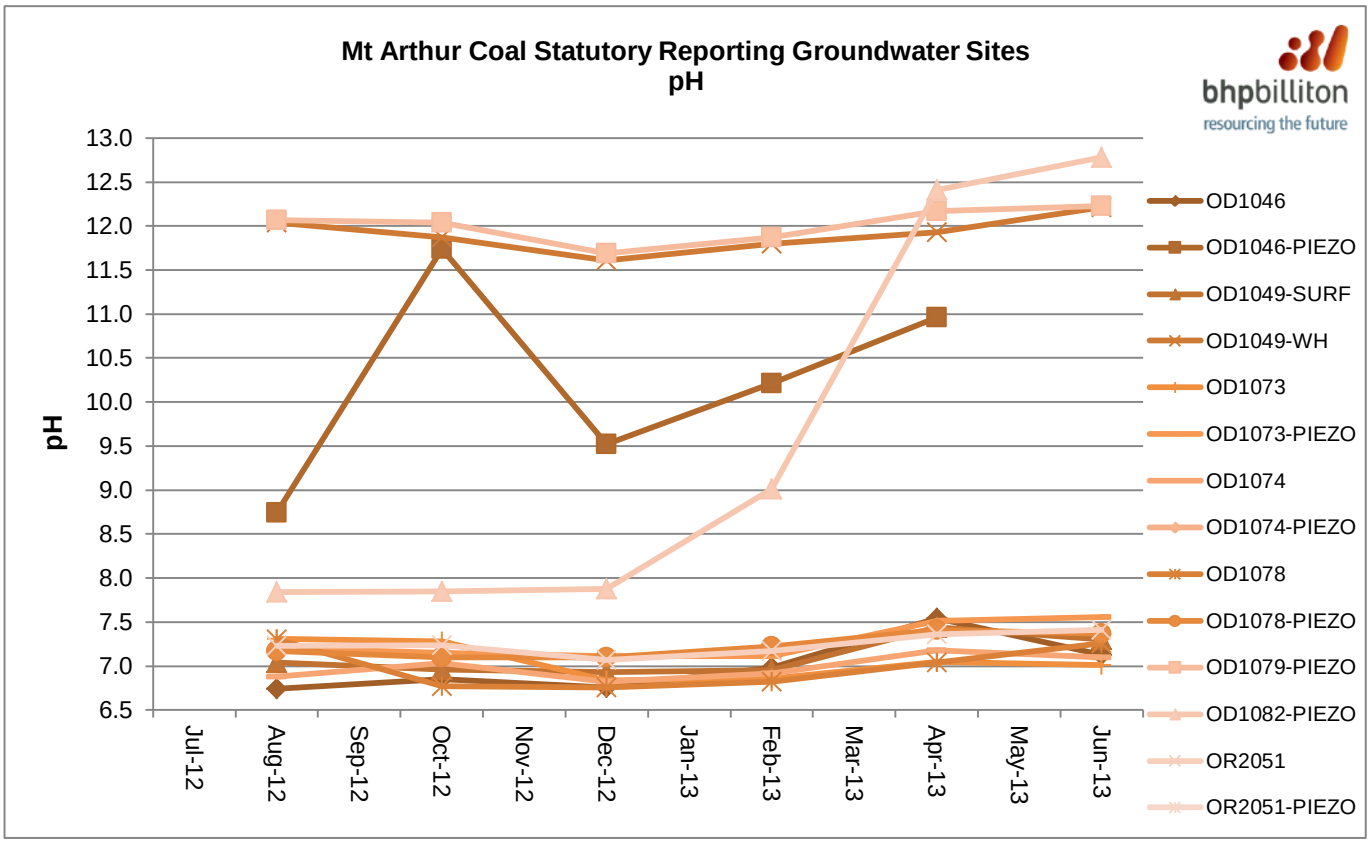
May-13
Jun-13
SW01
SW02
SW03
SW04
SW12
SW13
SW15
SW18

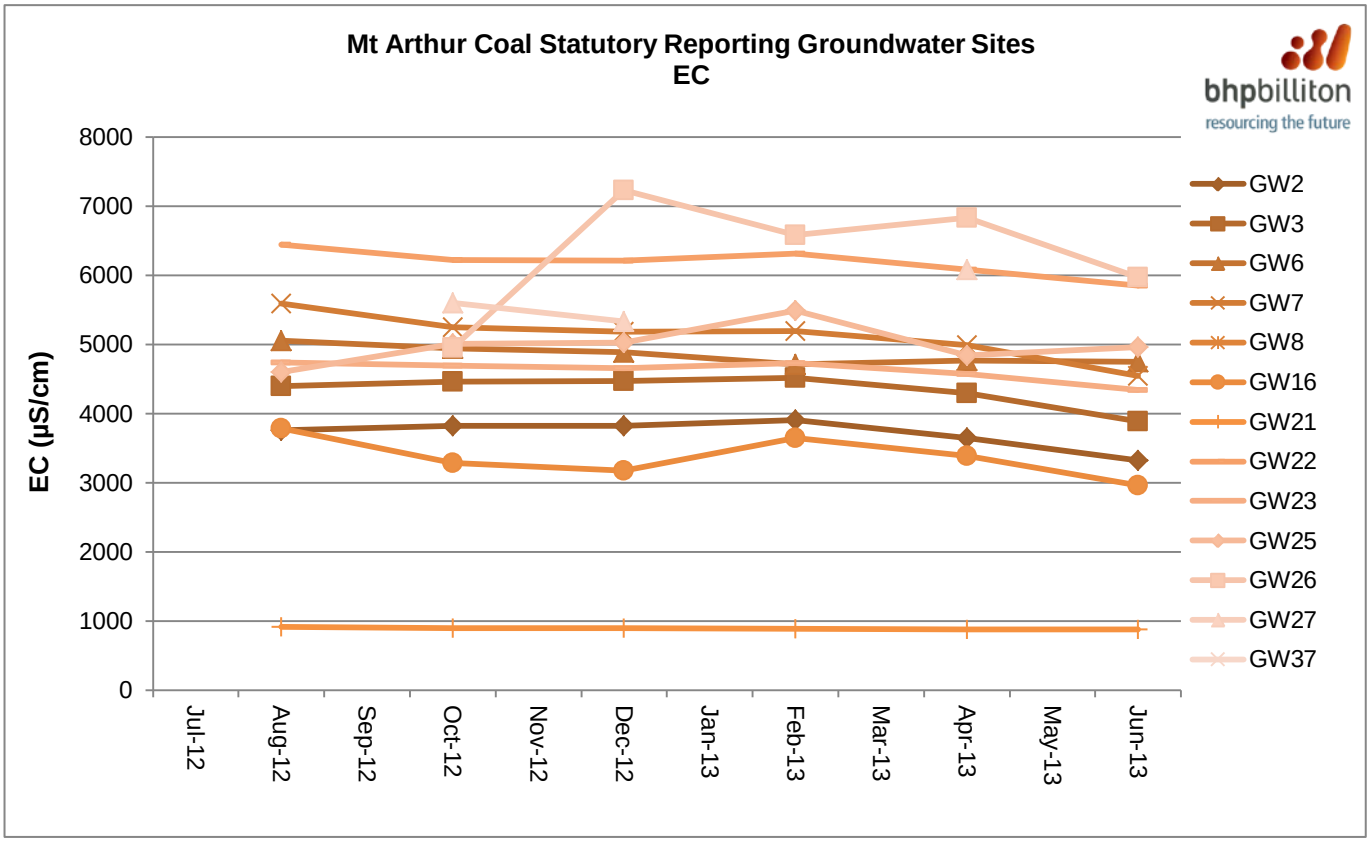
Appendix 5 - Groundwater Quality Monitoring Results






Mt Arthur Coal Statutory Reporting Groundwater Sites
pH
bhpbilliton
resourcing the future
pH
9.5
9.0
8.5
8.0
7.5
7.0
6.5
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
BCGW05
BCGW10
BCGW11
BCGW12
BCGW15
BCGW18
BCGW19
BCGW22
EWPC33


Mt Arthur Coal Statutory Reporting Groundwater Sites
pH
bhpbilliton
resourcing the future
pH
13.0
12.5
12.0
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
OD1046
OD1046-PIEZO
OD1049-SURF
OD1049-WH
OD1073
OD1073-PIEZO
OD1074
OD1074-PIEZO
OD1078
OD1078-PIEZO
OD1079-PIEZO
OD1082-PIEZO
OR2051
OR2051-PIEZO


