MT ARTHUR COAL
ANNUAL ENVIRONMENTAL MANAGEMENT REPORT FY14

bhpbilliton
resourcing the future

Table of Contents

List of Figures

List of Tables

Title Block	
Name of Mine	Mt Arthur Coal
Initial Mining Operations Plan Commencement Date	1 July 2011
Initial Mining Operations Plan Completion Date	31 December 2013
Subsequent Mining Operations Plan Commencement Date	1 January 2014
Subsequent Mining Operations Plan Completion Date	30 November 2015
AEMR Commencement Date	1 July 2013
AEMR Completion Date	30 June 2014
Name of Leaseholder	Hunter Valley Energy Coal Pty Ltd
Reporting Officer Name	Joel Chin
Reporting Officer Title	Head of Health, Safety and Environment
Reporting Officer Signature	
Date	25 September 2014

1 Introduction

Mt Arthur Coal is an open cut coal mine located approximately five 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 2013 to 30 June 2014. 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 fulfils statutory reporting requirements associated with mining leases and the Mt Arthur Coal Mine Open Cut Consolidation Project Approval (09_0062), referred to hereafter as the consolidation project approval. The AEMR has been prepared in accordance with AEMR guidelines issued by the NSW Division of Resources and Energy (DRE). Table 1 provides a summary of the AEMR requirements.

This report was prepared in consultation with the DRE, NSW Department of Planning and Environment (DP&E), Muswellbrook Shire Council (MSC), NSW Environment Protection Authority (EPA) and NSW Office of Water, and includes all additional reporting requirements requested, such as expanded discussion on blast fume management, particularly improvements made in the second half of the reporting period, analyses of trends and comparison to the Mt Arthur Coal Consolidation Project Environmental Assessment.

The AEMR is distributed to a range of stakeholders that include government authorities, non-government organisations (NGOs), the Mt Arthur Coal and Drayton Coal Joint Community Consultative Committees (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
Condition 8c of Schedule 3 of the consolidation project approval	The Proponent shall: …. 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

Reference	Condition	AEMR section
Condition 53d of Schedule 3 of the consolidation project approval	The Proponent shall: …. 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 5 of Appendix 3 of the consolidation project approval	Mt Arthur Coal will establish a new real-time Tapered Element Oscillating Microbalances (TEOM) monitoring station or stations on the Mt Arthur site positioned so that it (they) provide data that are representative of air quality conditions on the site itself and on nearby properties where air quality data may be needed for mine management purposes. Data collected is to be published in the Project's Annual Reviews.	Section 3.1
Commitment 10 of Appendix 3 of the consolidation project approval	Mt Arthur Coal will install and maintain for the life of the mine a real time surface water monitoring station, downstream of the mine in Saddlers Creek but upstream from any water off-takes, with the following characteristics: • The station would continuously monitor in real time the following parameters as a minimum: o Flows; o Conductivity; and o Turbidity. • Agreed trigger levels would be established in consultation with Darley for conductivity and turbidity; • If trigger levels are exceeded, nominated Darley staff would be automatically notified by SMS or other agreed alarm protocols; and • Annual water quality reports incorporating raw data and professional interpretation would be provided annually to Darley and the Department.	Section 3.3
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

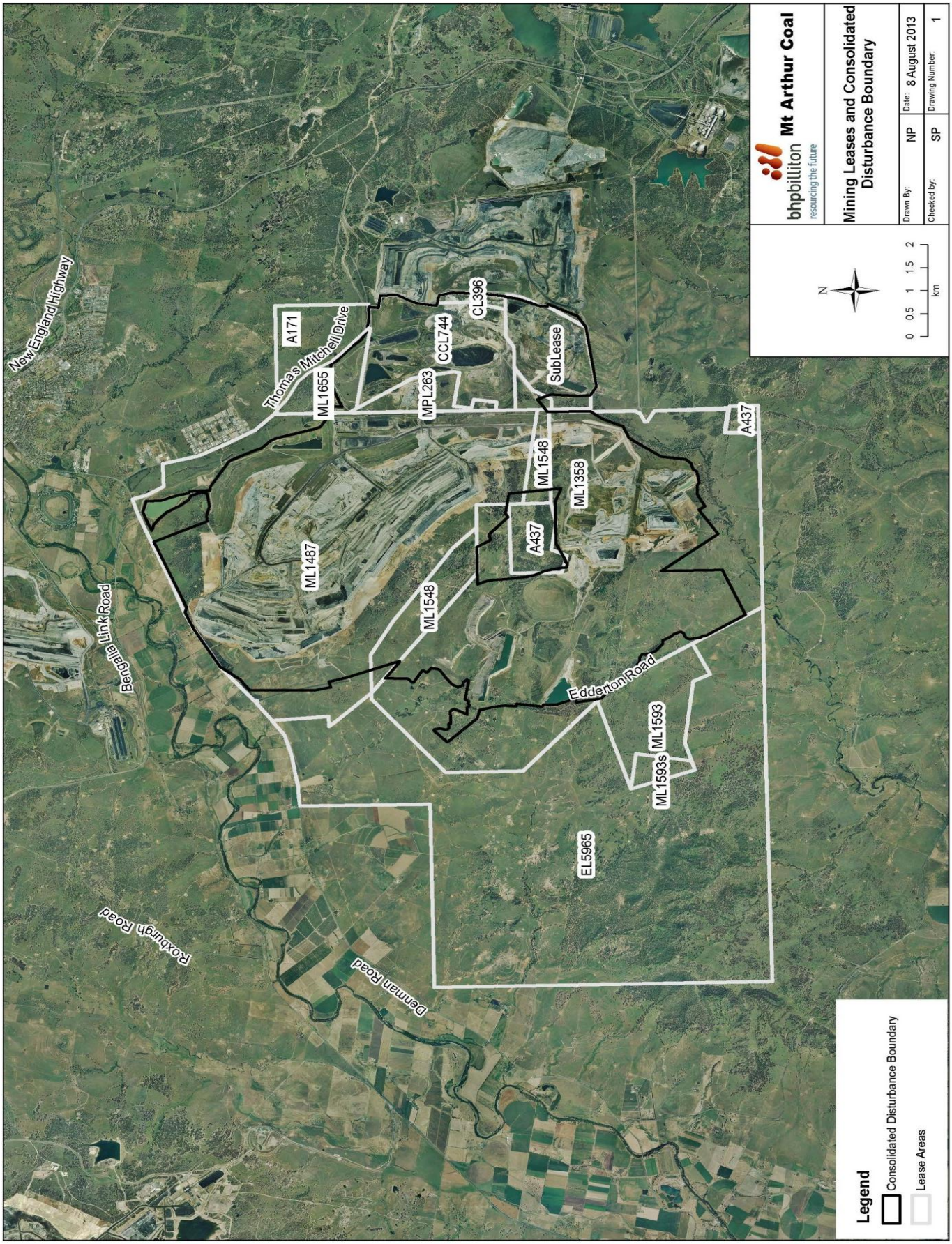


Figure 1: Location of the Mt Arthur Coal disturbance boundary and mining titles

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 2014 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. Mt Arthur Coal currently has two 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&E on 28 February 2013, during the previous reporting period. The assessment was 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 to 2026. 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 - Coal Lease (CL) 395 and CL 229. Mt Arthur Coal has submitted an Application for Mining Lease for mining purposes only to the DRE (MLA 476), which is currently under assessment for a small area adjacent to existing leases and licences.

Applications for the renewal of Mining Purpose Lease (MPL) 263 and Authorisation 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. The renewals for Authorisation 171 and Exploration Licence (EL) 5965 were granted on 12 May 2014, during the reporting period.

Applications for the renewal of Mining Lease (ML) 1358 and A 437 will be submitted to the DRE during the next reporting period.

1.1.3 Environment Protection Licence

Mt Arthur Coal currently holds one environment protection licence (EPL) 11457, for the following scheduled activities:

- chemical storage 5 to 100 tonnes generated or stored;
- coal works > 500,000 tonnes handled; and
- mining for coal > 5,000,000 tonnes produced.

The EPA issued a revised version of EPL 11457 on 5 September 2013, which updated conditions for the following Pollution Reduction Programs (PRPs):

- U1: Particulate Matter Control Best Practice Implementation – Wheel Generated Dust;
- U2: Particulate Matter Control Best Practice Implementation – Disturbing and Handling Overburden Under Adverse Weather Conditions; and

- U3: Particulate Matter Control Best Practice Implementation – Trial of Best Practice Measures for Disturbing and Handling Overburden.

Mt Arthur Coal prepared the report required by Condition U3 and submitted it to the EPA on 14 April 2014. EPA requested further information to fulfil the requirements of the PRP. Mt Arthur will submit the revised reporting during the next reporting period. Mt Arthur Coal is currently preparing reports required by Conditions U1 and U2, to be submitted to the EPA during the next reporting period.

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 the Environment (DoE) that protects nationally significant flora, fauna and ecological communities.

On 30 April 2012, Mt Arthur Coal was granted approval EPBC 2011/5866 with conditions 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. A Variation to Conditions Attached to Approval EPBC 2011/5866 was granted on 3 June 2014 by the DoE, to vary the delivery date of Condition 3 to 31 December 2014.

Mt Arthur Coal prepared an Annual EPBC Compliance Report covering the period 21 May 2012 to 21 May 2013 and published the report on the BHP Billiton website during the reporting period. Mt Arthur Coal is currently preparing the Annual EPBC Compliance Report covering the period 21 May 2013 to 21 May 2014.

Table 2: Mt Arthur Coal's existing statutory approvals as at 30 June 2014

Description	Issue date	Expiry date
Development consents or project approvals issued by the DP&E		
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	*
A 171	18/10/1979	25/11/2015
A 437	04/03/1991	04/03/2015
EL 5965	15/07/2002	14/07/2017
EPL issued by the EPA		
EPL 11457	9/10/01 (last updated on 5/09/2013)	Not specified
EPBC approval issued by the Department of the Environment		
EPBC 2011/5866	30/4/12 (varied on 3/06/2014)	30/06/2022

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

1.1.5 Mining Operations Plans

Mt Arthur Coal had a previously approved mining operations plan (MOP) in place, that covered the period 1 July 2011 to 30 June 2013. On 4 January 2013 approval was granted by the DRE to extend the period covered by this MOP, from 30 June 2013 to 31 December 2013, on the condition that during the six month extension period no works or activities would be undertaken at the site, that were inconsistent with the MOP. This AEMR reporting period is therefore partly covered by this previous MOP extension and Mt Arthur Coal's current approved MOP, which covers the period 1 January 2014 to 30 November 2015. No amendments were made to either MOP during the reporting period.

1.2 Mine Contacts

Mt Arthur Coal functions with two operational areas – Open Cut Operations and Coal Handling and Processing Plant (CHPP) and Infrastructure. Open Cut Operations 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. CHPP and Infrastructure is responsible for all coal processing, marketing interface and transportation of coal, including maintenance for the CHPP and all fixed and non-process infrastructure. Xavier Wagner was appointed the General Manger of Mt Arthur Coal Open Cut Operations during the reporting period, to replace Michael White. Mark van den Heuvel remained General Manger of Mt Arthur Coal CHPP and Infrastructure during the reporting period.

Mt Arthur Coal has a Health, Safety and Environment (HSE) team. Contact details for Mt Arthur Coal's general managers, head of HSE and key environment superintendents within the HSE team can be found in Table 3.

Table 3: Mt Arthur Coal management contact details

Name and role	Phone contact details
Xavier Wagner, 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
Joel Chin, Acting Head of HSE	(02) 6544 5800
Donna McLaughlin , Superintendent Environment – Execution	(02) 6544 5800
Michael Gale, Superintendent Environment – Improvement	(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 appropriate levels of effective assessment and reporting continue.

The DRE and DP&E conducted a review of the FY13 AEMR, including attending a site meeting and inspection at Mt Arthur Coal on 23 October 2013. The DRE noted that the report effectively met the compliance requirements and commended Mt Arthur Coal on a number of initiatives, including aerial seeding work and efficient management of tailings. The DRE also identified several issues during the site inspection. These issues and the actions taken to address them are listed in Table 4.

The DP&E also considered that the FY13 AEMR generally satisfied the requirements for Annual Reviews in Condition 3, Schedule 5 of the consolidation project approval. The DP&E also made several comments for consideration, which are listed in Table 4, along with actions taken to address them.

Table 4: Actions Required at Previous AEMR Review

No.	Issue or observation	Action required by Mt Arthur Coal	Due	Status update
DRE-1	Area of waste rock emplacement rehabilitation inspected (completed in early 2013) ("Saddlers Rehab") was impacted by a pervasive unknown woody weed	1. Identify weed 2. Undertake a weed eradication program at the appropriate time 3. Control this weed if evident in other areas on site	Ongoing	Mustard weed was identified in the area, which died off during subsequent dry weather conditions. Weeds are managed in accordance with Mt Arthur Coal's weed control program, as discussed in Section 3.7.
DRE-2	Aerial seeding of Temporary Stabilisation areas – species utilised	Verify species used for interim dust control on waste emplacement area will not present a problem for eventual final rehabilitation vegetation	Ongoing	Mt Arthur Coal verified with a qualified agronomist that the species used are appropriate as they do not spread readily or persist for long durations.
DRE-3	Waste emplacement area above Main Pit lookout – flat top landform	Current landform does not satisfy requirements for a landform which is sympathetic with existing landscapes of the location. Further discussions with DRE will be required if Mt Arthur Coal's current project approval modification application to increase the emplacement height is not successful	As appropriate (if required)	Necessity of action will be determined once the modification project approval is determined, which is anticipated for the next reporting period.
DRE-4	Prickly pear infestations in vicinity of North Cut Tailings Dam (in flower)	Treat the prickly pear within an appropriate timeframe to prevent seed dispersal	As appropriate	The observed infestation was treated during the reporting period.
DRE-5	Dumping of Slurry at New Tailings Area (Sublease)	Determine origin and contamination evaluation of slurry material dumped at New Tailings Area (Sublease) and dispose of accordingly	November 2013	An investigation, including a contamination evaluation, determined that the likely origin of the slurry was the heavy vehicle wash down bay. The affected soil was excavated and relocated to Mt Arthur Coal's holding area for contaminated material during the reporting period.

No.	Issue or observation	Action required by Mt Arthur Coal	Due	Status update
DRE-6	New bioremediation area	1. Determine origin and contamination evaluation of paddock dumped material in proposed bioremediation area 2. If Mt Arthur propose to operate a bioremediation area a Management Plan must be submitted to the Department for approval prior to operation and shall incorporate: a. legislative review b. management protocol and responsibilities c. design and criteria d. operating standards, inspection regime and reporting	By 31 December 2013	1. An investigation was carried out and the results reported to the DRE on 29 November 2013. The investigation determined that the material originated from the previous West Cut Fill Dam and was not contaminated. The material was excavated as part of construction of the new tailings dam wall as it was not competent for dam wall construction. The material was placed in an area assessed as appropriate for paddock dumping, adjacent to the temporary contaminated material storage area. 2. Mt Arthur Coal is not currently operating a bioremediation area for contaminated material. Following a review of material volumes, Mt Arthur Coal will determine the most appropriate option for the management of contaminated soil and the required documentation will be submitted to the DRE in accordance with this action.
DRE-7	Delineation and tracking of stored topsoil by former vegetation types	1. Topsoil recovered from former woodland areas to be delineated and tracked 2. Former woodland topsoils utilised (where available) for areas rehabilitated to woodland revegetation outcomes	Ongoing	Mt Arthur Coal maintains a register of topsoil stockpiles where topsoil from areas of woodland are planned to be tracked when cleared to be utilised for woodland rehabilitation areas. During the reporting period a majority of topsoil was recovered in advance of Macleans Pit. This was predominantly woodland and was used for box gum woodland rehabilitation on VD1.
DP&E-1	Format of the document	The Department requests that subjects are compartmentalised to include monitoring results, comparison against predictions and previous years data (including any discrepancies between predicted and actual impacts and the cause and potential environmental impact of any discrepancy), complaints (and whether any trends have emerged), exceedances (including the result of the subsequent investigation including improvements to prevent reoccurrence and any environmental impact) and incidents (including any warning letters, penalty notices or prosecutions and any subsequent improvements).	FY14 AEMR	Subjects in this AEMR have been compartmentalised as per Section 3. Complaints relating to each section have also been discussed and analysed within the relevant section.
DP&E-2	Format of the document	Explanation of how contributions are calculated.	FY14 AEMR	Section 3.1 explains how Mt Arthur Coal's contributions to High Volume Air Sampler (HVAS) and Tapered Element Oscillating Microbalance samplers (TEOM) results are calculated.

No.	Issue or observation	Action required by Mt Arthur Coal	Due	Status update
DP&E-3	Flora and fauna	The report states that monitoring of Pine Donkey Orchid (*Diuris tricolor*) has revealed a decrease in clumps found as well as a decrease in individual plants. While it was explained this was within the historic range the report would benefit from providing a comparison against previous years and a short description explaining the discrepancy.	FY14 AEMR	Further analysis and comparison to previous years for the Pine Donkey Orchid is provided Section 3.6.
DP&E-4	Offsets	Offsets are an integral part of current mining operations and as such the report would benefit on reporting on the progress of offsets against completion criteria, works carried out in the reporting period and proposed works in the next reporting period.	FY14 AEMR	Mt Arthur Coal's offsets areas are discussed in Section 3.6.
DP&E-5	Spontaneous combustion	While the report details the total area affected by spontaneous combustion, the amount treated during the reporting period and the amount of new areas identified, it could benefit from providing an image showing the areas treated, active areas and new areas identified. As the sublease areas are adjacent to the Drayton mine which is subject to spontaneous combustion, the Department would encourage Mt Arthur to carry out thermal imaging in conjunction with Drayton which may potentially reduce the cost of imaging for both mines.	FY14 AEMR	Spontaneous combustion plans showing the areas of outbreaks identified in June 2013 and June 2014 is provided in Section 3.13 (Figures 15 and 16) to indicate the areas treated, active areas and new areas identified during the reporting period. Mt Arthur Coal liaised with Drayton mine to determine common audited suppliers to conduct a thermal imagery scan flight over affected areas of the two operations. All common suppliers were contacted; however none were available to undertake the scan in the winter during the reporting period.
DP&E-6	Dust deposition results	The Department notes that dust deposition results have generally increased over the past three years. On the current trend DD15 and DD19 may exceed the annual average in the next reporting period. The Department encourages the mine to review operations and undertake all reasonable and feasible dust management practices.	FY14 AEMR	Dust management operations were reviewed and revised with implementation of the dust trigger action response plan (TARP) during the reporting period. Annual average depositional dust results at DD15 and DD19 did not exceed statutory limits during the reporting period, as discussed in Section 3.1.

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 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.

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. 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

An independent environmental audit was undertaken at Mt Arthur Coal in June 2014. The report from this audit will be submitted to the DP&E in the next reporting period. Progress on actions arising from audit recommendations will be included in the FY15 AEMR.

1.5.2 Website Audit

In preparation for the FY14 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 5. Mt Arthur Coal achieved a high level of compliance against approval conditions.

Table 5: Results of the Mt Arthur Coal website audit

Consolidation project approval or other 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 variations 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 the DP&E are available. Pollution reduction programs (PRP) that have been approved under the operation's EPL are also available, as well as the Pollution Incident Response Management Plan (PIRMP).

Consolidation project approval or other reference	Website requirement	Compliant	Comments
Conditions 8 and 11 of Schedule 5	The Proponent shall provide regular reporting on the environmental performance of the project on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this approval, and to the satisfaction of the Director-General. 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. Up to four years of pollution monitoring data must remain publicly available, in accordance with the EPA's *Requirements for publishing pollution monitoring data* (March 2012) which applies to data obtained from 1 April 2012. Monitoring results since April 2012 are also available through the documents titled 'CCC Meeting - Monitoring Results' on a bimonthly basis.
Condition 11 of Schedule 5	A complaints register, which is to be updated on a monthly basis	Yes	Monthly reports of community complaints for at least the last 12 months, dating back to June 2013, are available. Complaint details are also available in each AEMR.
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 are available, dating back to April 2012.
Condition 11 of Schedule 5	A copy of any Annual Reviews (over the last five years)	Yes	AEMRs dating back to calendar year 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. An Independent Environmental Audit was undertaken in June 2014 and documents related to this audit will be made publicly available on the website once finalised and approved by the DP&E.
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 weekly.
Condition 35 of Schedule 3	The Proponent shall prepare and implement a Remedial Action Plan for the former Bayswater No. 2 infrastructure area to the satisfaction of the Director-General.	Yes	The Remedial Action Plan Bayswater No. 2 Infrastructure, Mt Arthur Coal Complex report is available.
Condition 46 of Schedule 3	The Proponent shall keep records of the amount of coal transported from the site in each calendar year and the number of coal haulage train movements generated by the Mt Arthur Coal mine complex (on a daily basis) and make these records available on its website at the end of each calendar year.	Yes	The Mt Arthur Coal Annual Coal Transport Report 2013 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, 1487 and 1548 to further define coal seam geology and geotechnical parameters of the resource. During the reporting period 42 boreholes were drilled totalling 9,084 metres. Environmental assessments were conducted for each drill site prior to drilling to minimise impacts.

The rehabilitation and sealing of 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 either of the MOPs related to exploration activities.

2.2 Land Preparation

Clearing of vegetation is undertaken in accordance with Mt Arthur Coal's existing MAC-ENC-MTP-044 Biodiversity and Rehabilitation Management Plan (BRMP) and the MAC-ENC-PRO-012 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 the Land Management Procedure, 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 personnel or local wildlife carers.

During the reporting period 129,000 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 200 millimetres of topsoil was recovered during stripping. Once established, topsoil stockpiles were shaped, planted with a pasture-based vegetative cover and recorded in the mine planning database.

During the reporting period there were no material variations from either of the MOPs 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. The following major projects were commenced, progressed and/or completed during the reporting period:

- 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, which commenced in late June 2013, was completed during the reporting period in November 2013. The construction runs for 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 is three to five metres high and the low permeability barrier is 10 to 15 metres below the existing ground level;

- decommissioning of the main dam continued, along with associated upgrades to water transfer facilities to link them together which included additional pumps and transfer lines. This included the installations of new pumps in the CHPP dam which is a project initiated to supply water to the CHPP and is scheduled for completion during the next reporting period;
- construction of Stage 1 of the tailings storage facility expansion project continued, with construction of two containment walls completed in August 2013 and Stage 1 scheduled for completion in 2016;
- construction of the new Edderton Road construction pad, approximately 300m south of the currently located construction pad just off the Windmill/Huon Pit high wall, commenced in April 2014 and will be completed early in the next reporting period .

During the reporting period there were no material variations from either of the MOPs 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 mining continued within the extended pit shells of Saddlers Pit and the North Pit, which is comprised of Ayredale, Calool, Huon, Macleans, Roxburgh and Windmill Pits. 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 as well as Base of Weathering. Approximately 25.7 million tonnes of run-of-mine coal was mined from the combined open cut operations, which is an increase from the 22.7 million tonnes of run-of-mine coal that was mined during the previous reporting period.

The current MOP details a material production schedule for part of FY14, forecasting 12 million tonnes of run-of-mine coal and 9 million tonnes of total saleable product coal for the period 1 January 2014 to 30 June 2014. If these forecasts are extrapolated for the full financial year, Mt Arthur Coal's mine performance figures for FY14, as summarised in Table 6, are in line with the forecast in the current MOP. Overall mining rates are also in compliance with the 32 million tonnes of maximum extraction allowed from the open cut mining operations in the consolidation project approval.

The volumes of topsoil stripped during the reporting period and the forecast for the next reporting period vary from predictions in the current MOP. Less topsoil was stripped during the reporting period than predicted and no topsoil stripping is currently planned for the next reporting period. The reduction in topsoil stripping is a result of operational cost reduction measures which include concentrating mining activities into a smaller area. This will result in lower strip ratio, reduced haulage costs and is being achieved by slowing the advance of the mine into undisturbed areas. This is a temporary delay to topsoil stripping. During the reporting period there were no material variations from either of the MOPs related to mining activities, except for topsoil stripping as explained above.

Table 6: Mine performance figures for FY14

Category	Unit	This reporting period (July 2013 to June 2014)	Estimated for next reporting period (July 2014 to June 2015)
Topsoil stripped	bcm	129,000	0
Topsoil used/spread	bcm	83,125	66,500
Overburden (including rehandle)	bcm	115,598,321	116,900,000
Run-of-mine coal mined	tonnes	25,688,297	25,500,000
Product (saleable) coal	tonnes	19,963,342	19,600,000
Washery reject (coarse and tailings)	tonnes	5,716,384	5,500,000

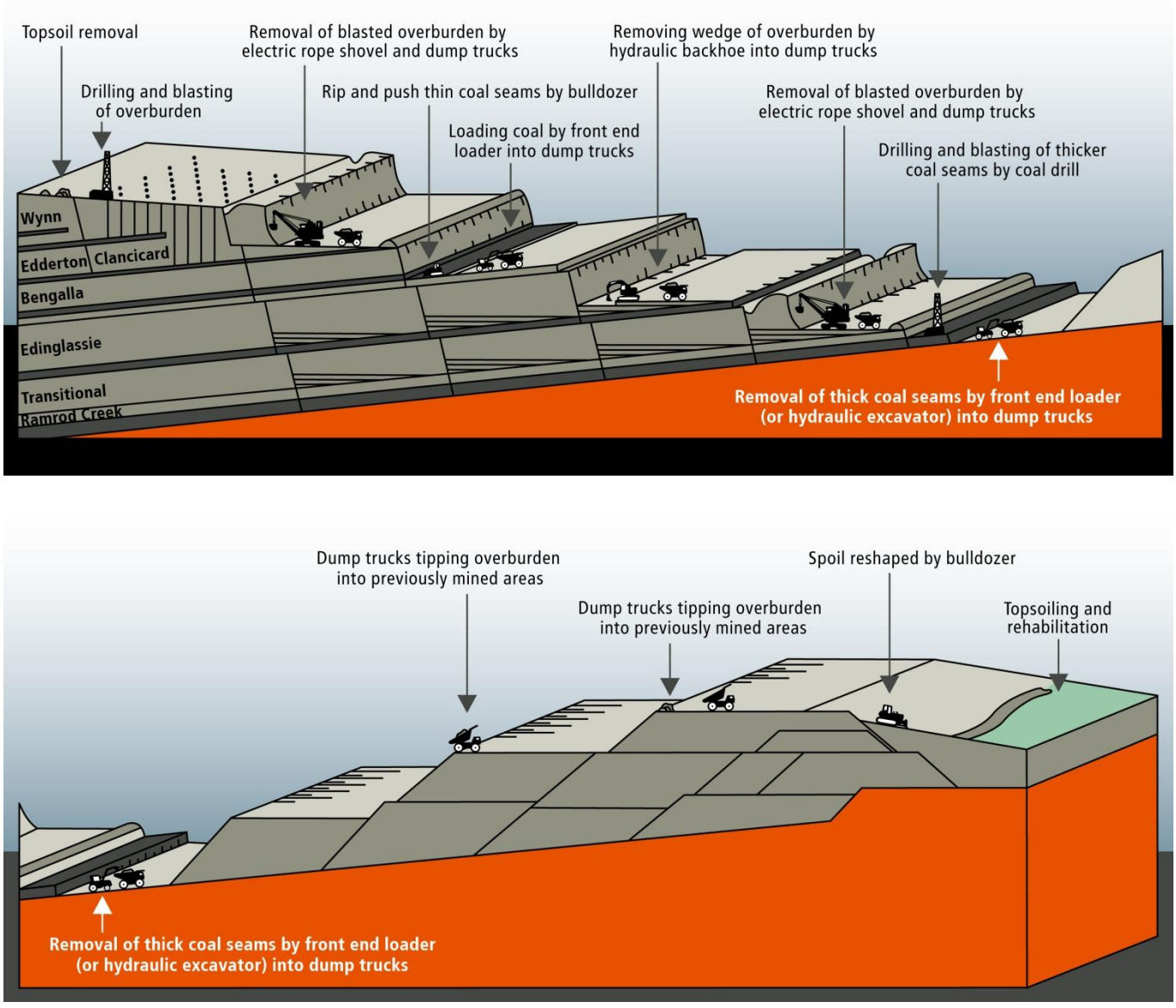


Figure 2: Mining sequence from topsoil removal to rehabilitation

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 20 million tonnes of total saleable product coal was produced by Mt Arthur Coal, which is in line with the forecast in the current MOP, as discussed in Section 2.4.

Approximately 18.1 million tonnes of export product coal was transported by rail to the Port of Newcastle and approximately 1.4 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.

Approximately 5.7 million tonnes of washery reject was produced from the CHPP during the reporting period, comprised of 60 per cent coarse reject material (3.4 million tonnes) and 40 per cent coal fines, known as tailings (2.3 million tonnes). This is in line with the forecast in the current MOP, as discussed in Section 2.4. Coarse reject material continued to be co-disposed within overburden emplacement areas and utilised in the construction of stockpile pads, road or other infrastructure, while tailings continued to be pumped from the CHPP to the existing west cut tailings dam. Pumping of tailings from the west cut tailings dam into a void to the east of the dam (known as East Pit), that is within Stage 1 of the tailings storage facility expansion project, commenced during the reporting period. This transfer of tailings to East Pit will continue during the next reporting period, maintaining a steady tailings level in the west cut tailings dam.

During the reporting period there were no material variations from either of the MOPs 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 115.6 million bank cubic meters of overburden was mined and handled (including rehandle), which is in line with the extrapolated forecast for FY14 of 110 million bank cubic meters in the current MOP. Overburden emplacement areas that were utilised during the reporting period included:

- visual dump 1 (VD1);
- contingency dumps 1 to 4 (CD1 to CD4);
- Saddlers dumps 1 to 3 (SD1 to SD3);
- tailings emplacement expansion walls; and
- Drayton Void emplacement area.

Heights of emplacement areas at the end of June 2014 are shown in Table 7.

Table 7. Heights of overburden emplacement areas at the end of the reporting period

Emplacement Area	Minimum Height (RL)	Maximum Height (RL)
VD1	250	282
CD1 to CD4	80	300
SD1 and SD3	120	250

Tailings emplacement expansion walls	235	235
Drayton void emplacement area	250	280

During the reporting period there were no material variations from either of the MOPs 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 closing run-of-mine stockpile inventory was 387,310 tonnes, the closing circular stockpile inventory was 154,107 tonnes and the total saleable coal stockpile inventory at Mt Arthur Coal was 1,016,189 tonnes.

During the reporting period there were no material variations from either of the MOPs 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 1.

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. This model is in accordance 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 8. 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 8. The second largest water input to site was pumping from the Hunter River utilising water access licences. Water sourced from the Hunter River increased slightly in comparison to the previous reporting period (2,790 megalitres (ML) in FY13). There were also greater losses to entrainment due to an increase in washery rejects (2,978 ML in FY13). Mt Arthur Coal also 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 negative 158 ML. Table 9 provides a surface water inventory for the reporting period, which shows a reduction in total volume of water stored

on site during the reporting period by 278 ML, which aligns relatively closely with water inputs minus outputs.

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.

During the reporting period Mt Arthur Coal used approximately 6,960 ML of water for coal handling and processing, dust suppression, potable consumption and use in the industrial area, most of which is recycled back into the water management system. This is a reduction in water usage compared to FY13 (7,166 ML). Very 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 decreased slightly in comparison to the previous reporting period, despite the increase in production (18.7 million tonnes of CHPP washery feed in FY14 compared with 16 million tonnes in FY13), as a result of improved water usage efficiency at the CHPP. 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 the decommissioning of the main dam as the focal point of Mt Arthur Coal's site water network to provide a flexible water network system that can transfer between most site storages for maximum practical capacity and water security;
- continuing to upgrade the integrated reticulation network to enable efficient management of water resources across the site;
- continuing the Site Water Management Committee, focused on water security and water efficiency across the mine site;
- undertaking work to update and refine the site water balance model, which will be ready for use during the next reporting period;
- reviewing available water storage options and supply rates for use at site;
- commencing construction works to recover water from the new tailings dam facility. In quarter three of FY14 the trench and screen construction was completed, with pumping infrastructure to be installed during the next reporting period. Water recovery from the new tailings dam will be dependent on progression of tailings towards the return trench. In the previous reporting period approximately 315 megalitres of tailings decant water was able to be recovered over several months from the West Cut tailings dam;
- trialled and implemented a new mechanical seal at the CHPP to reduce leakage and wastage of water at the CHPP. This project will continue during the next reporting period, with replacement of two more mechanical seals planned during the next reporting period;
- commencing a CHPP thickener optimisation project to decrease water usage at the CHPP by reducing the need to manually flush the system with water;
- trialling a haul road stabilisation project to reduce water usage for dust suppression. The trial was completed during the reporting period and implementation of the full scale project is planned for the next reporting period; and
- completing the removal of staging pond in the red rock quarry dust suppression system and replacement with a direct feeding system, to optimise water retention and reduce evaporation losses from the system, for the duration of the red rock quarry project.

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

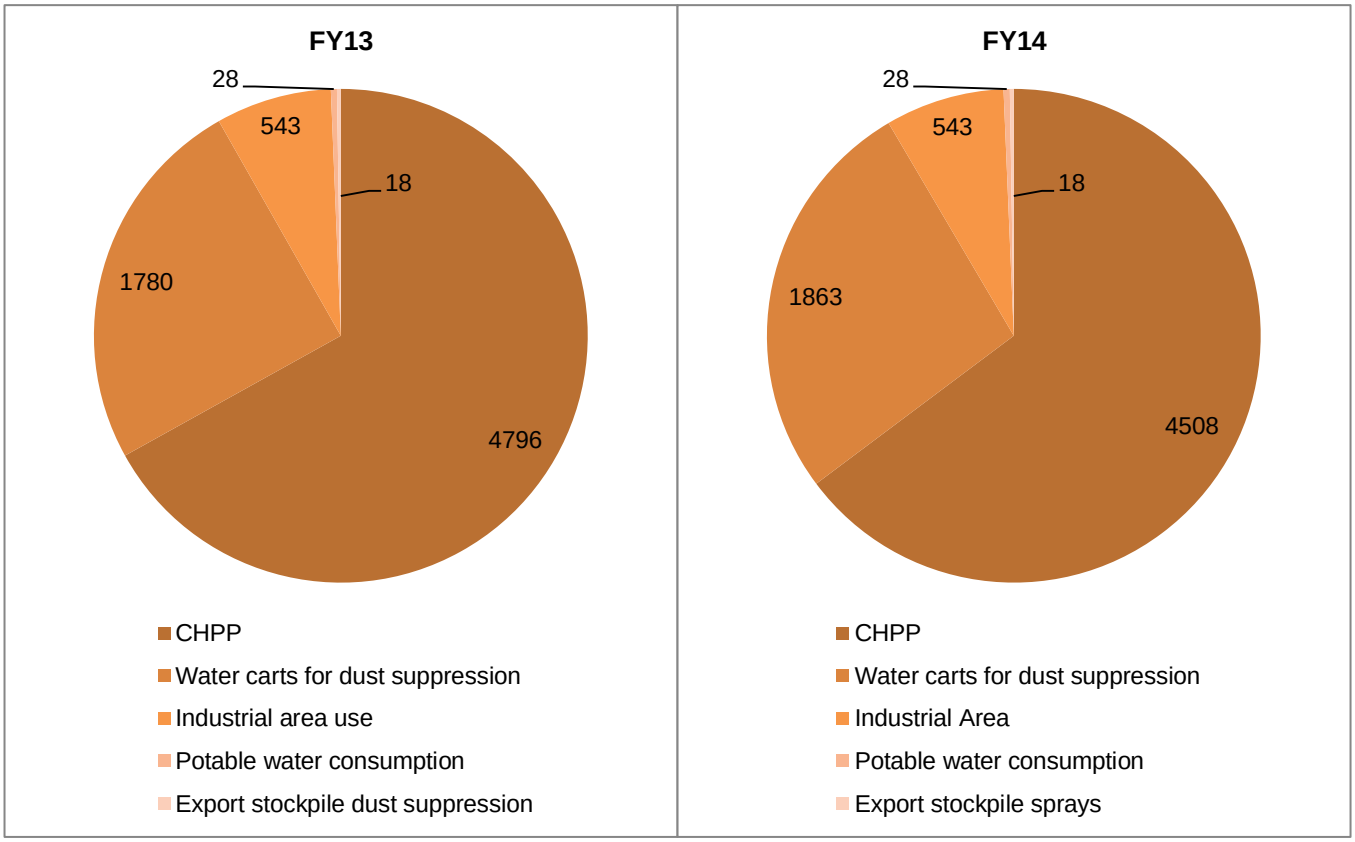


Figure 3: Composition and volumes in megalitres of Mt Arthur Coal site water usage

Table 8: 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^	668	3,063	0	3,730
		Rivers and creeks (pumped from Hunter River)	2,961	0	0	2,961
	Groundwater	Aquifer interception (inflow to the open cut areas)	0	578	0	578
		Ore entrainment	0	2,027	0	2,027
	Third party water	Contract/municipal (potable water)	28	0	0	28
		Waste water (treated effluent from Council)	0	0	674	674
	Total inputs		3,657	5,668	674	9,999
Outputs	Surface water	Discharge (to Hunter River under HRSTS)	0	0	0	0
	Other	Evaporation	3,873	0	0	3,873
		Entrainment	0	0	4,711	4,711
		Other (define)*	0	54	1,518	1,572
	Total outputs		3,873	54	6,229	10,157
					Balance	-158

^ 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 9: 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	687	521	1,296
Main dam	572	560	1,075
CHPP dirty water dam	287	353	500
Drayton void*	1,883	2,053	2,276
Belmont void	1,256	1,077	2,281
McDonalds void	2,625	2,468	4,040
Total	7,310	7,032	11,468

* 1,000 ML of existing water stored to be kept in reserve for Drayton Coal Mine.
Note: dead storage areas i.e. maximum 5ML are not included in the inventory

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 either of the MOPs related to hazardous materials management activities.