Mt Arthur Coal Statutory Reporting Groundwater Sites
EC
bhpbilliton
resourcing the future
EC (µS/cm)
8000
7000
6000
5000
4000
3000
2000
1000
0
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
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GW3
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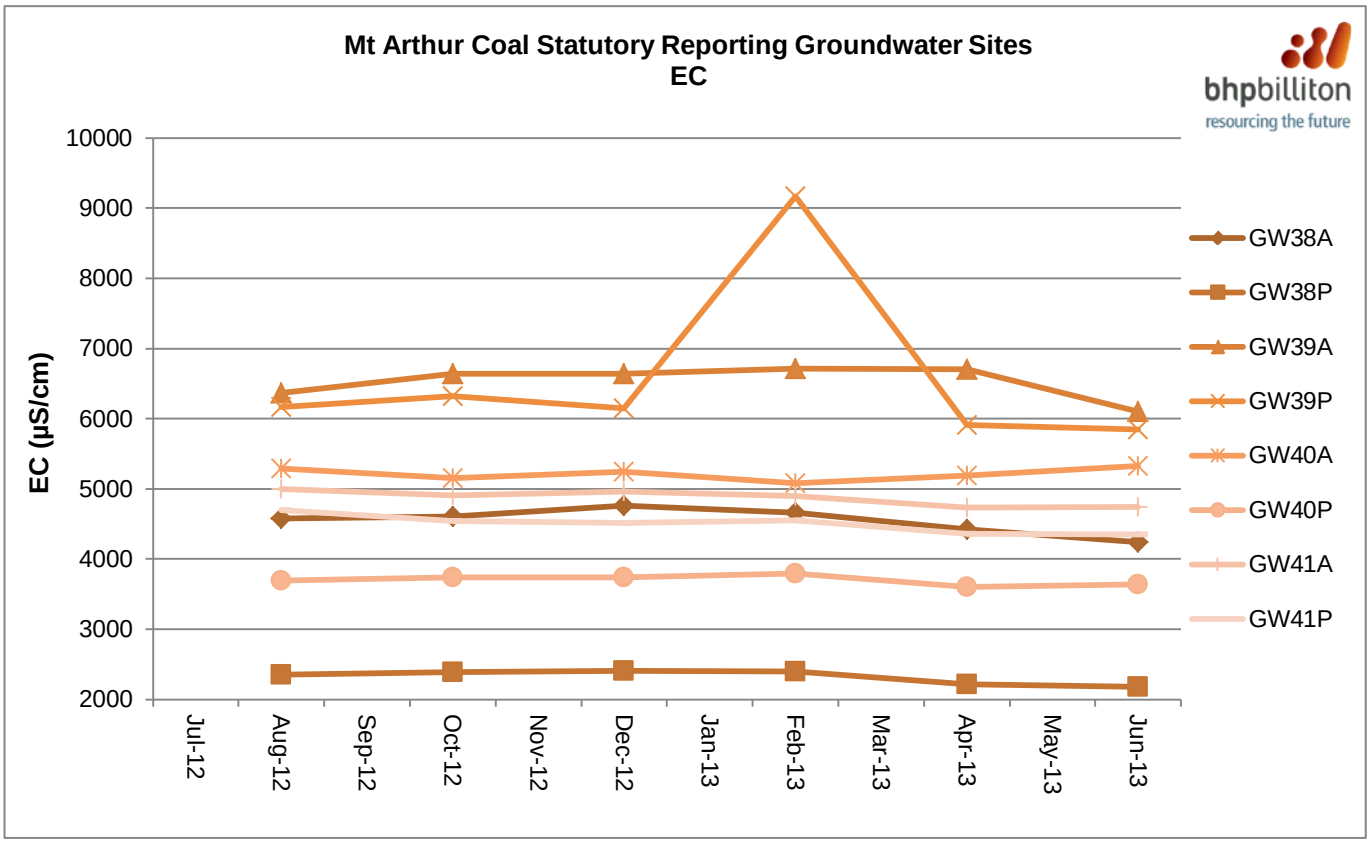
GW16
GW21
GW22
GW23
GW25
GW26
GW27
GW37


Mt Arthur Coal Statutory Reporting Groundwater Sites
EC
bhpbilliton
resourcing the future
EC (µS/cm)
10000
9000
8000
7000
6000
5000
4000
3000
2000
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
Feb-13
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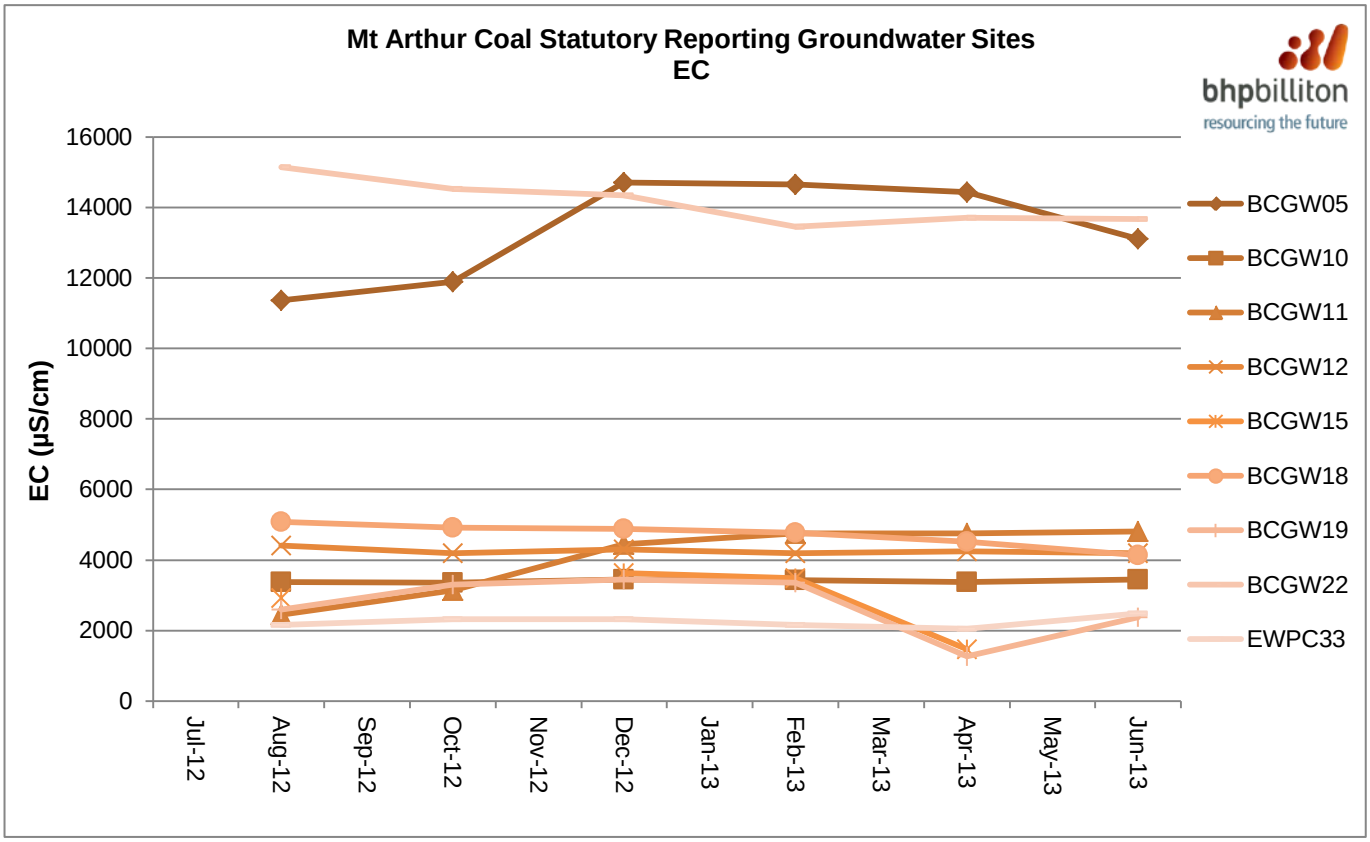
Jun-13
GW38A
GW38P
GW39A
GW39P
GW40A
GW40P
GW41A
GW41P


Mt Arthur Coal Statutory Reporting Groundwater Sites
EC
bhpbilliton
resourcing the future
EC (µS/cm)
16000
14000
12000
10000
8000
6000
4000
2000
0
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
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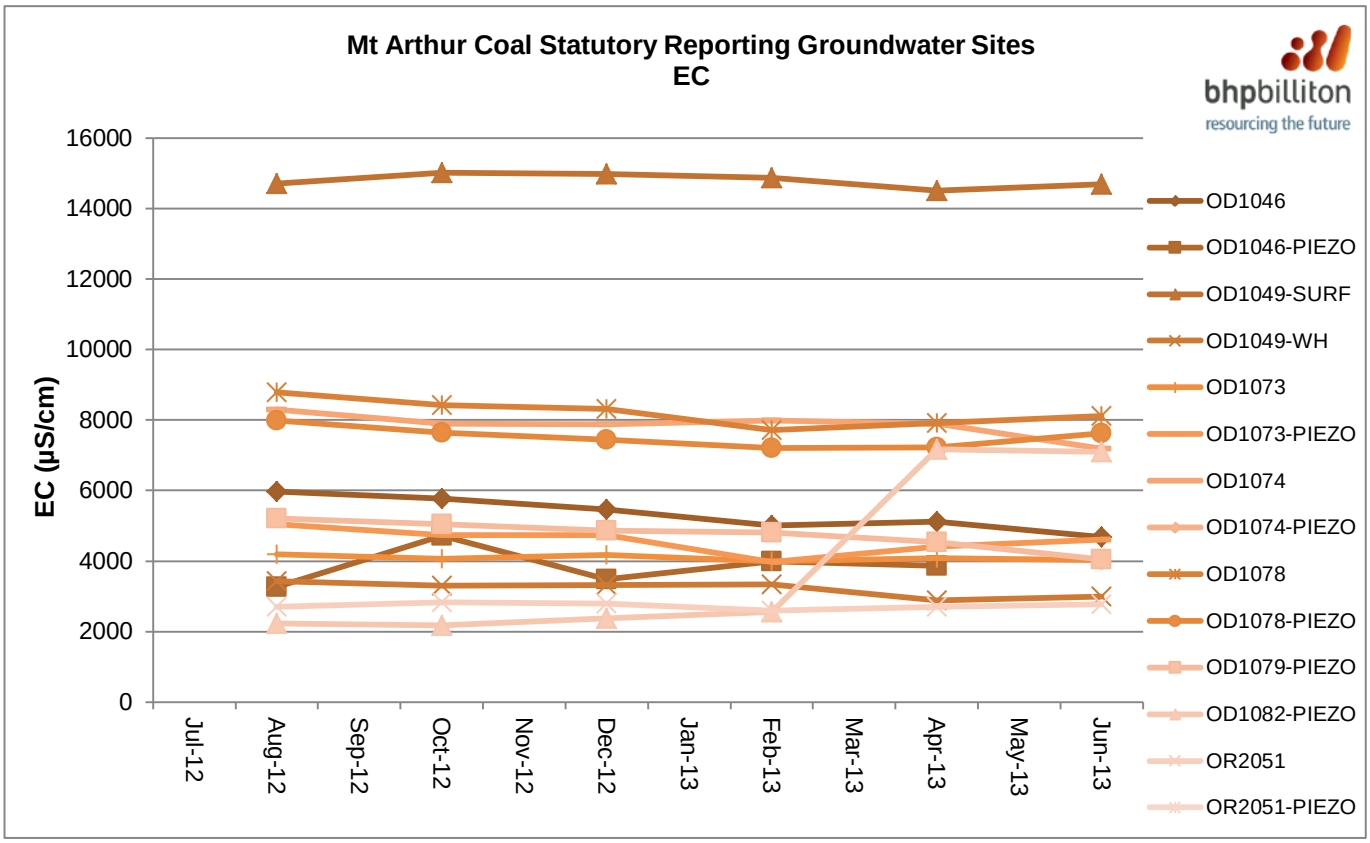
BCGW12
BCGW15
BCGW18
BCGW19
BCGW22
EWPC33