2.10 Other Infrastructure Management

The expansion of the existing tailings storage facility for the continued emplacement of coal fines (tailings), which commenced in 2012, continued in the reporting period. The tailings storage facility expansion project involves the construction of two cross-valley embankments and a series of rim embankments which will be completed in four stages over a 20-30 year period. Stage 1, to raise the tailings storage facility walls to RL 235m, commenced in 2012 and continued over the reporting period with the construction of two containment walls completed in August 2013. Stage 1 is planned for completion in 2016.

The decommissioning of the main dam also continued in the reporting period. A number of transfer lines were laid and pumps were installed to provide a flexible water network system, that can transfer between most site storages for maximum practical capacity and water security. The project is expected to be completed in the next reporting period.

Decommissioning of the disused Bayswater No. 2 infrastructure area is continuing. A Phase 2 Contamination Assessment was completed and a Remedial Action Plan for the area was developed and approved by DPE in May 2014. Project planning is currently underway for the dismantling and removal of structures which is expected to commence in FY17.

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. Approximately 77 per cent of Mt Arthur Coal's employees resided in the local government areas (LGAs) of Muswellbrook, Upper Hunter and Singleton as at 30 June 2014. This is consistent with predictions in the consolidation environmental assessment and the previous reporting period (78 per cent as at 30 June 2013).

As at 30 June 2014 Mt Arthur Coal employed 1,559 permanent and fixed-term contract employees and approximately 591 contractors on a full-time equivalent basis. This was a 4.7 per cent reduction in the number of permanent and fixed-term employees and a 2.5 per cent reduction in the number of contractors when compared to 30 June 2013 (1,636 and 606, respectively) and is consistent with the slowing of growth at Mt Arthur Coal during the reporting period, due to the current economic climate for the industry. Figure 4 shows the trend of Mt Arthur Coal employee numbers.

During the reporting period approximately 47 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 consistent with figures from the previous reporting period and the market conditions faced in the industry, it remains lower than the local recruitment figure forecast in the consolidation environmental assessment.

The ongoing economic climate in the industry and the resulting difficult market circumstances have continued to impact on the resourcing of local candidates. During the reporting period there was also a further decrease in the number of vacancies and eight per cent of new recruits hired by the operation came from other BHP Billiton assets, facing similar conditions and economic circumstances.

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. Mt Arthur Coal hired eight apprentices from the local community during the reporting period and plans to recruit a further eight for the 2015 apprenticeship program during the next reporting period. Of the 28 "entry level roles" hired by Mt Arthur Coal during the reporting period 22 were local candidates and a further five came from Maitland and Cessnock.

Recruitment opportunities were provided to local residents during the reporting period and will continue to be provided during the next reporting period. Throughout the reporting period Mt Arthur Coal posted all online advertisements under "Hunter Valley" and "Newcastle, Maitland & Hunter" locations and have also added "Hunter Valley" into the title of internet advertisements. Mt Arthur Coal adapted its "Work in progress reporting" to add the locations of candidate's residence and advertised two campaigns in the local press to encourage local applicants.

Although the economic climate remains challenging and recruitment opportunities will be reduced once again during the next reporting period, Mt Arthur Coal will continue these initiatives to promote recruitment from the local area.

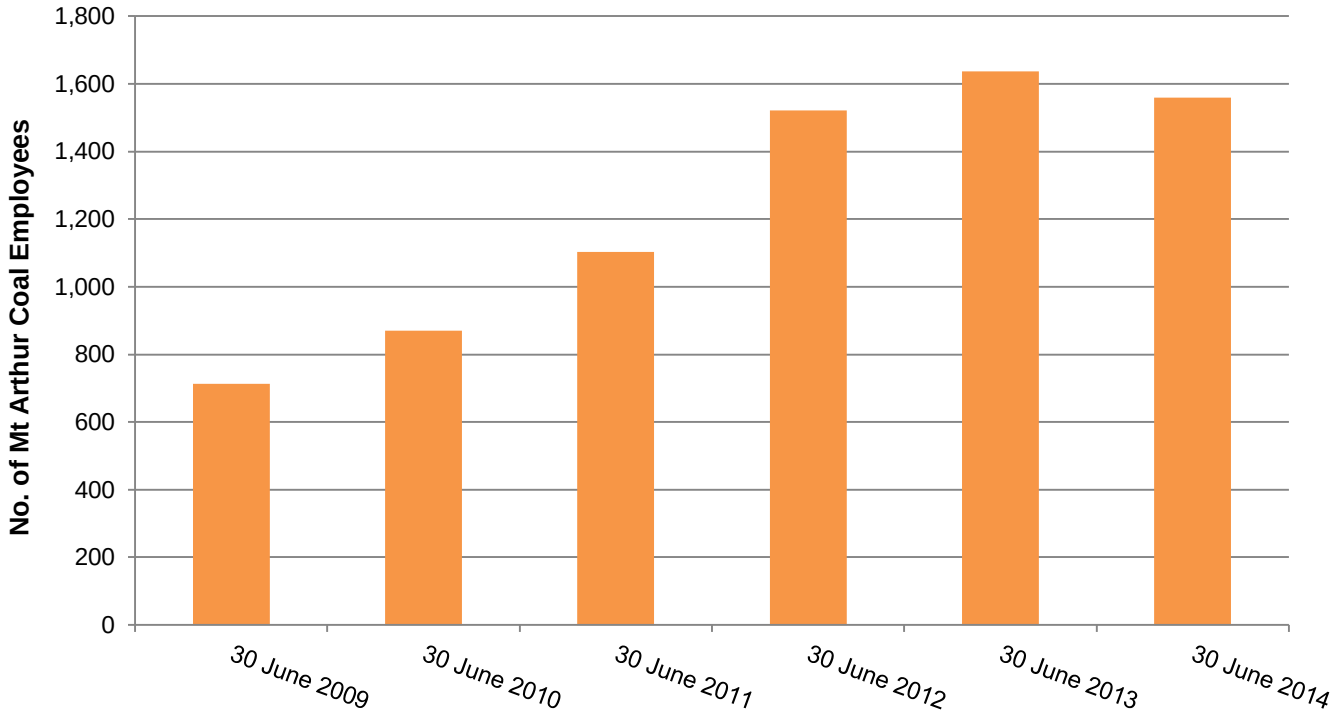


Figure 4: Mt Arthur Coal employee numbers from 30 June 2009 to 30 June 2014

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 MOPs, previous AEMRs and management plans are outlined in the following format:

- 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 the DP&E 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;
- MAC-ENC-PRO-057 Air Quality Monitoring Program; and
- MAC-PRD-PRO-122 Dust Management Procedure

Air quality is managed through 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.

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, as well as a number of gauges used for internal management purposes, surrounding Mt Arthur Coal. The locations of all depositional dust monitoring sites at Mt Arthur Coal are shown on Figure 5.

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*. Mt Arthur Coal operates three statutory HVAS units surrounding the mine site as shown in Figure 5.

Mt Arthur Coal also operates six statutory real-time dust monitors, referred to as tapered element oscillating microbalance samplers (TEOMs), which record PM_{10} levels on a continuous basis. In accordance with the approved monitoring program, two of these statutory monitoring stations were installed during the reporting period:

- Wellbrook (DC09), which commenced operating on 6 July 2013 and effectively replaced the former monitoring station at DC01 that was decommissioned in June 2013; and
- Antiene (DC07), which commenced operating on 16 December 2013.

An additional near-field, real-time air quality monitor located to the south-east of the operation was installed and commissioned in March 2014 This equipment records PM_{10} levels on a continuous basis and is used for internal management purposes and to inform operational changes in response to air quality conditions. The locations of all PM_{10} monitoring sites at Mt Arthur Coal are shown in Figure 6.

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 Mt Arthur Coal owned water carts and one hire water cart across site;
- utilising dedicated water carts for contractor projects and operations;
- using dust suppressants on haul roads;
- trialling of a dust Trigger Action Response Plan (TARP) from October 2013, with full scale implementation of the dust TARP from 1 January 2014;
- maintaining a short message service (SMS) 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.

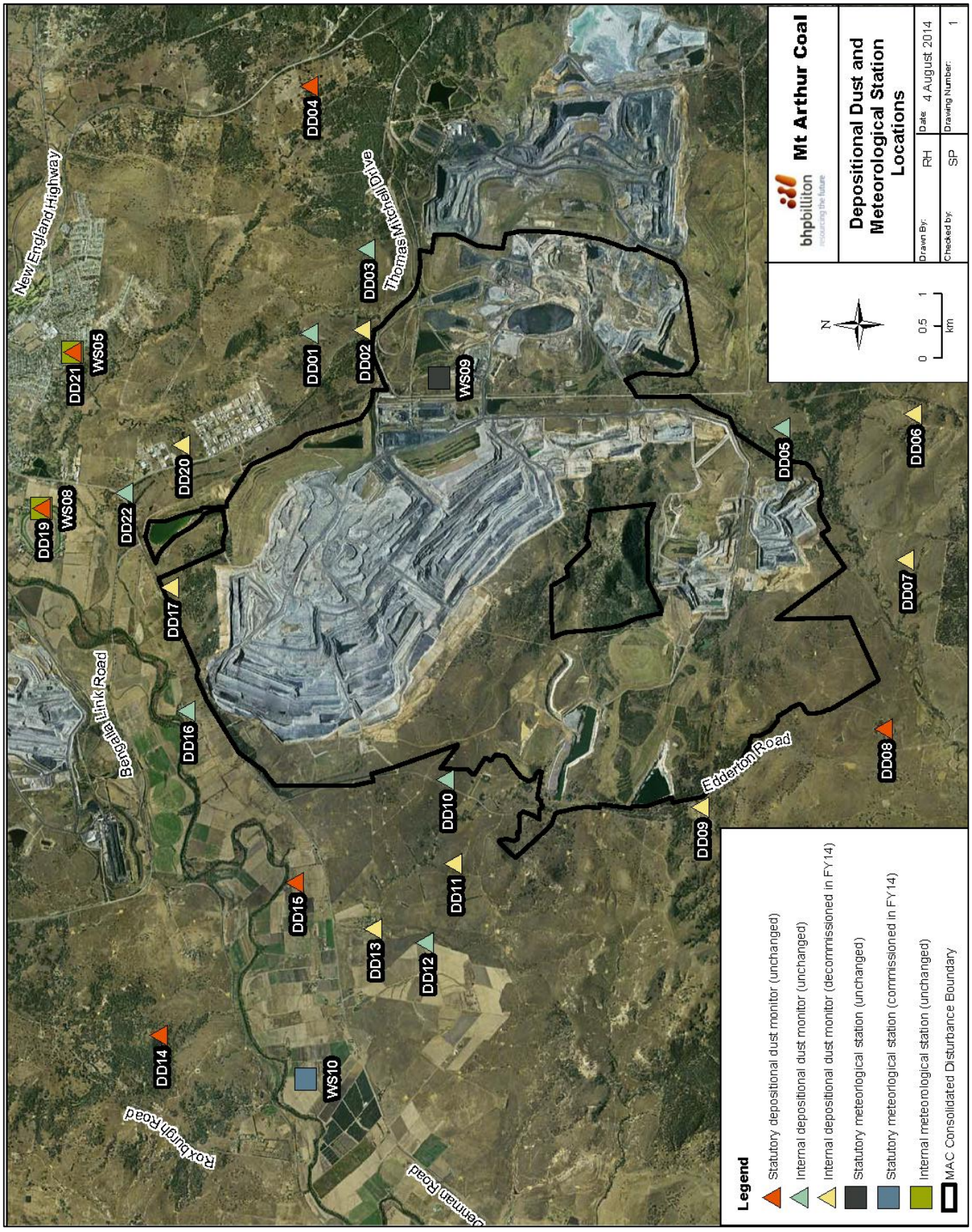


Figure 5: Mt Arthur Coal's depositional dust and meteorological monitoring locations

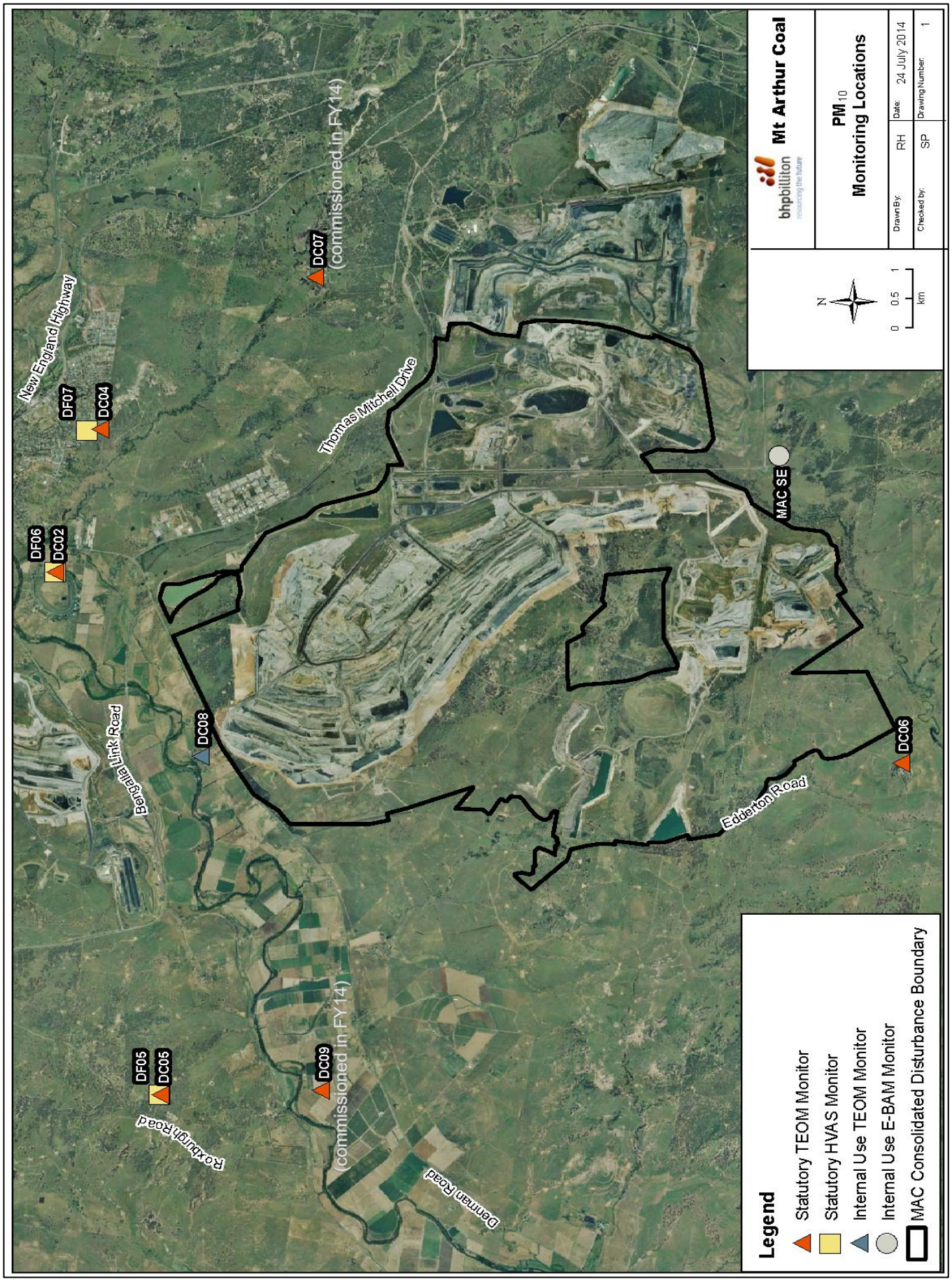


Figure 6: Mt Arthur Coal's HVAS and TEOM monitoring locations

During the reporting period Mt Arthur Coal aerial seeded approximately 100 hectares of exposed overburden not yet ready for final rehabilitation, with a season appropriate seed mix specified in the operation's Aerial Seeding Manual. This is an increase on 55 hectares aerial seeded in FY13. Due to the limited amount of rain received since seeding, limited germination has occurred. It is expected that similar results as previous years will occur with sufficient rainfall, with germination across the area without the need for cultivation or irrigation and in the absence of topsoil.

A key dust management tool implemented during the reporting period was the dust TARP developed by Mt Arthur Coal. The dust TARP is triggered when guideline monitoring conditions are exceeded. SMS alarms are sent to operational supervisors, who follow progressive steps to alter or cease operations to reduce and maintain dust levels at acceptable levels.

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 carried out an investigation to determine optimum dust suppressant products for use on its haul roads. This included the trial and assessment of six different suppressant products. As a result of the investigation, Mt Arthur Coal now uses an improved liquid polymer product on its haul roads. Mt Arthur Coal is also undertaking a more extensive trial of a bitumen product which has been applied to 7km of haul roads.

Mt Arthur Coal participated in the trial of a weather prediction tool in the reporting period as an initiative of the Upper Hunter Mining Dialogue to assist dust management. This has been incorporated into operational preparation and contingency planning to appropriately manage dust during forecast adverse weather conditions.

During the reporting period Mt Arthur Coal continued to be a signatory to the Upper Hunter Air Quality Monitoring Network, 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 contributed in the Upper Hunter Mining Dialogue emissions and health working group. 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

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 in 2011, 2016 and 2022 calendar years. Progression in the pit during the reporting period is considered to be most similar to the pit shell modelled for 2016, particularly for mine progression north towards Denman Road. However, the production profile during the reporting period is partway between the modelled 2011 and 2016 scenarios, as follows, hence neither model is strictly representative of current conditions:

- run-of-mine coal mined:
    - 2011 model included 16.7 million tonnes;
    - 2016 model included 32.0 million tonnes;
    - approximately 25.7 million tonnes of run-of-mine coal was mined during the reporting period;
- overburden moved:

- 2011 model included 98.4 million bcm;
- 2016 model included 169.15 million bcm; and
- approximately 115.6 million bcm of overburden was moved during the reporting period.

Air dispersion modelling predictions based on the 2016 model have been evaluated against data for the reporting period in this section.

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 2. Depositional dust gauge data capture rates for the reporting period were 100 per cent at all statutory sites.

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. Annual average depositional dust results remained relatively consistent with FY13, only showing slight differences. Results for the reporting period were slightly higher than the FY13 annual average at half the monitors (DD04, DD14 and DD19) and slightly lower than the FY13 annual average at the other half of the monitors (DD08, DD15 and DD21), as shown in Table 10.

Table 10: Comparison of annual average deposited dust results

Site name	Site reference	FY14 annual average g/m^2/month	FY13 annual average g/m^2/month	FY12 annual average g/m^2/month	FY11 annual average g/m^2/month
Antiene	DD04	2.2	1.9	1.7	2.1
Edderton Homestead	DD08	1.6	2.0	1.3	1.0
Roxburgh Road	DD14	2.1	1.9	1.5	1.3
Denman Road West	DD15	3.1	3.6	2.7	1.8
Sheppard Avenue	DD19	3.7	3.4	2.8	2.9
South Muswellbrook	DD21	2.0	2.2	1.7	1.6

The consolidation environmental assessment predicted that no exceedances of the annual average dust deposition above 4 g/m^2/month would occur for the 2016 modelled scenario. Monitoring results for the reporting period support the predicted results, as no exceedances occurred.

Figure 7 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 11. 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.

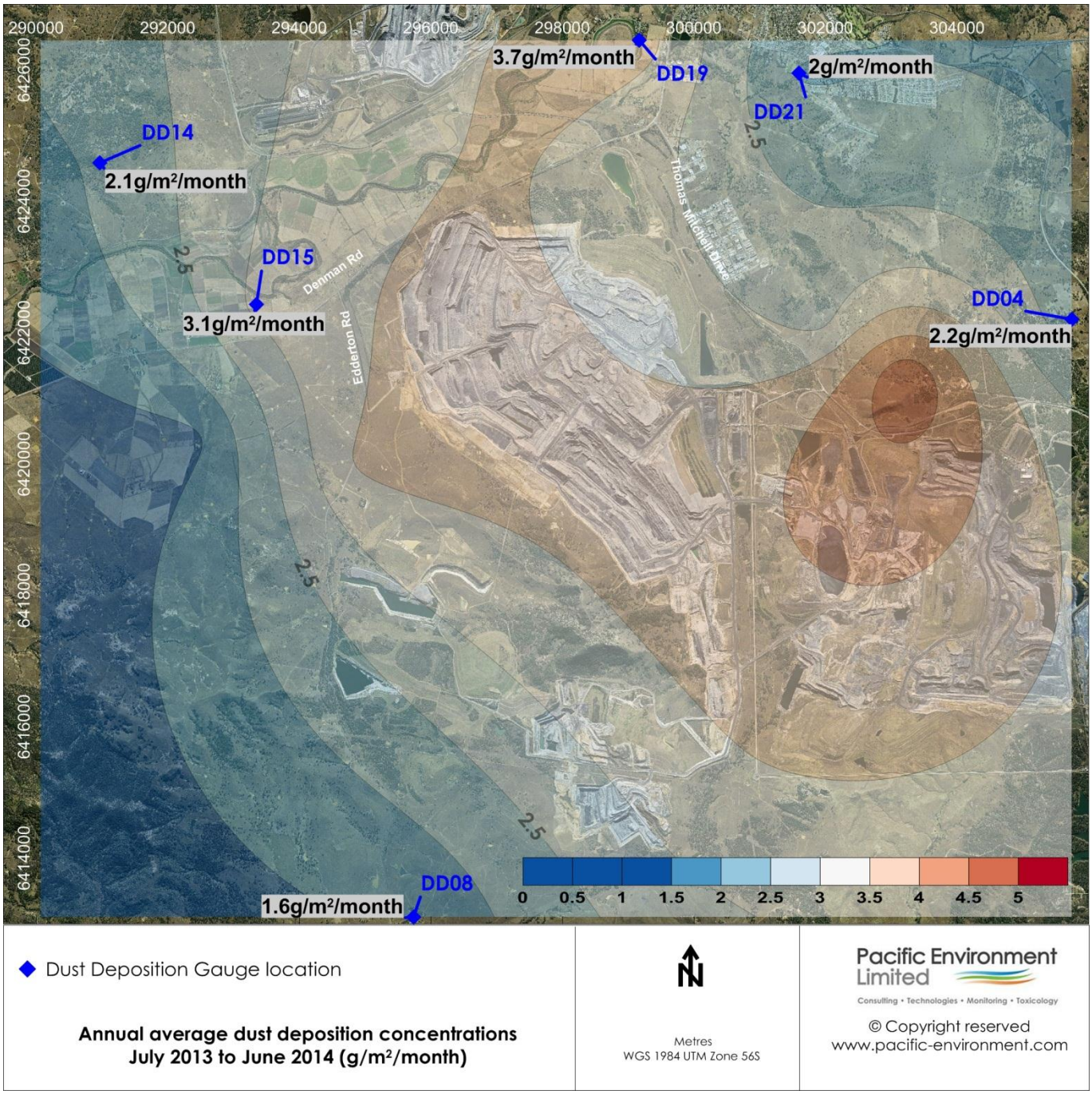


Figure 7: Annual depositional dust concentration

Table 11: Summary of contaminated depositional dust results

Month	Site reference	Source of sample contamination as determined by independent contractor
August 2013	DD08	Insects, bird droppings and vegetation
November 2013	DD15	Insects and vegetation
February 2014	DD15	Insects, vegetation and other material
April 2014	DD08	Insects, bird droppings and vegetation

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 13 and plots are provided in Appendix 2. 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 nine times on eight 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 to infer Mt Arthur Coal's contribution. Calculated on 15 minute wind direction data, 1.04 per cent of the overall result is assigned to Mt Arthur Coal for each 15 minute occasion when the monitor is downwind of the operation. Table 12 shows the wind directions used for each monitor to calculate Mt Arthur Coal's contribution to HVAS results. 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 14.

During the reporting period Mt Arthur Coal's HVAS monitors DF05 and DF07 remained below the long-term annual impact assessment criteria. However, monitor DF06 exceeded the long-term annual impact assessment criteria in February, March and April 2014, when air emissions from all sources were considered, as detailed in Table 14. Annual averages were slightly higher for each monitor when compared to results from previous financial years. This change is expected with the increase in operations at the northern end of the mine.

Air dispersion modelling predictions based on the 2016 model have been evaluated against data for the reporting period and previous financial years, as summarised in Table 15. The 2016 predicted annual average PM_{10} contours compared with the annual average concentration measured at each HVAS monitor are shown in Figure 2A in Appendix 2. The monitored data is below the predicted cumulative annual average PM_{10} concentrations at sites DF05 and DF07, however annual average results for DF06 exceed predictions. The elevated annual average result at DF06 is primarily due to a single high result on 23 December 2013, which was not attributable to Mt Arthur Coal. When Mt Arthur Coal's calculated contribution is used on the occasions when the 24-hour result recorded at DF06 exceeded the 24-hour limit of 50 µg/m^3, then the annual average is calculated to 22 µg/m^3. With the exception of DF06, the measured concentrations of monitoring results at all locations in FY14 were between four and 21 per cent lower than the predicted cumulative results from the 2016 model.

Table 12: Wind directions used to calculate Mt Arthur Coal's contribution to HVAS results

Site name	Site reference	Wind direction minimum (degrees)	Wind direction maximum (degrees)
Roxburgh Road	DF05	100	143
Sheppard Avenue	DF06	153	230
South Muswellbrook	DF07	170	250

Table 13: Summary of HVAS 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
Roxburgh Road	DF05	1	62*	19.8
Sheppard Avenue	DF06	3	128*	29.5

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
South Muswellbrook	DF07	6	46	22.5

* 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 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
8/7/2013	Sheppard Avenue	DF06	71.0	3.0	This monitor is located to the north-north east of the operation near Muswellbrook Racecourse. Wind direction was predominately from the north west on this day. During approximately four 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. When compared to other HVAS monitors, this result is inconsistent and can be attributed to a localised source.
30/9/2013	Sheppard Avenue	DF06	56.0	0.0	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 zero per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
23/12/2013	Sheppard Avenue	DF06	128.0	0.0	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 zero per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
29/12/2013	Roxburgh Road	DF05	62.0	34.2	This monitor is located north west of the operation. Wind direction was predominately from the north west until 11 am and from the south east for the remainder of the day. During approximately 55 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
16/1/2014	Roxburgh Road	DF05	56.0	26.8	This monitor is located north west of the operation. Wind direction was predominately from the south east, with winds from the north west between 9 am and 2 pm. During approximately 48 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
16/1/2014	Sheppard Avenue	DF06	68.0	5.7	This monitor is located to the north-north east of the operation. Wind direction was predominately from the south east, with winds from the north west between 9 am and 2 pm. During approximately eight per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
22/1/2014	Sheppard Avenue	DF06	52.0	0.0	This monitor is located to the north-north east of the operation. Wind direction was predominately from the south east on this day. During approximately 0 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
3/2/2014	Sheppard Avenue	DF06	60.0	30.0	This monitor is located to the north-north east of the operation. Wind direction was predominately from the south to south east on this day. During approximately 50 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
Feb-14	Sheppard Avenue	DF06	Annual Average: 31.3	Annual Average: 22.2	This monitor is located to the north-north east of the operation. This monitor recorded elevated annual average PM_{10} results over 30 µg/m^3 from 3 February. Further investigation revealed that if Mt Arthur Coal's calculated contribution is used on the occasions when the 24-hour result recorded at DF06 exceeded the 24-hour limit of 50 µg/m^3, then the annual average is calculated to be less than the impact assessment criteria of 30 µg/m^3.
Mar-14	Sheppard Avenue	DF06	Annual Average: 30.2	Annual Average: 21.1	This monitor is located to the north-north east of the operation. This monitor recorded elevated annual average PM_{10} results over 30 µg/m^3 for March. Further investigation revealed that if Mt Arthur Coal's calculated contribution is used on the occasions when the 24-hour result recorded at DF06 exceeded the 24-hour limit of 50 µg/m^3, then the annual average is calculated to be less than the impact assessment criteria of 30 µg/m^3.

Date of event	Site name	Site reference	Recorded result µg/m^3	Mt Arthur Coal's contribution µg/m^3	Explanation of results
Apr-14	Sheppard Avenue	DF06	Annual Average: 30.1	Annual Average: 21.9	This monitor is located to the north-north east of the operation. This monitor recorded elevated annual average PM_{10} results over 30 µg/m^3 for April. Further investigation revealed that if Mt Arthur Coal's calculated contribution is used on the occasions when the 24-hour result recorded at DF06 exceeded the 24-hour limit of 50 µg/m^3, then the annual average is calculated to be less than the impact assessment criteria of 30 µg/m^3.
28/5/2014	Sheppard Avenue	DF06	55.0	0.0	This monitor is located to the north-north east of the operation. Wind direction was predominately from the south east on this day. During approximately zero 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 HVAS PM_{10} results

Site name	Site reference	2016 – predicted cumulative µg/m^3	FY14 actual annual average µg/m^3	FY13 actual annual average µg/m^3	FY12 actual annual average µg/m^3	FY11 actual annual average µg/m^3
Roxburgh Road	DF05	25	20	19	16	15
Sheppard Avenue	DF06	26	29*	27	20	19
South Muswellbrook	DF07	23	22	21	17	19

* When Mt Arthur Coal's calculated contribution is used on the occasions when the 24-hour result recorded at DF06 exceeded the 24-hour limit of 50 µg/m^3, then the annual average is calculated to 22 µg/m^3

Tapered Element Oscillating Microbalance Samplers

TEOM data capture rates for the reporting period were below 100 per cent at all statutory sites, as discussed in Table 16. A summary of the results from the statutory real-time PM_{10} TEOM monitoring sites for the reporting period is provided in Table 18 and plots are provided in Appendix 2.

Table 16: Data capture rates for TEOM PM_{10} monitors

Site name	Site reference	Data capture rate (per cent)	Reason data not captured
Sheppard Avenue	DC02	98	DC02 did not record valid/sufficient data for: • one day in January 2014 due to a power outage; • three days in February 2014, two days due to erratic moisture readings and one day due to equipment calibration; and • four days in April 2014 due to a power outage.
South Muswellbrook	DC04	99	DC04 did not record valid/sufficient data for: • two days in August 2013 due to high negative readings following a filter change; • one day in January 2014 due to a power outage; and • one day in February 2014 due to equipment calibration.
Roxburgh Road	DC05	97	DC05 did not record valid/sufficient data for: • two days in November 2013 due to a power outage; • one day in March 2014 due to a temperature/relative humidity sensor failure; and • seven days in April 2014 due to a power outage.

Site name	Site reference	Data capture rate (per cent)	Reason data not captured
Edderton Homestead	DC06	93	DC06 did not record valid/sufficient data for: • twenty-four days in July 2013 due to a temperature sensor fault; • one day in November 2013 due to a power outage; and • two days in February 2014 due to equipment calibration.
Antiene	DC07	86	DC07 did not record valid data for: • nine days in February 2014 and 14 consecutive days in March 2014 due to a temperature/relative humidity sensor failure; and • a subsequent four days in March due to a temperature sensor issue.
Wellbrook	DC09	99	DC09 did not record valid/sufficient data for: • one day in January 2014 due to erratic moisture readings; and • four days in February 2014, two days due to a power outage and a subsequent two days due to equipment calibration.

During the reporting period the short term 24-hour impact assessment criteria of 50 µg/m^3 was exceeded 31 times on 25 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. Table 17 shows the wind directions used for each monitor to calculate Mt Arthur Coal's contribution to TEOM results. 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 19.

During the reporting period Mt Arthur Coal's statutory TEOM monitoring sites remained below the long-term annual impact assessment criteria of 30 µg/m^3. Annual averages at DC02 and DC04 were slightly higher when compared to results from previous financial years, however at DC05 and DC06 the annual averages were slightly lower when compared to results from previous financial years. Note that a significant number of recorded exceedances of the short term 24-hour impact assessment criteria at DC02 (23 out of 31), which were all not attributable to Mt Arthur Coal's operation, have contributed to a higher annual average for the reporting period than would otherwise have occurred.

Air dispersion modelling predictions based on the 2016 model have been evaluated against data for the reporting period and previous financial years, as summarised in Table 20. The monitored data is below the predicted cumulative annual average PM_{10} concentrations at all sites. The 2016 predicted annual average PM_{10} contours compared with the annual average concentration measured at each TEOM monitor are shown in Figure 2B in Appendix 2. The measured concentrations of monitoring results at all locations in FY14 were between eight and 30 per cent lower than the predicted cumulative results from the 2016 model.

Table 17: Wind directions used to calculate Mt Arthur Coal's contribution to TEOM results

Site name	Site reference	Wind direction minimum (degrees)	Wind direction maximum (degrees)
Sheppard Avenue	DC02	153	230
South Muswellbrook	DC04	170	250
Roxburgh Road	DC05	100	143
Edderton Homestead	DC06	359	76
Antiene	DC07	188	282
Wellbrook	DC09	75	135

Table 18: 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
Sheppard Avenue	DC02	2.1	157.3*	23.4
South Muswellbrook	DC04	5.0	51.1*	20.2
Roxburgh Road	DC05	1.6	54.1*	17.6
Edderton Homestead	DC06	1.4	114.9*	16.4
Antiene	DC07	3.2	40.7	15.2
Wellbrook	DC09	1.0	63.2*	17.0

* 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 19: 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
29/8/2013	Roxburgh Road	DC05	54.1	25.6	This monitor is located to the north west of the operation. Wind direction was predominately from the south east on this day. During approximately 36 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
8/9/2013	Roxburgh Road	DC05	54.0	44.4	This monitor is located to the north west of the operation. Wind direction was predominately from the south east on this day. During approximately 65 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
10/9/2013	Sheppard Avenue	DC02	67.7	0.0	This monitor is located to the north-north east of the operation near Muswellbrook Racecourse. Wind direction was predominately from the north west on this day. During approximately zero 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.
13/10/2013	Sheppard Avenue	DC02	70.7	0.5	This monitor is located to the north-north east of the operation near Muswellbrook Racecourse. Wind direction was predominately from the north west on this day. During approximately two per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
17/10/2013	Sheppard Avenue	DC02	54.3	0.4	This monitor is located to the north-north east of the operation near Muswellbrook Racecourse. Wind direction was predominately from the north west on this day. During approximately one per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. There were bushfires throughout the region on this day, the closest being at Blackjack Mountain north west of Mt Arthur Coal, which impacted on local air quality.
17/10/2013	Edderton Homestead	DC06	52.3	0.4	This monitor is located to the south west of the operation. Wind direction was predominately from the north west on this day. During approximately one per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. There were bushfires throughout the region on this day, the closest being at Blackjack Mountain north west of Mt Arthur Coal, which impacted on local air quality.
17/10/2013	Wellbrook	DC09	57.9	0.0	This monitor is located to the west of the operation. Wind direction was predominately from the north west on this day. During approximately zero per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. There were bushfires throughout the region on this day, the closest being at Blackjack Mountain north west of Mt Arthur Coal, which impacted on local air quality.

Date of event	Site name	Site reference	Recorded result µg/m^3	Mt Arthur Coal's contribution µg/m^3	Explanation of results
21/10/2013	Sheppard Avenue	DC02	53.9	1.7	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 two per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. There were bushfires throughout the region on this day, the closest being at Blackjack Mountain north west of Mt Arthur Coal, which impacted on local air quality.
22/10/2013	Sheppard Avenue	DC02	73.2	9.6	This monitor is located to the north-north east of the operation near Muswellbrook Racecourse. Wind direction was predominantly from the north west on this day. During approximately eight 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. There were bushfires throughout the region on this day, the closest being at Blackjack Mountain north west of Mt Arthur Coal, which impacted on local air quality.
22/10/2013	Wellbrook	DC09	52.2	4.6	This monitor is located to the west of the operation. Wind direction was predominately from the north west on this day. During approximately five per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. There were bushfires throughout the region on this day, the closest being at Blackjack Mountain north west of Mt Arthur Coal, which impacted on local air quality.
23/10/2013	Sheppard Avenue	DC02	51.7	1.2	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 one per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. There were bushfires throughout the region on this day, the closest being at Blackjack Mountain north west of Mt Arthur Coal, which impacted on local air quality.
25/10/2013	Sheppard Avenue	DC02	53.5	5.7	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 11 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. There were bushfires throughout the region on this day, the closest being at Blackjack Mountain north west of Mt Arthur Coal, which impacted on local air quality.
28/10/2013	Sheppard Avenue	DC02	54.6	4.4	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 10 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. There were back burning operations being undertaken throughout the region on this day, which impacted on local air quality.
29/10/2013	Sheppard Avenue	DC02	69.2	9.7	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 25 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. There were back burning operations being undertaken throughout the region on this day, which impacted on local air quality.
3/11/2013	Sheppard Avenue	DC02	69.3	0.4	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 one per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
8/11/2013	Sheppard Avenue	DC02	73.1	6.0	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 five per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
8/11/2013	South Muswellbrook	DC04	51.1	8.3	This monitor is located to the north east of the operation. Wind direction was predominately from the north west on this day. During approximately eight per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.

Date of event	Site name	Site reference	Recorded result µg/m^3	Mt Arthur Coal's contribution µg/m^3	Explanation of results
8/11/2013	Edderton Homestead	DC06	114.9	1.5	This monitor is located to the south west of the operation. Wind direction was predominately from the north west on this day. During approximately three per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
8/11/2013	Wellbrook	DC09	63.2	0.0	This monitor is located to the west of the operation. Wind direction was predominately from the north west on this day. During approximately zero per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
11/12/2013	Sheppard Avenue	DC02	51.1	6.4	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 14 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
19/12/2013	Sheppard Avenue	DC02	50.2	12.9	This monitor is located to the north-north east of the operation. Wind direction was predominately from the south east on this day. During approximately 23 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
20/12/2013	Sheppard Avenue	DC02	88.3	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 two per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
21/12/2013	Sheppard Avenue	DC02	52.2	2.2	This monitor is located to the north-north east of the operation. Wind direction was predominately from the north west until 9 am and south east for the remainder of the day. During approximately six per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
23/12/2013	Sheppard Avenue	DC02	63.6	0.0	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 zero per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
2/1/2014	Sheppard Avenue	DC02	57.8	0.3	This monitor is located to the north-north east of the operation. Wind direction was predominately from the south east on this day. During approximately six per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
19/1/2014	Sheppard Avenue	DC02	51.2	2.7	This monitor is located to the north-north east of the operation. Wind direction was predominately from the south east on this day. During approximately six per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
4/2/2014	Sheppard Avenue	DC02	51.9	10.8	This monitor is located to the north-north east of the operation. Wind direction was predominately from the south east on this day. During approximately 17 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.
10/2/2014	Sheppard Avenue	DC02	51.0	4.8	This monitor is located to the north-north east of the operation. Wind direction was predominately from the south east on this day. During approximately 11 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations.