Mt Arthur Coal Statutory Reporting Groundwater Sites
EC
bhpbilliton
resourcing the future
EC (µS/cm)
16000
14000
12000
10000
8000
6000
4000
2000
0
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
OD1046
OD1046-PIEZO
OD1049-SURF
OD1049-WH
OD1073
OD1073-PIEZO
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OD1079-PIEZO
OD1082-PIEZO
OR2051
OR2051-PIEZO

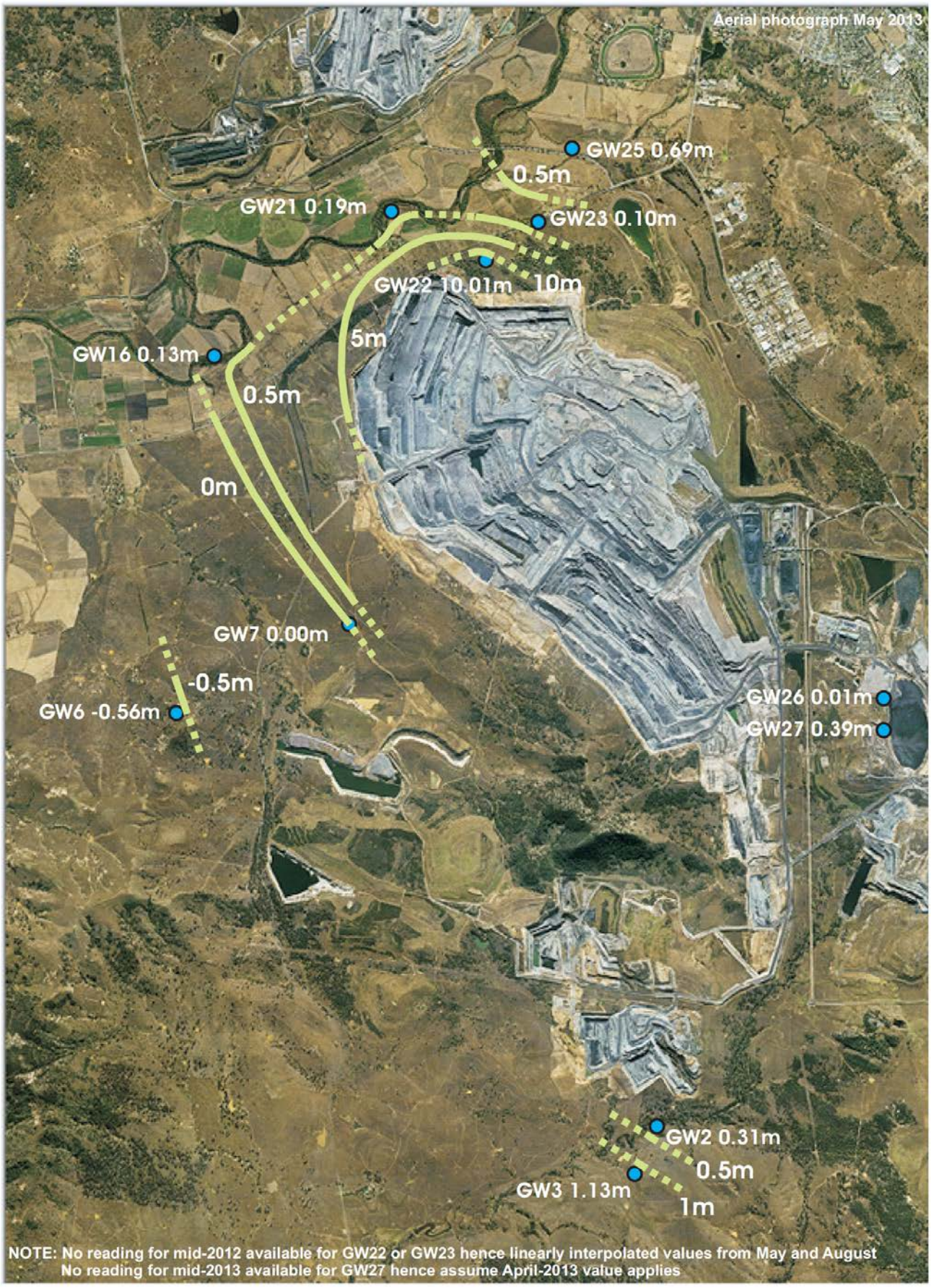
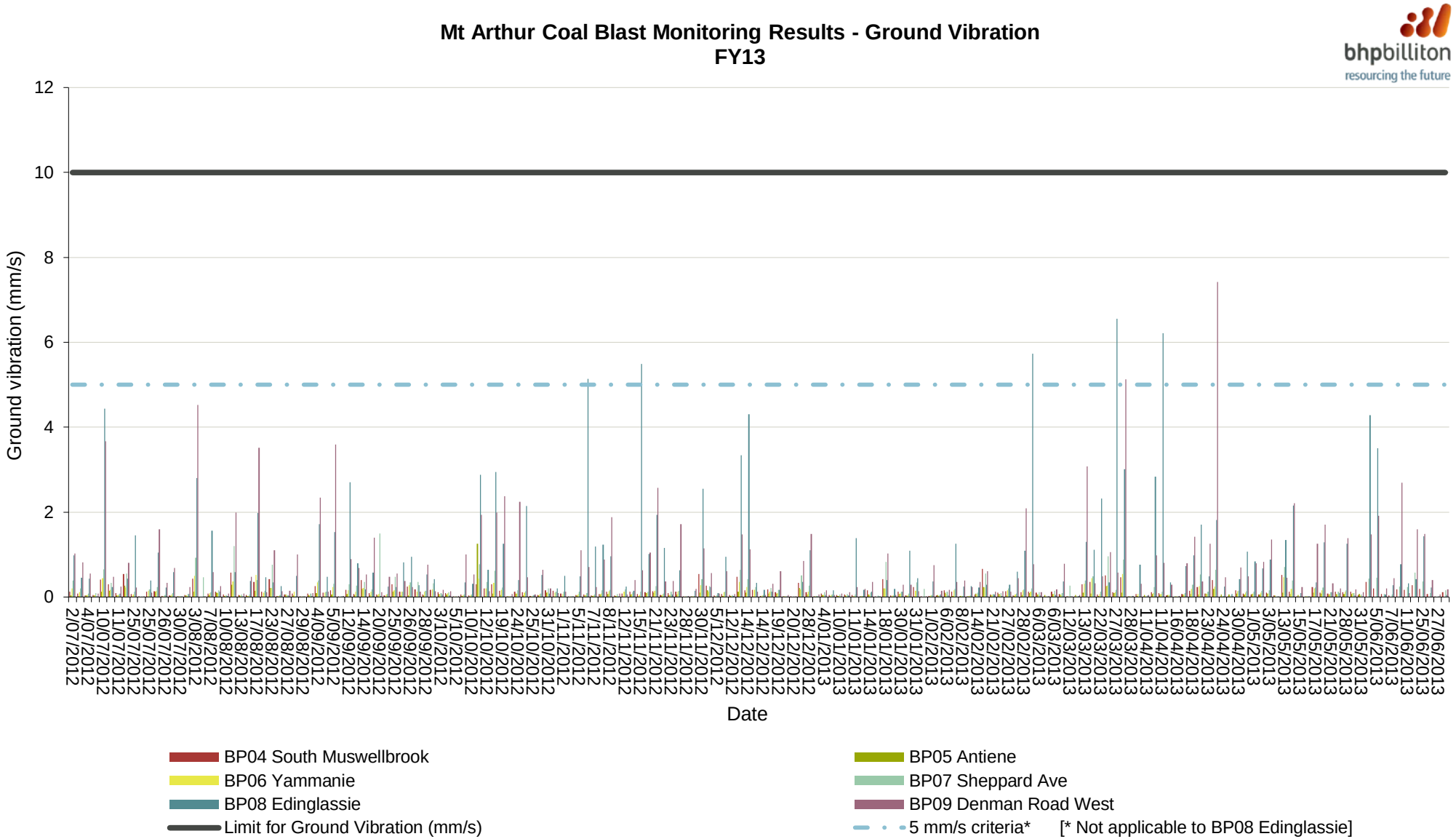
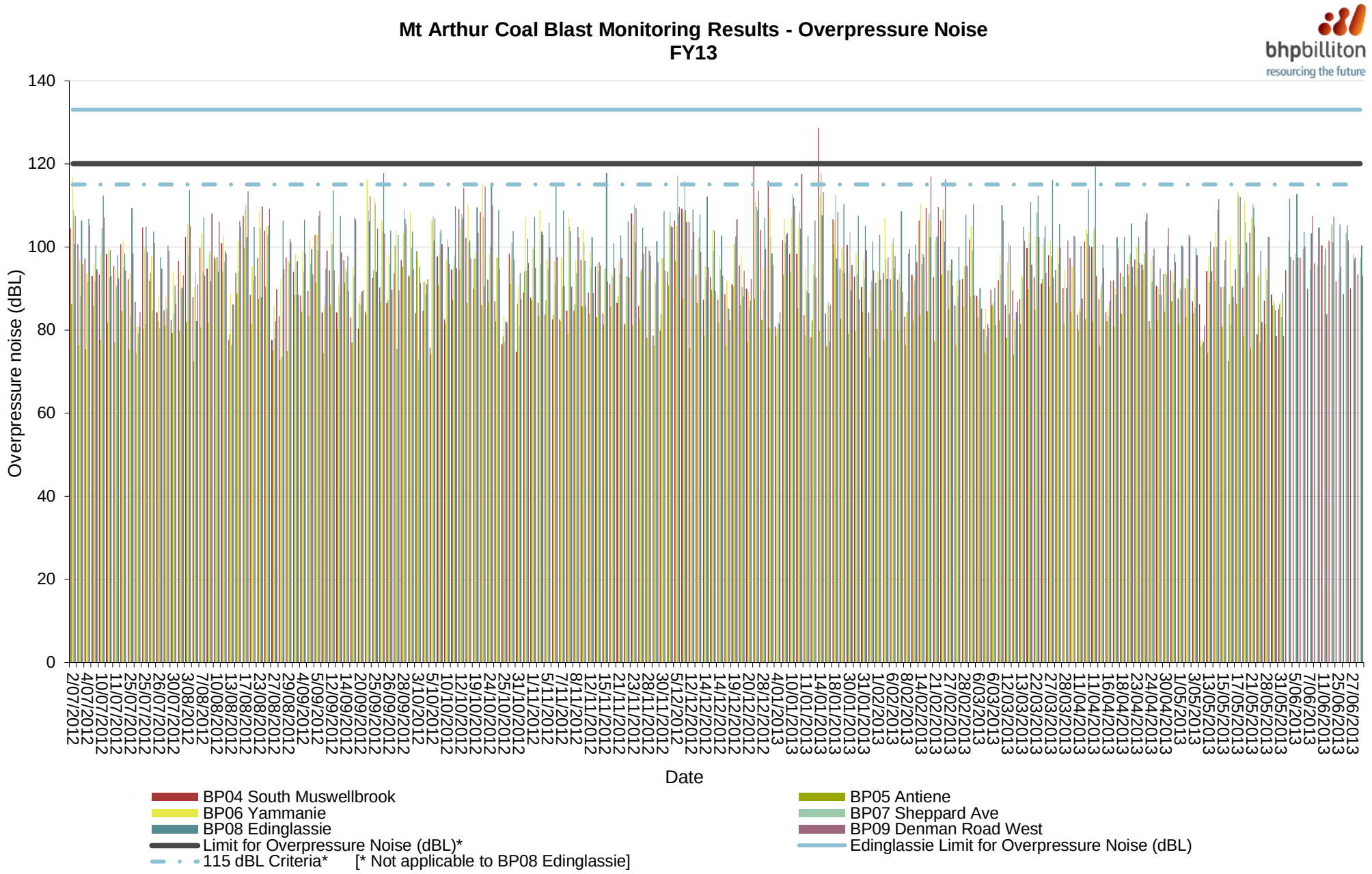


Figure 5A: Groundwater drawdown during the reporting period (prepared by Gilbert and Associates)

Appendix 6 - Blast Monitoring Results




Mt Arthur Coal Blast Monitoring Results - Overpressure Noise
FY13
bhpbilliton
resourcing the future
Overpressure noise (dBL)
140
120
100
80
60
40
20
0
Date
BP04 South Muswellbrook
BP05 Antiene
BP06 Yammanie
BP07 Sheppard Ave
BP08 Edinglassie
BP09 Denman Road West
Limit for Overpressure Noise (dBL)*
Edinglassie Limit for Overpressure Noise (dBL)
115 dBL Criteria*
[* Not applicable to BP08 Edinglassie]

Appendix 7 - Meteorological Data

	Temperature 2m (°C)			Temperature 10m (°C)			Humidity (%)			Wind speed (m/s)			Sigma Theta			Solar Radiation (W/m^2)			Rainfall (mm)	No. of days rain >1mm
	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.		
July 2012	0.0	10.3	18.0	1.5	10.6	17.8	35.7	72.1	95.9	0.0	2.4	9.1	0.0	35.1	103.4	0.0	174.4	1058.0	51.6	4
August 2012	0.5	11.5	26.4	1.6	12.2	26.5	21.9	52.5	94.2	0.0	4.0	14.6	0.1	18.1	101.6	0.0	264.8	1315.3	9.4	2
September 2012	1.2	15.1	29.1	2.6	15.7	28.9	15.4	50.9	94.1	0.0	3.6	15.9	1.0	18.0	98.2	0.0	360.1	1466.6	12.6	2
October 2012	4.5	17.4	34.4	5.7	17.8	33.3	8.1	51.3	93.7	0.0	3.7	11.8	4.7	18.7	99.6	0.0	409.0	1725.3	4.2	2
November 2012	10.5	20.9	39.2	11.6	21.2	38.5	10.4	57.4	92.6	0.0	3.4	12.7	4.3	20.1	100.1	0.0	372.9	1801.4	20.0	6
December 2012^	11.8	22.2	39.5	13.2	22.6	38.9	13.8	59.5	93.5	0.0	3.7	13.3	0.0	20.3	100.5	0.0	366.3	1823.1	55.8	6
January 2013	14.0	24.0	42.6	14.9	24.4	41.8	16.9	63.2	93.6	0.0	4.3	12.4	3.8	16.9	103.0	0.0	360.6	1728.3	135.4	9
February 2013	11.4	21.1	33.8	12.3	21.6	33.3	29.0	69.3	94.2	0.0	3.9	11.9	5.5	16.6	96.8	0.0	370.6	1771.1	96.2	8
March 2013	12.7	20.4	30.8	13.8	20.9	30.4	27.4	68.1	93.8	0.0	3.4	10.1	5.4	18.3	100.0	0.0	336.8	1659.9	71.4	5
April 2013	6.5	17.0	29.1	7.5	17.4	28.6	18.8	64.8	94.4	0.0	2.4	8.9	2.9	19.2	96.2	0.0	276.7	1381.7	6.4	2
May 2013	3.4	13.9	27.8	4.0	14.1	27.1	21.0	67.5	94.7	0.0	2.9	11.6	4.7	16.4	102.4	0.0	211.3	1112.1	18.2	3
June 2013	2.6	12.0	20.3	2.5	12.0	19.6	38.6	76.6	95.5	0.0	2.6	9.7	3.5	16.5	97.3	0.0	130.2	1027.7	61.4	10

^ Wind speed and wind direction data was not reading correctly for a period of 17 days in December 2012 due to a fault with the sensor. Wind speed data for this period was substituted with data from the Denman Road West meteorological station (WS07). Wind direction data was not substituted.