Date of event	Site name	Site reference	Recorded result µg/m^3	Mt Arthur Coal's contribution µg/m^3	Explanation of results
21/4/2014	Sheppard Avenue	DC02	157.3	107.5*	This monitor is located to the north-north east of the operation near Muswellbrook Racecourse. Wind direction was predominately from the north west on this day. During approximately nine 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. PM_{10} data at DC02 showed a spike in levels between 5 pm and 7 pm. Discussions with Muswellbrook Race Club confirmed that the last race was held at approximately 4:45 pm after which there was an increase in traffic on the unsealed road near the monitor. All other real-time monitors recorded results below the 24-hour impact assessment criteria and Mt Arthur Coal did not receive any complaints on this day. It is considered that the elevated result was caused by a localised source and not influenced by operations at Mt Arthur Coal.
2/5/2014	Sheppard Avenue	DC02	64.4	0.0	This monitor is located to the north-north east of the operation near Muswellbrook Racecourse. Wind direction was predominately from the north on this day. During approximately zero 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.
13/6/2014	Sheppard Avenue	DC02	71.3	6.8	This monitor is located to the north-north east of the operation near Muswellbrook Racecourse. Wind direction was predominately from the north in the morning and from the east in the afternoon 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.

* Investigation determined that the elevated contribution was attributable to a localised source.

Table 20: Comparison of predicted and actual annual average TEOM PM_{10} results

Site name	Site reference	2016 – predicted cumulative µg/m^3	FY14 actual annual average µg/m^3	FY13 actual annual average µg/m^3	FY12 actual annual average µg/m^3	FY11 actual annual average µg/m^3
Sheppard Avenue	DC02	26	23	22	16	17
South Muswellbrook	DC04	22	20	19	13	14
Roxburgh Road	DC05	25	18	19	10	3
Edderton Homestead	DC06	22	16	17	15	18
Antiene*	DC07	20	15	-	-	-
Wellbrook*	DC09	21	17	-	-	-

* Installed in FY14

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, in accordance with the approved air quality monitoring program. 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 21. The highest annual average TSP result was 58.6 µg/m^3 at DC02. TSP results at DC02 and DC04 were slightly higher when compared to results from previous financial years, however at DC05 and DC06 the annual averages were slightly lower when compared to results from previous financial years. Note that a significant number of recorded exceedances of the short term 24-hour impact assessment criteria at DC02 (23 out of 31), which were all not attributable to Mt Arthur Coal's operation, have contributed to a higher annual average for the reporting period than would otherwise have occurred.

Table 21: Summary of TSP results

Site name	Site reference	FY14 annual average µg/m^3	FY13 annual average µg/m^3	FY12 annual average µg/m^3
Sheppard Avenue	DC02	58.6	54.1	40.7
South Muswellbrook	DC04	50.5	47.8	33.7
Roxburgh Road	DC05	43.9	46.5	25.5
Edderton Homestead	DC06	40.9	42.6	37.1
Antiene*	DC07	37.9	-	-
Wellbrook*	DC09	42.5	-	-

* Installed in FY14

Dust-related Community Complaints

During the reporting period nine per cent of the total complaints received related to dust, as shown in Table 22 along with a comparison to the previous financial year. There was also a reduction in the number of dust complaints received during the reporting period compared with the previous reporting period, which is a positive reflection on Mt Arthur Coal's air quality control measures, including implementation of the dust TARP.

For each of the complaints received that were not anonymous, real-time air quality monitoring results at the nearest monitor to the caller were within statutory limits. Seven anonymous complaints were received through third parties such as the EPA and DPE. All real-time monitors were assessed for these complaints and were within statutory limits with the exception of an elevated 24 hour TEOM result recorded at the Sheppard Avenue monitor on 13 October 2013 when three anonymous complaints were received through the EPA. An investigation determined that during approximately two per cent of the day this monitor was located downwind of Mt Arthur Coal's operations and Mt Arthur Coal's contribution was below statutory limits, as discussed in Table 19.

Table 22: Dust complaint statistics at Mt Arthur Coal

Dust complaints	FY14	FY13	FY12
Dust complaints received	24	44	10
Dust complaints received, as a percentage of total complaints	9%	19%	8%

As shown in Figure 8, the majority of dust-related complaints in FY14 were received during spring and summer, from September 2013 to March 2014, which correlates to the warmer, drier and windier months and is comparable to FY13 dust complaint trends.

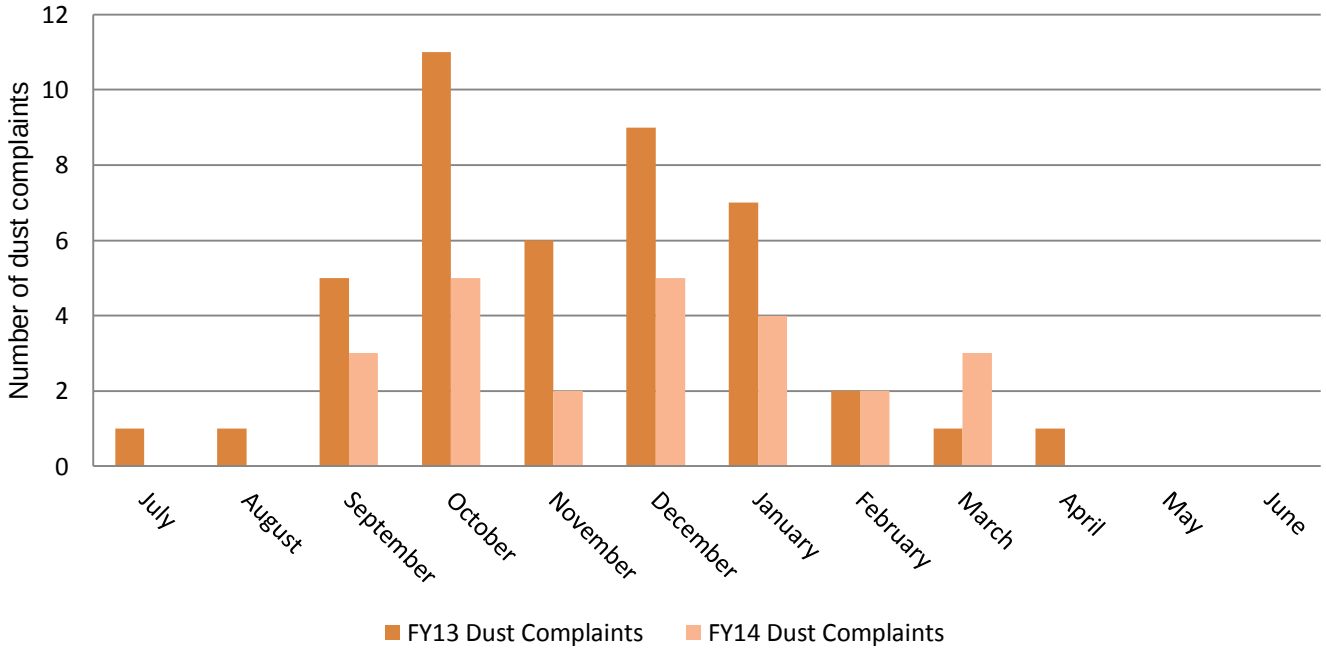


Figure 8: Trend of dust complaints received during FY14 and FY13

3.1.3 Reportable Incidents

All elevated results listed in Table 14 and Table 19 were reported to the DP&E 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 request from the EPA on 11 February 2014 to show cause for dust generation on 20 December 2013. This was in relation to alleged wheel generated dust from equipment transporting soil to a bund under construction close to Mt Arthur Coal's northern boundary. The affected operations were ceased immediately upon notification by the EPA. Mt Arthur Coal's investigation determined that wheel generated dust during the transportation of material was adequately managed and some dust, within acceptable levels, was generated from the placement of soil for the construction of the bund. TEOM monitors were within the consolidated project approval limits at the time and wind direction was from the north-north west indicating that any dust generated would have headed away from the boundary and toward the active mining area.

Mt Arthur Coal received a penalty infringement notice from the DP&E on 27 June 2014 for a failure to comply with condition 23a of the consolidation project approval, to implement best practice air quality management, by carrying out dumping operations on an elevated and exposed area during adverse weather conditions on 24 June 2014. Dumping activities at elevated and exposed areas of the mine were ceased immediately upon notification by the DP&E. On the day of the inspection, all real-time air quality monitors remained below 24 hour regulatory limits. Following an investigation into the incident, wind speed triggers for SMS alarms were set to a lower wind speed to provide sufficient warning and time to alter operations and prevent a reoccurrence of the incident.

3.1.4 Further Improvements

As discussed in Section 1.1.3, Mt Arthur Coal undertook work during the reporting period for pollution studies and reduction programs required by EPL 11457 conditions U1, U2 and U3. These pollution reduction programs (PRPs) were focused on minimising particulate matter through implementing best practice measures to control wheel generated dust and dust generated by disturbing and handling overburden. Mt Arthur Coal submitted the report required by EPL Condition U3 to the EPA on 14 April

2014 and is currently preparing reports required by Conditions U1 and U2, to be submitted to the EPA during the next reporting period.

Mt Arthur Coal is also 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 and removed in March 2013. During the reporting period Mt Arthur Coal undertook a trial to investigate the dust reducing properties of six different suppressants. As a result of the investigation, Mt Arthur Coal now uses an improved liquid polymer product on its haul roads and is undertaking a more extensive trial of a bitumen product which has been applied to 7km of haul roads.

In the next reporting period Mt Arthur Coal will complete a trial for a more advanced predictive dust model. This model builds upon the existing weather prediction components by integrating dust dispersion modelling to predict maximum one hour PM_{10} concentration averages at various receptors surrounding the mine site. The model will be used for operational preparation and contingency planning to appropriately manage dust during forecast adverse weather conditions.

An external specialist review of the aerial seeding program will be conducted during the next reporting period to identify improvement opportunities.

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 (ESCP);
- MAC-ENC-PRO-061 Surface Water Monitoring Program; and
- MAC-ENC-PRO-063 Surface and Ground Water Response Plan.

Minor amendments were made to some monitoring locations in the Surface Water Monitoring Program during the reporting period, approved by the DP&E on 16 April 2014.

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 is 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 low during the reporting period at all statutory sites, with no reportable exceedances. These recorded results were still relatively low compared with results from previous financial years. TSS results are discussed further in Section 3.3 and results are presented in Appendix 3. 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

Between approximately 5 pm and 6 pm on Friday 28 March 2014, a rainfall event resulted in surface water runoff leaving the Mt Arthur Coal boundary at two low lying points along Denman Road. Water passed across Denman Road eventually dispersing onto Mt Arthur Coal-owned property adjacent to the mine. Denman Road remained passable with traffic movement slowed during the event for approximately one hour. The likely pollutant discharged during this incident was suspended solids from soils. On the day prior to the incident significant rainfall had occurred, which had saturated the ground and catchment area. A significant amount of rain also fell immediately prior to and during the incident, generating the large volume of surface water runoff. In accordance with the *Protection of the Environment Operations* (POEO) *Act 1997*, Mt Arthur Coal immediately initiated the site's Pollution Incident Response Management Plan (PIRMP) and notified the relevant authorities

At approximately 10 am on 4 April 2014 after a rainfall event, surface water runoff left the Mt Arthur Coal boundary at three low lying points along Denman Road. Water passed underneath Denman Road via culverts and shallowly across Denman Road for approximately 15 minutes dispersing onto Mt Arthur Coal-owned property adjacent to the mine. In accordance with the *POEO Act 1997*, Mt Arthur Coal immediately initiated the site's PIRMP and notified the relevant authorities.

Investigations into these two events determined that the erosion and sediment controls in place at the time of these incidents had not adequately considered design capacities as per the mine's approved ESCP. Specifically, two sediment dams identified in the ESCP had not been constructed prior to disturbance within the two catchments. Controls in place at the time of the incidents included sediment fencing along the boundary fence, hay bales in low lying areas, three rock-lined outlets installed along the visual bund along the site boundary, two small sediment dams installed along the flow paths, use of an existing farm dam as a sediment dam and vegetation established along the visual bund.

Since the incidents, additional controls and enhancements to existing controls have been put in place to reduce the level of suspended solids and minimise surface water runoff leaving the site boundary including regular inspections of the Denman Road culverts, installation of new sediment fencing and hay bales, installation of rock check dams to reduce water velocity along flow paths, seeding of exposed soil to reduce erosion risk , construction of sediment dams in accordance with the approved ESCP and installation of pumps on sediment dams to maintain capacity.

Mt Arthur Coal received a penalty infringement notice from the DP&E on 24 April 2014 regarding these two surface water runoff incidents in March and April 2014.

3.2.4 Further Improvements

Consistent with commitments made in the consolidation environmental assessment, surface water runoff 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).

As a result of the surface water runoff incidents detailed above, Mt Arthur Coal is in progress of making some amendments to the internal ground disturbance permit process, risk assessment processes around land management and the current topsoil stripping and rehabilitation schedule, to include adequate consideration and time for the installation of appropriate erosion and sediment controls.

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;
- MAC-ENC-PRO-063 Surface and Ground Water Response Plan; and
- MAC-ENC-PRO-032 Water Management.

The MAC-ENC-PRO-032 Water Management is a tactical document and has been introduced to better define site personnel responsibilities for the management of water onsite. As previously mentioned in Section 3.2.1, minor amendments were made to some monitoring locations in the MAC-ENC-PRO-061 Surface Water Monitoring Program during the reporting period, approved by the DP&E on 16 April 2014.

Water quality upstream and downstream of Mt Arthur Coal's operation is currently monitored by an independent consultant at seven statutory monitoring sites, including Mt Arthur Coal's licensed discharge point. In accordance with the approved monitoring program, the following two former statutory monitoring sites were removed from the program in April 2014:

- SW13 at Fairford Creek - removed due to the construction of the alluvial cut-off wall and flood levy along the site boundary near Denman Road; and
- SW18 at Whites Creek Upstream – removed as the site did not provide an indication of water quality of upstream Whites Creek.

The following four sites were added to the monitoring program in April 2014.

- SW33 at Whites Creek Wetland – to monitor water quality downstream of Mt Arthur Coal activities.
- SW34 at the Hunter River (Keys Bridge) upstream of Mt Arthur Coal's discharge point - to monitor water quality upstream of Mt Arthur Coal activities.
- SW35 at the Hunter River downstream of Mt Arthur Coal's discharge point - to monitor water quality downstream of Mt Arthur Coal activities.
- SW36 at Whites Creek Dam upstream of Whites Creek Diversion - to monitor water quality upstream of Mt Arthur Coal activities.

Mt Arthur Coal monitored several additional surface water sites for internal management purposes only. The location of all surface water monitoring sites is shown in Figure 9. Additional non-routine water samples were taken during the reporting period including from the oil water separators, CHPP wash plant, wash bay and clean water areas and to monitor 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 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 against which monitoring results are compared. Impact assessment criteria can be described as trigger values which, if exceeded, lead to a response such as more intensive monitoring, investigation and if required, remedial action.

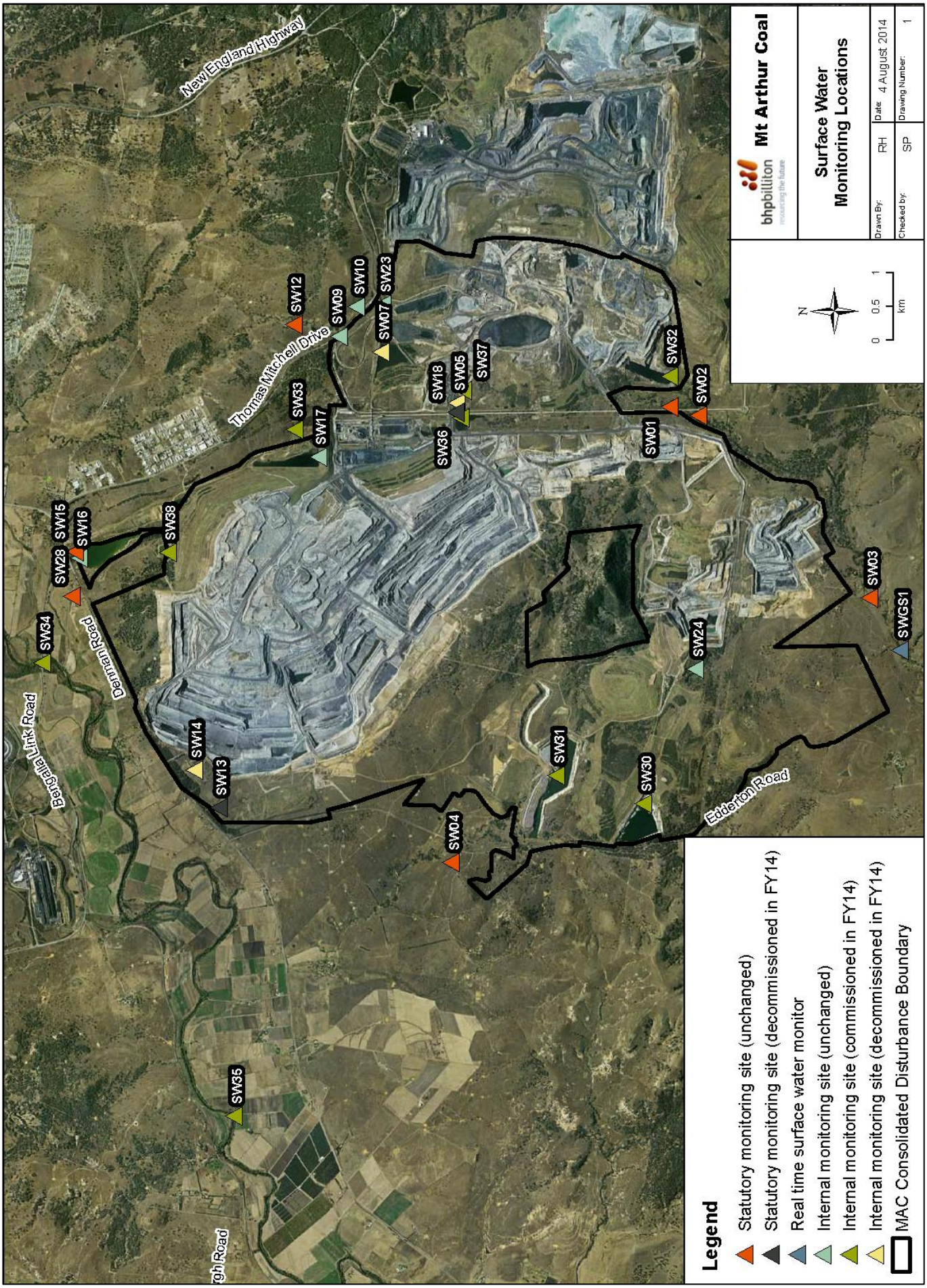


Figure 9: Mt Arthur Coal's surface water monitoring locations

During the previous reporting period, in May 2013, Mt Arthur Coal installed a real-time surface water monitoring station, SWGS1, downstream of the mine in Saddlers Creek. This monitoring station has been incorporated into the approved surface water monitoring program and has continuously monitored flow, electrical conductivity (EC) and turbidity on Saddlers Creek since 10 July 2013 when real-time logging capabilities were commissioned.

The SWGS1 monitoring station will provide baseline surface water quality data and meets the requirements of the consolidated project approval. It has been determined in consultation with Darley that 24 months of monitoring will be used to generate baseline data at this site. After this time trigger levels will be established in consultation with Darley for EC and turbidity.

Mt Arthur Coal also participated in the Upper Hunter Mining Dialogue water management working group. 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 water management across the region.

3.3.2 Environmental Performance

A summary of the surface water quality data for statutory sites during the reporting period is provided in Table 23, with a comparison against data from previous financial years. Plots of surface water quality data for the statutory sites during the reporting period are provided in Appendix 3.

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 readings.

Table 23: Summary of surface water quality monitoring results

FY14	pH	EC (µS/cm)	TSS (mg/L)
Minimum	7.02	1,513	5
Maximum	8.98	11,710	57
Average	8.10	5,726	11
FY13	**pH**	**EC (µS/cm)**	**TSS (mg/L)**
Minimum	7.24	1,900	5
Maximum	9.05	11,400	172
Average	8.07	7,198	29
FY12	**pH**	**EC (µS/cm)**	**TSS (mg/L)**
Minimum	6.64	213	5
Maximum	9.08	9,950	828
Average	8.02	5,436	60
FY11	**pH**	**EC (µS/cm)**	**TSS (mg/L)**
Minimum	6.85	1,360	2
Maximum	9.20	11,800	164
Average	7.95	5,417	32

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 at all times. The pH results for FY14 were generally consistent compared with previous financial years, with a very slight increasing trend evident in the average pH and a very slight decreasing trend evident in the maximum pH across all statutory sites.

FY14 surface water EC results were generally consistent with the average EC recorded in FY11 and FY12. EC results generally decreased since FY13. During the reporting period EC trigger values were exceeded on two occasions at SW18 (Whites Creek Upstream). The investigations for these results are discussed in Section 3.3.3

Surface water TSS results were generally low and a decreasing trend is evident in the average concentration compared with FY13 and FY12 results. Surface water TSS measured at individual statutory sites remained below impact assessment trigger levels for each site at all times during the reporting period.

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 which has now been removed from the program) were subject to normal variations in response to the ephemeral nature of the creeks, local geology and weather conditions. Fairford Creek (SW13), which was removed from the monitoring program in April 2014, was unable to be sampled during the reporting period as the watercourse was dry. The reductions in both pH and EC at a number of sites in December 2013 (see plots in Appendix 3) are likely due to significant rainfall that was experienced in November 2013.

Table 23 shows the data captures rates for each statutory surface water site during the reporting period. Additional non-routine surface water sampling was undertaken along these creeks following heavy rainfall events to monitor stream quality. 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 24: Surface water data capture rates

Watercourses	Saddlers Creek			Quarry Creek	Ramrod Creek	Fairford Creek	Whites Creek		HRSTS Licensed Discharge Point
Site reference	**SW01**	**SW02**	**SW03**	**SW04**	**SW12**	**SW13***	**SW15**	**SW18***	**SW28**
Data capture rate	25%^	33%^	100%	100%	100%	0%^	75%^	100%	N/A

^ Watercourse was either dry or too low to sample
# Only required during discharge events and none occurred during the reporting period

Surface water monitoring results were also recorded for flow, EC and turbidity at the SWGS1 monitoring station to capture baseline data for flows in Saddlers Creek. As it is an ephemeral creek, Saddlers Creek was mostly dry over the reporting period at the SWGS1 monitoring location. Peak flows and corresponding turbidity and EC results were recorded in late November 2013 and to a lesser extent in late March and early April 2014, coinciding with significant rainfall events that occurred during the reporting period. The accuracy of the monitoring station is significantly lower during low flow. When the water level is low enough that the turbidity and EC probes are no longer submersed, EC will record as zero or close to zero and turbidity is also likely to record low values.

Flow and turbidity results for SWGS1 for the reporting period are presented in plots in Appendix 3 and a summary of results for the reporting period is provided in Table 25.

Table 25: Summary of SWGS1 surface water gauging station monitoring results on Saddlers Creek

FY14	Flow (ML/day)	Average Daily EC (µS/cm)	Average Daily Turbidity (NTU)
Minimum	0	0	5
Maximum	223	524	496
Average	3	8	14

3.3.3 Reportable Incidents

Mt Arthur Coal reported two exceedances of EC trigger values at SW18 to the DP&E during the reporting period. 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, monitoring field sheets, on-site meteorological data and changes in land use. These exceedances and the investigation findings are summarised in Table 26.

Table 26: Surface water quality exceedances

Site name	Site reference	Elevated months	Elevated recorded results	Investigation results
Whites Creek Upstream	SW18	July 2013	EC: 5,080 µS/cm	A visual inspection revealed low water levels in SW18, which is the result of lower than average rainfall combined with an increase in evaporation levels. Mt Arthur Coal has reviewed the suitability of the current SW18 sample location, in an isolated dam, and has identified and established a more suitable sample location in a dam located to the west of SW18 with a culvert connection to the Whites Creek diversion. This new sample point (SW36) was subsequently added to the monitoring program and SW18 was removed in April 2014.
		August 2013	EC: 4,330 µS/cm	
		September 2013	EC: 5,230 µS/cm	
Whites Creek Upstream	SW18	January 2014	EC: 4,780 µS/cm	The investigation revealed that there were no changes to land use near SW18. Meteorological records indicate that lower than average rainfall during January 2014 through to March 2014 reduced the influx of fresh water to the isolated dam causing the EC level to increase. A review of the long term EC average for this monitoring location shows that EC averages approximately 4,790 µS/cm and results are consistent with normal conditions at this monitoring location. Mt Arthur Coal has reviewed the suitability of the current SW18 sample location and has identified and established a more suitable sample location in a dam located to the west of SW18 with a culvert connection to the Whites Creek diversion. This new sample point was subsequently added to the monitoring program and SW18 was removed in April 2014.
		February 2014	EC: 5,050 µS/cm	
		March 2014	EC: 4,620 µS/cm	

As previously discussed in Section 3.2.3, Mt Arthur Coal received a penalty infringement notice from the DP&E on 24 April 2014 regarding two surface water runoff incidents that occurred at the Denman Road boundary in March and April 2014. Mt Arthur Coal did not receive any other government fines or penalties related to surface water during the reporting period.

3.3.4 Further Improvements

Mt Arthur Coal will review its surface water monitoring trigger values in consultation with the DP&E to ensure that trigger values are appropriate to the nature of the operation and the local environment.

Mt Arthur Coal will continue to use site water collected in both in-pit and out-of-pit storages prior to the use of 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 as discussed in Section 2.8 to reduce the need to source water from the Hunter River.

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.

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 shown on 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 trigger values which, if exceeded, lead to a response such as more intensive monitoring, investigation and if required, remedial action. Mt Arthur Coal commenced a comprehensive review of all groundwater monitoring sites during the reporting period, with the assistance of an independent consultant, in order to assess the suitability of groundwater sampling sites and to reassess trigger values for sites by taking into consideration a larger dataset that would better account for natural cyclic variations in groundwater quality. It is anticipated that as a result of the review some groundwater bores will require repair works and some groundwater monitoring sites may be decommissioned and additional sites may be established. As part of the groundwater monitoring review all groundwater bores were cleaned (purged) and resampled as per Australian Standards in February and March 2014 by an independent consultant to further understand previously recorded elevated pH and EC results. The results of this review are expected to be finalised early in the next reporting period and the groundwater monitoring program will be updated accordingly in consultation with relevant authorities.

Monitoring of groundwater levels and groundwater 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.

During the reporting period construction of a low permeability barrier (bentonite wall) along the area of connection of mining and the Hunter River alluvium was completed in November 2013. Subsequent additional monitoring and management requirements have been implemented post-construction in accordance with the DP&E approval requirements.

Mt Arthur Coal also participated in the Upper Hunter Mining Dialogue water management working group. 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 water management across the region.

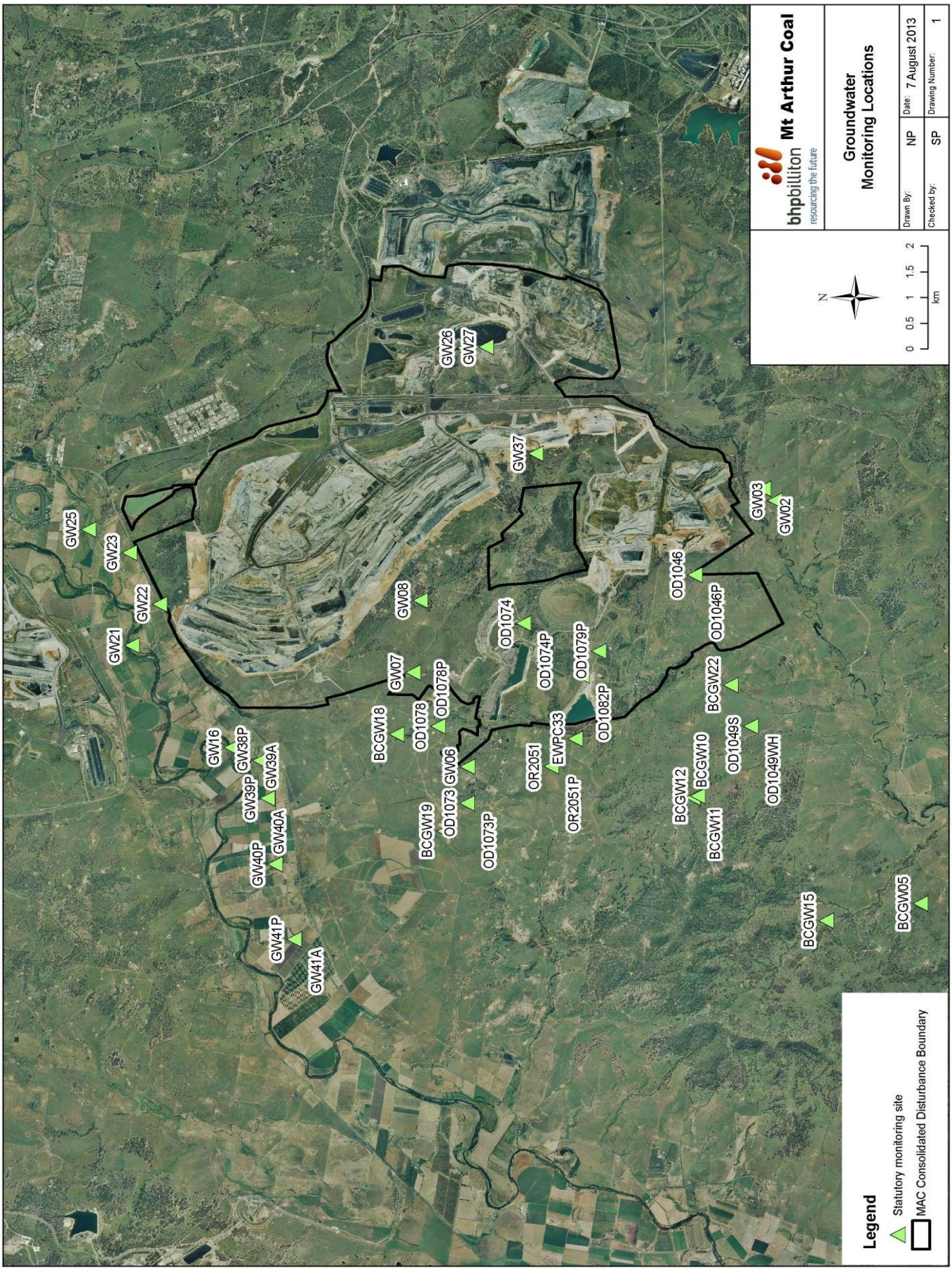


Figure 10: Mt Arthur Coal's groundwater monitoring locations

3.4.2 Environmental Performance

A summary of the groundwater quality data for each key aquifer during the reporting period is provided in Table 27 with a comparison against data from previous financial years presented in Table 28. Plots of groundwater quality data during the reporting period for all statutory sites are provided in Appendix 4.

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 27: Summary of groundwater monitoring results by aquifer

Aquifer	Sites	pH			EC (µS/cm)			Depth to water from top of casing (m)		
FY14	**Site references**	**Min.**	**Max.**	**Ave.**	**Min.**	**Max.**	**Ave.**	**Min.**	**Max.**	**Ave.**
Saddlers Creek Alluvial	GW2, GW3	7.71	8.61	8.10	3,030	4,930	3,923	6.28	8.95	7.26
Hard Rock Groundwater (north west)	GW6, GW7, GW8	6.87	7.44	7.09	3,970	5,320	4,690	23.26	74.80	38.23
Hunter River Alluvial	GW16, GW21, GW22, GW23, GW25	6.83	7.80	7.32	819	6,630	3,742	9.28	62.58	27.08
West Cut Groundwater	GW26, GW27	6.28	6.96	6.66	4,860	6,140	5,643	39.45	43.22	41.52
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 and EC measured at all individual statutory sites fluctuated depending on the locality, as shown in Table 27. Table 28 shows that groundwater results in FY14 are generally consistent with results from previous financial years. Groundwater pH results were within the impact assessment criteria of 6.5-9.0 at the majority of sites, with exceptions listed in

Table 30. There were also a number of exceedances of the EC trigger value during the reporting period as listed in

Table 30.

Table 28: Summary of groundwater quality monitoring results for all statutory sites

FY14	pH	EC (µS/cm)
Minimum	6.28	819
Maximum	13.18	15,500
Average	7.82	5,211
FY13	**pH**	**EC (µS/cm)**
Minimum	6.39	876
Maximum	12.78	15,150
Average	7.70	5,276
FY12	**pH**	**EC (µS/cm)**
Minimum	5.39	687
Maximum	12.37	13,770
Average	7.61	4,431
FY11	**pH**	**EC (µS/cm)**
Minimum	4.90	580
Maximum	12.10	13,810
Average	7.58	4,784

Groundwater depth at most bores remained relatively stable, with the average drawdown being 0.5 metres across all 44 statutory sites and the maximum change in groundwater level over the reporting period being 4.6 metres of drawdown at GW26. There is insufficient data to prepare a drawdown contour map for the reporting period, however drawdown for the reporting period is included as either yellow data points (in the alluvium) or blue data points (in the Permian) on Figure 4A in Appendix 4.

The interpreted total drawdown contours in the Permian sequence are also shown on Figure 4A in Appendix 4, using all historical groundwater data available. Drawdown in the Permian sequence around the main Mt Arthur Coal open cut pit is evident, as well as a second smaller drawdown in the vicinity of the historical Bayswater mine area. Drawdown is limited within the alluvium to generally less than one metre, indicating that impacts in this area are minimal.

As previously mentioned, during the reporting period a bentonite wall was installed along the Denman Road boundary in the vicinity of the F4 fault, to minimise groundwater level drawdown in the alluvium. Subsequently future drawdown to the west of this wall within the alluvium is likely to be minimal. Some drawdown is noted in the single site to the west of Saddlers Pit, however the single data point does not allow for contouring in this area.

The modelled head for FY14 was extracted for all model slices from the consolidation project groundwater model and compared to measured data in June 2014, or the last available measured data recorded during the reporting period. Figure 4B in Appendix 4 shows the result, with negative values showing where the model under-predicts mine impacts (red and orange and yellow markers) and positive values showing where the model over predicts mine impacts (green markers). The largest difference in modelled versus measured results is 92.1 metres of drawdown being over predicted by the model at OD1046. This is likely to be due to a variation in actual mine progression in this area compared with modelled mine progression. The four bores in the alluvium all show slight negative values indicating the model may have slightly under predicted impacts in this area, however, as previously mentioned, future drawdown to the west of the bentonite wall within the alluvium is likely to be minimal.

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. Data capture rates fell below 100 per cent at ten of the 44 groundwater sites, as discussed in Table 29.

Table 29: Groundwater data capture rates

Site	Data capture rate	Comments
GW8	33%	Water level was too deep to sample (greater than 100m) in October and December 2013 as well as February and June 2014 during the reporting period.
GW37	0%	There was no access to this site during the reporting period due to mining activities.
BCGW05, BCGW10, BCGW11, BCGW12 and BCGW15	67%	There was no access to these sites in April and June 2014 as the land owner denied access to Mt Arthur Coal. Mt Arthur Coal is currently working on an access agreement with the landholder.
OD1074-PIEZO	0%	The well at this site was blocked during the reporting period.
OD1082-PIEZO	83% (for lab samples only)	Unable to obtain samples for laboratory analysis in December 2013 as the well was blocked. The contractor was, however, able to obtain water level and in-situ readings for pH and EC during the December 2013 sample run.
OR2051-PIEZO	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 the DP&E. 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.

The investigation findings noted that the data did not indicate that alluvial groundwater had been impacted by mining. The assessments 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 that was not captured in the baseline data used to develop the impact assessment criteria. The exceedances and investigation findings are summarised in

Table 30.

As previously discussed, Mt Arthur Coal engaged a groundwater consultant to undertake a comprehensive review of all groundwater monitoring sites during the reporting period. The results of this review are expected to be finalised early in the next reporting period and the groundwater monitoring program will be updated accordingly in consultation with relevant authorities.