Appendix 8 - Community Complaints Register

Date and time	From	Issue	Lodgement type	Investigation and response to caller
9/07/2012 1:53:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Regarding booming noise heard at their residence. There was no unusual mining activity to which the noise could be attributed. Noise monitoring results from monitor closest to Caller were within regulatory requirements. Caller advised of the monitoring results.
9/07/2012 11:35:00 AM	Denman Road	General Dust	Community Response Line	Regarding dust around their residence and enquired about a blast. Water cart trucks were allocated to northern area to focus on dust mitigation in this area. Air quality monitoring results from monitor closest to Caller indicated that dust levels were within regulatory requirements. There had not been a blast at Mt Arthur that morning. Caller advised of the monitoring results and actions taken.
10/07/2012 12:41:00 PM	Denman Road	Operational Noise	Community Response Line	Regarding noise, that was more audible than normal. Noise monitoring results from monitor closest to the Caller were within regulatory requirements. Caller advised of the monitoring results.
10/07/2012 1:51:00 PM	Denman Road	Blast Vibration	Community Response Line	Regarding a blast felt at their property. The Caller explained that they first felt the vibration and then heard the boom. They expressed concern that the blast vibration lasted longer than usual. All blast monitoring results were within regulatory requirements. Caller advised of the monitoring results.
10/07/2012 1:54:00 PM	Denman Road	Blast Vibration	Community Response Line	Regarding a blast felt at their property, that was thought to be stronger than normal. All blast monitoring results were within regulatory requirements and weather conditions were suitable for blasting at the time of the blast. Caller advised of the monitoring results.
10/07/2012 2:00:00 PM	Denman	Blast Overpressure Noise	Phone Call	Received via a direct phone call regarding a blast that shook their house and stated that the blast felt similar to the blast on the 18th May. Blast monitoring results were within regulatory requirements and weather conditions were suitable for blasting at the time of the blast. Caller advised of the monitoring results.
17/07/2012 10:30:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Regarding noise that could be heard at their residence. Noise monitoring results from monitors closest to the Caller were within regulatory requirements and the source of the noise could not be determined. Caller advised of the monitoring results.
22/07/2012 3:51:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Regarding noise that could be heard at their residence. The Plant was not operational at the time of the complaint and the source of the noise could not be determined. Noise monitoring results from monitors closest to the Caller were within regulatory requirements. Caller advised of the monitoring results.
25/07/2012 12:36:00 PM	Denman Road	General (Road Closure)	Community Response Line	Regarding traffic caused by the temporary closure of Denman Road for the purpose of a mine blast. The road was closed for the typical duration of 15 to 20 minutes. However the road closure was delayed beyond the planned time period due to the time taken to complete the blast clearance in accordance with safety management procedures. The exclusion area was larger than usual as it encompassed three separate blasting patterns. Approval to undertake the road closure outside of the planned time period was obtained from the Roads and Maritime Services in accordance with licence requirements. Caller advised of the results of the investigation.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
1/08/2012 9:46:00 AM	Denman Road	General Dust	Community Response Line	Regarding general dust coming from the northern end of the pit. Water cart trucks were allocated to northern area to focus on dust mitigation in this area. Air quality monitoring results from monitors closest to Caller indicated that dust levels were within regulatory requirements. Caller advised of the monitoring results and actions taken.
2/08/2012 5:11:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Regarding constant booming noise at their residence. Monitoring results were within regulatory requirements. Caller advised of monitoring results.
3/08/2012 11:20:00 AM	Denman Road	Blast Vibration	Community Response Line	Regarding blast vibration felt at their residence. Blast monitoring results from monitors closest to the Caller were within regulatory requirements and weather conditions were suitable for blasting at the time of the blast. Caller was advised of the monitoring results.
10/08/2012 1:20:00 PM	Muswellbrook	Blast Vibration	Community Response Line	Regarding overpressure from a blast. The caller stated that their house rattled from the blast for an approximate duration of 8 seconds. Monitoring results were within regulatory requirements and weather conditions were suitable for blasting at the time of the blast. Caller asked not to be called back.
10/08/2012 1:25:00 PM	Racecourse Road	Blast Overpressure Noise	Phone Call	Received via a direct phone call regarding a blast felt at their residence. Blast monitoring results from monitors closest to the Caller were within regulatory requirements and weather conditions were suitable for blasting at the time of the blast. Caller asked not to be called back.
17/08/2012 1:17:00 PM	Denman Road	Blast Vibration	Community Response Line	Regarding a blast felt at their residence. Blast monitoring results from monitors closest to the Caller were within regulatory requirements and weather conditions were suitable for blasting at the time of the blast. Caller was advised of the monitoring results.
17/08/2012 1:47:00 PM	Muswellbrook	Blast Vibration	Community Response Line	Regarding a blast felt at their residence that lasted longer than usual. Blast monitoring results from monitors closest to the Caller were within regulatory requirements and weather conditions were suitable for blasting at the time of the blast. Caller advised of the monitoring results.
21/08/2012 2:40:00 AM	Roxburgh Road	Operational Noise	Phone Call	Received via the NSW Environment Protection Authority complaints line regarding a constant pulsating noise that could be heard at their residence. Noise monitoring results from monitors closest to the Caller were within regulatory requirements and weather conditions were suitable for operations. The investigation details of the complaint were provided to the NSW Environment Protection Authority.
27/08/2012 8:22:00 AM	Denman Road	Odour	Community Response Line	Regarding a sulphurous odour at their residence. There were no new outbreaks of spontaneous combustion of material within the pit. Caller was provided an overview of the management and monitoring measures for controlling materials susceptible to spontaneous combustion and indicated that no issues had been identified during recent monitoring.
9/09/2012 10:00:00 PM	Roxburgh Road	Lighting	Community Response Line	Regarding lighting from the mine site over the previous week. Caller advised that lighting plant set-up was reviewed the following evening.
15/09/2012 12:49:00 PM	Thomas Mitchell Drive	General Dust	Community Response Line	Received from the NSW Environment Protection Authority on behalf of resident. Dust monitoring results were below regulatory requirements.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
17/09/2012 7:42:00 AM	Roxburgh Road	General Dust	Community Response Line	Regarding dust through the night. Normal mining operational activities occurred during that night, including the usual number of water carts to mitigate dust, and weather conditions were suitable for operations. Caller advised that air monitoring results from the nearest monitors were within regulatory requirements.
17/09/2012 9:12:00 AM	Denman Road	General Dust	Email	Received from the NSW Environment Protection Authority on behalf of resident. The Authority was advised that on the morning of the complaint eight water carts were operating on key haul routes, active monitoring of operations and meteorological conditions were continuing and no blasting occurred on the day.
19/09/2012 8:20:00 AM	New England Highway	General Dust	Phone Call	Regarding dust blowing from the mine observed from Thomas Mitchell Drive the previous afternoon. Caller advised that mining operations had been ceased at approximately 5pm as a result of adverse weather conditions and air quality monitoring results were within regulatory requirements.
21/09/2012 1:20:00 PM	Denman	General Dust	Community Response Line	Regarding increasing levels of dust at their residence. Caller advised of recent air quality monitoring and meteorological results and of regulatory requirements to minimise and mitigate dust impacts.
21/09/2012 7:13:00 PM	Muswellbrook	Lighting	Community Response Line	Regarding a light observed from Bengalla Road that was shining off site towards Denman Road. Caller advised that an inspection of operations was undertaken, with the light plant identified and redirected.
5/10/2012 11:36:00 PM	Roxburgh Road	General Dust	Community Response Line	Regarding high levels of dust at their residence. Caller advised dust levels recorded at the nearest monitor were elevated at the time of the complaint, but that the daily average dust level remained within regulatory requirements.
7/10/2012 6:39:00 AM	Denman	General Dust	Community Response Line	Regarding dust on the Golden Highway. Caller advised that all mining activities had been suspended at 5.30 pm due to dust levels and that dust levels recorded at the nearest monitor were below regulatory requirements.
10/10/2012 2:25:00 AM	Roxburgh Road	Operational Noise	Email	Complaint received through the NSW Environment Protection Authority regarding a pulsating noise that could be heard at a Caller's residence. EPA advised that weather conditions at the time of the complaint were suitable for operations and noise monitoring results from the nearest monitor were below regulatory requirements.
14/10/2012 8:00:00 PM	Muswellbrook	Operational Noise	Email	Received from the NSW Environment Protection Authority on behalf of resident. The Authority was advised that noise results at the nearest monitor were below regulatory requirements at the time.
17/10/2012 2:00:00 PM	Hunter Valley	General Dust	Email	Received from the NSW Environment Protection Authority on behalf of resident. The Authority was advised that dust monitoring results from the nearest downwind monitor were below regulatory requirements at the time and that dust controls were in place.
17/10/2012 5:03:00 PM	Denman	General Dust	Community Response Line	Regarding excessive dust. Operations had been ceased at the northern end of the mine due to conditions and all available water carts were in operation. Caller advised that dust levels recorded at the nearest monitor were elevated at the time of the complaint, but the daily average dust level remained within regulatory requirements.
18/10/2012 3:37:00 PM	Denman Road	General Dust	Community Response Line	Regarding high levels of dust along Denman Road. Caller advised that conditions were being monitored closely and haulage routes had been modified in order to concentrate water carts to operating areas.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
19/10/2012 12:26:00 PM	Denman Road	Blast Overpressure Noise	Community Response Line	Regarding blast overpressure noise at their residence. Caller advised that a blast had been undertaken by Mt Arthur Coal and provided with the blast monitoring results. The Caller asked to routinely receive blast monitoring results.
19/10/2012 12:29:00 PM	Roxburgh Road	Blast Overpressure Noise	Community Response Line	Regarding blast overpressure noise at their residence on Roxburgh Road from a blast undertaken at Mt Arthur Coal. Caller advised that a blast had been undertaken by Mt Arthur Coal and provided with the blast monitoring results.
19/10/2012 3:38:00 PM	Antiene	Blast Overpressure Noise	Email	Received from the NSW Department of Planning and Infrastructure on behalf of resident. The Department was advised that weather conditions were suitable for blasting at the time and that blast overpressure noise and vibration results were below regulatory limits.
20/10/2012 3:15:00 AM	Hunter Valley	Operational Noise	Email	Received from the NSW Environment Protection Authority on behalf of resident. Noise monitoring results at the nearest monitor were below regulatory limits at the time.
20/10/2012 10:35:00 PM	Hunter Valley	Operational Noise	Email	Received from the NSW Environment Protection Authority on behalf of resident. Noise monitoring results at the nearest monitor were below regulatory limits at the time.
22/10/2012 1:18:00 PM	Muswellbrook	General Dust	Community Response Line	Regarding a large band of dust stretching across the Hunter River and a dozer he could see from their residence that was generating dust. Caller advised that at the time of the complaint mining operations had been ceased due to adverse weather conditions, and air quality monitoring results at the nearest monitor showed a spike in dust levels, with the 24 hour average remaining below regulatory requirements.
22/10/2012 1:34:00 PM	Roxburgh Road	General Dust	Community Response Line	Regarding dust from the mine and its potential impact on his health and requesting that a manager call him back or drive out to Roxburgh Road to observe the dust coming from the mine. Caller advised that at the time of the complaint mining operations had been ceased due to adverse weather conditions, and air quality monitoring results from the nearest monitor had shown a spike in dust levels, with the 24 hour average remaining below regulatory requirements.
22/10/2012 1:41:00 PM	Denman Road	General Dust	Community Response Line	Regarding haze of dust coming from the mine. Caller advised that at the time of the complaint mining operations had been ceased due to adverse weather conditions, and air quality monitoring results from the nearest monitor had shown a spike in dust levels, with the 24 hour average remaining below regulatory requirements.
22/10/2012 3:33:00 PM	Denman	General Dust	Community Response Line	Regarding haze of dust visible from Scone to Muswellbrook. Caller advised that mining operations had been ceased from 1 pm due to adverse weather conditions, and that air quality monitoring results at the time of the complaint were below regulatory requirements, but were continuing to be monitored.