Table 30: Groundwater quality exceedances

Site references	Elevated months	Parameter	Investigation results
GW26, EWPC33	June, August and October 2013	EC	GW26 targets the West Cut Tailings formation and EWPC33 is within the Permian coal measure. All elevated EC results for both sites are consistent with Mt Arthur Coal's historic results recorded at these monitoring bores and do not indicate a recent impact from mining activities. The trigger levels at these sites will be reassessed as part of the comprehensive review of all groundwater monitoring sites.
BCGW10, OD1046-PIEZO, OD1049-SURFACE, OD1078-PIEZO	August, October and December 2013	EC	All of these monitoring bores are within the Permian coal measures. A review of historic results suggests that the recently recorded elevated EC results do not indicate a recent impact from mining activities: • results recorded at BCGW10 have been above the trigger value for every sample taken since February 2012; • results recorded at OD1046-PIEZO have been recorded over the trigger value on all but three occasions since October 2010; • results recorded at OD1049-SURFACE have been recorded above the trigger value for every sample taken since June 2012; and • results at OD1078-PIEZO have been recorded over the trigger value for every sample taken since April 2010.
OD1046-PIEZO, OD1049-WH, OD1079-PIEZO	August, October and December 2013	pH	All of these monitoring bores are within the Permian coal measures. The elevated pH results are consistent with historic results recorded at these monitoring bores. The recorded results therefore do not indicate any impact from mining activities.
OD1082-PIEZO	August, October and December 2013 and February 2014	EC and pH	OD1082-Piezo is located to the immediate east of the abandoned Bayswater workings where the Glen Munro and Woodlands Hill seams were mined during 2007. The bore is screened in the Woodlands Hill seam between 115.5 m and 121.5 m below ground level. The groundwater level in the bore has been declining since July 2008, from a high of 44.8 m to a current level of 66.82 m below ground level. The bore appears to be blocked.
OD1049-WH, GW40A	December 2013, February and April 2014	EC	Field sheets and recorded rainfall did not suggest a potential influence on groundwater monitoring results, although a number of relatively high rainfall events were recorded in February, March and early April 2014. There were no changes in land use in proximity to the monitoring bores. All elevated EC results are consistent with historic results recorded at these monitoring bores. The recorded results therefore do not indicate any impact from mining activities: • results recorded at OD1049-WH have been above the trigger value for eight out of fourteen samples taken since February 2012. Previous investigation findings for OD1049-WH indicate EC levels have risen since sampling commenced in August 2008. The reason for the gradually increasing salinity was not clear, but an independent consultant indicated drilling fluids may not have been flushed from the bore after drilling, meaning early samples were diluted; and • results recorded at GW40A have been above the trigger value for every sample taken except one since April 2012. Previous investigation findings for GW40A indicated EC levels have risen since mid-2011 in line with an increase in water level. The January 2013 groundwater investigation by an independent consultant indicated that this was likely to be due to the flushing of salts from the soil profile and that the available baseline data has not been sufficient to capture this natural cycle.

OD1049-SURFACE, OD1078-PIEZO	February, April and June 2014	EC	Field sheets and recorded rainfall did not suggest a potential influence on groundwater monitoring results, although a number of relatively high rainfall events were recorded in February, March and April 2014. There were no changes in land use in proximity to the monitoring bores. All elevated EC results are consistent with historic results recorded at these monitoring bores. The recorded results therefore do not indicate any impact from mining activities. A review of historic results also suggests that the recently recorded elevated EC results do not indicate a recent impact from mining activities: • results recorded at OD1049-Surface have been above the trigger value since June 2012. It is considered that the construction of the bore may allow water to be drawn from different zones in the fractured rock, which host water of different salinities; and • results recorded at OD1078 –Piezo have been above the trigger value since October 2010. The reason for the gradually increasing salinity was not clear, but an independent groundwater review has indicated that drilling fluids may not have been flushed from the bore after drilling, meaning early samples were diluted.
OD1046-PIEZO, OD1049-WH, OD1079-PIEZO	February, April and June 2014	pH	Field sheets and recorded rainfall did not suggest a potential influence on groundwater monitoring results, although a number of relatively high rainfall events were recorded in February, March and April 2014. There were no changes in land use in proximity to the monitoring bores. All elevated pH results are consistent with historic results recorded at these monitoring bores. The recorded results therefore do not indicate any impact from mining activities. A review of historic results also suggests that the recently recorded elevated pH results do not indicate a recent impact from mining activities: • results recorded at OD1046-Piezo have been above the trigger value since October 2012; • results recorded at OD1049-WH have been above the trigger value since April 2009. This is mostly likely due to the cement grout invading the coal seam during bore construction and is unlikely to be the result of mining; and • results recorded at OD1079-Piezo have been above the trigger value since August 2009. This is mostly likely due to the cement grout invading the coal seam during bore construction and is unlikely to be the result of mining.

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

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.

As discussed previously, specialised consultants are currently finalising a comprehensive review of 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 relevant authorities 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 small spills were disposed of offsite by Mt Arthur Coal's waste contractor. Mt Arthur Coal is considering options regarding management of larger scale contaminated soils on site. Material is currently transported to an on-site storage area. Volumes taken to this area are being assessed over time to determine the most appropriate treatment option. When the most appropriate option has been selected Mt Arthur Coal will plan and undertake the management method in accordance with relevant legislative requirements.

A suitably qualified consultant completed a Phase 2 Contamination Assessment for the former Bayswater No. 2 infrastructure area during the previous reporting period. During the current reporting period a remedial action plan (RAP) for the area was developed in accordance with the *Contaminated Land Management Act 1997* and applicable guidelines and submitted to the DP&E for approval, prior to further development of the area. The RAP was finalised and made available on the BHP Billiton website in May 2014.

As indicated in the RAP, the preferred remedial action for the Bayswater No. 2 infrastructure area for management of identified soil and groundwater impacts is through the placement of overburden/tailing material to facilitate a capping layer on top of the impacted media. Therefore, prior to this placement, no further action for identified soil and groundwater impacts at the site is deemed required. This preferred remedial action for the area was selected based on the findings of the human health and environmental risk assessment conducted for the site, review of available remediation options and the planned development for the site detailed in Section 5.1 of the RAP (being the removal of existing infrastructure and placement of overburden/tailings material on the site).

An environmental response exercise was undertaken during the reporting period on 4 December 2013 to assess site response against relevant procedures, including the requirements of the PIRMP. The exercise simulated a fire at the Orica plant located on the Mt Arthur Coal site, with potential runoff of pollutants into the Whites Creek Diversion. The exercise indicated general compliance with the PIRMP, with key exercise observations used to improve site processes.

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

Mt Arthur Coal will continue to manage contaminated land and hydrocarbon contamination in accordance with project approval and legislative requirements.

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-MTP-044 Biodiversity and Rehabilitation Management Plan (BRMP);
- MAC-ENC-MTP-047 Rehabilitation Strategy; and
- MAC-ENC-PRO-012 Land Management.

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.

On 30 June 2014 Mt Arthur Coal submitted a biodiversity management plan (BMP) to the DP&E and the DoE for approval, as part of a process to separate biodiversity and rehabilitation aspects into two separate documents. Once approved, this document will replace the existing BRMP, in the next reporting period.

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

Thirteen biodiversity monitoring sites have been established across the Mt Arthur Coal operational area since the monitoring program began in 2003. Seven of these are located in remnant vegetation and the remaining six are located in rehabilitation areas. These sites are monitored on a rotational schedule as described in the monitoring program.

3.6.2 Environmental Performance

The annual flora and fauna monitoring program was undertaken over four days in December 2013 by independent consultants. The annual survey assessed diversity and habitat condition across one remnant vegetation site, one rehabilitation site, and five nest box monitoring sites in accordance with the rotational schedule of the monitoring program.

In addition to annual monitoring, a targeted survey of the A171 area was also conducted in October 2013 for Pine Donkey Orchid (*Diuris tricolor*), which is listed as an endangered population under the *Threatened Species Conservation Act 1995* (TSC Act). Baseline monitoring of this species was undertaken by independent consultants in 2007 and seasonal monitoring has been undertaken every year since 2008. The 2013 targeted survey represents the sixth season of ongoing monitoring to facilitate the appropriate conservation of this endangered population.

Flora

The remnant vegetation site Mt Arthur Coal Terminal (MACT) and the rehabilitation site McDonalds Void 1 (MCV1), as shown on Figure 11, were surveyed in December 2013. Overall a total of 66 flora species were recorded during the monitoring event.

The MACT remnant vegetation site showed an increase in terms of native flora species diversity and abundance since the previous monitoring event in 2010, with 42 flora species detected in 2013, of which 35 were native and seven exotic. This represents an increase in native and overall species compared with 36 species detected in 2010 when monitoring was first undertaken at this site, of which 29 were native and seven exotic. No threatened flora species or endangered flora populations were recorded within this monitoring plot in 2013. In 2013, the lower stratum vegetation showed signs of recent growth with many grasses and forbs immature or just entering the reproductive phase, most likely attributed to the significant amount of rainfall preceding the survey, particularly in November 2013.

Creeping pear (*Opuntia humifusa*) was recorded in moderate abundance in the MACT monitoring plot and surrounding areas. This species is listed as a Class 4 noxious weed under the *Noxious Weeds Act 1993* and is subject to relevant legislation and control measures. This species had not been recorded during the 2010 survey, suggesting recent and rapid colonisation. The identified area was treated in December 2013.

The rehabilitation site MCV1 was established and seeded in 2003/2004, with a high proportion of exotic species used in order to rapidly colonise the area and stabilise the soil. Monitoring at MCV1 in 2013 showed an improvement in structure and species diversity, although species diversity is still relatively low, with 30 flora species recorded, of which 21 were native and nine exotic. This represents an increase in native species compared with 30 species detected in 2011 when monitoring was first undertaken at this site, of which 16 were native and 14 exotic.

The current vegetation at MCV1 is dominated by spotted gum (*Corymbia maculata*), with evidence of significant dieback in the *Acacia* species present, likely to be a natural occurrence as a result of the age of the plants. The ground layer was dominated by the introduced pasture species plantain (*Plantago lanceolata*) and numerous native herbs and forbs including *Glycine clandestina*, *Glycine tabacina* and burr daisies (*Calotis* species). In 2013, the lower stratum vegetation showed signs of recent growth with many grasses and forbs immature or just entering the reproductive phase, most likely attributed to the significant amount of rainfall preceding the survey, particularly in November 2013. No noxious weeds were recorded in the MCV1 rehabilitated area. The understorey elements within the MCV1 monitoring plot are trending away from the exotic grasses that were initially spread, with a higher diversity of native herbs and forbs now beginning to dominate this stratum.

Mt Arthur Coal's 2013 targeted survey for the endangered population of Pine Donkey Orchid (*Diuris tricolor*) identified three clumps, all of which were identified clumps from previous surveys. Within the three clumps, eight individual plants were recorded during the 2013 survey. A total of 58 clumps have been identified over the course of the previous six years of monitoring (2007 to 2012). Despite searches in the vicinity of each previously recorded location, the remaining 55 clumps identified in previous years were absent during the 2013 survey. This is likely to be due to the 2013 survey being undertaken later in the season, when the population was at a stage just past peak flowering, combined with known early flowering of known *Diuris tricolor* populations in the 2013 season.

Survey results for *Diuris tricolor* from 2013 indicate a significant decrease when compared with the most recent previous surveys in 2012 and 2011, as shown in Table 31. However, the total number of plants and the total number of clumps recorded in each year has been highly variable, with the population appearing to decline from 2007 to 2009, followed by a significant increase in 2010 and 2011 before declining again in 2012 and 2013. There also appears to be a correlation with the timing of the survey, with survey results in October consistently resulting in fewer clumps and individuals being recorded, potentially due to the very restricted flowering period of the population.

Survey results indicate that individuals do not flower each consecutive year, but may lie dormant until conditions are favourable. It is likely that fluctuations in clump size and individuals recorded each year are heavily influenced by prevailing weather conditions and rainfall in the months preceding the flowering period. The decreasing number of recorded plants in the 2012 and 2013 survey periods may be due to increasing numbers of previously recorded clumps remaining in dormancy due to a lack of favourable weather conditions. Long term monitoring would be required to determine whether the population is in a stable state of flux or whether the population is increasing or declining, as the dynamics of this population are not well understood.

The most significant potential threat in the ML 1165 area to the *Diuris tricolor* population continues to be the risk of invasion by weed species, the four main species of concern being Coolatai grass (*Hyparrhenia hirta*), Mother-of-millions (*Bryophyllum delagoense*), Cape Daisy (*Osteospermum ecklonis*) and St John's Wort (*Hypericum perforatum*). Mt Arthur Coal will continue to manage weeds including noxious weeds in the ML 1165 area in accordance with the operation's management plan.

Table 31: *Diuris tricolor* survey results since 2007

Survey year	Survey date	Number of *Diuris tricolor* clumps recorded	Number of *Diuris tricolor* plants recorded
2013	3 October	3	8
2012	26 September	12	20
2011	29 September	33	155
2010	20 September	25	189
2009	9 October	4	11
2008	26 September	19	74
2007	9 October	8	97

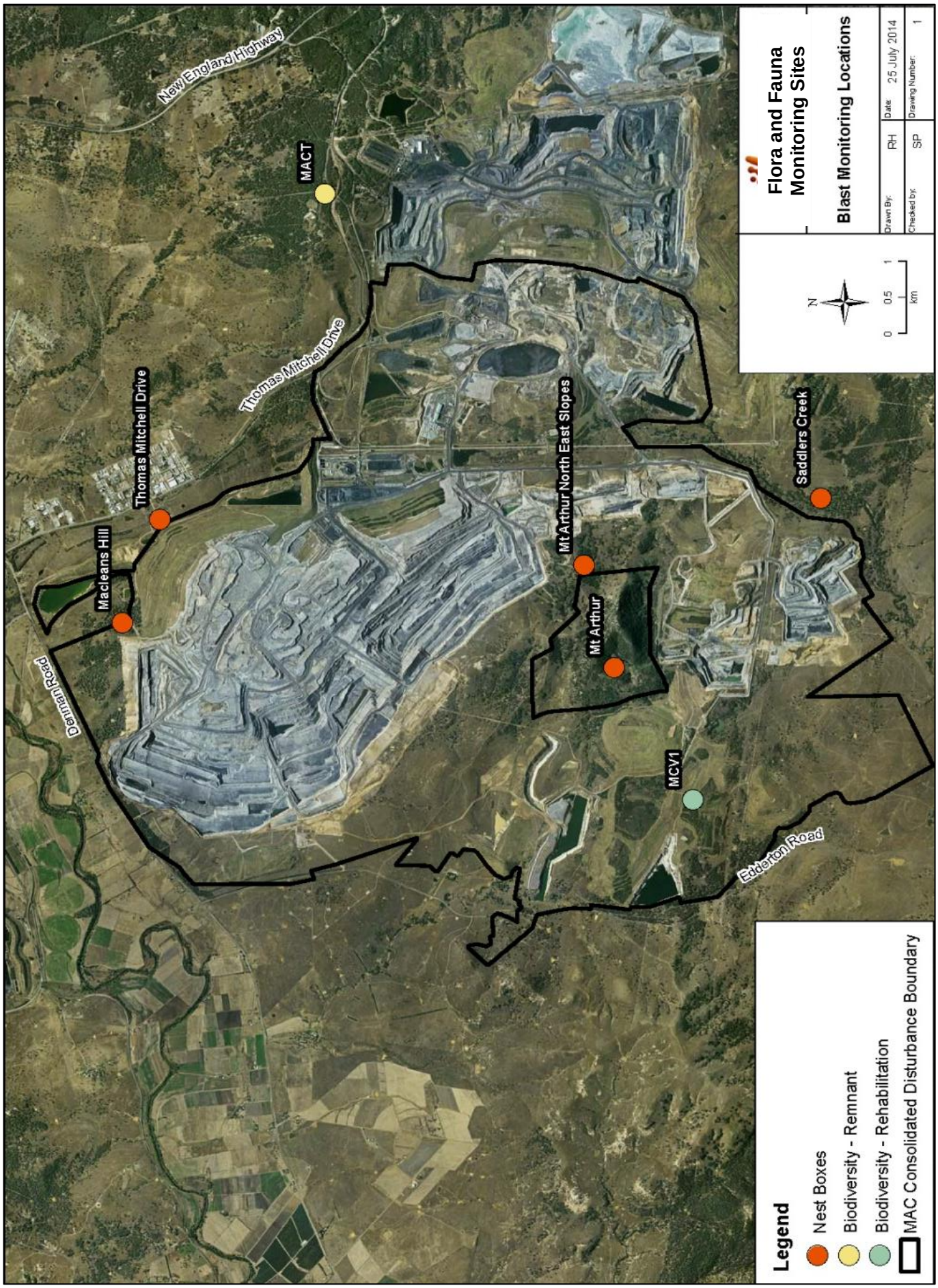


Figure 11: Flora and fauna monitoring locations

Fauna

Overall a total of 53 fauna species were recorded during the 2013 monitoring event, consisting of 37 birds, seven amphibians, six mammals and three reptiles. The diversity of fauna species recorded across the monitoring sites remained relatively stable, suggesting that current management practices are adequate. This represents a slight increase in species recorded since the previous year's fauna monitoring, albeit at different monitoring sites, totalling 51 fauna species, consisting of 31 birds, 14 mammals, four reptiles and two amphibians.

During the 2013 monitoring survey 38 fauna species were recorded at the MACT remnant vegetation site, consisting of 28 bird species, five mammals, four amphibians and one reptile species. This represents an increase in species compared with the 30 species recorded at MACT in 2010. No threatened fauna species were recorded during the 2013 survey, although one threatened species, the bentwing-bat (*Miniopterus schreibersii oceanensis*), was recorded during the 2010 survey. This bat species is considered likely to sporadically forage within the MACT monitoring site, so it is not usual that it was not detected during the 2013 survey. One of the mammals recorded in the 2013 survey was an introduced species, the European rabbit (*Oryctolagus cuniculus*).

During the 2013 monitoring survey 33 fauna species were recorded at the MCV1 rehabilitation site, consisting of 21 bird species, six amphibians, three mammals and three reptile species. This represents an increase in species compared with the 26 species recorded at MCV1 in 2011. One threatened fauna species was recorded at the site during the 2013 survey, the speckled warbler (*Chthonicola sagittata*), which is listed as vulnerable under the TSC Act. Two of the mammals recorded in the 2013 survey were introduced species, the European rabbit (*Oryctolagus cuniculus*) and the Brown hare (*Lepus capensis*), consistent with the 2011 survey.

The five nest box sites Mt Arthur North-east Slopes, Maclean's Hill (now comprising Maclean's Hill, Saddlers Creek Offset Area and Mt Arthur) and Thomas Mitchell Drive, as shown on Figure 11, were surveyed in December 2013. The Mt Arthur North-east Slopes and Maclean's Hill nest boxes were installed in 2005. In 2012 the majority of the nest boxes at Maclean's Hill were removed and relocated to the Saddlers Creek Offset Area and Mt Arthur. The Thomas Mitchell Drive nest boxes were installed in 2011 and 2013 represents the first monitoring event for these boxes.

A total of 54 nest boxes were inspected during the 2013 survey, consisting of 25 at Mt Arthur North-east Slopes, nine at Saddlers Creek Offset Area, eight at Thomas Mitchell Drive, seven on Mt Arthur and five at Maclean's Hill. Overall, the condition of the nest boxes monitored in 2013 was good with only a few showing some degree of disrepair. Overall a total of 11 nest boxes previously monitored in 2011 were missing and unable to be located in 2013.

The results of the nest box monitoring in 2013 revealed a high occupancy rate in the Mt Arthur North-east Slopes nest boxes, but low occupancy rates at the other sites of between zero and 20 per cent, as shown in Table 32. Eighty per cent of the Mt Arthur North-east Slopes boxes either contained at least one animal or sufficient evidence of regular use. The threatened Squirrel glider (*Petaurus norfolcensis*) was the most abundant animal recorded using the Mt Arthur North-east Slopes nest boxes, with at least 13 individuals recorded from six boxes, which is an excellent outcome and demonstrates how effective artificial habitat augmentation can be. One glider box contained at least six individuals, consisting of two adult gliders and four dependent young, which indicate that the species is successfully breeding in the area and demonstrates Mt Arthur Coal's ability to effectively and sustainably manage habitat loss impacts on threatened species. The other species recorded occupying nest boxes at most of the sites during monitoring in 2013 was the Common brushtail possum (*Trichosurus vulpecula*).

When monitoring was last undertaken at Maclean's Hill in 2011, before the majority of the Maclean's Hill nest boxes were relocated, the results were moderately successful, with an occupancy rate of approximately 45 per cent in the Maclean's Hill nest boxes. Monitoring in 2013 showed occupancy rates for these boxes to be much lower and although the reason is unclear, a likely contributing factor may be

that the boxes at Saddlers Creek and Mt Arthur have been reinstalled much lower (less than three metres above the ground) than those at Mt Arthur North-east Slopes.

No birds or signs of bird use were recorded in any of the nest boxes during the survey, although some boxes were specifically designed for birds, such as rosellas, cockatoos and owls. Many bird nest boxes were found to be chewed, particularly at the spout entrance, and occupied by Common brushtail possums (*Trichosurus vulpecula*). None of the micro-bat boxes were found to show any signs of use by their target species either. These boxes were generally found to contain large spider webs or mud nests made by wasps.

A number of nest boxes at various monitoring sites were replaced or raised and 16 new nest boxes were installed by independent consultants. This was undertaken based on the outcomes of the 2013 survey and prior to clearing works in certain areas.

Table 32: Nest box monitoring results for 2013

Nest box monitoring location	Total nest boxes	Number of boxes occupied	Number of boxes showing signs of occupancy, but no occupants present
Mt Arthur North-east Slopes	25	10 (with Common brushtail possums) 6 (with Squirrel gliders)	1 (potentially with possum species) 3 (potentially with glider species)
Saddlers Creek Offset Area	9	0	0
Thomas Mitchell Drive	8	1 (with a Common brushtail possum)	0
Mt Arthur	7	1 (with a Common brushtail possum)	0
Maclean's Hill	5	1 (with a Common brushtail possum)	0

Biodiversity Offset Areas

Mt Arthur Coal has established a variety of biodiversity and conservation areas in order to compensate for impacts on biodiversity values. The current biodiversity offset strategy includes the following:

- Mount Arthur Conservation Area (105 hectares);
- Saddlers Creek Conservation Area (295 hectares);
- Thomas Mitchell Drive Offsite Offset Area (495 hectares);
- Thomas Mitchell Drive Onsite Offset Area (222 hectares);
- Roxburgh Offset Area (110 hectares); and
- Middle Deep Creek Offset Area (493 hectares).

Mt Arthur Coal completed baseline ecological studies for each of the offset areas in spring 2013. These baseline studies were used to prepare the BMP, which details completion criteria, and Offset Management Programs.

Biodiversity monitoring is scheduled for Mt Arthur Coal's biodiversity offset areas in accordance with the BMP to assess the adequacy of the ecological management strategies implemented by Mt Arthur Coal and facilitate their continual improvement.

DP&E completed a review of Mt Arthur Coal's biodiversity offset areas in August 2013 as a part of DP&E's 2013 Biodiversity Offset Review Program. The review was undertaken through a desktop study and field inspection to ensure that objectives and commitments related to biodiversity offset area management were being achieved. The DP&E recognised that most of the Mt Arthur Coal offset areas inspected were generally well managed and provided some improvements to be implemented which were either actioned in the reporting period or are planned to be actioned in the next reporting period.

Other Activities

Wild dog and fox management activities continued on land owned by Mt Arthur Coal during the reporting period with a wild dog and fox baiting program undertaken during February 2014. Results from the program indicated that baits were taken from 56 of the 70 (80 per cent) baiting locations, with 86 baits taken overall. This shows a general increase in the number of baiting locations where baits were taken compared with previous programs, as shown in Table 33.

Table 33: Baiting results from feral animal control programs

Program date	Number of baiting locations where baits were taken	Percentage of baits taken
February 2014	56	80
May 2013	47	72
February 2013	51	82
May 2012	41	61
February 2012	22	19
May 2011	42	38

Additional signage 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

The stand-alone BMP Mt Arthur Coal submitted to the DP&E and the Department of the Environment for approval is expected to be approved during the next reporting period. This document details the measures Mt Arthur Coal has implemented to protect and enhance biodiversity features and values on site and within off site offset areas.

Mt Arthur Coal plans to undertake a seventh consecutive season of *Diuris tricolor* population monitoring in the A 171 area 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-MTP-044 Biodiversity and Rehabilitation Management Plan; and
- MAC-ENC-MTP-047 Rehabilitation Strategy; and
- MAC-ENC-PRO-012 Land Management.

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.

The weed control program was also expanded during the reporting period to cover all biodiversity offset areas, including the Middle Deep Creek Offset Area.

An annual weed assessment was conducted over four days in September 2013 by land management consultants 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 (*Lycium ferocissimum*), Mother-of-millions (*Bryophyllum delagoense*), various ground cactus species and St John's Wort (*Hypericum perforatum*).

3.7.2 Environmental Performance

Mt Arthur Coal targeted approximately 141 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.

The annual weed assessment conducted in September 2013 positively identified 23 weed species at Mt Arthur Coal, which is consistent with the November/December 2012 annual weed assessment, which positively identified 22 weed species.

Two weed species identified during the 2012 annual weed assessment were not identified during the 2013 assessment, including African Lovegrass (*Eragrostis curvula*) and Boneseed (*Chrysanthemoides monilifera subsp. Monilifera*), which is listed as a Weed of National Significance. These species were successfully eradiated from the site due to appropriate control methods being employed during the reporting period (spot spraying via Quik Spray Unit). Three additional weed species were identified in the 2013 annual weed assessment that were not previously identified during the 2012 assessment, including Pampas Grass (*Cortaderia selloana*), Peppercorn Tree (*Schinus molle L.*) and Variegated Thistle (*Silybum marianum*). None of these new weed species are a high priority for control, based on their legislative listings and densities recorded on site.

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.

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 details the relevant blast overpressure and vibration impact assessment criteria and compliance procedures and controls related to open cut blasting activities. The blast fume

management strategy, included in the Blast Management Plan, aims to minimise visible fume generated from blasting and reduce the potential of any fume leaving the Mt Arthur Coal site. The blast fume management strategy was revised and submitted to the DP&E for review and approval during the reporting period and was approved on 30 June 2014. During the year, all statutory blast monitors were calibrated in accordance with relevant Australian standards.

In accordance with the approved monitoring program two new statutory blast monitors, BP10 (North Yammanie) and BP11 (Balmoral Road), were installed during the reporting period on 26 and 27 June 2014 respectively. These monitors effectively replaced the former monitors BP05 (Antiene) and BP06 (Yammanie), which were decommissioned during the previous reporting period in June 2013. These new monitors are considered to better represent residences on privately-owned land. The locations of Mt Arthur Coal's statutory blast monitors are shown in Figure 12 .

Prior to each blast, a pre-blast environmental assessment is carried out to assess the risk of potential 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 a total of 49 blasts were delayed at Mt Arthur Coal due to unfavourable weather conditions determined through this process.

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. Blasts are designed to minimise the effects of air blast overpressure noise and ground vibration on structures and the neighbouring community. Mitigation measures undertaken during the reporting period to reduce blasting impacts include:

- modelling potential impacts prior to blasting;
- using monitoring data to refine predictive tools that estimate likely overpressure and vibration levels during the design of blasts;
- using appropriate stemming material and adequate stemming lengths in the blast hole;
- controlling blast charges;
- undertaking pre-blast environmental assessments;
- delaying blasts where weather conditions represent an unacceptable risk of offsite impacts;
- implementing the blast fume management strategy, which was revised during the reporting period and includes assessing the potential for fume generation and the potential fume travel path;
- the use of explosive product with a lower fume potential for blasts considered to have a higher potential for fume generation, as discussed in Section 3.8.3;
- notifying other mines and nearest residents of proposed blast times;
- advertising planned blast times on the BHP Billiton website;
- using electronic initiation systems in higher risk areas to reduce vibration;
- the use of helium filled balloons to assess wind conditions at the time of firing;
- the installation and use of on-site wind socks to enable wind conditions to be assessed at the time of firing;
- improved planning processes to minimise blast sleep time;
- a post blast checklist to record information to assist the continual improvement of blast design and blast practices, including fume rating, fume characteristics, meteorological information, monitoring results and video recordings;
- modifying blasting methods to ensure compliance with environmental limits; and
- undertaking periodic structural inspections of blast-sensitive structures.

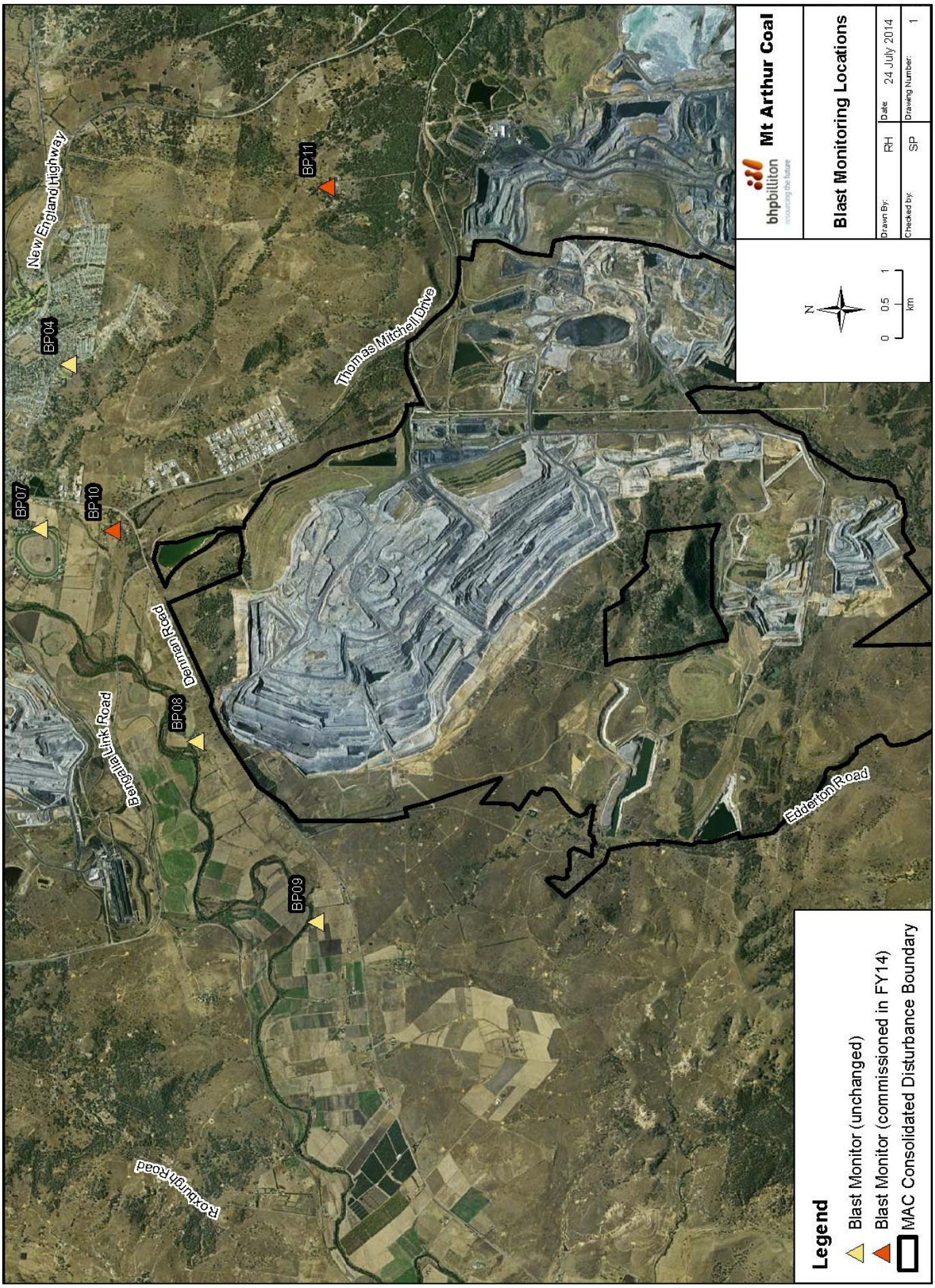


Figure 12: Mt Arthur Coal's blast monitoring locations

3.8.2 Environmental Performance

A summary of the results from the statutory blast monitoring sites for the reporting period is provided in Appendix 5. Blast data capture rates for the reporting period were below 100 per cent at the following statutory sites:

- BP04 recorded a blast capture rate of 99.7 per cent for the reporting period following an invalid overpressure noise result recorded on 17 October 2013;
- BP07 recorded a blast capture rate of 99.2 per cent for the reporting period following a failure to record ground vibration and overpressure noise data for a blast on 13 August 2013 due to a bad sector on the monitor's compact flash card, and following an invalid overpressure noise result recorded on 20 September 2013; and
- BP09 recorded a blast capture rate of 99.7 per cent for the reporting period following an invalid overpressure noise result recorded on 20 September 2013, as discussed in Section 3.8.3.

The invalid overpressure noise results above are discussed in Table 36.

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

There were 188 blast events during the reporting period in accordance with the consolidation project approval.

Also in accordance with the consolidated project approval, blasting activities in the reporting period were only undertaken between 9 am and 5 pm Monday to Saturday, inclusive. No blasting was carried out on Sundays or public holidays.

Blast monitoring statistics for the current and previous reporting periods are provided in Table 34. Although three valid blasts were recorded above the overpressure noise threshold limit of 115 dBL during the reporting period (i.e. BP07 (Sheppard Avenue) in August 2013; BP07 (Sheppard Avenue) and BP09 (Denman Road West) in September 2013), all statutory monitors remained below the five per cent limit criteria of 115 dBL. All statutory monitors also remained below the five per cent limit criteria for ground vibration of 5 mm/s during the reporting period.

Table 34: Summary of blast monitoring results

Parameter	Statistic	FY14	FY13	FY12
Ground vibration (mm/s)	Average	0.46	0.34	0.44
	Maximum valid result	5.99 at BP08 (Edinglassie)	7.42 at BP09 (Denman Road West)	7.40 at BP08 (Edinglassie)
	Valid blasts above 5 mm/s threshold^	0	2	0
Overpressure noise (dBL)	Average	96.1	94.8	96.8
	Maximum valid result	120.2 at BP08 (Edinglassie)	120.0 at BP04 (South Muswellbrook)	124.1 at BP08 (Edinglassie)
	Valid blasts above 115 dBL threshold^	3	11	7

^ Excluding BP08 (Edinglassie).

Results generally reflect predictions made in the consolidation environmental assessment and do not show a significant difference in average or maximum results compared to previous financial years. Mt

Arthur Coal will continue to modify blasting methods to ensure compliance with environmental limits. During the reporting period mining works progressed to the north and northwest of the operation, resulting in blasts occurring closer to Mt Arthur Coal's northern monitors.

Blasting-related Community Complaints

Complaints regarding blasting impacts, including blast vibration, overpressure noise, dust and fume, accounted for 20 per cent of the total complaints received during the reporting period, as shown in Table 35 along with a comparison to previous financial years. Six of the blast complaints in FY14 were made by anonymous callers through third parties such as the EPA and the DP&E. On eight occasions during the reporting period more than one complaint was received in relation to a single blast event.

Mt Arthur Coal received 14 blast fume complaints in relation to a 5C blast fume event that resulted in fume travelling off site on 19 February 2014, as discussed in Section 3.8.3. Mt Arthur Coal received one blast fume complaint in relation to a 4C blast fume event on 24 January 2014, as also discussed in Section 3.8.3.

During the reporting period 25 of the complaints recorded related to blast vibration and/or overpressure noise, 16 related to blast fume and 11 related to blasting dust. All blast vibration and overpressure noise results were within regulatory criteria on dates when complaints were received in relation to these issues.

Table 35: Blasting complaint statistics at Mt Arthur Coal

Blasting complaints	FY14	FY13	FY12
Blasting complaints received	52	37	55
Blasting complaints received, as a percentage of total complaints	20%	16%	42%

3.8.3 Reportable Incidents

Mt Arthur Coal received a penalty infringement notice from the EPA on 12 December 2013 regarding blast Hun2836/MUU, which was fired by Mt Arthur Coal on 10 October 2013 and exceeded the manufacturers recommended blast sleep time. The explosives used for this shot consisted of 74 per cent, by weight, emulsion product which has a recommended sleep time of 21 days. ANFO was used for the remaining 26 per cent, which has a recommended sleep time of 42 days. The shot was fired 30 days after loading began. The fume generated from this blast was visually classified by Mt Arthur Coal as 1C fume and it did not leave site. It was not reported to the DP&E or the EPA at the time of the blast, as it did not constitute a reportable event in accordance with Mt Arthur Coal's blast fume management strategy or PIRMP.

No elevated blast vibration results were recorded at any of the statutory blast monitors during the reporting period. Two blast overpressure noise results were recorded that exceeded the maximum overpressure noise limit of 120 dBL during the reporting period, both of which were reported, investigated and found to be invalid, as detailed in Table 36. Four blasts were recorded above the overpressure noise threshold limit of 115 dBL during the reporting period, however all statutory monitors remained below the five per cent limit criteria during the reporting period, as detailed in Table 36.

Table 36: Elevated blast overpressure noise results

Blast date and time	Site name	Site reference	Recorded result $\mu g/m^3$	Status	Investigation findings

Blast date and time	Site name	Site reference	Recorded result µg/m^3	Status	Investigation findings
23/8/2013 10:57	Sheppard Avenue	BP07	115.2	Valid	The blast overpressure noise result was lower than the statutory limit of 120 dBL but above the five per cent limit criteria of 115 dBL. The total number of blasts recorded by the Sheppard Avenue monitor above 115 dBL over the 12 months to 31 August 2013 was below five per cent.
20/9/2013 11:50	Sheppard Avenue	BP07	117.6	Invalid	The blast overpressure noise result was lower than the statutory limit of 120 dBL but above the five per cent limit criteria of 115 dBL. An investigation found this result was due to meteorological conditions (strong winds) impacting on the appropriate functioning of the equipment, generating invalid overpressure results.
20/9/2013 11:50	Denman Road West	BP09	122.9	Invalid	This exceedance was reported to the DP&E and the EPA. An investigation found this result was due to meteorological conditions (strong winds) impacting on the appropriate functioning of the equipment, generating invalid overpressure results.
20/9/2013 11:53	Sheppard Avenue	BP07	116.3	Valid	The blast overpressure noise result was lower than the statutory limit of 120 dBL but above the five per cent limit criteria of 115 dBL. The total number of blasts recorded by the Sheppard Avenue monitor above 115 dBL over the 12 months to 30 September 2013 was below five per cent.
20/9/2013 11:53	Denman Road West	BP09	117.6	Valid	The blast overpressure noise result was lower than the statutory limit of 120 dBL but above the five per cent limit criteria of 115 dBL. The total number of blasts recorded by the Denman Road West monitor above 115 dBL over the 12 months to 30 September 2013 was below five per cent.
17/10/2013 9:50	South Muswellbrook	BP04	128.2	Invalid	This exceedance was reported to the DP&E and the EPA. An investigation found this result was due to meteorological conditions (strong winds) impacting on the appropriate functioning of the equipment, generating invalid overpressure results.