24/10/2012 12:10:00 PM	Roxburgh Road	Blasting Dust	Community Response Line	Regarding dust impacts from a blast. Caller advised that a pre-blast environmental assessment had confirmed conditions were suitable for blasting, but that the wind speed and direction changed immediately after the blast. Air quality monitoring results from the nearest monitor were reviewed for around an hour after the blast and did not show an increase in dust levels, remaining below regulatory requirements.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
25/10/2012 7:38:00 AM	Roxburgh Road	General Dust	Community Response Line	Regarding dust from all mines in the area which could be seen at Bunnan. Caller was advised that operations had been ceased from around 5.30 pm due to adverse weather conditions and all water carts were operating. Air quality monitoring results from the nearest monitor indicated a spike in dust levels at the time of the complaint, with the 24 hour average remaining below regulatory requirements.
27/10/2012 6:34:00 PM	Muswellbrook	General Dust	Community Response Line	Received via the Community Response Line regarding dust from Mt Arthur Coal operations. At the time of the complaint mining operations had been ceased due to adverse weather conditions. Air quality monitoring results from the nearest monitor indicated a spike in dust levels at the time of the complaint however the 24 hour average was below regulatory requirements. Complainant advised of the findings and actions taken.
27/10/2012 10:59:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Regarding a loud deep humming noise heard at the caller's residence. Caller advised that at the time of the call weather conditions were suitable for operations and real-time noise monitoring results from the nearest monitor were below regulatory requirements. There was no equipment operating in the northern end of the pit except for three drills which were monitored for noise the following night.
28/10/2012 3:40:00 AM	Roxburgh Road	Operational Noise	Email	Received from the NSW Environment Protection Authority on behalf of resident. Noise monitoring results at the nearest monitor were below regulatory limits at the time.
31/10/2012 1:30:00 AM	Denman Road	Operational Noise	Email	Received from the NSW Environment Protection Authority on behalf of resident. Noise monitoring results at the nearest monitor were below regulatory limits at the time.
2/11/2012	Roxburgh Road	Operational Noise	Email	Received from the NSW Environment Protection Authority on behalf of resident. Noise levels at the nearest monitor were below regulatory limits at the time and weather conditions were suitable for operations.
2/11/2012 8:15:00 AM	Denman Road	General Dust	Community Response Line	Dust monitoring results at the nearest monitor were within regulatory requirements at the time and weather conditions were suitable for operations. An investigation found that the dust could not be attributed to any unusual mining activity. Caller requested not to be advised of investigation results.
3/11/2012 10:58:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Noise monitoring results were below regulatory limits at the time and weather conditions were suitable for operations.
5/11/2012 9:15:00 AM	Denman Road	General Dust	Community Response Line	Air quality monitoring results from nearest monitor indicated dust levels were within regulatory requirements at the time. An investigation found that the dust could not be attributed to any unusual mining activity. Caller requested not to be advised of investigation results.
5/11/2012 10:05:00 AM	Thomas Mitchell Drive	Operational Noise	Facsimile	Regarding blast noise and vibration on the 30/10/2012 and noise on 3/11/2012 and 4/11/2012. Investigation found no blast on 30/10/2012 and noise levels were below regulatory limits on 3/11/2012 and 4/11/2012. Resident advised of the monitoring results.
6/11/2012 10:25:00 PM	Hunter Valley	Operational Noise	Email	Received from the NSW Environment Protection Authority on behalf of resident. Noise monitoring results from the closest monitors were elevated prior to the time of the complaint. Operations were not modified due to the delayed receipt of complaint.
7/11/2012 8:31:00 AM	Hunter Valley	Operational Noise	Email	Received from the NSW Environment Protection Authority on behalf of resident. Noise monitoring results from the closest monitors were within regulatory requirements at the time and weather conditions were suitable for operations.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
12/11/2012 2:50:00 AM	Denman Road	Operational Noise	Email	Received from the NSW Environment Protection Authority on behalf of resident. Noise monitoring results from the closest monitors were elevated at the time. Operations were not modified due to the delayed receipt of complaint (three days).
13/11/2012 3:32:00 AM	Denman Road	Operational Noise	Email	Received from the NSW Environment Protection Authority on behalf of resident. Noise monitoring results from the closest monitors were elevated at the time. Operations were not modified due to the delayed receipt of complaint (two days).
13/11/2012 4:06:00 PM	Denman Road	General Dust	Community Response Line	An investigation found that operations had already been shut down. Dust levels were elevated at the time, but the 24 hour average for the day was below regulatory limits. Caller was advised of operational status and monitoring results.
13/11/2012 4:16:00 PM	Muswellbrook	General Dust	Community Response Line	An investigation found that operations had already been shut down. Dust levels were elevated at the time, but the 24 hour average for the day was below regulatory limits. Caller was advised of operational changes and monitoring results.
13/11/2012 5:52:00 PM	Roxburgh Road	General Dust	Community Response Line	An investigation found that operations had already been shut down. Dust levels were elevated at the time, but the 24 hour average for the day was below regulatory limits. Caller was advised of operational changes and monitoring results.
15/11/2012 5:10:00 AM	Denman Road	Operational Noise	Email	Received from the NSW Environment Protection Authority on behalf of resident. Noise monitoring results from the closest monitors were within regulatory requirements at the time.
19/11/2012 4:14:00 PM	Roxburgh Road	General Dust	Community Response Line	An investigation found that operations had already been shut down. Dust levels were elevated at the time, but the 24 hour average for the day was below regulatory limits. Caller was advised of operational changes and monitoring results.
19/11/2012 11:15:00 PM	Roxburgh Road	Lighting	Community Response Line	Caller was advised that stationary lighting in the area described would be checked to ensure lights were not facing their property. Resident requested not to be contacted again about the issue.
20/11/2012 3:28:00 PM	Thomas Mitchell Drive	Operational Noise	Community Response Line	Caller was advised equipment already stood down for other reasons, which would reduce noise impacts. Caller stated noise levels at the property were currently not obtrusive, but advised of periods prior when they were an issue.
21/11/2012 1:30:00 PM	Denman Road	Blast Vibration	Community Response Line	Monitoring results indicated the blast was within regulatory requirements for both overpressure and ground vibration. Caller was advised of the monitoring results.
23/11/2012 4:15:00 AM	Roxburgh Road	Operational Noise	Community Response Line	A review of operations did not indicate any obtrusive noise sources. Noise monitoring results at the time were within regulatory requirements. Caller requested not to be advised of results.
23/11/2012 2:25:00 PM	Roxburgh Road	Blast Fume	Community Response Line	The fume was tracked until it dissipated and was not seen leaving Mt Arthur Coal's lease boundary. Weather conditions were appropriate for blasting at the time.
24/11/2012 10:20:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigations revealed there was no unusual mining activity at the time. Noise monitoring results from the monitor closest to the resident were within regulatory requirements at the time.
25/11/2012 10:38:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigations revealed there was no unusual mining activity at the time. Noise monitoring results from the monitor closest to the resident were within regulatory requirements at the time.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
27/11/2012 7:00:00 AM	Antiene	Operational Noise	Community Response Line	Regarding operational noise and dust. Investigations were not able to determine the source of the noise. Details of the issue were discussed with the resident.
27/11/2012 2:30:00 PM	Racecourse Road	Blast Vibration	Phone Call	Monitoring results indicated the blast was within regulatory requirements for both overpressure and ground vibration. Caller requested not to be advised of results.
29/11/2012 5:03:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigations found there was no unusual mining activity at the time. Noise monitoring results from the monitor closest to the resident were within regulatory requirements at the time.
2/12/2012 8:05:00 AM	Denman Road	General Dust	Community Response Line	Investigations found that regional air quality was poor and that Mt Arthur Coal had already adopted strategies to minimise its dust generation. Caller did not wish to receive monitoring data.
2/12/2012 9:45:00 AM	Skellatar Stock Route / Thomas Mitchell Drive	Lighting	Community Response Line	A review of lighting plants was undertaken. No further action was required.
3/12/2012 9:27:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Mt Arthur Coal employees drove to caller's residence to monitor potential noise sources, but a specific source could not be determined. Caller requested not to be called back.
3/12/2012 9:48:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Operations were informed, but no obvious obtrusive noise sources could be identified.
3/12/2012 10:34:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Weather conditions were suitable for operations at the time and noise monitoring results from the nearest monitor were below regulatory requirements. Caller was advised of the monitoring results.
5/12/2012 7:58:00 PM	New England Highway	General Dust	Community Response Line	Weather conditions were suitable for operations at the time. Air quality monitoring results from the nearest monitor were below regulatory requirements at the time. Caller was advised of the monitoring results.
6/12/2012 6:00:00 PM	Denman Road	General Dust	Email	Received from the NSW Environment Protection Authority on behalf of resident. Dust monitoring results at the time were below regulatory limits and weather conditions were suitable for operations. Results were provided to the Authority.
6/12/2012 6:33:00 PM	Denman Road	General Dust	Community Response Line	Mining operations had already been modified due to adverse weather conditions. Air quality monitoring results from the nearest monitor indicated elevated dust levels at the time, but the 24 hour average was within regulatory requirements. Caller was advised of the monitoring results and actions taken.
6/12/2012 7:45:00 PM	New England Highway	General Dust	Community Response Line	Mining operations had already been modified due to adverse weather conditions. Air quality monitoring results from the nearest monitor indicated elevated dust levels at the time, but the 24 hour average was within regulatory requirements. Caller was advised of the monitoring results and actions taken.
9/12/2012 11:37:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results from the nearest monitor indicated noise levels were below regulatory limits at the time. Caller requested not to be called back.
10/12/2012 2:48:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results indicated noise levels were below regulatory limits at the time. Caller requested not to be called back.
10/12/2012 4:50:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results indicated noise levels were below regulatory limits at the time. Caller requested not to be called back.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
10/12/2012 9:51:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results indicated noise levels were below regulatory limits at the time. Caller requested not to be called back.
11/12/2012 3:24:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results indicated noise levels were below regulatory limits at the time. Caller requested not to be called back.
11/12/2012 10:55:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results indicated noise levels were below regulatory limits at the time. Caller requested not to be called back.
12/12/2012 4:15:00 PM	Denman Road	General Dust	Email	Received from the NSW Environment Protection Authority on behalf of resident. Monitoring results indicated dust levels were below regulatory limits at the time and were provided to the Authority.
14/12/2012 11:22:00 AM	Roxburgh Road	Blast Vibration	Community Response Line	Blast monitoring results indicated ground vibration levels were within regulatory requirements. Caller was advised of the monitoring results.
14/12/2012 11:31:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results indicated noise levels were below regulatory limits at the time. Caller was advised of monitoring results.
14/12/2012 11:42:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results indicated noise levels were below regulatory limits at the time. Caller was advised of monitoring results.
15/12/2012 1:21:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results indicated noise levels were below regulatory limits at the time. Caller requested not to be called back.
15/12/2012 6:42:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results indicated noise levels were below regulatory limits at the time. Caller was advised of monitoring results.
16/12/2012 4:02:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results indicated noise levels were below regulatory limits at the time. Caller requested not to be called back.
20/12/2012 7:47:00 PM	Muswellbrook	General Dust	Community Response Line	Monitoring results indicated elevated dust levels at the time and operations were modified. Caller was advised of monitoring and investigation results.
20/12/2012 7:47:00 PM	Roxburgh Road	General Dust	Community Response Line	Monitoring results indicated elevated dust levels at the time and operations were modified. Caller was advised of monitoring and investigation results.
22/12/2012 11:13:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Weather conditions were suitable for operations and monitoring results indicated noise levels were below regulatory limits at the time. Caller requested not to be called back.
23/12/2012 10:43:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Weather conditions were suitable for operations and monitoring results indicated noise levels were below regulatory limits at the time. Caller requested not to be called back.