In accordance with the site's blast fume management strategy, blast fume events are reportable to the DP&E in cases where any fume leaves site or in the case of a Level 4 or 5 fume event. The event is also managed and reported, if required, in accordance with Mt Arthur Coal's PIRMP. Mt Arthur Coal notified the DP&E of five blast fume events during the reporting period:

- MCw2209/EG1 blast on 28 November 2013 at 13:16 generated 4C fume that remained on site;
- WMn3117/BOW blast on 24 January 2014 at 11:49 generated 3B fume that went off site across Denman Road, which was closed for blasting at the time, and dispersed on land owned by Mt Arthur Coal;
- CAn2744/BOW blast on 29 January at 10:53 generated 4C fume that remained on site;
- WMn3122/BOW blast on 19 February at 11:43 generated 4C fume that remained on site; and
- MCe2206/EG1 blast on 19 February 2014 at 14:25 generated 5C fume that went off site towards the Thomas Mitchell Drive Industrial Estate. This blast fume event constituted a pollution incident and required the initiation of Mt Arthur Coal's PIRMP. It is discussed below is further detail.

On 19 February 2014 at 14:25 Mt Arthur Coal fired a blast at its mine that resulted in fume travelling towards the Thomas Mitchell Drive Industrial Estate. The blast was timed to ensure that the wind conditions would prevent any fume from travelling off site. However, due to a change in conditions immediately after the blast fume travelled towards the Thomas Mitchell Drive Industrial Estate. In accordance with the POEO Act Mt Arthur Coal initiated the site's PIRMP and notified the relevant

authorities immediately. Mt Arthur Coal issued a media release and indicated that, as a precautionary measure, people may wish to seek medical advice, and encouraged people to call the Mt Arthur Coal Community Response Line. Mt Arthur Coal apologised in the media release to the community for any impacts they may have experienced from the blast. Formal incident reports were sent to the relevant authorities regarding this incident. As the fume was dispersed within a relatively short timeframe, no lasting environmental impacts occurred.

All of the above listed blast fume events were investigated. A key action resulting from the investigations was to update the blast fume management strategy in consultation with appropriate government agencies. As mentioned previously, the blast fume management strategy was revised and approved by DP&E on 30 June 2014. The revision resulted in changes to fume risk assessment, shot design, processes to minimise sleep time, explosive selection and quality, on-bench practices and the assessment of meteorological conditions at the time of firing.

Mt Arthur Coal's pre-blasting approval process, to assess the risk of potential impacts from blasts prior to final preparations, was also modified as a result of the investigations with changes to the meteorological prediction and fume risk assessment process. The approval process now also incorporates an initiation approval based on observed weather data at the time of the blast.

3.8.4 Further Improvements

Improvements to the blast fume management strategy will continue to be used during the next reporting period to continue to minimise the risk of blast fume generation. The success of the improvements will be assessed and further refinements made as required.

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.

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 tests the noise emitted from most new

mobile plant, and a sample of site mobile plant is tested on a regular basis to ensure it is below the site's sound power noise limits. Results from sound power level monitoring of the fleet is used in the predictive noise model discussed below.

To adequately sample the noise environment, attended monitoring is undertaken by an acoustic consultant on a monthly basis at eight statutory monitoring locations as shown in Figure 13. Attended monitoring involves an acoustic consultant listening and measuring dominant noise sources at various locations for a period of time. Attended monitoring is typically conducted at night under worst case conditions when atmospheric conditions can allow noise to travel further from the source. One attended noise monitoring event was undertaken during day and evening periods at each monitoring location during the reporting period to demonstrate compliance with EPL conditions at these times.

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 $L_{A1\ (1min)}$, 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 (INP) 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 INP. 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 and record audio every 15 minutes. This information is used for internal management rather than statutory purposes. An additional directional real-time monitor, shared with Anglo American's Drayton Coal, was installed to the north east of the operation in the reporting period.

During the reporting period Mt Arthur Coal engaged acoustic consultants to complete a predictive noise model for winter 2014 in order to be able to predict the likely change in the acoustic locations around the operation for the proposed mine plan. This predictive model enables Mt Arthur Coal to input locations of mobile plant and haul routes, and uses forecasted weather conditions and results of sound power testing from each unit to predict noise impact at each receptor detailed in the consolidation project approval. Based on these predictions, the mine plan can be adjusted and remodelled accordingly.

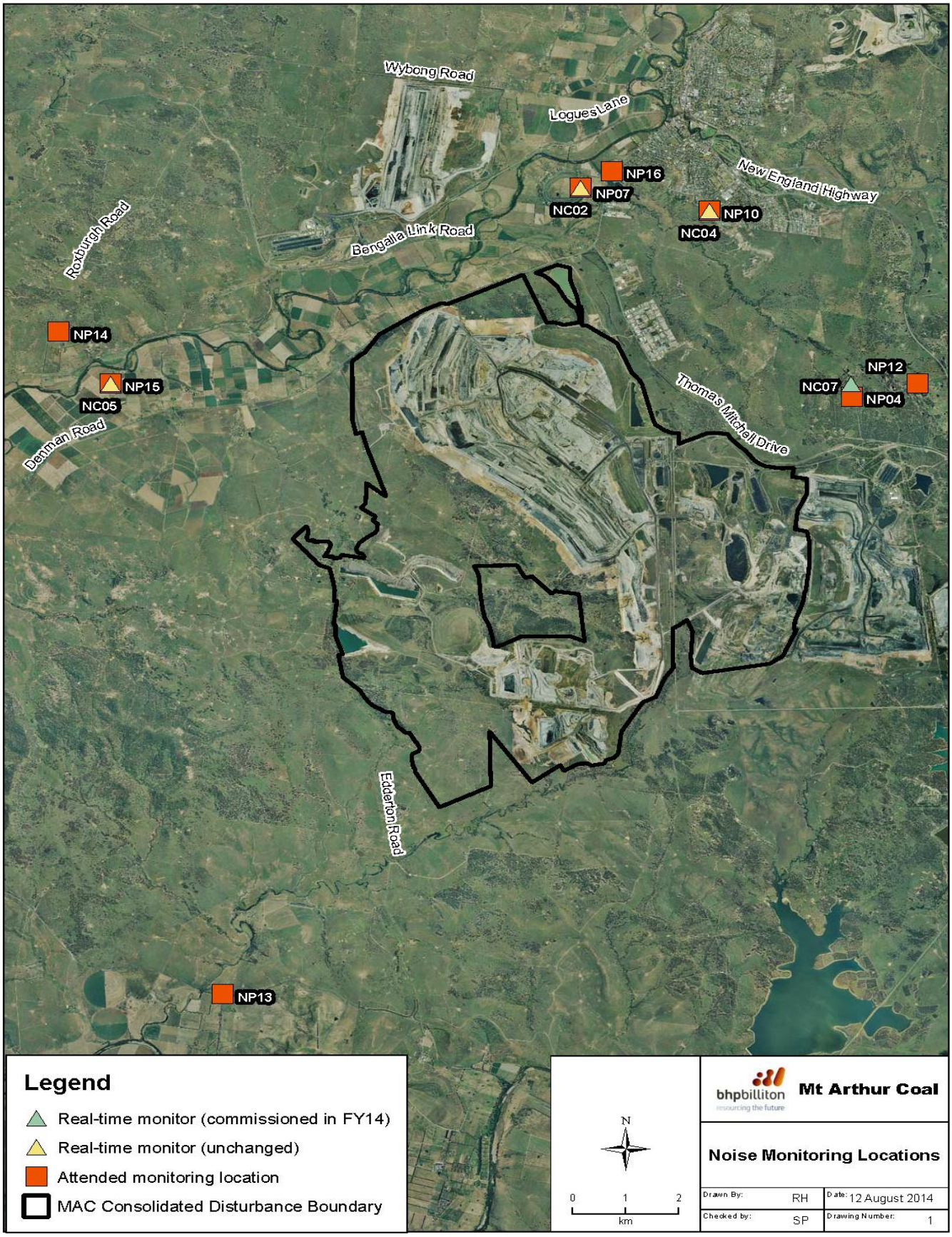


Figure 13: Mt Arthur Coal's noise monitoring locations

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 NP04 in September 2013 and NP16 in June 2014, which are discussed in Section 3.9.3. A summary of results from Mt Arthur Coal's attended noise monitoring in the reporting period is provided in Table 37.

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 model year 2016 are considered to be 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 model year 2016 are shown in Table 37.

Table 37: $L_{Aeq\ (15min)}$ and $L_{A1\ (1min)}$ attended noise monitoring results in decibels

$L_{Aeq\ (15min)}$	NP04	NP07	NP10	NP12	NP13	NP14	NP15	NP16
Representative residential assessment zone	A	C	E	G	N/A	D	D & F	B
Project approval noise impact assessment criteria (Intrusive criteria) ($L_{Aeq\ (15min)}$)	38	39	39	39	N/A	35	35	37
Land acquisition criteria ($L_{Aeq\ (15min)}$)	43	44	44	44	N/A	40	40	42
Predicted noise level for 2016 for each monitoring location	38	37	38	39	N/A	34	35	38
18-19 July 2013	IA	<30	IA	IA	28	NM	IA	NM
21-22 August 2013	35*	37	39*	37*	IA*	IA	IA	NM*
5-6 September 2013	**39***	<35*	35*	37*	IA*	IA*	IA*	37*
30-31 October 2013	IA*	36*	<30*	IA*	IA*	IA*	IA*	32*
20-21 November 2013	NM	34*	32*	<30*	28*	25*	31*	28*
19-20 December 2013	NM	<30	<30	IA	IA	IA	<25	<30
16-17 January 2014	IA*	33*	30*	IA*	<30*	27*	30*	31*
26-27 February 2014	NM*	32*	<30*	IA*	IA	IA	25	32*
31 March - 1 April 2014	IA	31	25	IA	26*	IA*	IA*	31
15-16 April 2014	NM*	32	NM*	IA	IA	24	NM*	33
26-27 May 2014	IA	38	33	IA	IA	<25	<25	<30
12-13 June 2014	<35	33	35	IA	IA	26	30	**39**
$L_{A1\ (1min)}$	**NP04**	**NP07**	**NP10**	**NP12**	**NP13**	**NP14**	**NP15**	**NP16**
Representative residential assessment zone	A	C	E	G	N/A	D	D & F	B
Project approval noise impact assessment criteria ($L_{A1\ (1min)}$)	45	45	45	45	N/A	45	45	45
18-19 July 2013	IA	38	IA	IA	31	32	IA	36
21-22 August 2013	39*	44	45*	43*	IA*	IA	IA	NM*
5-6 September 2013	44*	40*	39*	42*	IA*	IA*	IA*	42*
30-31 October 2013	IA*	44*	37*	IA*	IA*	IA*	IA*	33*
20-21 November 2013	NM	44*	38*	<30*	28*	27*	33*	38*
19-20 December 2013	NM	35	32	IA	IA	IA	28	30

$L_{Aeq\ (15min)}$	NP04	NP07	NP10	NP12	NP13	NP14	NP15	NP16
16-17 January 2014	IA*	36*	33*	IA*	<30*	30*	33*	33*
26-27 February 2014	NM*	36*	<30*	IA*	IA	IA	27	37*
31 March - 1 April 2014	IA	35	30	IA	<30*	IA*	IA*	37
15-16 April 2014	NM*	34	NM*	IA	IA	31	NM*	39
26-27 May 2014	IA	42	35	IA	IA	<25	<25	33
12-13 June 2014	35	40	41	IA	IA	32	32	42

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.
* Noise emission limits do not apply due to 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. The INP requires that a 5dB modifying factor be added to the total LAeq generated by Mt Arthur Coal when total dBL_{Ceq} minus total dBL_{Aeq} is greater than 15dB in order to reflect the additional impact of low frequency noise. Broner specifies a low frequency criterion of 60 dBL_{Ceq}.

As there were no exceedances of the low frequency criteria as detailed in Table 38, no further low frequency assessment was required. There were no measurements where Mt Arthur Coal was measureable and modification factors added to Mt Arthur Coal Only L_{Aeq} measurements from September 2013 to February 2014 inclusive or in June 2014.

Table 38: Low frequency noise monitoring results

		Measurements			Calculations						
Location	**Date**	**Total L_{Aeq} dB**	**Mt Arthur Coal Only L_{Aeq}[1] dB**	**Total L_{Ceq} dB**	**Total L_{Ceq} minus total L_{Aeq}[2,3] dB**	**INP L_{Ceq} Modifying Factor Criterion[4] dB**	**Modificatin Factor To Be Added to Mt Arthur Coal Only L_{Aeq} dB**	**INP L_{Ceq} Modifying Factor Criterion[4] dB**	**Adjusted Mt Arthur Coal Only L_{Aeq}**	**L_{Ceq} Criterion[5] dB**	**Comment**
NP13	18 July 2013	48	28	54	7	15	0	15	28	60	Road traffic and Mt Arthur Coal
NP07	21 August 2013	40	37	57	**17**[6]	15	0	15	37	60	Mt Arthur Coal and another mine continuum
NP07	1 April 2014 (constitutes March 2014 monitoring)	45	31	56	11	15	0	15	31	60	Mt Arthur Coal only
NP16	1 April 2014 (constitutes March 2014 monitoring)	37	31	51	14	15	0	15	31	60	Mt Arthur Coal only
NP16	16 April 2014	36	33	57	**21**[6]	15	0	15	33	60	Mt Arthur Coal and another mine continuum

		Measurements			Calculations						
Location	**Date**	**Total L_{Aeq} dB**	**Mt Arthur Coal Only L_{Aeq}[1] dB**	**Total L_{Ceq} dB**	**Total L_{Ceq} minus total L_{Aeq}[2,3] dB**	**INP L_{Ceq} Modifying Factor Criterion[4] dB**	**Modificatin Factor To Be Added to Mt Arthur Coal Only L_{Aeq} dB**	**INP L_{Ceq} Modifying Factor Criterion[4] dB**	**Adjusted Mt Arthur Coal Only L_{Aeq}**	**L_{Ceq} Criterion[5] dB**	**Comment**
NP07	26 May 2014	40	38	57	**17**[6]	15	0	15	38	60	Mt Arthur Coal continuum, other mine engine noise and road traffic engine noise

1. Mt Arthur Coal only $L_{Aeq\ (15min)}$ provided as a guide.
2. 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.
3. Bolded results are those that require a 5dB penalty to be added to the total Mt Arthur Coal only $L_{Aeq\ (15min)}$ at a monitoring location.
4. Low frequency criterion for adding a 5dB penalty to the total Mt Arthur Coal only $L_{Aeq\ (15min)}$ at a monitoring location.
5. Night L_{Ceq} criterion as detailed in Broner (2010).
6. 5dB penalty not required to be applied to the total Mt Arthur Coal only $L_{Aeq\ (15min)}$ due to other noise sources occurring during the measurement.

Noise-related Community Complaints

During the reporting period 57 per cent of the total complaints received related to noise, as shown in Table 39 along with a comparison to previous financial years. Of the noise complaints received in FY14, 125 (86 per cent) were related to machinery and low frequency noise at a single location, in comparison to 118 (84 per cent) in FY13. Eight of the noise complaints in FY14 were made by anonymous callers through third parties such as the EPA and the DP&E.

Real-time noise monitoring at the time each complaint was received in FY14 showed that noise levels from mining operations at the nearest monitor to the caller were within internal benchmark monitoring levels on all but one occasion on 8 May 2014. The complaint on 8 May 2014 was received from the EPA on behalf of a resident and the location of the resident was not disclosed. Mt Arthur Coal assessed all real-time noise monitors at the time of the complaint and noted elevated results at the South Muswellbrook monitor, however these elevated results were found to be due to local noise sources identified through recorded audio samples.

Table 39: Noise complaint statistics at Mt Arthur Coal

Noise complaints	**FY14**	**FY13**	**FY12**
Noise complaints received	145*	141*	43
Noise complaints received, as a percentage of total complaints	57%	60%	33%

* In FY14 125 (86%) and in FY13 118 (84%) of these noise complaints were from a single location.

3.9.3 Reportable Incidents

Mt Arthur Coal reported two attended noise monitoring exceedances in September 2013 at NP04 and in June 2014 at NP16 to the DP&E. On 6 September 2013 attended noise monitoring at NP04 recorded an $L_{Aeq\ (15min)}$ of 39 dB, although meteorological conditions meant the project approval criteria of 38 dB did not apply at the time. Additional monitoring was undertaken approximately an hour later to determine if the elevated result was sustained and a result of 38 dB was recorded. On 13 June 2014 attended noise monitoring at NP16 recorded an $L_{Aeq\ (15min)}$ of 39 dB against the project approval criteria of 38 dB. Additional monitoring was undertaken a few hours later to determine if the elevated result was sustained

and a result of <30 dB was recorded. 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 and 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

Mt Arthur Coal will continue to manage noise in accordance with project approval and other license conditions.

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.

Mt Arthur Coal's visual assessment procedure aims 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 procedure involves taking photographs from six locations along public roads surrounding Mt Arthur Coal on a quarterly basis for comparison against modelled predictions in the consolidation environmental assessment.

Mt Arthur Coal's light management procedure aims to mitigate, control and reduce the impact of lighting on the surrounding area. The procedure is 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. A field assessment of lighting at a number of off-site locations, representative of nearby residences, is also undertaken each month by an independent consultant to evaluate light management performance.

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 off site 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 a visual screening bund was constructed along the Denman Road boundary, from Maclean's Hill to the alluvial wall, and across Macleans Hill perpendicular to Denman Road. Construction started in October 2013 and was completed by February 2014. The visual screening bund was hydro-mulched to quickly establish vegetation and stabilise the bund. Tube stock was planted in front of and on the eastern visual bund across Macleans Hill in February 2014, which will provide further screening in the future. Due to the close proximity to the power lines which run along Denman Road, tree tube stock could not be planted on the visual screening bund along Denman Road although shrub species were included in the seed mix used on the bund to assist with the visual screen.

Mt Arthur Coal continued to operate fifteen mobile light-emitting diode (LED) lighting plants on site during the reporting period, to reduce lighting impacts on the environment and the community. These lighting systems use 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.

Lighting-related Community Complaints

Lighting complaints accounted for 12 per cent of the total complaints relieved during the reporting period, as shown in Table 40 along with a comparison to previous financial years. These lighting complaints were received from residents on Roxburgh Road (22 complaints), Skelletar Stock Route (five complaints) and Denman Road (three complaints). Three of the lighting complaints in FY14 were made by anonymous callers through third parties such as the EPA and the DP&E.

In cases where complaints were received at night, immediate action was taken to locate the offending light and, where possible, either redirect or relocate it to address the caller's concern.

During the reporting period there was an increase in lighting complaints compared with previous financial years, which corresponds to works and dumping activities progressing to the northwest of the mine site. To address these lighting concerns Mt Arthur Coal OCEs commenced nightly visual inspections of the mine site in April 2014, viewing from boundary roads towards the mine site, in order to identify and address any potential offending lights at the start of each shift.

Table 40: Lighting complaint statistics at Mt Arthur Coal

Lighting complaints	FY14	FY13	FY12
Lighting complaints received	30	9	16
Lighting complaints received, as a percentage of total complaints	12%	4%	12%

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.

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, in February and March 2014, salvage works of 17 Aboriginal sites was undertaken in pre-strip areas in advance of the active pit by registered archaeologists in consultation with attending representatives from the Aboriginal community. Mudstone and silcrete artefacts were the most common raw material types salvaged during the February and March 2014 salvage works and the most common artefact types were flakes, flake fragments and cores. A total of 152 Aboriginal objects were salvaged from the 17 Aboriginal sites in February and March 2014.

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.

The temporary Keeping Place was established on site at Mt Arthur Coal during the reporting period, as agreed with representatives of the Aboriginal community and archaeological items are continuing to be catalogued. The interpretative display will be established during the next reporting period.

During the reporting period Mt Arthur Coal celebrated Aboriginal cultural heritage during the 2013 National Aborigines and Islanders Day Observance Committee (NAIDOC) celebration in July 2013, which included an acknowledgement of country, smoking ceremony and traditional dance on site at the operation. Internal cultural respect training was also developed and delivered at Mt Arthur Coal during the reporting period.

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

Archaeological items will continue to be catalogued in the temporary Keeping Place at Mt Arthur Coal during the next reporting period. The interpretative display will also be established during the next reporting period and managed with the assistance of Aboriginal stakeholders.

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.

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

In July 2013 Mt Arthur Coal purchased an historic homestead in the local area located along Denman Road, known as Balmoral. Balmoral is a heritage-listed homestead with local significance and will be managed under the operation's European heritage management plan, which will be revised during the next reporting period to reflect the purchase of this property. In total Mt Arthur Coal now owns and manages five heritage-listed homesteads as follows:

- Edinglassie Homestead (state significance);
- Rous Lench Homestead (state significance);
- Edderton Homestead Complex (local significance);
- Belmont Homestead Complex (local significance); and
- Balmoral Homestead (local significance).

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 five 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.

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 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.

As suggested by the DP&E in the FY13 AEMR audit findings Mt Arthur Coal liaised with the Anglo American Drayton Coal mine to determine common audited suppliers to conduct a thermal imagery scan flight over affected areas of the two operations. All common suppliers were contacted, however none were available to undertake the scan during the winter period.

3.13.2 Environmental Performance

During the reporting period there was a nine per cent increase in the amount of area affected by spontaneous combustion. This increase occurred for a number of reasons, including excavation works for example for road construction to the red rock quarry area, which exposed areas of spontaneous combustion material and natural weathering.

An area of approximately 2,552 square metres (m^2) was affected by spontaneous combustion at the start of the reporting period. A total of 2,867 m^2 was treated during the period by the emplacement of overburden over areas affected by spontaneous combustion or by excavation and loading out of affected material. The majority of the treatment works were conducted in June 2014, resulting in 2,200 m^2 of spontaneous combustion being extinguished primarily by the strategic emplacement of overburden in CCL 744 (1,027 m^2) and by capping and excavation and loading out of spontaneous combustion material from Sublease CL 229 (764 m^2).

In addition, a total of 829 m^2 was naturally extinguished during the reporting period, the majority of this (793 m^2) was reported in June 2014. Note that most of this affected area may have actually naturally extinguished prior to June 2014, however in order to be conservative Mt Arthur Coal did not remove these areas from the spontaneous combustion inspection plans and database until the first winter survey, as spontaneous combustion is most easily detectable in winter. Suspect areas that were not visible during the June 2014 winter survey were considered to be naturally extinguished. An area of approximately 2,787 m^2 was affected by spontaneous combustion at the end of the reporting period.

A summary of the spontaneous combustion recorded for the period is presented in Table 41 and shown as a plot in Figure 14. A plan showing the location of remaining spontaneous combustion areas at the start of the reporting period is shown in Figure 15. The location of remaining spontaneous combustion areas on site at the end of the reporting period is provided in Figure 16.

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 intensity and evident in the form of occasional steam or smoke, posing a low risk to both employees and the environment, with the exception of the following five areas:

- a small outbreak area (26 m^2) in Huon Pit in the active mining area was detected in June 2013 was classified as major intensity due to low open flames being observed in the outbreak area. Works were scheduled to contain this outbreak and were completed in October 2013;
- two new areas detected in Sublease CL229 in February 2014 of size 212m^2 and 263m^2 were classified as moderate intensity due to the size of the areas affected (greater than 200m^2). The larger of the two areas was capped with overburden in March 2014 and the smaller of the two was capped in June 2014;
- a new area detected in CCL744 in May 2014 of size 863m^2 was classified as moderate intensity due to the size of the area affected. This area was capped with overburden in June 2014; and
- a new area detected in CCL744 in June 2014 of size 639m^2 was classified as moderate intensity due to the size of the area affected. Works have been scheduled to treat this area during the next reporting period.

Table 41: Summary of spontaneous combustion at Mt Arthur Coal in FY14

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 2013	2,552	12	0	59	2,599
August 2013	2,599	13	23	25	2,588
September 2013	2,588	0	71	742	3,259
October 2013	3,259	0	35	0	3,224
November 2013	3,224	5	24	119	3,314
December 2013	3,314	1	0	34	3,347
January 2014	3,347	0	12	94	3,429
February 2014	3,429	0	55	890	4,264
March 2014	4,264	5	319	5	3,945
April 2014	3,945	0	0	125	4,070
May 2014	4,070	0	128	1,142	5,084
June 2014	5,084	793	2,200	696	2,787
Total	2,552	829	2,867	3,931	2,787

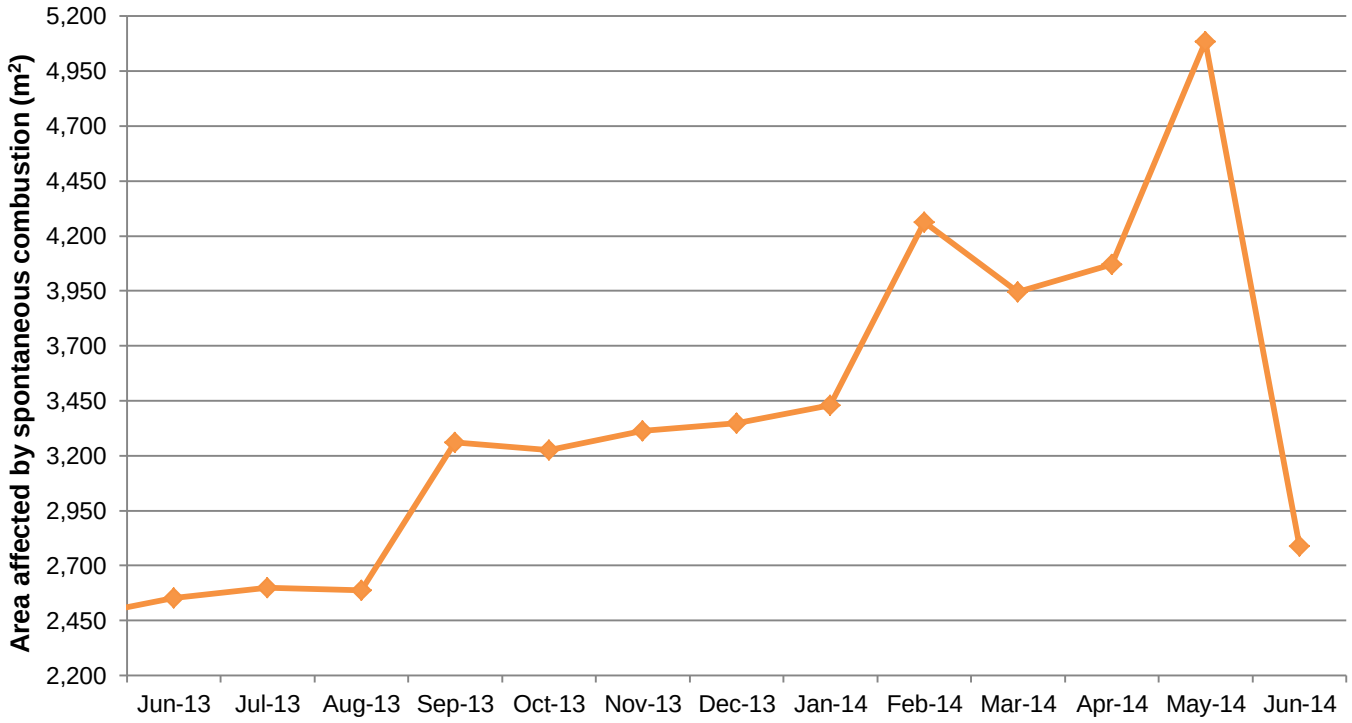


Figure 14: Area affected by spontaneous combustion at Mt Arthur Coal over past 12 months

Figure 15: Locations of spontaneous combustion at Mt Arthur Coal at start of reporting period

Figure 16: Locations of spontaneous combustion at Mt Arthur Coal at end of reporting period

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 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 assess the frequency with which aerial thermal imagery scanning is required to validate on the ground monitoring of spontaneous combustion undertaken on a monthly basis.

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.

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

During the next reporting period Mt Arthur Coal will continue to manage bushfire risk in accordance with relevant procedures.

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 previously 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. During the reporting period this EEO legislation was repealed, however Mt Arthur Coal will continue to investigate and implement feasible projects to reduce energy use and greenhouse gas emissions in accordance with BHP Billiton's sustainability commitments.

3.15.2 Environmental Performance

During the previous reporting period Mt Arthur Coal undertook substantial work to improve the measurement of open cut coal fugitive emissions reportable under the NGER legislation, using the higher order NGER Method 2. The higher order method was used during this reporting period.

Scope 1 emissions, as defined by NGER legislation, accounted for approximately 84 per cent, while Scope 2 emissions, resulting from the use of electricity purchased from the grid, accounted for the remaining 16 per cent of all greenhouse gas emissions from Mt Arthur Coal, as displayed in Figure 17. The composition of emissions is the same as the previous financial year; however there is a slight increase in total volume of emissions due to increased diesel usage as a result of an increase in production.

Approximately 95 per cent of Scope 1 emissions resulted from diesel and biodiesel combustion, while approximately 4.5 per cent resulted from open cut coal fugitive emissions. Emissions from combusted petroleum based oils (PBOs) and from the onsite wastewater treatment plant made up the remaining Scope 1 emissions for the reporting period, as displayed in Figure 17.

During the reporting period approximately 94 per cent of energy consumed at Mt Arthur Coal was attributed to diesel and biodiesel use in mobile and stationary equipment and in explosives, while electricity consumption from the grid accounted for approximately five per cent. Energy consumed from non-combusted PBOs and grease, combusted PBOs and self-generated electricity accounted for the remaining energy consumed for the reporting period, as displayed in Figure 17.

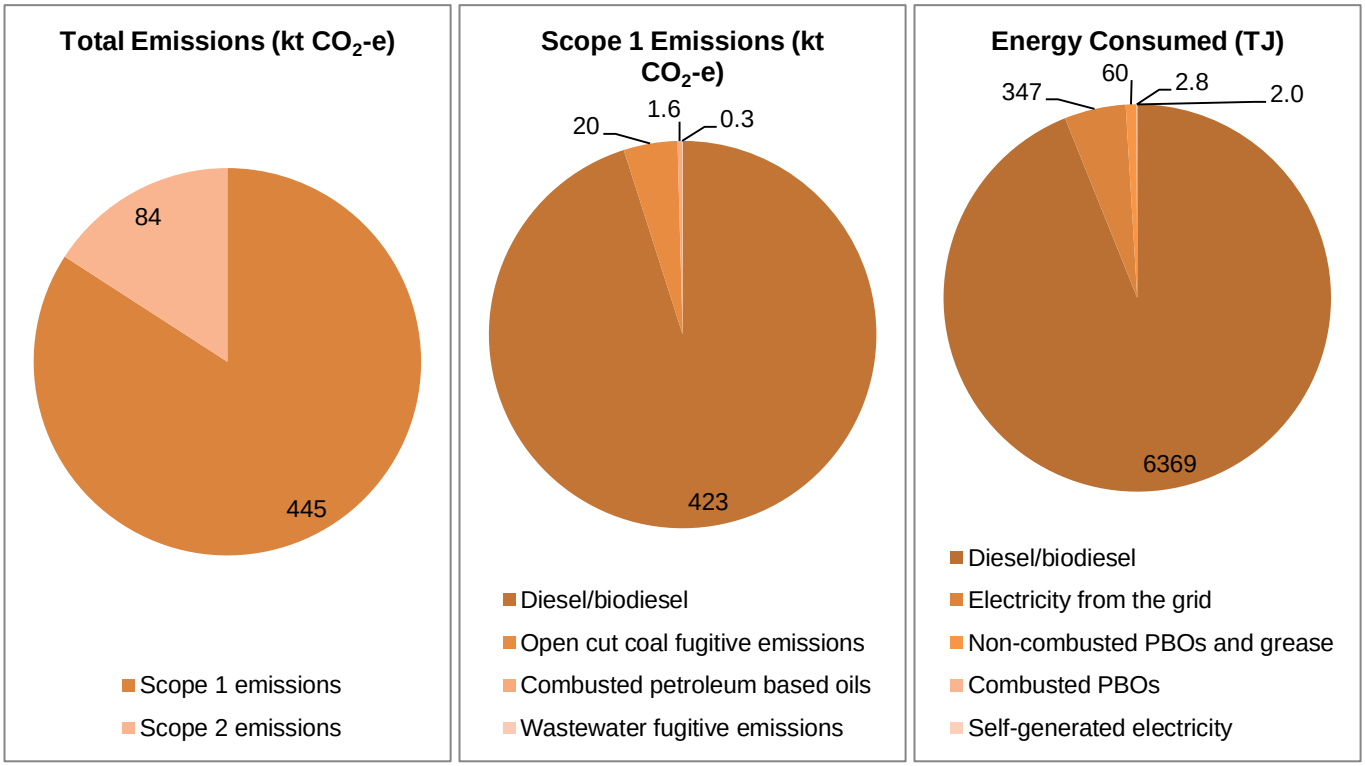


Figure 17: Composition of Mt Arthur Coal emissions and energy consumption during the reporting period

Mt Arthur Coal continued to utilise a five per cent biodiesel blend to fuel mobile plant and vehicles in the reporting period. Towards the end of the previous reporting period a 'super bridge' in the active mining area was constructed to reduce haulage distances in the pit, which in turn reduces diesel usage. During the reporting period this project contributed approximately 22 kt CO_2-e of greenhouse gas emissions abatement at Mt Arthur Coal's operation.

Other 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 also 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 and, where feasible, implement projects to mitigate, substitute, reduce or eliminate energy consumption and greenhouse gas emissions in accordance with BHP Billiton's sustainability commitments.

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 inspection 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 4,593 tonnes of waste sent off site for management, which was approximately a 17 per cent decrease on the previous financial year's result of 5,559* tonnes, a significant improvement. The recyclable component of the waste produced and sent off site for management was 78 per cent overall, as visually displayed in Figure 18. This is a lower recyclable component compared with results from FY13 at 84 per cent, however is due to a change in waste management practices on site, to first elect for reuse options where available, which has not been captured in the waste statistics reported. This also partially accounts for the reduction in total tonnes of waste sent off site for management.

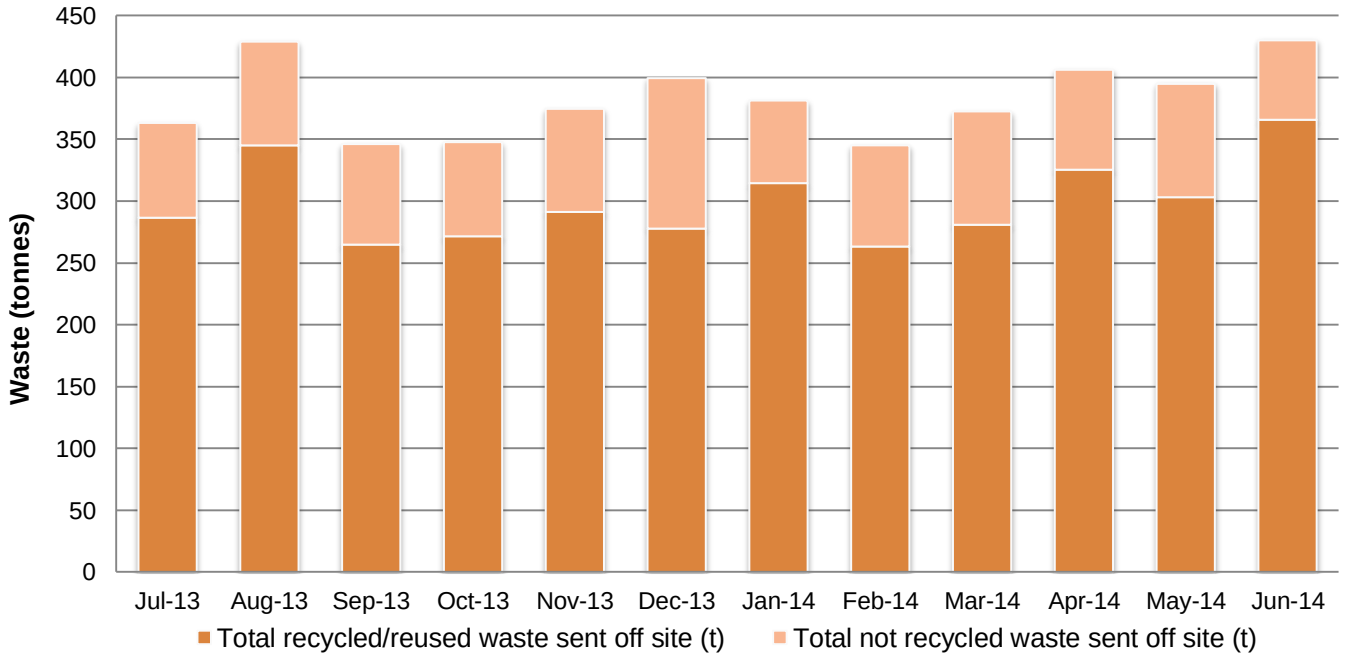


Figure 18: Waste disposal from Mt Arthur Coal

There has been an increased focus on reuse of waste generated on site during the reporting period. This has included return of intermediate bulk containers to suppliers, and auctioning of items such as cyclones, used conveyor belt and intermediate bulk containers that are not owned by suppliers. While this has impacted on the reported recycling rate, as this reused waste material is not captured in the waste statistics presented, it is an improved environmental outcome.

During the reporting period two additional oil water separators were commissioned onsite to treat water from the workshop and associated bulk hydrocarbon storage areas. When analysing oily water data for FY14 an error was identified in previously reported statistics. This waste category was erroneously included in total waste sent off site for management. Oily water is actually not sent off site for management, but rather is pumped from various areas of the mine site into the onsite oil water separators for processing. Waste oil and waste grease, the outputs from the oil water separators, are then sent off site for management. Data for previous financial years was re-analysed and where FY13

* Previously reported 5,674 tonnes in FY13 AEMR for this figure due to error

and FY12 results are now different to those reported previously they have been marked with an asterix in this section.