24/12/2012 11:59:00 AM	Antiene	Operational Noise	Community Response Line	Monitoring results from the nearest monitor indicated noise levels were within regulatory requirements at the time. Caller requested not to be called back.
27/12/2012 11:41:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Mt Arthur Coal employees drove to caller's residence to monitor potential noise sources, but a specific source could not be determined. Monitoring results from the closest monitor indicated noise levels were within regulatory limits at the time.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
28/12/2012 12:10:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Mt Arthur Coal employees drove to caller's residence to monitor potential noise sources, but a specific source could not be determined. Monitoring results from the closest monitor indicated noise levels were within regulatory limits at the time.
28/12/2012 4:03:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Mt Arthur Coal employees drove to caller's residence to monitor potential noise sources, but a specific source could not be determined. Monitoring results from the closest monitor indicated noise levels were within regulatory limits at the time.
28/12/2012 8:24:00 PM	Roxburgh Road	General Dust	Community Response Line	Mining operations had already ceased in the northern pits prior to the call. Monitoring results indicated dust levels were within regulatory limits at the time.
2/01/2013 8:15:00 AM	Denman Road	General Dust	Community Response Line	Mining operations were altered to ensure the dumping of material occurred at less exposed overburden dumps. Monitoring results from the nearest monitor indicated dust levels were within regulatory requirements at the time. Caller was advised of monitoring results and operational changes.
3/01/2013 1:33:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed there was no unusual mining activity and the majority of the overburden fleet was shut down at the time. Monitoring results from the nearest monitor indicated noise levels were within regulatory requirements. Caller was advised of the investigation and monitoring results.
4/01/2013 1:44:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed there was no unusual mining activity at the time. Monitoring results from the nearest monitor indicated noise levels were within regulatory requirements. Caller was advised of the investigation and monitoring results.
4/01/2013 8:36:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed there was no unusual mining activity at the time. Monitoring results from the nearest monitor indicated noise levels were within regulatory requirements. Caller was advised of the investigation and monitoring results.
5/01/2013 11:55:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed there was no unusual mining activity at the time. Monitoring results from the nearest monitor indicated noise levels were within regulatory requirements. Caller was advised of the monitoring results.
6/01/2013 12:15:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Regarding operational noise, dust and lighting. The lighting was identified and relocated. Investigation revealed there was no unusual mining activity at the time to which excess noise could be attributed and dust generation was closely monitored throughout the night. Noise and dust monitoring results from the nearest monitors indicated levels were within regulatory requirements at the time. Caller was advised of the action taken and the monitoring results.
9/01/2013 1:10:00 PM	Denman Road	General Dust	Email	Received from the NSW Environment Protection Authority on behalf of resident. Investigation revealed that operations had already been shut down. Monitoring results showed that the dust levels were elevated at the time, however the 24 hour average for the day was within regulatory limits. The Authority requested a brief written response outlining actions taken to prevent or minimise dust from site.
9/01/2013 1:24:00 PM	Roxburgh Road	General Dust	Phone Call	Investigation revealed that mining operations had already been shut down. Monitoring results indicated that dust levels were elevated at the time. However the 24 hour average for the day was within regulatory limits. Caller requested not to be called back.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
9/01/2013 1:27:00 PM	Muswellbrook	General Dust	Community Response Line	Investigation revealed that mining operations had already been shut down. Monitoring results show that the dust levels were elevated at the time, however the 24 hour average for the day was within regulatory limits. Caller was advised of the monitoring results.
10/01/2013 3:13:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed that mining operations had already been shut down. Monitoring results show noise levels were within regulatory limits at the time. Caller requested not to be called back.
10/01/2013 9:20:00 AM	Muswellbrook	General Dust	Community Response Line	Investigation revealed that mining operations had already been shut down. Monitoring results indicated that dust levels were elevated at the time. However the 24 hour average for the day was within regulatory limits. Caller was advised of the monitoring results.
14/01/2013 1:10:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed there was no unusual mining activity at the time. Monitoring results from the nearest monitor indicated noise levels were below regulatory limits. Caller was advised of the monitoring results.
14/01/2013 10:01:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed there was no unusual mining activity at the time. Monitoring results from the nearest monitor indicated noise levels were below regulatory limits. Caller was advised of the monitoring results.
16/01/2013 9:18:00 AM	Denman Road	General Dust	Community Response Line	Investigation revealed dust controls were employed at the time. Monitoring results indicated dust levels were within regulatory requirements. Caller was advised of the investigation and monitoring results.
20/01/2013 12:51:00 PM	Denman Road	Spontaneous Combustion	Community Response Line	Received from the NSW Environment Protection Authority on behalf of resident regarding black smoke from Mt Arthur Coal, which was confirmed to be a small section of spontaneous combustion. The material was loaded out and the outbreak was contained. The Authority was advised of the investigation and actions taken.
21/01/2013 11:03:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed there was no unusual mining activity at the time. Monitoring results indicated noise levels were below regulatory limits. Caller was advised of the monitoring results.
22/01/2013 10:19:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed there was no unusual mining activity at the time. Monitoring results indicated noise levels were below regulatory limits. Caller requested not to be called back.
24/01/2013 4:18:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed reduced excavator activity in the pit at the time. Monitoring results indicated noise levels were below regulatory limits. Caller was advised of the monitoring results.
26/01/2013 3:45:00 PM	Thomas Mitchell Drive	General Dust	Email	Received from the NSW Environment Protection Authority on behalf of resident. Dust control measures were being employed at the time. Monitoring results indicated dust levels were within regulatory requirements. No response was requested by the Authority.
26/01/2013 11:23:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Mt Arthur Coal employees drove to the area to monitor potential noise sources and did not find any production noise that would be considered to be elevated. Monitoring results indicated noise levels were within regulatory requirements at the time. Caller was advised of the investigation and monitoring results.
28/01/2013 9:28:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results indicated noise levels were within regulatory requirements at the time. Caller was advised that the mine had been shut down since the previous evening due to weather conditions.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
29/01/2013 11:56:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Monitoring results indicated noise levels were below regulatory limits at the time. Caller was advised that operations in the pit were minimal at the time.
3/02/2013 11:03:00 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed that lights were shining onto the residence from the mine. Corrective action was taken to switch off one of the lights and redirect the other to face south. Caller was advised and confirmed that lights had been corrected.
4/02/2013 4:17:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results indicated noise levels were below regulatory limits. Caller was advised of the monitoring results the following day on request.
6/02/2013 1:07:00 PM	Denman Road	Blast Fume	Community Response Line	Investigation revealed that the blast fume was contained on the mine site and wind conditions were suitable for blasting at the time. Caller was advised of the investigation results.
6/02/2013 1:20:00 PM	South Muswellbrook	Blast Fume	Phone Call	Investigation revealed that the blast fume was contained on the mine site and wind conditions were suitable for blasting at the time. Caller was advised of the investigation results.
8/02/2013 11:26:00 AM	Hunter Valley	Cultural Heritage	Phone Call	Regarding the consultation process for Mt Arthur Coal's cultural heritage salvage works and Native Title holders over land covering Mt Arthur Coal mine. A search of the Native Title Applications and Determinations register revealed that the application the caller was referring to was located in the Singleton local government area and a determination had not yet been given. Caller was advised that Mt Arthur Coal were operating in compliance with their approved Aboriginal Heritage Management Plan and DECCW guidelines for Aboriginal cultural heritage consultation.
8/02/2013 2:26:00 PM	Thomas Mitchell Drive	Blast Vibration	Phone Call	Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results for the nearest monitor indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller requested not to be called back with monitoring results.
9/02/2013 8:47:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Regarding general machinery noise the night before and at the time of the call. Noise monitoring results from monitors closest to the caller indicated noise levels were within regulatory criteria at the time of the complaint. Caller requested not to be called back with monitoring results.
10/02/2013 8:27:00 PM	Roxburgh Road	General Dust	Community Response Line	Investigation revealed operations had been modified prior to the call in response to changing weather conditions. Monitoring results indicated dust levels were below regulatory limits at the time of the call. Caller requested not to be called back with monitoring results.
12/02/2013 12:49:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed there were no abnormal operating conditions to which the noise could be attributed. Monitoring results indicated noise levels were within regulatory limits at the time. Caller requested not to be informed of monitoring results.
13/02/2013 5:27:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed mining operations were reduced due to shift changeover at the time of the call, but a light wind was blowing in the direction of the caller. Monitoring results at the nearest real-time monitor indicated noise levels were elevated at the time. Caller requested not to be informed of monitoring results or actions taken.
14/02/2013 5:11:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring, but a light wind was blowing in the direction of the caller. Monitoring results indicated noise levels were within regulatory criteria. Caller requested not to be informed of monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
14/02/2013 9:05:00 AM	Denman Road	General Dust	Phone Call	Received from the NSW Environment Protection Authority on behalf of resident regarding dust. At the time of the call monitoring results indicate that dust levels were within regulatory criteria. Investigation revealed weather conditions were suitable for operations at the time. No response required to the Authority.
14/02/2013 11:38:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring and no obvious obtrusive noise sources could be identified, but a light wind was blowing in the direction of the caller. Monitoring results indicated noise levels were elevated at the time of the call. Caller requested not to be informed of monitoring results or investigation.
15/02/2013 11:49:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no obvious obtrusive noise sources, but a light wind was blowing in the direction of the caller. At the time of the call monitoring results indicate that noise levels were within regulatory limits. Caller requested not to be notified of monitoring results or action taken.
16/02/2013 5:02:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no obvious obtrusive noise sources, but a light wind was blowing in the direction of the caller. At the time of the call monitoring results indicate that noise levels were within regulatory limits. Caller requested not to be notified of monitoring results or action taken.
17/02/2013 11:06:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria. Caller requested not to be informed of monitoring results or investigation.
17/02/2013 12:06:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria. Caller requested not to be informed of monitoring results or investigation.
20/02/2013	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed there were no abnormal operational conditions to which the noise could be attributed. Monitoring results indicated noise levels were within regulatory requirements. Caller was contacted to discuss the issue further.
25/02/2013 2:48:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed there were no abnormal operational conditions to which the noise could be attributed. Monitoring results indicated noise levels were within regulatory requirements. Caller was advised of investigation and monitoring results.
25/02/2013 5:26:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed there were no abnormal operational conditions to which the noise could be attributed. Monitoring results indicated noise levels were within regulatory requirements. Caller was contacted to discuss the issue further.
25/02/2013 12:15:00 PM	Denman Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Noise monitoring results from monitors closest to the caller indicated noise levels were within the regulatory criteria. Caller did not request monitoring results.