Historically, effluent has been the largest contributor to total waste that was sent off site for management. During the previous reporting period Mt Arthur Coal completed an upgrade of the onsite effluent treatment plant and commenced treatment of non-sewered holding tank wastes on site. During this reporting period the majority of effluent (94 per cent) continued to be treated onsite, rather than sent off site for treatment, with effluent generally only being sent off site for treatment if there were issues with the onsite effluent treatment plant, such as capacity issues.

The breakdown and largest four contributors to total waste sent off site for management are shown in the pie charts in Figure 19 for FY14, FY13 and FY12. The materials constituting the largest four contributors have remained the same across these three financial years; waste oil, general waste, scrap steel and effluent sent off site. However, their percentage contributions have changed over time due to changes in waste management practices, as discussed above, particularly regarding effluent from FY13 onwards and scrap steel in FY14. With the exception of general waste, the largest four contributors are all recycled waste.

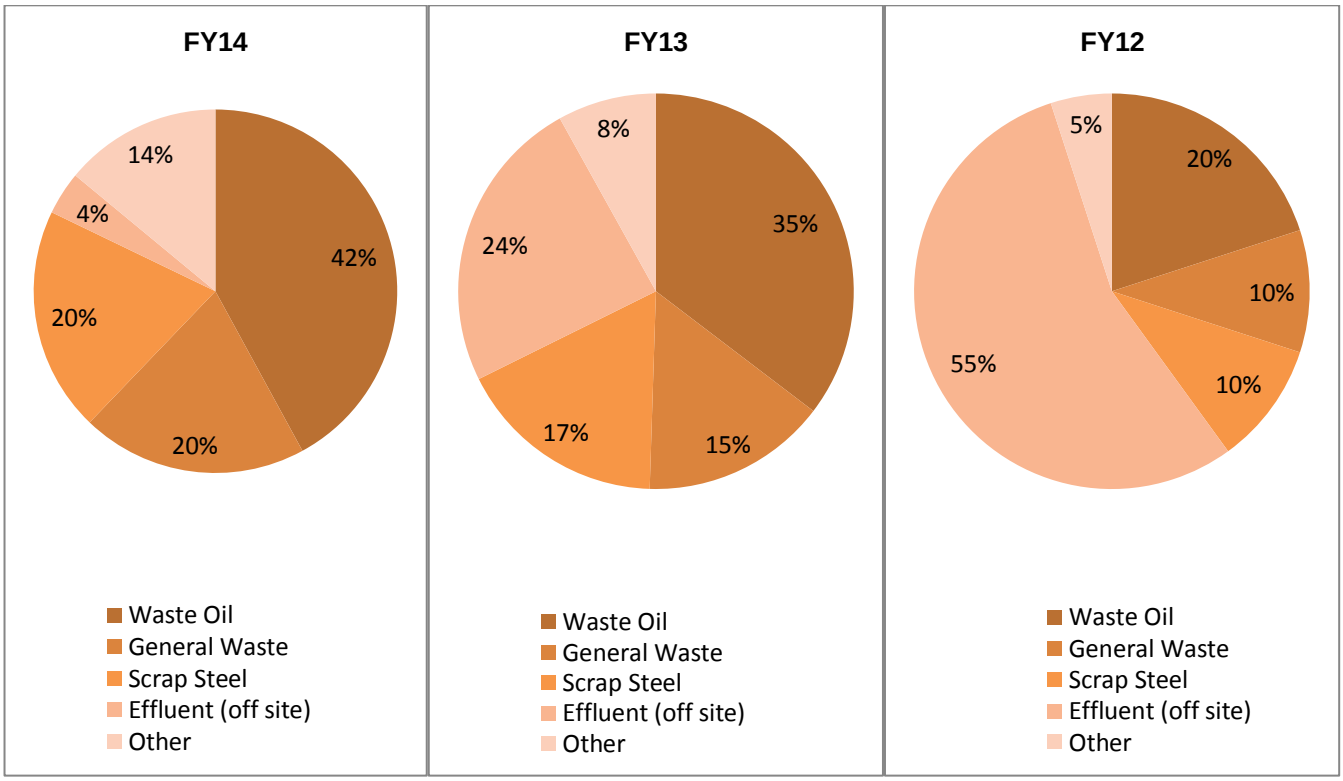


Figure 19: Breakdown of total waste sent off site for management showing largest contributors

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

During the reporting period Mt Arthur Coal completed the installation of a security fence around much of the perimeter of its site to ensure no unauthorised access to mining areas. The fence was installed on land owned by Mt Arthur Coal along the general alignment of the existing fence line.

A number of additional boom gates were also installed during the reporting period to restrict unauthorised or unintentional access to the active mining and infrastructure areas. These will be commissioned in the next reporting period.

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

Mt Arthur Coal will commission additional boom gates at identified entry points to active mining and infrastructure areas during the next reporting period.

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 primary 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 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 minimise impacts on the environment and community. It also plays a vital role in the pre-blast environmental assessment to minimise potential impacts on the community.

In accordance with the approved monitoring program, a secondary statutory real-time meteorological station was installed during the reporting period, located off site to the north west of the mine at Wellbrook (WS10), and commissioned on 22 August 2013. This station also provides representative weather data for the mine site, including prevailing wind conditions, and is used in conjunction with WS09 to determine the presence and strength of temperature inversions in the local atmosphere as part of the pre-blast environmental assessment.

Both statutory meteorological stations comply with the Australian Standard 2923-1987 *Ambient Air – Guide for measurement of horizontal wind for air quality applications* and the NSW INP.

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 5.

3.18.2 Environmental Performance

A summary of meteorological data recorded at WS09 and WS10 during the reporting period is provided in Table 42, along with a comparison to monitoring results from previous financial years for WS09. Monthly meteorological data from WS09 and WS10 for the reporting period is provided in Appendix 6. Meteorological data capture rates for the reporting period were 100 per cent at WS09 and WS10 with the following exceptions:

- 10 metre temperature and relative humidity data was not recorded at WS09 for a period of 93 days from 30 March to 30 June 2014 due to a broken sensor. The access road to the meteorological station is currently not suitable for the transportation of the equipment required to replace the broken sensor, which involves working at heights. Road repair works are currently being arranged in order to repair the sensor for the next reporting period;
- a lightning strike at WS10 at approximately 10:30 on 17 February 2014 caused a power outage and damaged the data logging equipment. Power was restored on 19 February 2014 and data logging equipment was replaced on 13 March 2014, hence all data from 17 February 2014 to 13 March 2014 was invalid. The lightning strike also damaged the anemometer, preventing wind speed and direction data from being correctly recorded until 5 May 2014 when the anemometer was replaced (replacement had to be sourced internationally, hence the delay in repairs);
- valid relative humidity data at WS10 was not recorded for a period of 94 days from 29 March to 30 June 2014 due to a faulty sensor. The sensor will be inspected and replaced/repaired as required during the next reporting period; and
- other power outages at WS10 have meant that valid daily data was not recorded during the following periods:
    - 7, 19 and 20 October 2013;
    - 7 to 28 April 2014; and
    - 22 and 23 May 2014.

Table 42: Summary of meteorological results from WS09 and WS10

Parameter	Units	WS09				WS10
		FY14	FY13	FY12	FY11	FY14*
Total rainfall	mm	638.2	542.6	783.2	405.5^	359.2
Maximum monthly rainfall	mm	194.0 (November 2013)	135.4 (January 2013)	162.2 (November 2011)	126.8 (June 2011)^	212.2 (November 2013)
Minimum monthly rainfall	mm	5.0 (August 2013)	4.2 (October 2012)	10.8 (July 2011)	0.7 (August 2010)^	0.0 (March and April 2014)
Maximum monthly temp.	°C	38.2 (December 2013)	42.6 (January 2013)	34.6 (January 2012)	41.5 (January 2011)	38.7 (January 2014)
Minimum monthly temp.	°C	1.0 (July 2013)	0.0 (July 2012)	0.9 (July 2011)	-0.4 (May 2011)	-2.8 (August 2013)

* Commissioned on 22 August 2013, hence full FY14 dataset is not available.
^ Issues with the WS09 rain gauge from July 2010 to January 2011 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 20.

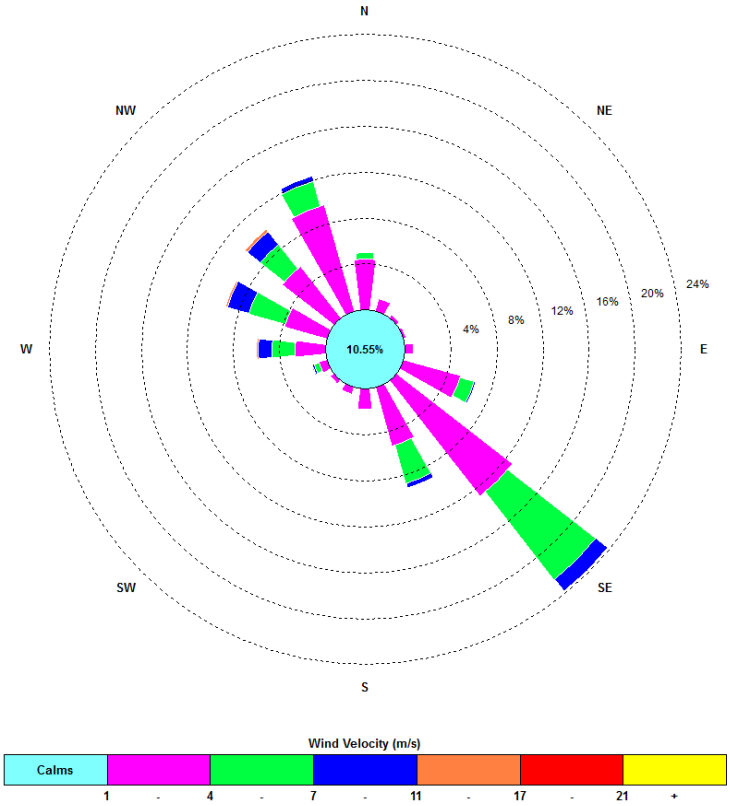


Figure 20: Mt Arthur Coal annual wind rose for FY14 from WS09

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 continue to record and utilise meteorological data from its two statutory monitors 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 255 complaints from community members and near neighbours. Twenty-four of these complaints were made by anonymous callers through third parties such as the EPA and the DP&E. A comparison of complaints received during the reporting period against previous financial years is shown in Figure 21 and a complete register of complaints can be found in Appendix 7.

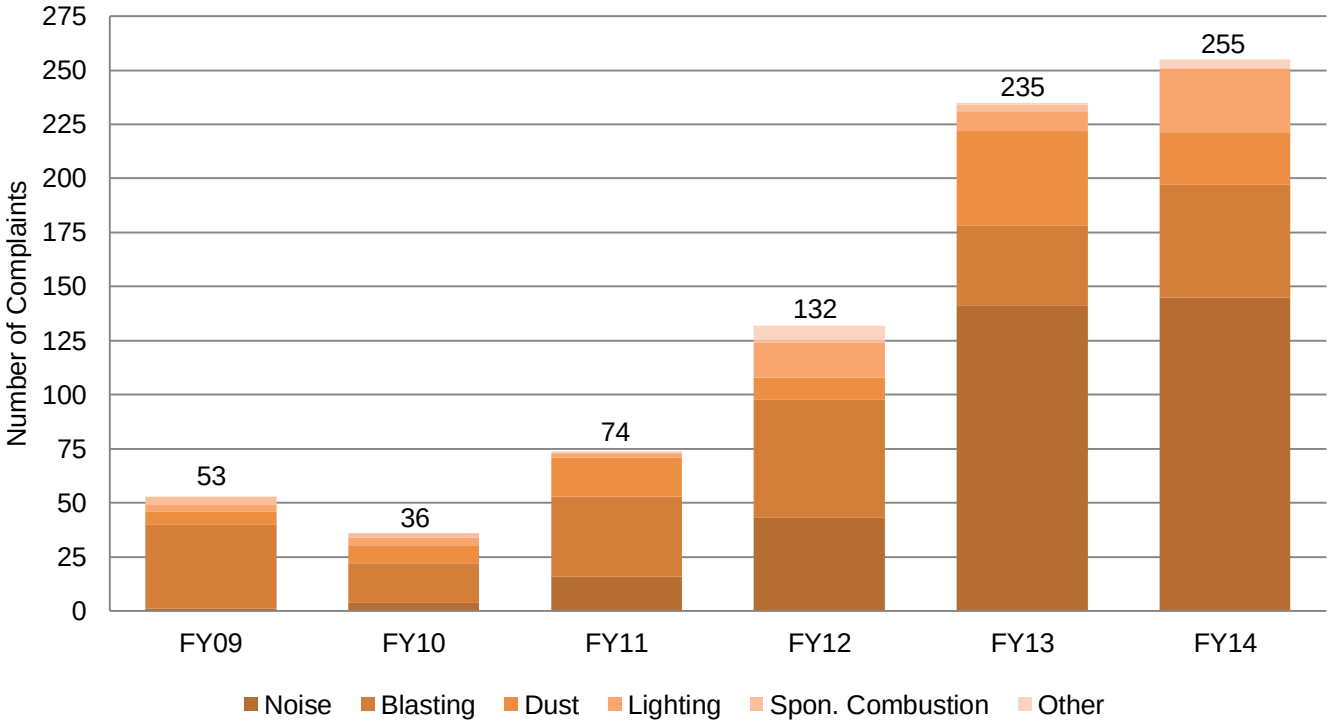


Figure 21: Comparison of complaints received during current and previous financial years

Complaints relating to dust, blasting, noise and lighting have been discussed in each of their respective Sections 3.1.2 (air quality), 3.8.2 (blasting), 3.9.2 (noise) and 3.10.2 (visual amenity and lighting) in this report. Other complaints received are discussed below. There were four complaints in the 'other' category in FY14.

Two complaints were received during the reporting period regarding the surface water runoff incidents discussed in Section 3.2.3. The callers indicated that there was water on Denman Road during each of the incidents on 28 March and 4 April 2014. Mt Arthur Coal had already commenced a response to these incidents at the time.

Two complaints were also received during the reporting period from the same caller regarding kangaroos on and surrounding Mt Arthur Coal's mine site, particularly dead kangaroos along roads adjacent to the mine site. The caller was advised to contact Muswellbrook Shire Council's ranger to discuss the issue.

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.

Community engagement is the foundation of 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 website 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 distributes regular newsletters to local residents and stakeholders and undertakes a range of media activities.

Mt Arthur Coal's free-call 24-hour Community Response Line (1800 882 044), which is advertised in local newspapers monthly and in other media, 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 bi-monthly CCC meetings as shown in Table 43.

Key items discussed during the year included:

- operational schedules, equipment and infrastructure upgrades, processing, transport and production results;
- environmental monitoring results and management plans;
- community investment and engagement activities;
- community complaints;
- approval timeframes for the Mt Arthur Coal Open Cut Modification Project; and
- work undertaken by the Upper Hunter Mining Dialogue.

On 6 October 2013 Mt Arthur Coal's CCC was invited to a site visit of the alluvial trench and bund along Denman Road, which forms the low permeability barrier along the area of connection between mining and the Hunter River alluvium. Mt Arthur Coal's CCC was also invited to observe a blast at the mine on 9 April 2014. Both events were well attended and well received.

During the reporting period Mt Arthur Coal was also involved in two Joint CCC meetings with Anglo American's Drayton Coal. These meetings allow the two operations to discuss issues surrounding rail movements, air quality and noise monitoring results relating to their joint rail loading facility. The dates of these meetings are provided in Table 43.

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 local residents and representatives from both Mt Arthur Coal and MSC. All CCC meeting minutes and documents are made available on the BHP Billiton website within 28 days of a meeting's occurrence.

Table 43: Mt Arthur Coal CCC meetings

Mt Arthur Coal CCC
7 August 2013
3 October 2013
4 December 2013
5 February 2014
9 April 2014
5 June 2014 (cancelled due to lack of attendance by community members)
Mt Arthur Coal and Drayton Coal Joint CCC
15 August 2013 (coordinated by Mt Arthur Coal)
13 March 2014 (coordinated by Drayton 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 Mt Arthur Coal's CCC, school students, potential candidates for apprenticeships and university and TAFE students.

4.2.4 Community Investment

Mt Arthur Coal invests in projects that address 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, both financially and in-kind. Table 44 lists the organisations, projects and events supported by Mt Arthur Coal during the reporting period.

Table 44: Community funding recipients for FY14

Organisation	Project or activity
Graham (Polly) Farmer Foundation*	Muswellbrook Partnerships for Success
Hunter Life Education*	School drug and alcohol education program
Muswellbrook South Public School*	Warrae Wanni Pathways to School Program
Muswellbrook Shire Council and Upper Hunter Community Services Inc.*	Community Capacity Building Project
Upper Hunter Drug and Alcohol Service*	Funded the position of Social Emotional Wellbeing Worker
Muswellbrook Race Club*	2013 Mt Arthur Coal Muswellbrook Gold Cup
Aberdeen Highland Games Committee	2013 Aberdeen Highland Games
Black Coal Cup Fundraising Committee	2013 Black Coal Cup Charity Golf Day in support of Westpac Rescue Helicopter Service
Muswellbrook and Upper Hunter Eisteddfod	2013 and 2014 Muswellbrook and Upper Hunter Eisteddfods
Muswellbrook Race Club	Educational partnership in support of industry diversification
Muswellbrook Chamber of Commerce and Industry Inc.	2013 business awards
Muswellbrook South Public School	Breakfast Club
Scone Grammar School	The Wiz theatre production
NSW Minerals Council	2013 Environment and Community Conference 2014 Health and Safety Conference 2014 NSW Women in Mining Awards 2014 Scholarship Program
Outreach Global Care Christian Network	2014 Multicultural ladies program

* 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.

During the reporting period, $500,000 was contributed from the Mt Arthur Coal Community Fund towards the construction of a new student residence at TAFE Muswellbrook, with preference for the accommodation to be given to students enrolled in the Mining Skills program.

4.2.5 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 attended a number of company-sponsored community events during the reporting period, some of which are listed in Table 45.

Table 45: Events supported and attended by Mt Arthur Coal employees in FY14

Event
Clean Up Australia Day
Muswellbrook Public School Karoola Park Cross Country
Muswellbrook South Public School Breakfast Club

Event
Denman Horse Trials
Muswellbrook PCYC Christmas Appeal
Denman Sandy Hollow Junior Rugby League Home Games
Muswellbrook and Upper Hunter Eisteddfod
Aberdeen Highland Games
Muswellbrook Gifted And Talented Students Program

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 the BHP Billiton Matched Giving Program donated approximately $404,135 to more than 88 different charities and not-for-profit organisations to match financial and volunteering contributions of NSW Energy Coal employees to organisations such as the Westpac Rescue Helicopter Service and Muswellbrook Police Citizens Youth Club (PCYC).

5 Rehabilitation

5.1 Buildings

A Phase 2 Contamination Assessment was completed for the disused Bayswater No. 2 infrastructure area and a Remedial Action Plan was developed and approved by DPE in May 2014. Project planning is currently underway for the dismantling and removal of structures which is expected to commence in FY17.

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, existing BRMP and Land Management Procedure.

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 runoff 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. Drop structures were constructed on CD1 and SD2 in the reporting period.

Topsoil stripped ahead of advancing mining (as discussed in Section 2.2) was stockpiled during the reporting period. 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;
- testing topsoil to determine appropriate depths for stripping and recovery and ameliorant requirements;
- 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; and
- felling and mulching trees in situ on disturbance areas to increase organic content within the stockpiled soil.

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.

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, 21 hectares of rehabilitation was to grazing pasture classified as land capability class six. This classification is based on landform slopes of between five 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 46.

Table 46: 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 18.6 hectares of woodland rehabilitation established during the reporting period (at VD1 and CD1) was seeded with a seed mix targeting the establishment of Upper Hunter Box-Ironbark Woodland vegetation community.

The woodland seed mix consists of appropriate native tree and grass species as listed in Table 47. 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. The woodland seed mix used by Mt Arthur Coal during the reporting period is shown in Table 47.

Table 47: 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

Species	Seed mix kg/ha
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 16.2 kilograms of seed from remnant native vegetation located on Mt Arthur Coal owned land in the vicinity of the project. A further 1.8 kilograms of seed was collected from remnant native vegetation at the Middle Deep Creek offset area. This seed is 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 3,000 tubestock seedlings were planted in offset areas during the reporting period. Tubestock planting in the next reporting period will be undertaken in accordance with the current MOP and recently submitted BMP once approved.

Prior to vegetation clearing, pre-clearance surveys are undertaken, with support from qualified ecologists, to identify potential habitat features. During the reporting period, large surface rocks raked clear of rehabilitated areas were placed in piles as habitat features adjacent to areas rehabilitated during the reporting period.

During the reporting period Mt Arthur Coal completed 47.5 hectares of rehabilitation on areas of the site as listed in Table 48. This is in accordance with the total rehabilitation proposed in the current MOP for FY14. There were some minor variations in the locational distribution of rehabilitation, compared to what was proposed in the current MOP due to availability of emplacement areas to be reshaped. Twenty six hectares of previously rehabilitated areas were disturbed in the reporting period.

Table 48: Mt Arthur Coal rehabilitation undertaken in FY14

Location	FY14 MOP commitment hectares	Rehabilitated area hectares
VD1	16	11.7
CD1	9	6.9
Saddlers North	22	28.9
Total	47	47.5

The rehabilitation plan in Appendix 8 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. Progressive rehabilitation of shaped overburden areas during the next reporting period will continue to be undertaken in accordance with the sequence outlined in the current MOP. Additional information about rehabilitation activities undertaken during the period can be found in Table 49.

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 50.

The aerial seeding program at Mt Arthur Coal also continued during the reporting period with approximately 100 hectares of exposed overburden not yet ready for final rehabilitation seeded with a season appropriate pasture mix. Due to the limited amount of rain received since seeding, germination has not yet occurred, but it is expected that with sufficient rainfall results will be similar to previous years, with germination across the area without the need for cultivation or irrigation and in the absence of topsoil.

Table 49: Mt Arthur Coal rehabilitation summary

Domain	Area affected or rehabilitated hectares		
	Reporting period (1 July 2013 - 30 June 2014)	**Previous reporting period (1 July 2012 - 30 June 2013)**	**Next reporting period (estimated) (1 July 2014 - 30 June 2015)**
A: MINE LEASE AREA			
A1 Mine lease area	8,475	8,475	8,522
B: DISTURBED AREAS			
B1 Infrastructure area	411	459	411
B2 Active mining areas	1,195	1,127	1,280
B3 Unshaped waste emplacement	1,483	1,403	1,419
B4 Tailings storage facility	85	73	85
B5 Shaped overburden emplacement	3	11	0
Other disturbed land	62^	-	62
All disturbed areas	3,238	3,072	3,298
C: REHABILITATION PROGRESS			
C1 Total Rehabilitated area – except for maintenance	977**	956*	1,026
D: REHABILITATION ON SLOPES			
D1 10 to 18 degrees	22.9	22.9	22.9
D2 Greater than 18 degrees	0	0	0
E: SURFACE OF REHABILITATED LAND			
E1 Pasture and grasses	412	391	429
E2 Native forests or ecosystems	565	565	612
E3 Plantations and crops	0	0	0
E4 Other	0	0	0

^ These are areas that have had land disturbed but do not fall into the mining footprint, such as topsoil stripping for areas to be drilled and mined, including the visual bund along Denman Road and the new erection pad.

* This cumulative value was reported as 975 hectares in the FY13 AEMR. During the reporting period survey validation indicated that some small areas on site had been incorrectly included as rehabilitation prior to FY13. Hence this FY13 value has been updated accordingly.

** This cumulative value includes 47.5 hectares of rehabilitation undertaken during the reporting period, with the disturbance of 26 hectares of rehabilitated areas during the reporting period subtracted.

Table 50: Maintenance activities on rehabilitated land

Nature of treatment	Area affected or rehabilitated hectares			Comment, control strategies or treatment
	Reporting period (1 July 2013 - 30 June 2014)	Previous reporting period (1 July 2012 - 30 June 2013)	Next reporting period (estimated) (1 July 2014 - 30 June 2015)	
Additional erosion control works	0.8	0	0	Drop structures were constructed on CD1 and SD2.
Re-topsoiling	0	0	0	-
Soil treatment	0	0	0	The requirement for soil to be treated will be determined by chemical testing prior to use for rehabilitation during the next reporting period.
Reseeding and replanting	0	15	0	1,000 tubestock planted in the Thomas Mitchell Drive on site offset area and 2,000 tubestock planted in the Thomas Mitchell Drive off site offset area. Works during next reporting period will be primarily based on the requirements of the BMP when approved.
Weed Control	141.7	1,043	To be determined	Targeting African Boxthorn, Mother of Millions, Prickly Pear, St Johns Wort and various thistles on buffer and offset areas. Area reported covers buffer and offset areas. Works in next reporting period to be determined by annual weed survey to be completed in Spring 2014.
Feral animal control	3,290	3,700	3,200	Wild dog and fox baiting across Mt Arthur Coal buffer areas, Bayswater rehabilitation area and onsite offset areas.

5.3 Other Infrastructure

During the reporting period, 75 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, the disturbed areas of the site are hand-seeded with the pasture rehabilitation mix.

5.4 Rehabilitation Trials and Research

During the reporting period further preparations were made for a grazing trial on mine rehabilitated land, including establishment of additional perimeter fencing at proposed trial areas, installation of water supply infrastructure for livestock and cattle yards for temporary holding of cattle. This trial will form part of an industry-wide rehabilitation grazing study being coordinated through the Upper Hunter Mining Dialogue, an initiative of the NSW Minerals Council. The study will also be supported by a range of community, industry, business groups and government stakeholders.

In April, a site visit for the Land Management Joint Working Group of the Upper Hunter Mining Dialogue was hosted at Mt Arthur Coal to look at the proposed 60 hectares of rehabilitated and unmined sites (analogue sites) set aside for the grazing trial. Final funding for the grazing trial through the Australian

Coal Association Research Program and the DRE was confirmed in March 2014. Baseline monitoring of land and pasture condition was undertaken prior to the introduction of cattle into the study areas. The grazing study project will commence early in the next reporting period, with cattle planned to be moved onto grazing sites in July 2014.

In FY13 supplementary replanting trials were carried out on VD1 to improve the ratio of tree to pasture cover, with the objective of re-establishing Box-gum Grassy Woodland. Monitoring of seedlings during this reporting period has demonstrated a reasonable success rate for this trial.

Mt Arthur Coal also participated in the Upper Hunter Mining Dialogue land management working group. 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 land management across the region.

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 existing BRMP and Land Management Procedure provide specific management actions required to achieve these outcomes.

Mt Arthur Coal underwent a process to separate the rehabilitation and biodiversity aspects of the existing BRMP into separate documents during the reporting period. A BMP was developed and submitted to the DP&E and the Department of the Environment on 30 June 2014 for approval, to cover the biodiversity aspects. The current MOP and subsequent MOPs will detail rehabilitation planning information. Together the BMP and MOP documents detail information relevant to the final rehabilitation plan for Mt Arthur Coal.

Mt Arthur Coal lodged an application with the DP&E during the previous reporting period to modify its existing consolidation project approval. The modification project includes the continuation of open cut mining operations at Mt Arthur Coal for an additional four years. 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, were 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, which have already been integrated into the recently submitted BMP, will be integrated into the next MOP and revised draft closure plan.

6 Activities Proposed for 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.

Table 51 outlines a progress summary of Mt Arthur Coal's performance against targets set for the FY14 period. Two projects that had a status of 'in progress' in the FY13 AEMR have been carried forward into this reporting period as well.

Mt Arthur Coal has established the following targets for the next reporting period, FY15:

- Complete a trial to assess the suitability of a bitumen product for dust suppression on haul roads;
- complete a trial for a predictive dust model that builds upon existing weather prediction components by integrating dust dispersion modelling;
- continue investigating the practicality of a future landscapes design project at Mt Arthur Coal;
- investigate and, where feasible, implement projects to mitigate, substitute, reduce or eliminate energy consumption and greenhouse gas emissions;
- investigate and, where feasible, implement projects to reduce water consumption;
- update and refine the site water balance model;
- implement the BMP, pending DPE approval;
- conduct an external specialist review of the aerial seeding program to identify improvement opportunities;
- finalise the comprehensive review of Mt Arthur Coal's ground water monitoring program;
- commence the grazing study project and move cattle onto grazing sites; and
- employ at least eight first-year apprentices from the local community.

Table 51: Mt Arthur Coal's performance against targets for FY14

Target	Status	Performance
Complete and lodge an application for the new consolidated mining lease	Not completed (substituted with another project)	Mt Arthur Coal decided not to pursue this project and instead submitted an Application for Mining Lease for mining purposes only to the DRE, which is currently under assessment for a small area adjacent to existing leases and licences.
Continue investigating the practicality of a future landscapes design project at Mt Arthur Coal	Ongoing	Further environmental and cost investigations to determine the feasibility of the future landscapes design project will be identified during the next reporting period.
Continue investigating the feasibility of dust reduction projects identified in the PRP report	Completed	In March 2013 Condition U1 titled Coal Mine Particulate Matter Control Best Practice was removed from EPL 11457 due to its satisfactory completion. Nevertheless, details of projects that were ongoing and completed at Mt Arthur Coal during this reporting period are discussed below. An operating manual for aerial seeding was developed for the vegetative ground cover project. The purpose of this document is to provide a detailed description of the process required to undertake aerial seeding operations. An additional three projects were assigned completion dates in December 2013. These related to investigating chemical wetting agents, surface crusting agents and chemical suppressants. During the reporting period Mt Arthur Coal undertook a trial to investigate the dust reducing properties of six different suppressants. As a result of the trial, Mt Arthur Coal is currently undertaking a project to apply a bitumen product to seven kilometres of haul roads. An improved liquid polymer product is now being applied to all other haul roads which do not have the bitumen product applied.

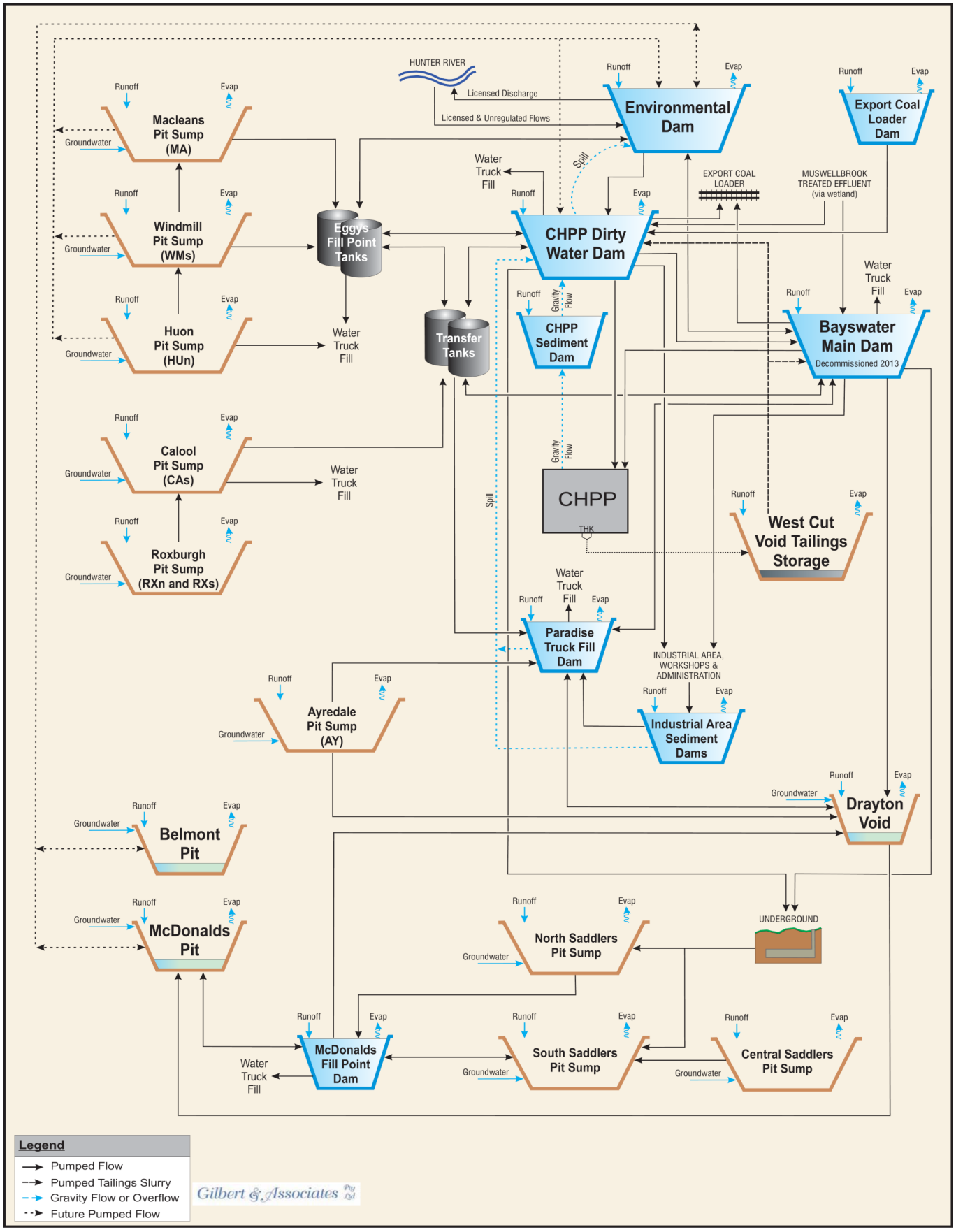
Target	Status	Performance
Trial a predictive dust model to facilitate management of dust during forecasted adverse weather conditions	NSW Minerals Council trial – Complete Mt Arthur Coal trial – in progress	Mt Arthur Coal participated in the NSW Minerals Council led initiative to trial a predictive dust tool. The trial was completed and predictions have been embedded into site operations. Mt Arthur Coal is trailing its own dust tool to work on improving the accuracy and reliability of the predictions in order to better manage dust emissions from its operations.
Investigate the need for additional near-field, real-time air quality monitoring stations to be used for internal management purposes	Completed	Mt Arthur Coal reviewed the locations of all current real-time air quality monitoring equipment to ensure they were representative of sensitive receptors surrounding the mine and also enabled Mt Arthur Coal to react to changing conditions to reduce impacts on surrounding receivers. An additional near-field mobile monitor was incorporated into the management system during the reporting period for internal management purposes only.
Install two statutory real-time PM_{10} TEOM monitoring stations	Completed	In accordance with the approved Air Quality Monitoring Program the following two new statutory monitoring stations were installed: • Wellbrook (DC09), which commenced operating on 6 July 2013 and effectively replaced the former monitoring station at DC01 that was decommissioned in June 2013; and • Antiene (DC07), which commenced operating on 16 December 2013.
Install two statutory blast monitoring stations	Completed	In accordance with the approved Blast Monitoring Program the following two new statutory blast monitors were installed: • BP10 (North Yammanie), which was installed on 26 June 2014 and effectively replaced the former monitor BP06 (Yammanie) that was decommissioned in June 2013; and • BP11 (Balmoral Road), which was installed on 27 June 2014 and effectively replaced the former monitor BP05 (Antiene) that was decommissioned in June 2013.
Install one statutory real-time meteorological station	Completed	In accordance with the approved Air Quality Monitoring Program the following new statutory real-time meteorological station was installed: • Wellbrook (WS10), which was installed on 22 August 2013.
Review the recruitment program at Mt Arthur Coal to encourage greater local recruitment	Completed	The recruitment program was reviewed during the reporting period.
Employ at least eight first-year apprentices from the local community	Completed	Mt Arthur Coal welcomed eight new apprentices from the local community to the operation during the reporting period, as part of Mt Arthur Coal's commitment to employing and training local people for local jobs.
Install a real-time noise monitor to assist in the management of noise impacts at nearby properties	Completed	A real-time noise monitor was installed at Antiene on 15 December 2013, which is a shared monitor with AngloAmerican for Drayton Coal mine. This monitor was used for internal management purposes during the reporting period.

7 Acronyms

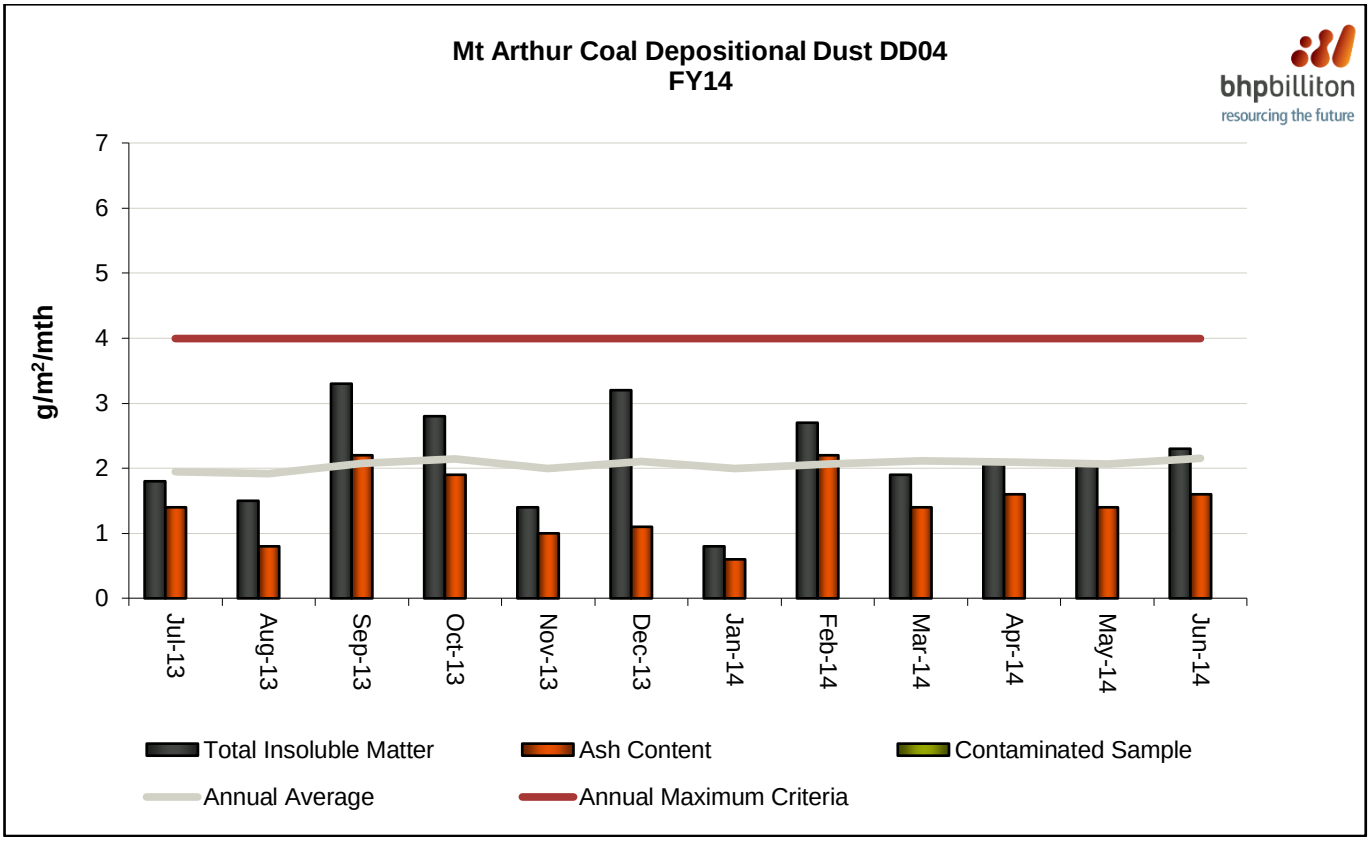
AEMR	Annual environmental management report
bcm	Bank cubic metres
BMP	Biodiversity management plan
BRMP	Biodiversity and rehabilitation management plan
CCC	Community consultative committee
CCL	Consolidated coal lease
CHPP	Coal handling preparation plant
CL	Coal lease
dB	Decibels
dBL	Decibels linear (for blast overpressure noise)
DoE	Commonwealth Department of the Environment
DP&E	NSW Department of Planning and Environment
DRE	NSW Division of Resources and Energy, within the NSW Department of Trade and Investment, Regional Infrastructure and Services
EA	Environmental assessment
E-BAM	Electronic Beta Attenuation Monitor
EC	Electrical conductivity
EEO	Energy efficiency opportunities
EL	Exploration licence
A	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
ESCP	Erosion and sediment control plan
FY	Financial year
ha	Hectares
HRSTS	Hunter River Salinity Trading Scheme
HVAS	High volume air sampler
INP	Industrial Noise Policy
ISO	International Standards Organisation
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

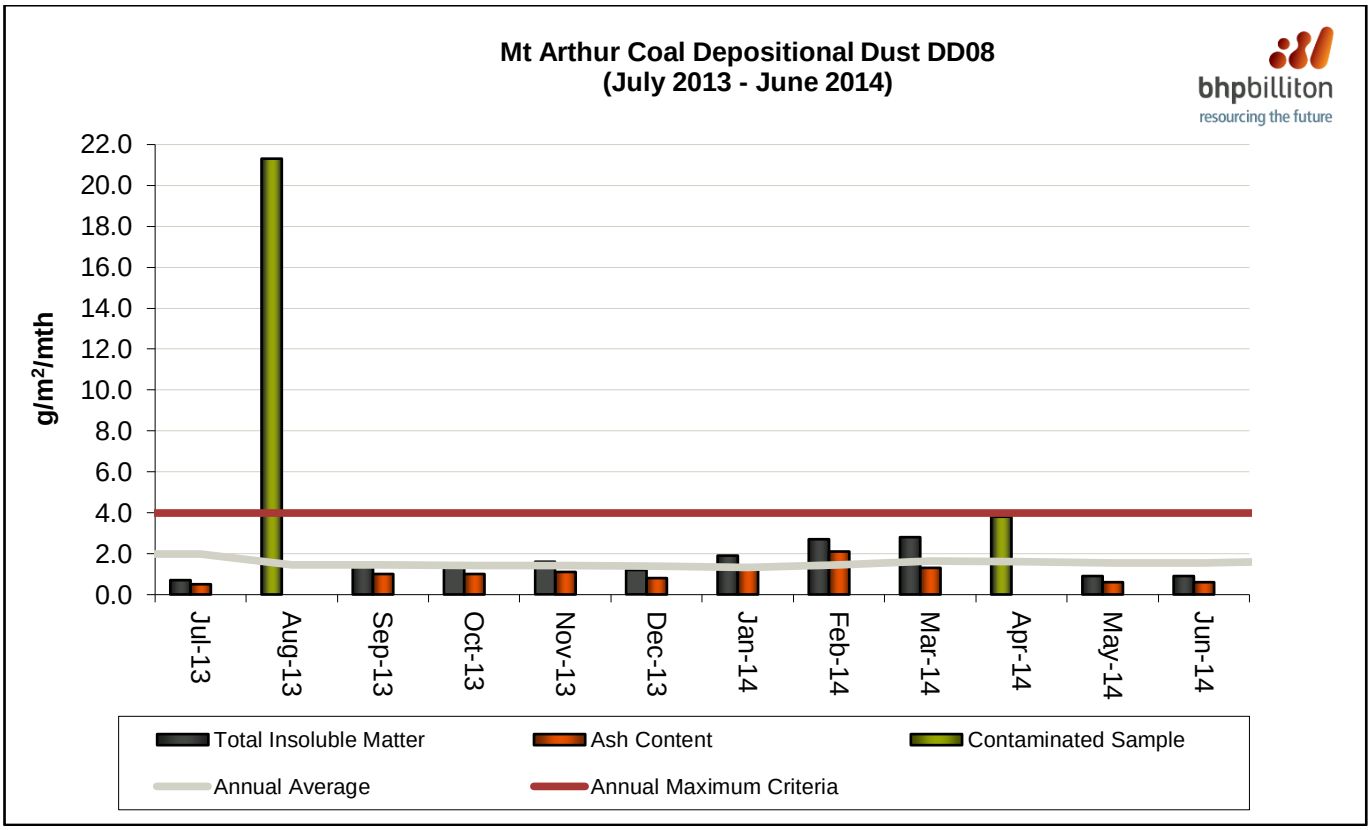
m	Metre
MACT	Mt Arthur Coal terminal
MCV1	McDonalds Void 1
mg/L	Milligrams per litre
ML	Megalitre
ML	Mining lease
m/s	Metres per second
mm	Millimetres
mm/s	Millimetres per second
MOP	Mining operations plan
MPL	Mining purpose lease
MSC	Muswellbrook Shire Council
m^2	Square metres
m^3	Cubic metres
NAIDOC	National Aborigines and Islanders Day Observance Committee
NATA	National Association of Testing Authority
NGER	National Greenhouse and Energy Reporting
NGO	Non-government organisation
NSW	New South Wales
pH	Potential hydrogen
PIRMP	Pollution incident response management plan
POEO	Protection of the Environment Operations
PM_{10}	Particulate matter less than 10 microns in size
PRP	Pollution reduction program
RAP	Remedial action plan
RL	Reduced Level
TEOM	Tapered element oscillating microbalance samplers
TSC Act	*Threatened Species Conservation Act 1995*
TSP	Total suspended particulate
TSS	Total suspended solids
SMS	Short message service
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

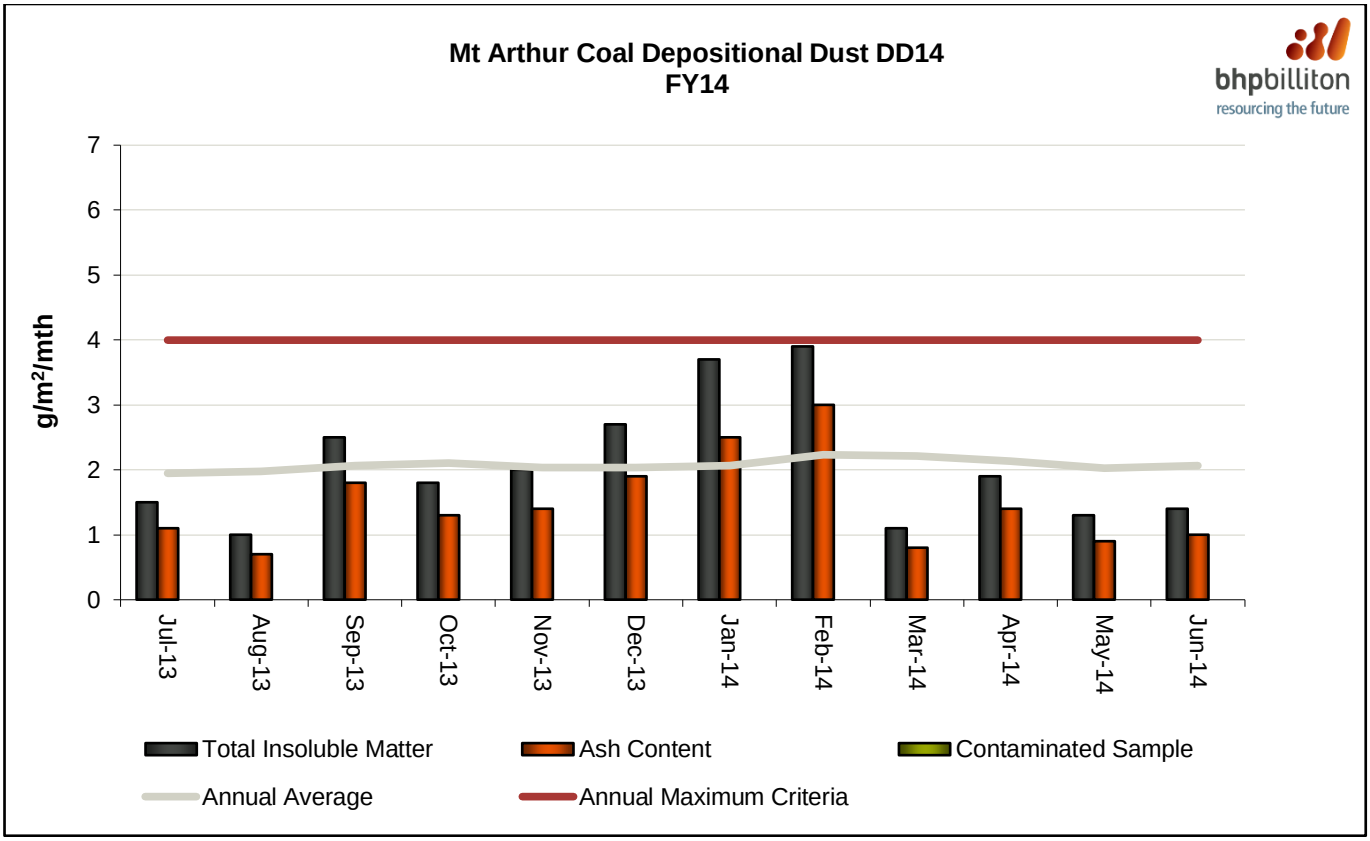
Appendix 1 - Overview of Surface Water Management System

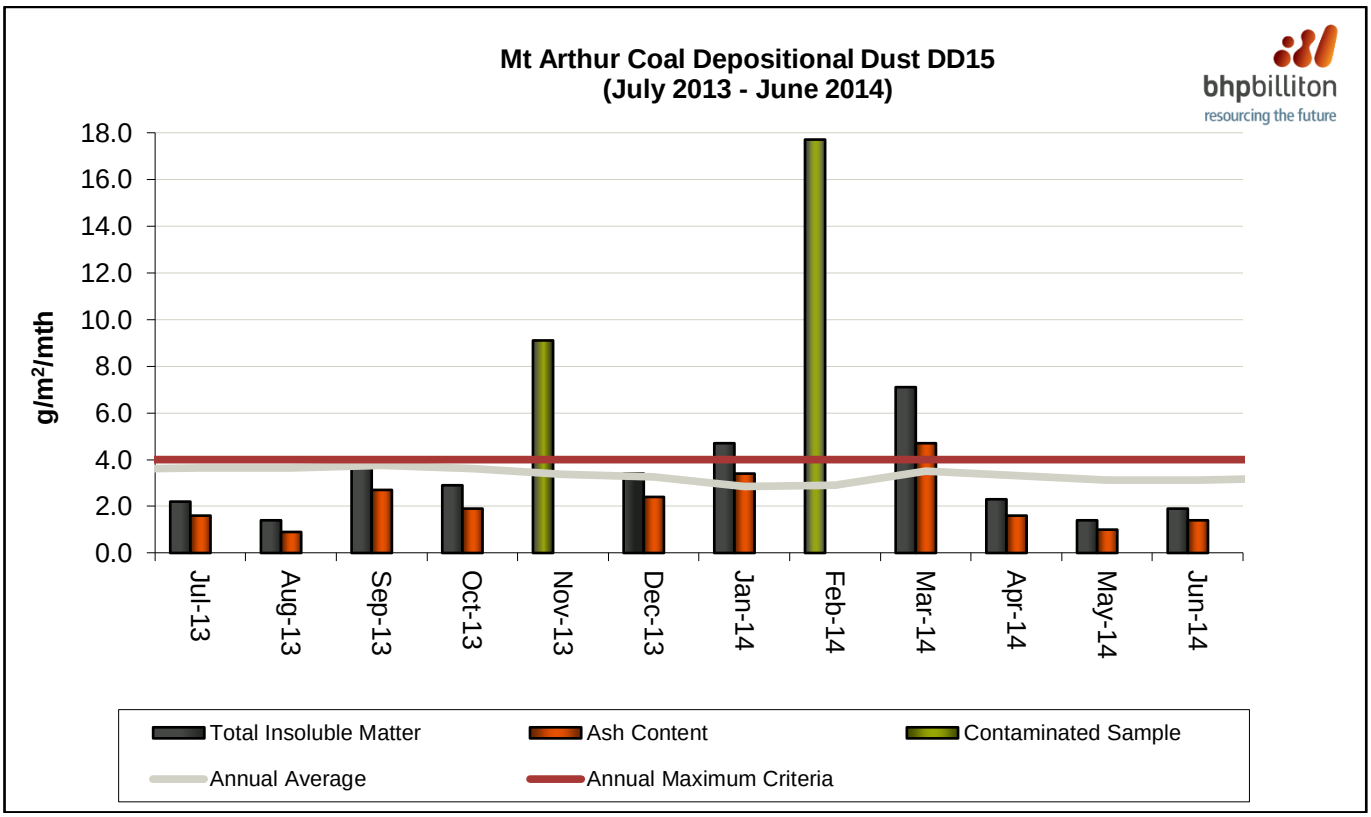


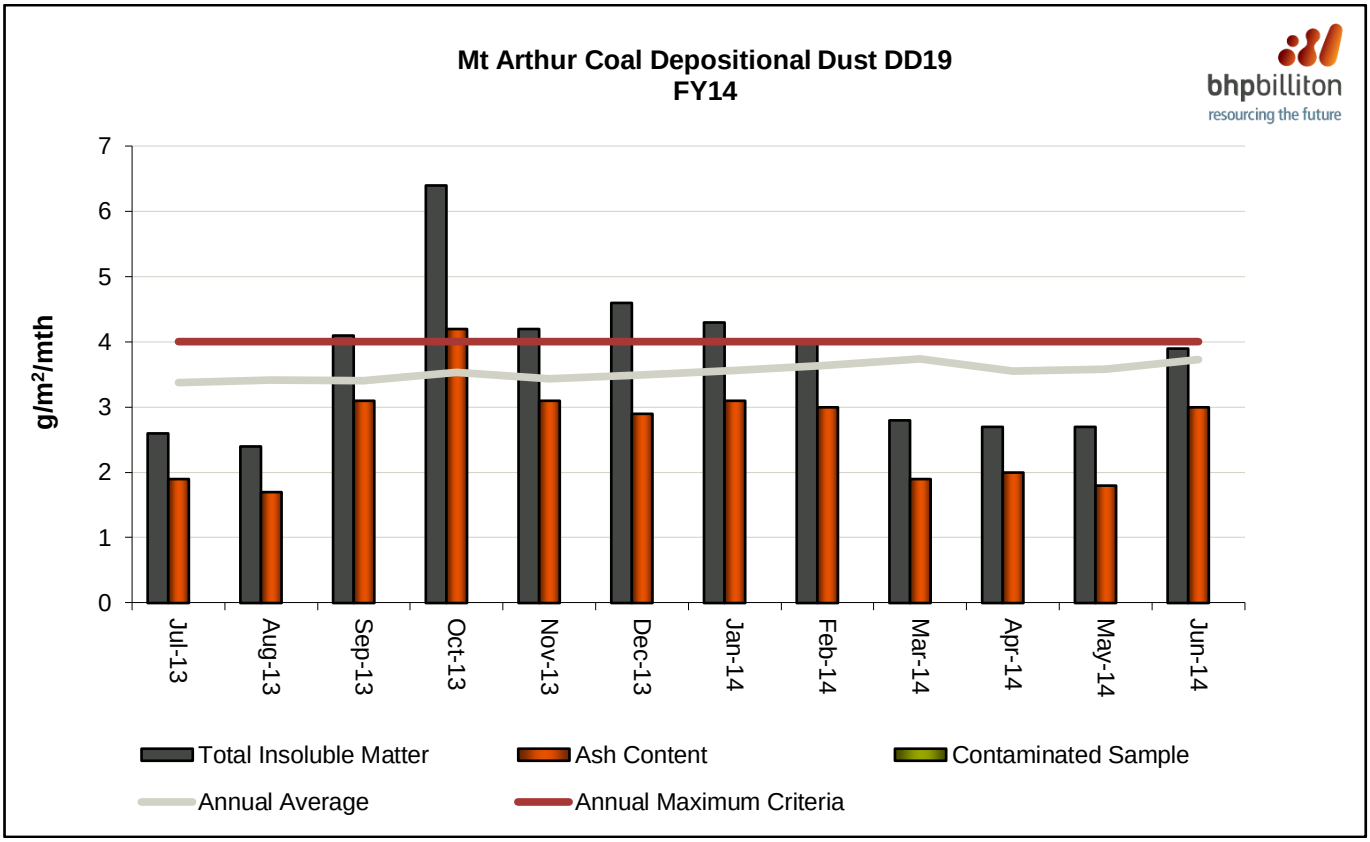
Appendix 2 - Air Quality Monitoring Results

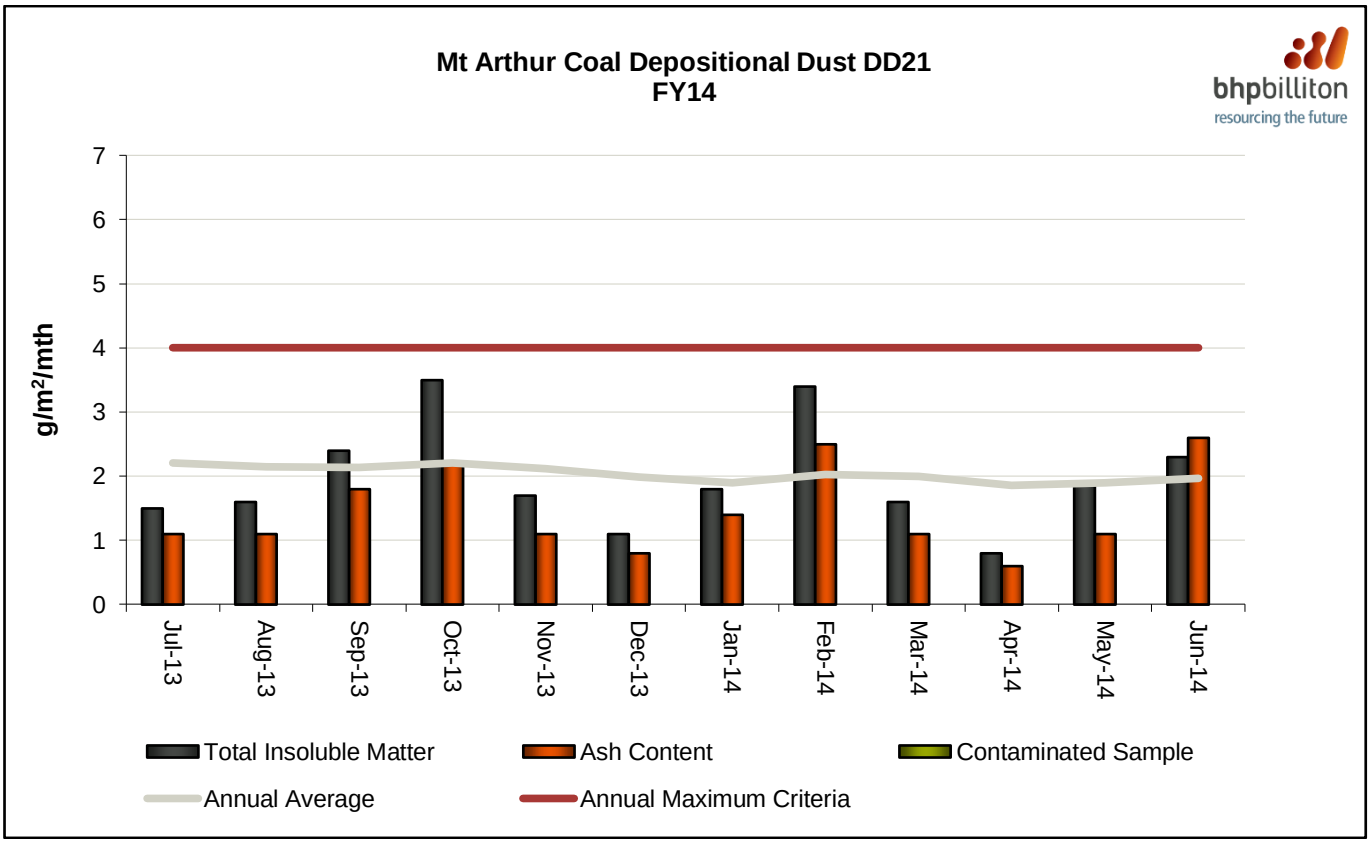


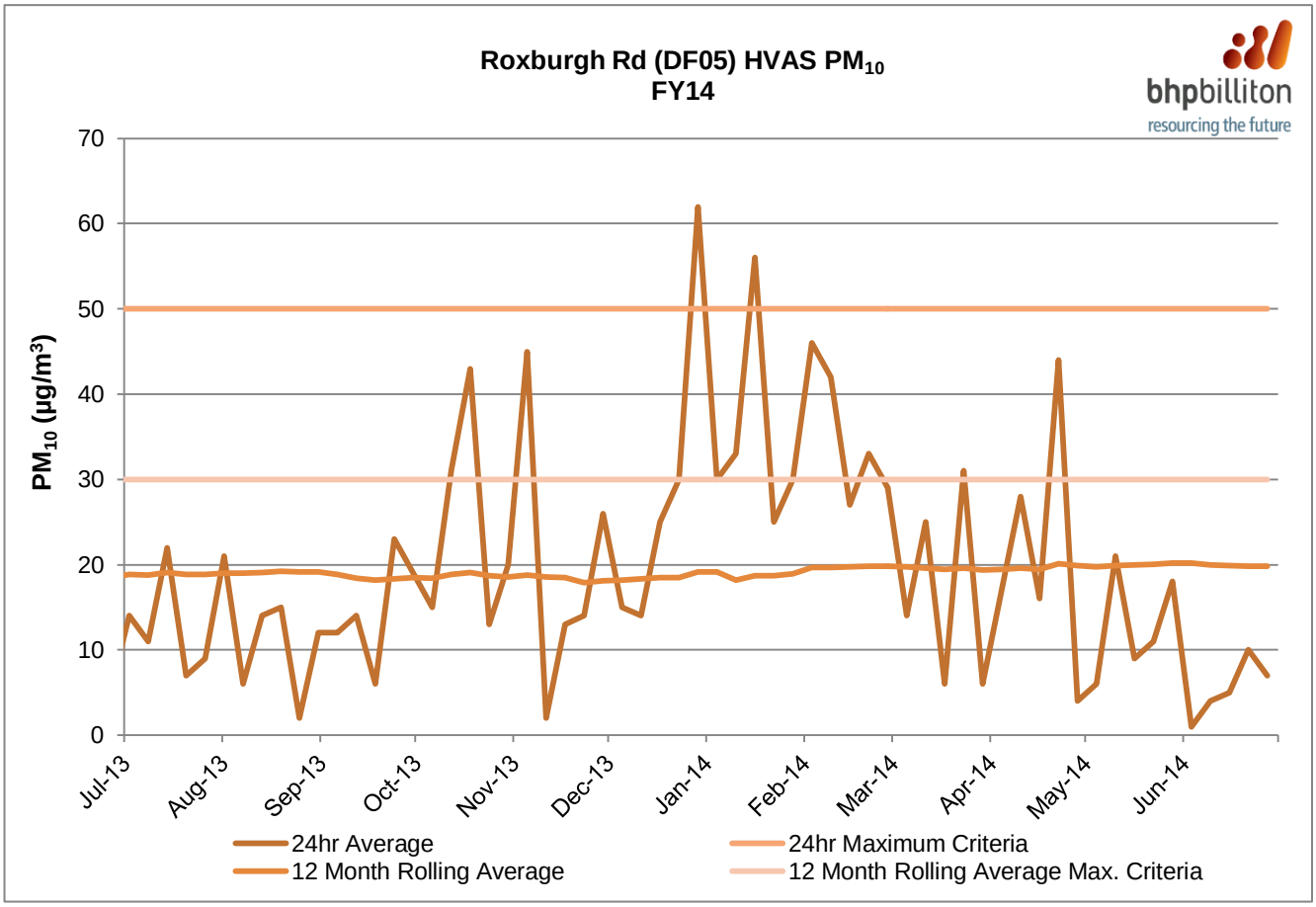


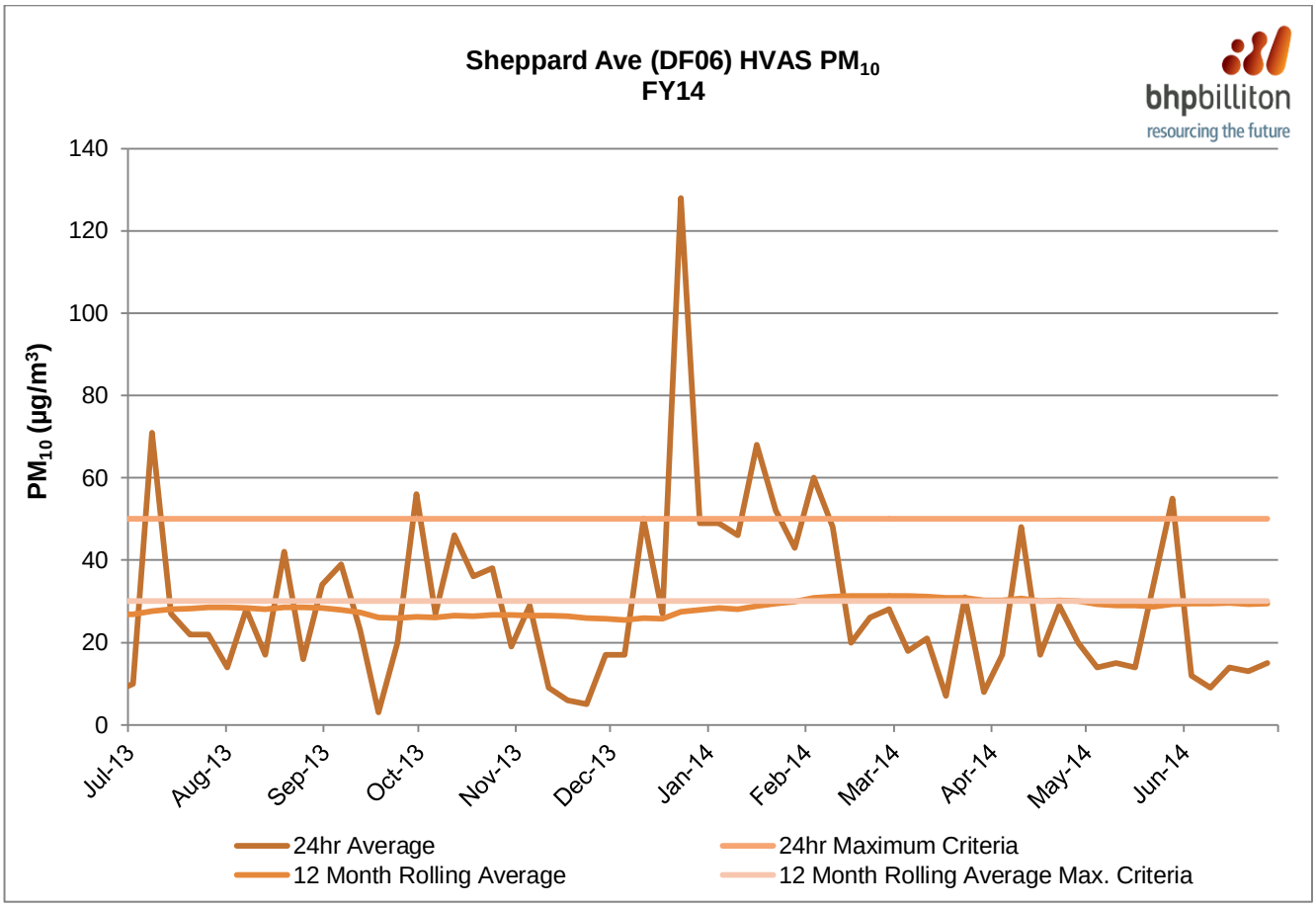

Mt Arthur Coal Depositional Dust DD14
FY14
bhpbilliton
resourcing the future
g/m²/mth
0
1
2
3
4
5
6
7
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Total Insoluble Matter
Ash Content
Contaminated Sample
Annual Average
Annual Maximum Criteria

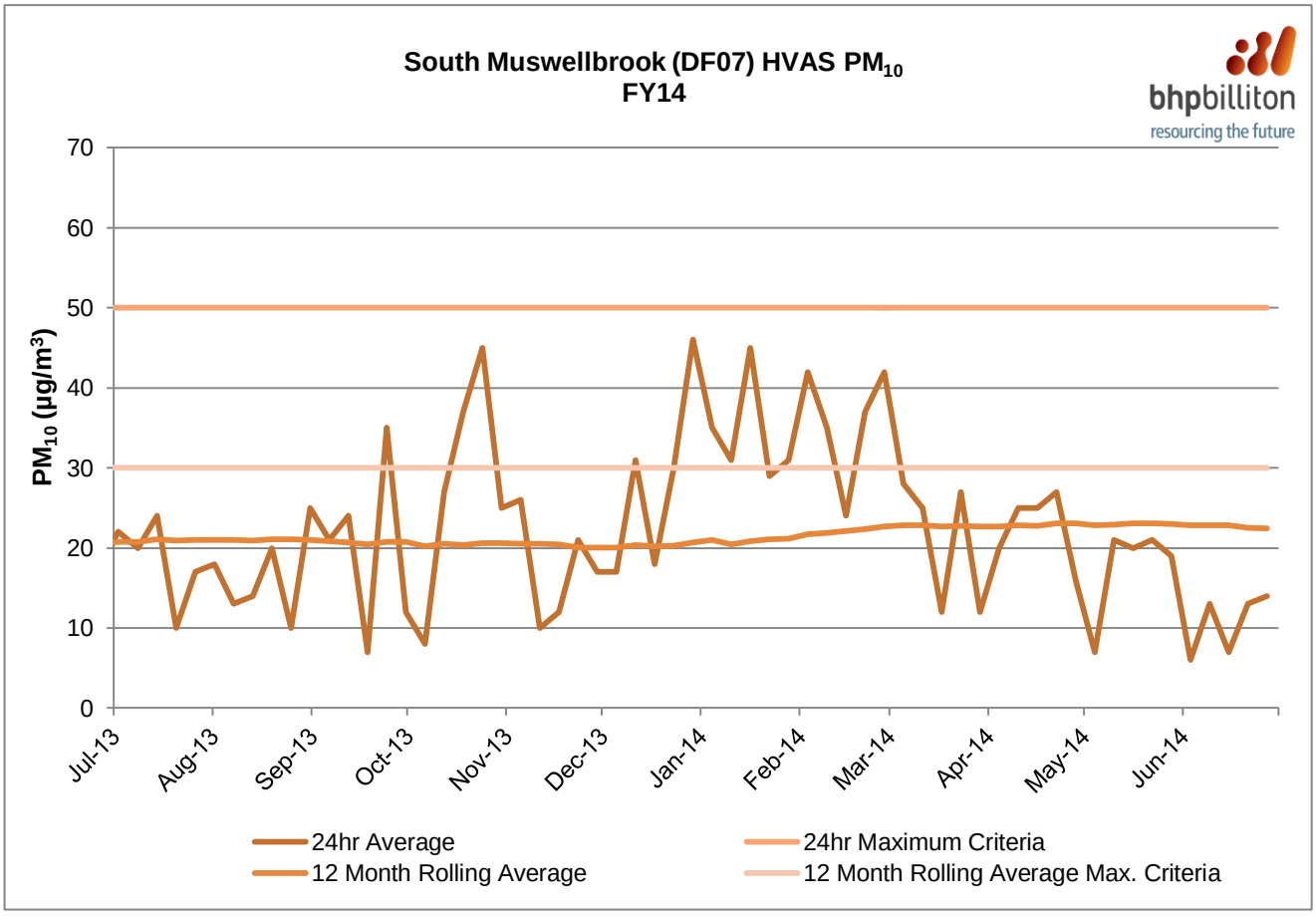

Mt Arthur Coal Depositional Dust DD15
(July 2013 - June 2014)
bhpbilliton
resourcing the future
g/m²/mth
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Total Insoluble Matter
Ash Content
Contaminated Sample
Annual Average
Annual Maximum Criteria


Mt Arthur Coal Depositional Dust DD19
FY14
bhpbilliton
resourcing the future
g/m²/mth
0
1
2
3
4
5
6
7
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Total Insoluble Matter
Ash Content
Contaminated Sample
Annual Average
Annual Maximum Criteria


Mt Arthur Coal Depositional Dust DD21
FY14
bhpbilliton
resourcing the future
g/m²/mth
0
1
2
3
4
5
6
7
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Total Insoluble Matter
Ash Content
Contaminated Sample
Annual Average
Annual Maximum Criteria


Roxburgh Rd (DF05) HVAS PM10
FY14
bhpbilliton
resourcing the future
PM10 (µg/m3)
70
60
50
40
30
20
10
0
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
24hr Average
12 Month Rolling Average
24hr Maximum Criteria
12 Month Rolling Average Max. Criteria


Sheppard Ave (DF06) HVAS PM10
FY14
bhpbilliton
resourcing the future
PM10 (µg/m3)
140
120
100
80
60
40
20
0
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
24hr Average
12 Month Rolling Average
24hr Maximum Criteria
12 Month Rolling Average Max. Criteria


South Muswellbrook (DF07) HVAS PM10
FY14
bhpbilliton
resourcing the future
PM10 (µg/m3)
70
60
50
40
30
20
10
0
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
24hr Average
12 Month Rolling Average
24hr Maximum Criteria
12 Month Rolling Average Max. Criteria