27/02/2013 4:26:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise was within regulatory criteria. Caller asked not to be called back.
28/02/2013 4:44:00 PM	Denman Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria at the time. Caller was advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
4/03/2013 10:42:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring and weather conditions were suitable for operations. Monitoring results indicated noise levels were within regulatory criteria. Caller was advised of investigation.
5/03/2013 2:31:00 AM	Denman Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring and weather conditions were suitable for operations. Monitoring results indicated noise levels were within regulatory criteria. Caller was advised of investigation.
5/03/2013 10:45:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria at the time. Caller was advised of investigation and monitoring results.
6/03/2013 12:28:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria at the time. Caller was advised of investigation.
6/03/2013 4:27:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria at the time. Caller was advised of investigation and monitoring results.
6/03/2013 11:26:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria at the time. Caller was advised of investigation.
9/03/2013 1:35:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria at the time. Caller was advised of investigation and monitoring results.
9/03/2013 11:50:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria at the time. Caller was advised of investigation and monitoring results.
11/03/2013 1:30:00 PM	Muswellbrook	Operational Noise	Community Response Line	Investigation revealed that no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
11/03/2013 11:53:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations occurring. Monitoring results at the nearest monitor indicated noise levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
12/03/2013 8:14:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results from the nearest monitor indicate noise levels were within regulatory criteria. Caller asked not to be advised of investigation results.
17/03/2013 9:20:00 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed that lights were shining at the northern end of the pit. Corrective action was taken to redirect the lights. Caller was informed of investigation results and corrective action taken.
19/03/2013 8:07:00 AM	Roxburgh Road	General Dust	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated dust levels were within regulatory criteria at the time. Caller asked not to be called back.
19/03/2013 11:16:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation did not identify any potential noise sources. Monitoring results indicated noise levels were below regulatory limits. Caller requested not to be called back.
20/03/2013 11:05:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation did not identify any potential noise sources. Monitoring results indicated noise levels were below regulatory limits. Caller requested not to be called back.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
22/03/2013 12:49:00 PM	South Muswellbrook	Blast Vibration	Community Response Line	Monitoring results indicated vibration levels were below regulatory limits. Caller indicated they would not like to receive monitoring results.
24/03/2013 3:23:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation did not identify any potential noise sources. Monitoring results indicated noise levels were below regulatory limits. Caller was contacted, but did not request monitoring results.
25/03/2013 5:09:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation did not identify any potential noise sources and no unusual activities were occurring at the time. Monitoring results indicated noise levels were below regulatory limits. Caller was advised of investigation results.
25/03/2013 10:27:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
26/03/2013 1:29:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria. Caller asked not to be called back on the night, and was contacted the following morning.
27/03/2013 12:26:00 PM	Denman Road	Blast Vibration	Community Response Line	Investigation revealed weather conditions were suitable for blasting. Monitoring results indicated blast overpressure and ground vibration levels were within regulatory criteria. Caller was advised of investigation and outcomes.
27/03/2013 12:26:00 PM	Roxburgh Road	Blast Vibration	Community Response Line	Investigation revealed weather conditions were suitable for blasting. Monitoring results indicated blast overpressure and ground vibration levels were within regulatory criteria. Caller was advised of investigation and outcomes.
27/03/2013 12:26:00 PM	Denman Road	Blast Vibration	Community Response Line	Investigation revealed weather conditions were suitable for blasting. Monitoring results indicated blast overpressure and ground vibration levels were within regulatory criteria. Caller was advised of investigation and outcomes.
30/03/2013 3:44:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
30/03/2013 5:44:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
30/03/2013 9:42:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
30/03/2013 12:58:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
1/04/2013 2:41:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory limits. Caller asked not to be called back.
2/04/2013 12:42:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory limits. Caller was advised of monitoring results.
2/04/2013 3:56:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory limits. Caller was advised of monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
2/04/2013 11:04:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory limits. Caller requested not to be advised of investigation and monitoring results.
3/04/2013 1:05:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory limits. Caller requested not to be advised of investigation and monitoring results.
3/04/2013 3:52:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory limits. Caller was advised of monitoring results.
4/04/2013 1:40:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory limits. Caller was advised of monitoring results.
4/04/2013 10:41:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory limits. Caller requested not to be advised of investigation and monitoring results.
11/04/2013 12:46:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
11/04/2013 4:42:00 PM	Roxburgh Road	General Dust	Email	Investigation revealed no unusual activities were happening at the time. Monitoring results at the nearest monitor indicated dust levels were within regulatory criteria. Caller asked not to be called back.
11/04/2013 10:36:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed that noise levels at the nearest monitor were over regulatory limits at the time of the call. Changes in operation reduced noise levels to within regulatory limits. Caller was advised of investigation results.
12/04/2013 9:34:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring and weather conditions were suitable for operations. Monitoring results indicated noise levels were within regulatory limits. Caller was advised of investigation results.
19/04/2013 9:02:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated noise levels were elevated in one 5 minute period that was affected by bird noise, otherwise noise levels were within limits. Caller was advised of investigation and monitoring results.
23/04/2013 9:36:00 AM	Denman Road	Odour	Phone Call	Investigation revealed that there was no spontaneous combustion occurring in the northern end of the pit. Caller asked not to be called back.
23/04/2013 10:30:00 AM	Denman	Blast Vibration	Phone Call	Investigation revealed that weather conditions were suitable for blasting at the time of the blast. Monitoring results indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller was advised of investigation.
23/04/2013 10:31:00 AM	Roxburgh Road	Blast Vibration	Community Response Line	Investigation revealed that weather conditions were suitable for blasting at the time of the blast. Monitoring results indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller was advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
23/04/2013 10:32:00 AM	Denman Road	Blast Vibration	Community Response Line	Investigation revealed that weather conditions were suitable for blasting at the time of the blast. Monitoring results indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
23/04/2013 10:38:00 AM	Racecourse Road	Blast Vibration	Phone Call	Investigation revealed that weather conditions were suitable for blasting at the time of the blast. Monitoring results indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
23/04/2013 10:40:00 AM	Roxburgh Road	Blast Vibration	Community Response Line	Investigation revealed that weather conditions were suitable for blasting at the time of the blast. Monitoring results indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
23/04/2013 10:43:00 AM	Roxburgh Road	Blast Vibration	Community Response Line	Investigation revealed that weather conditions were suitable for blasting at the time of the blast. Monitoring results indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
26/04/2013 3:25:00 PM	Denman Road	Blast Vibration	Community Response Line	Investigation revealed that weather conditions were suitable for blasting at the time of the blast. Monitoring results indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller was advised of investigation.
1/05/2013 2:59:00 PM	Denman Road	Blast Vibration	Email	Received from the NSW Environmental Protection Authority on behalf of resident. Investigation revealed that weather conditions were suitable for blasting at the time. Monitoring results indicated overpressure noise and ground vibration levels were within regulatory criteria. The Authority was advised of investigation and monitoring results.
6/05/2013 6:14:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
7/05/2013 8:40:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
8/05/2013 3:31:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
10/05/2013 2:45:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
10/05/2013 3:05:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
10/05/2013 8:57:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
10/05/2013 11:15:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
11/05/2013 3:29:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
11/05/2013 8:42:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
12/05/2013 11:57:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
13/05/2013 2:30:00 PM	Racecourse Road	Blast Vibration	Phone Call	Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
15/05/2013 11:41:00 AM	Roxburgh Road	Blast Vibration	Community Response Line	Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results indicated overpressure and ground vibration levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
22/05/2013 12:24:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
23/05/2013 2:06:00 PM	Antiene	Blast Vibration	Community Response Line	Investigation revealed weather conditions were suitable for blasting at this time. Monitoring results indicated air blast overpressure and ground vibration levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
27/05/2013 2:22:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual operations were occurring. Monitoring results indicated real-time noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
28/05/2013 2:45:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
31/05/2013 4:28:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was unable to be contacted after several attempts.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
31/05/2013 10:37:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Real-time noise monitoring results were not applicable due to atmospheric conditions present at the time. Caller was advised of investigation.
3/06/2013 10:59:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
3/06/2013 6:17:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
5/06/2013 1:42:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
5/06/2013 11:28:00 AM	Denman Road	Blast Overpressure Noise	Phone Call	Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller did not wish to be advised of monitoring results.
6/06/2013 12:52:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
7/06/2013 2:52:00 PM	Denman Road	Blast Vibration	Community Response Line	Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
9/06/2013 12:42:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results were not available. Caller was advised of the investigation.
10/06/2013 10:01:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of the investigation.
12/06/2013 12:41:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
12/06/2013 12:55:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
17/06/2013 10:51:00 PM	Roxburgh Road	Lighting	Community Response Line	Investigation identified lights at north end of the pit and corrective action was taken to redirect them. Caller was not able to be contacted the following day.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
19/06/2013 2:36:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
19/06/2013 9:08:00 AM	Roxburgh Road	Lighting	Community Response Line	Investigation identified lights at north end of the pit and corrective action was taken to redirect them. Caller was advised of the investigation and was satisfied with the corrective action taken.
19/06/2013 8:35:00 PM	Roxburgh Road	Lighting	Community Response Line	Investigation identified lights at north end of the pit and corrective action was taken to redirect them. Caller was advised of the investigation and was satisfied with the corrective action taken.
20/06/2013 5:11:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
20/06/2013 10:20:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
22/06/2013 11:55:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
23/06/2013 9:01:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
26/06/2013 7:40:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal monitoring benchmark levels. Caller was advised of investigation and monitoring results.
27/06/2013	Antiene	Operational Noise	Other	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
27/06/2013 2:58:00 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at the nearest real-time monitor indicated noise levels were within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.

Appendix 9 - Rehabilitation Plan