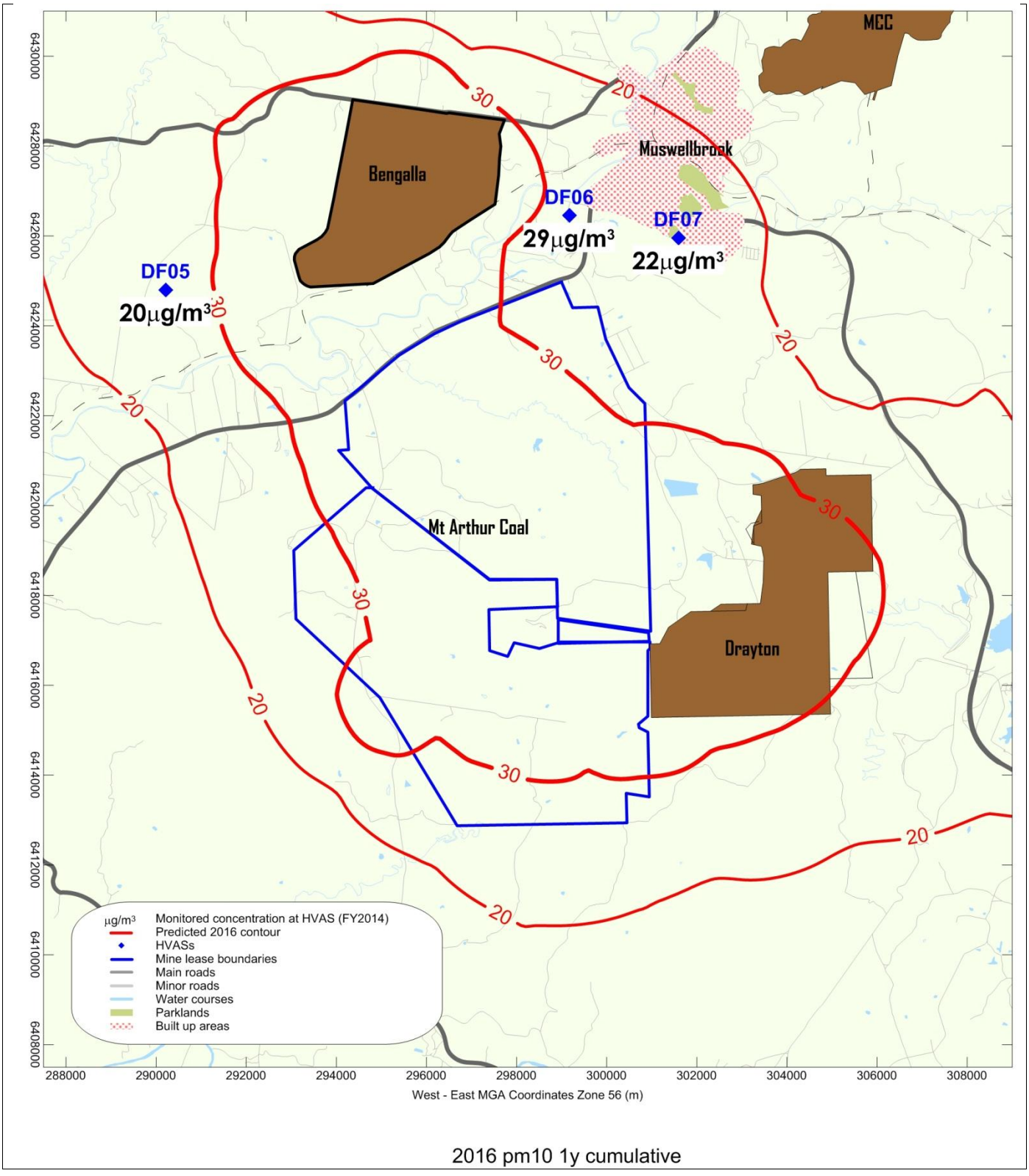
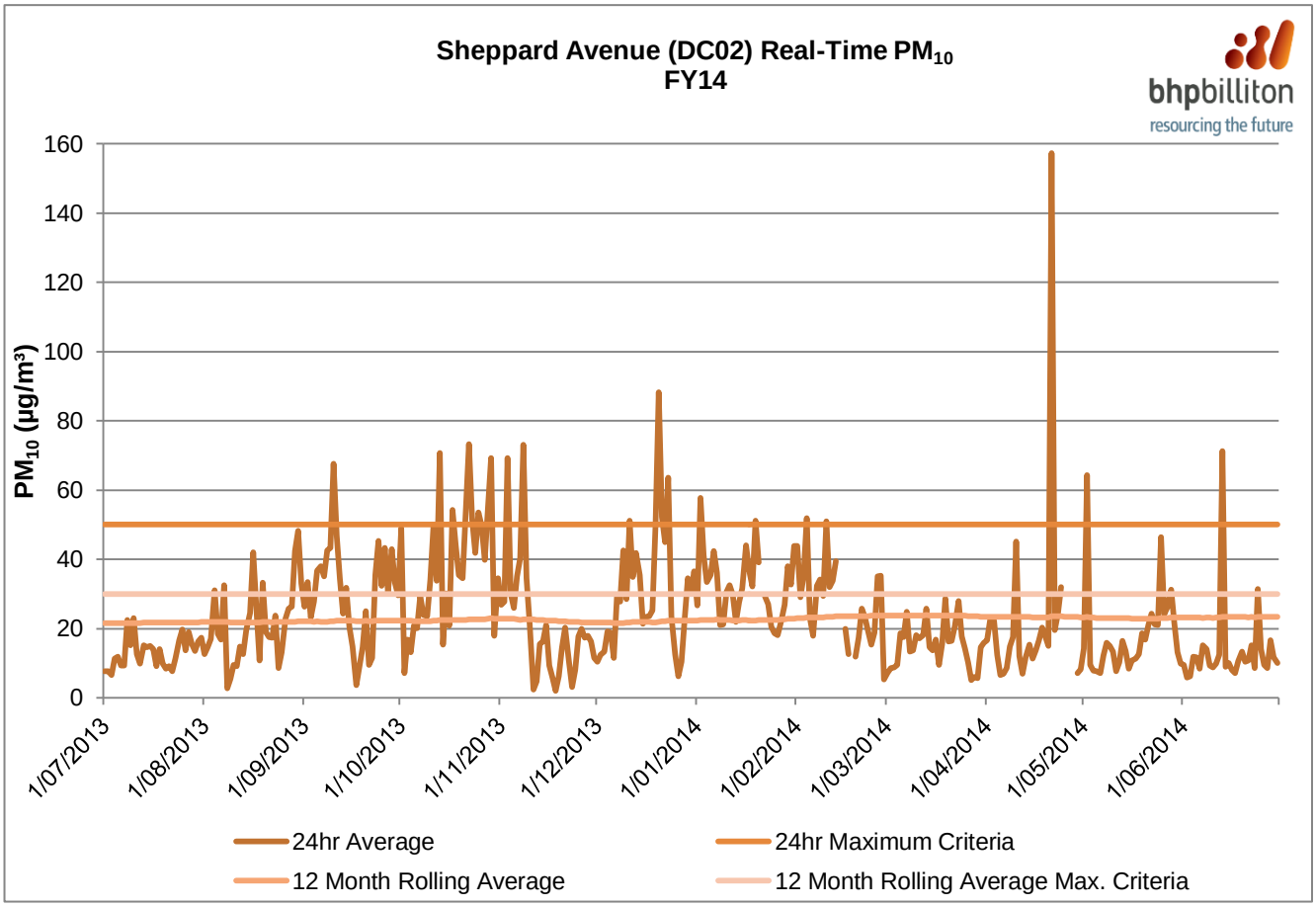
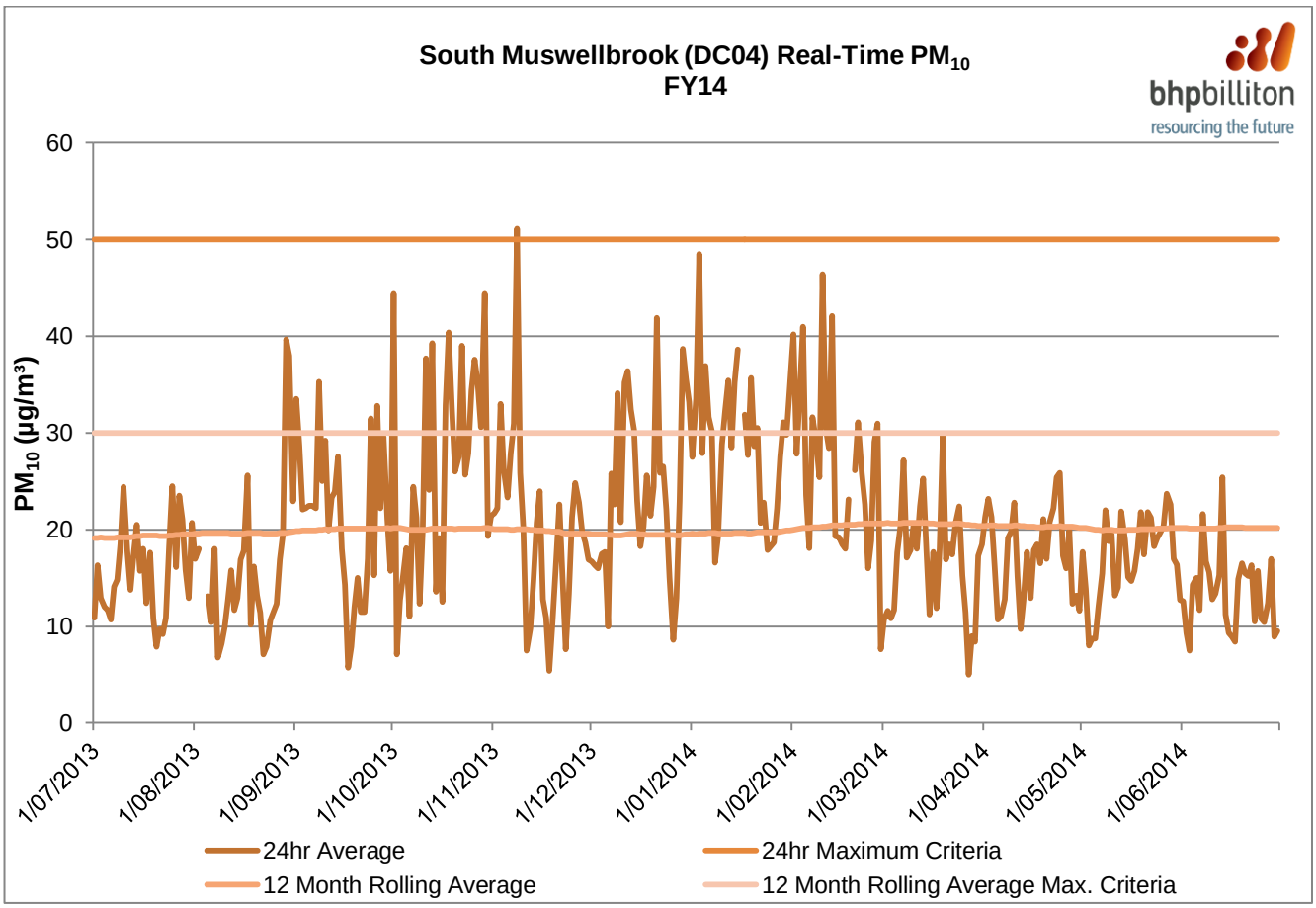
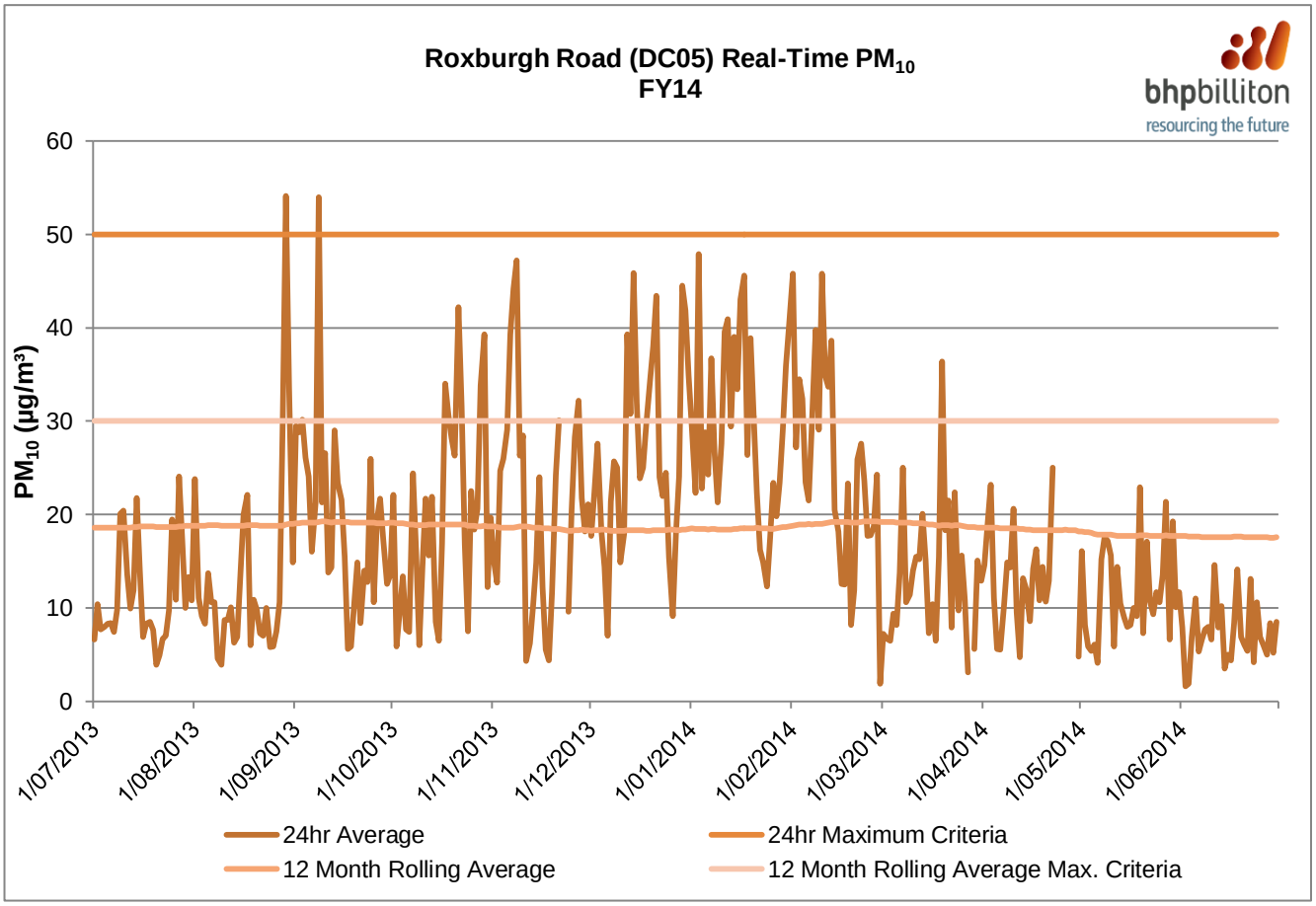
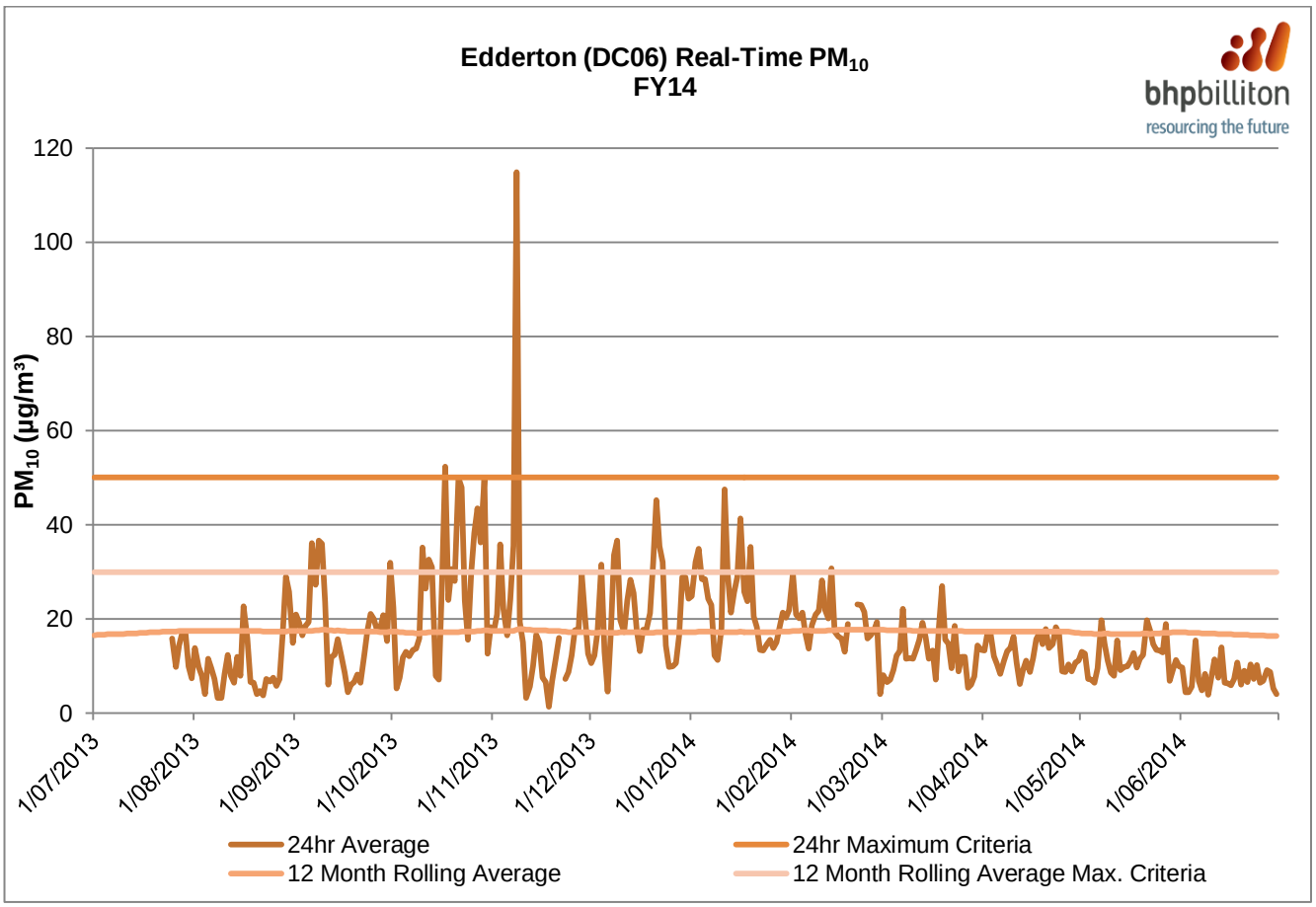


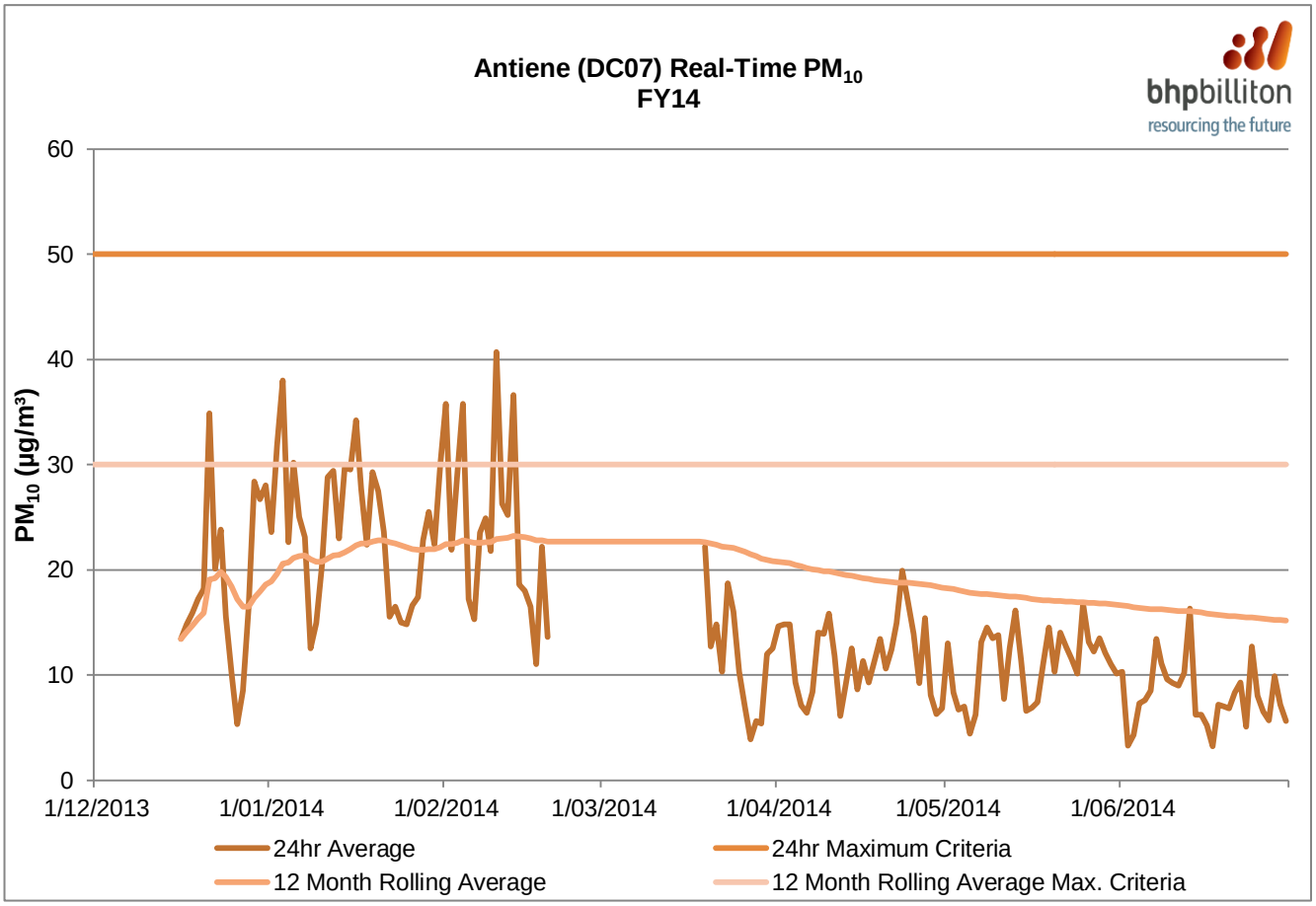
Figure 2A: Predicted annual average PM_{10} concentrations in $\mu g/m^3$ due to emissions from the project and other sources in 2016 compared with FY14 measured concentrations – HVAS

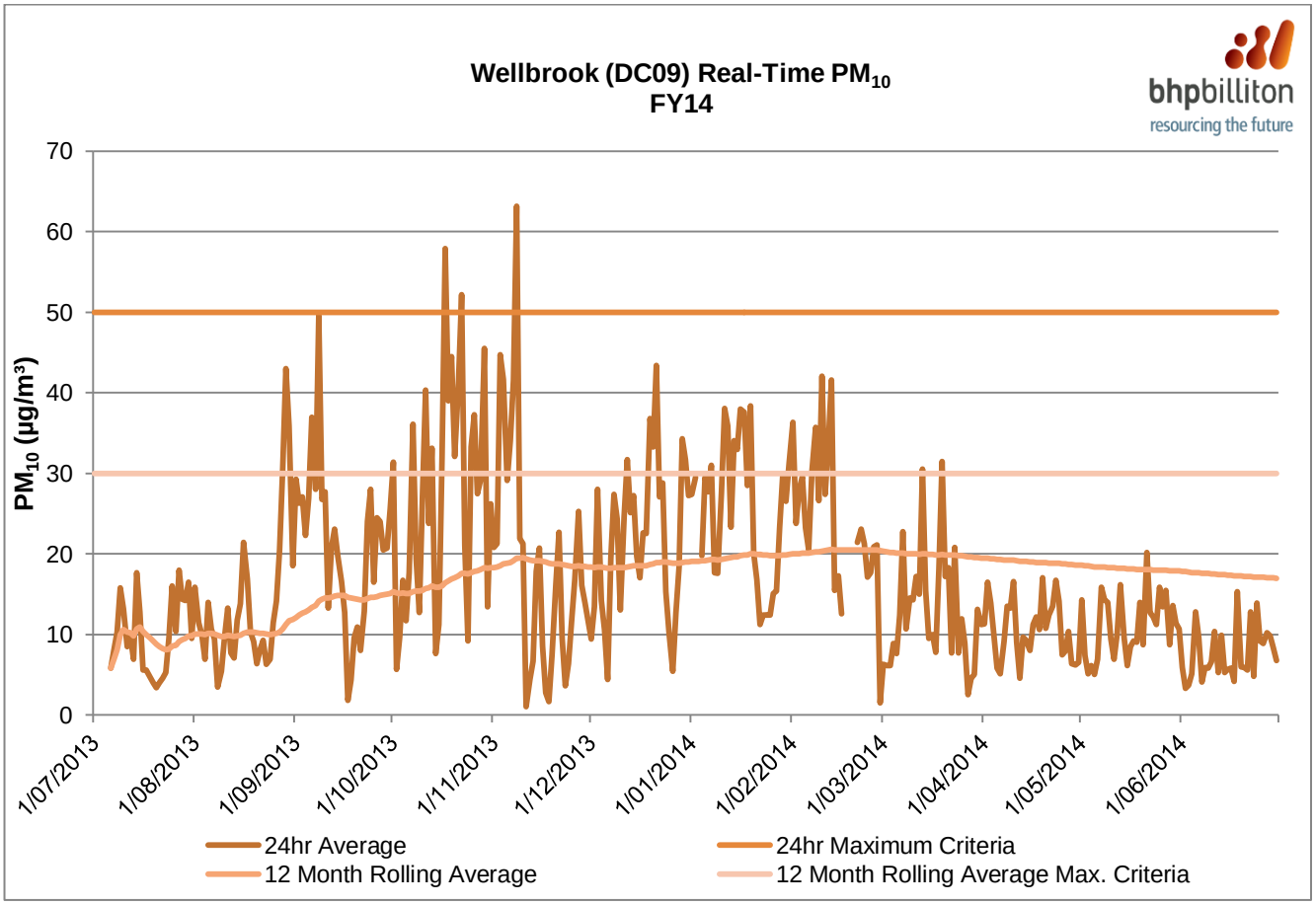

Sheppard Avenue (DC02) Real-Time PM10
FY14
bhpbilliton
resourcing the future
PM10 (µg/m3)
160
140
120
100
80
60
40
20
0
1/07/2013
1/08/2013
1/09/2013
1/10/2013
1/11/2013
1/12/2013
1/01/2014
1/02/2014
1/03/2014
1/04/2014
1/05/2014
1/06/2014
24hr Average
24hr Maximum Criteria
12 Month Rolling Average
12 Month Rolling Average Max. Criteria


South Muswellbrook (DC04) Real-Time PM10
FY14
bhpbilliton
resourcing the future
PM10 (µg/m3)
60
50
40
30
20
10
0
1/07/2013
1/08/2013
1/09/2013
1/10/2013
1/11/2013
1/12/2013
1/01/2014
1/02/2014
1/03/2014
1/04/2014
1/05/2014
1/06/2014
24hr Average
24hr Maximum Criteria
12 Month Rolling Average
12 Month Rolling Average Max. Criteria


Roxburgh Road (DC05) Real-Time PM10
FY14
bhpbilliton
resourcing the future
PM10 (µg/m³)
60
50
40
30
20
10
0
1/07/2013
1/08/2013
1/09/2013
1/10/2013
1/11/2013
1/12/2013
1/01/2014
1/02/2014
1/03/2014
1/04/2014
1/05/2014
1/06/2014
24hr Average
24hr Maximum Criteria
12 Month Rolling Average
12 Month Rolling Average Max. Criteria


Edderton (DC06) Real-Time PM10
FY14
bhpbilliton
resourcing the future
PM10 (µg/m³)
120
100
80
60
40
20
0
1/07/2013
1/08/2013
1/09/2013
1/10/2013
1/11/2013
1/12/2013
1/01/2014
1/02/2014
1/03/2014
1/04/2014
1/05/2014
1/06/2014
24hr Average
24hr Maximum Criteria
12 Month Rolling Average
12 Month Rolling Average Max. Criteria


Antiene (DC07) Real-Time PM10
FY14
bhpbilliton
resourcing the future
PM10 (µg/m³)
60
50
40
30
20
10
0
1/12/2013
1/01/2014
1/02/2014
1/03/2014
1/04/2014
1/05/2014
1/06/2014
24hr Average
24hr Maximum Criteria
12 Month Rolling Average
12 Month Rolling Average Max. Criteria


Wellbrook (DC09) Real-Time PM10
FY14
bhpbilliton
resourcing the future
PM10 (µg/m³)
70
60
50
40
30
20
10
0
1/07/2013
1/08/2013
1/09/2013
1/10/2013
1/11/2013
1/12/2013
1/01/2014
1/02/2014
1/03/2014
1/04/2014
1/05/2014
1/06/2014
24hr Average
24hr Maximum Criteria
12 Month Rolling Average
12 Month Rolling Average Max. Criteria

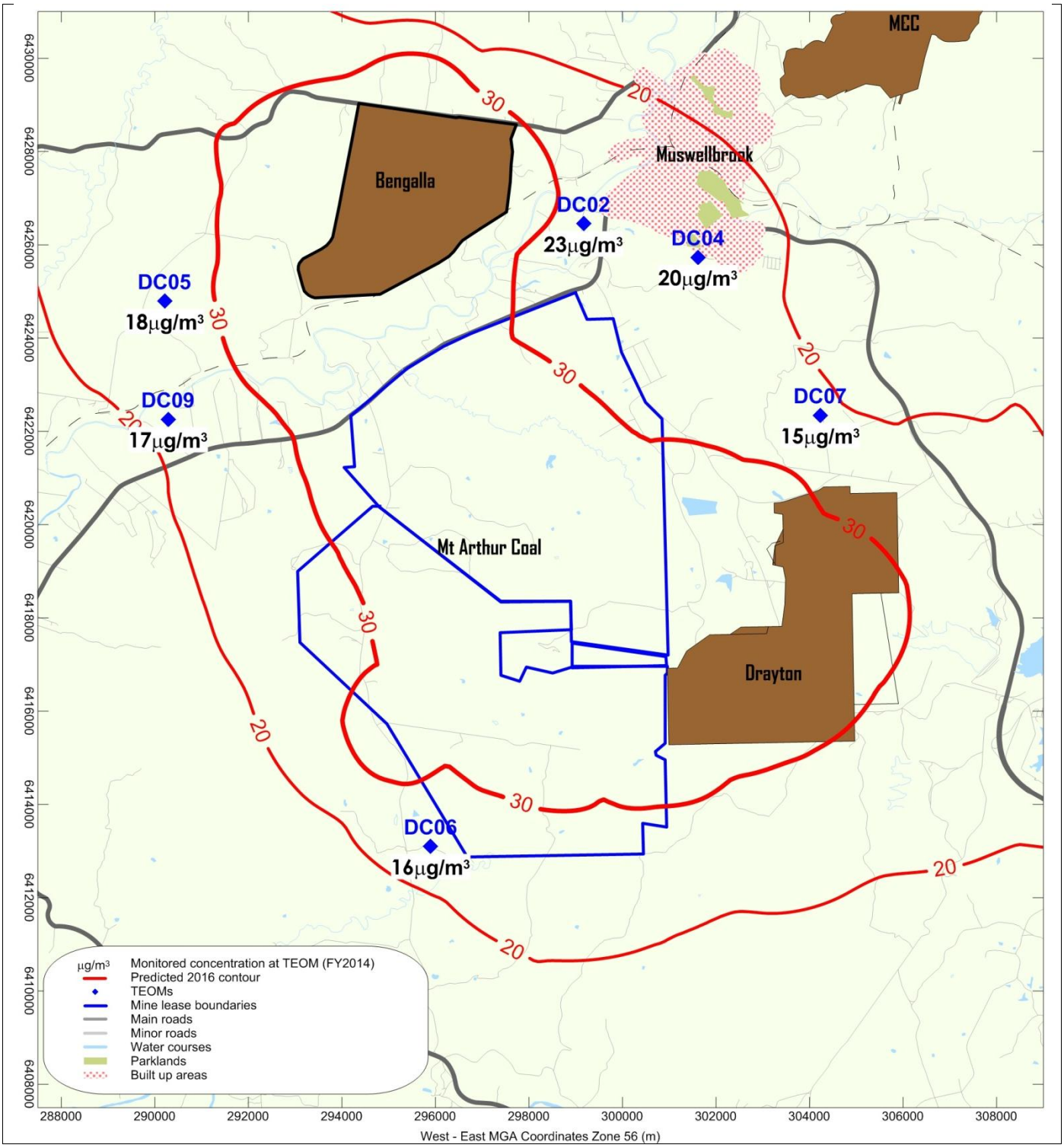
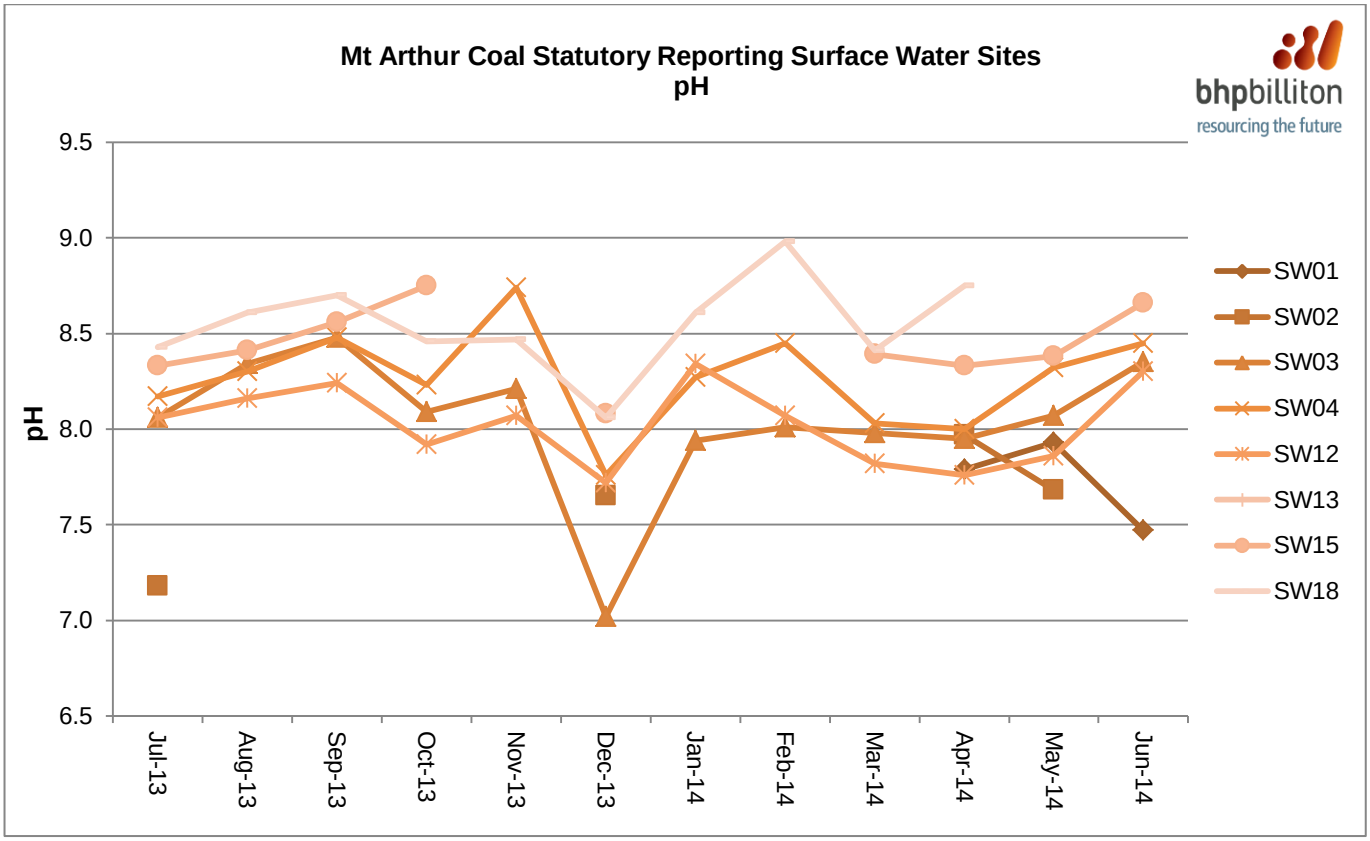
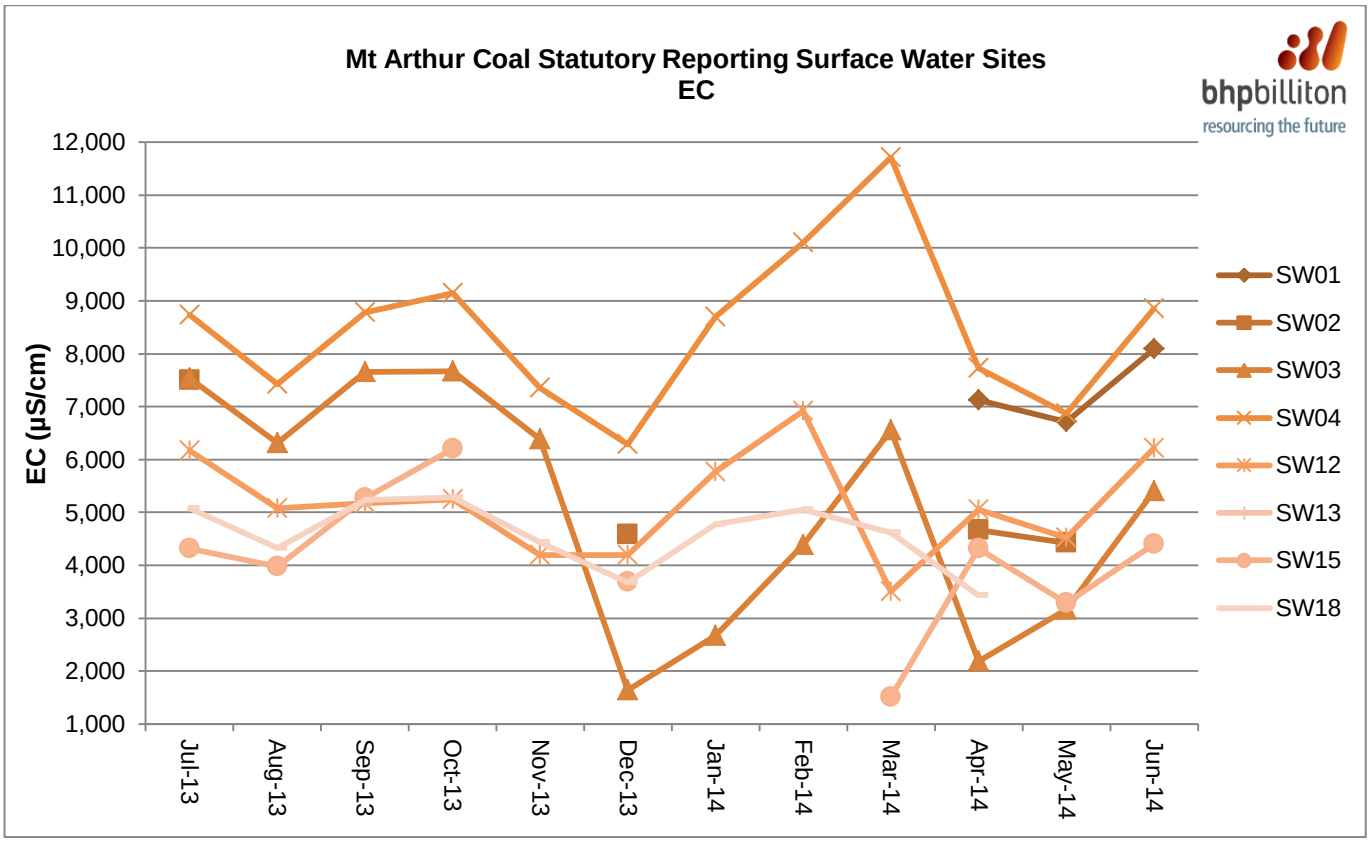
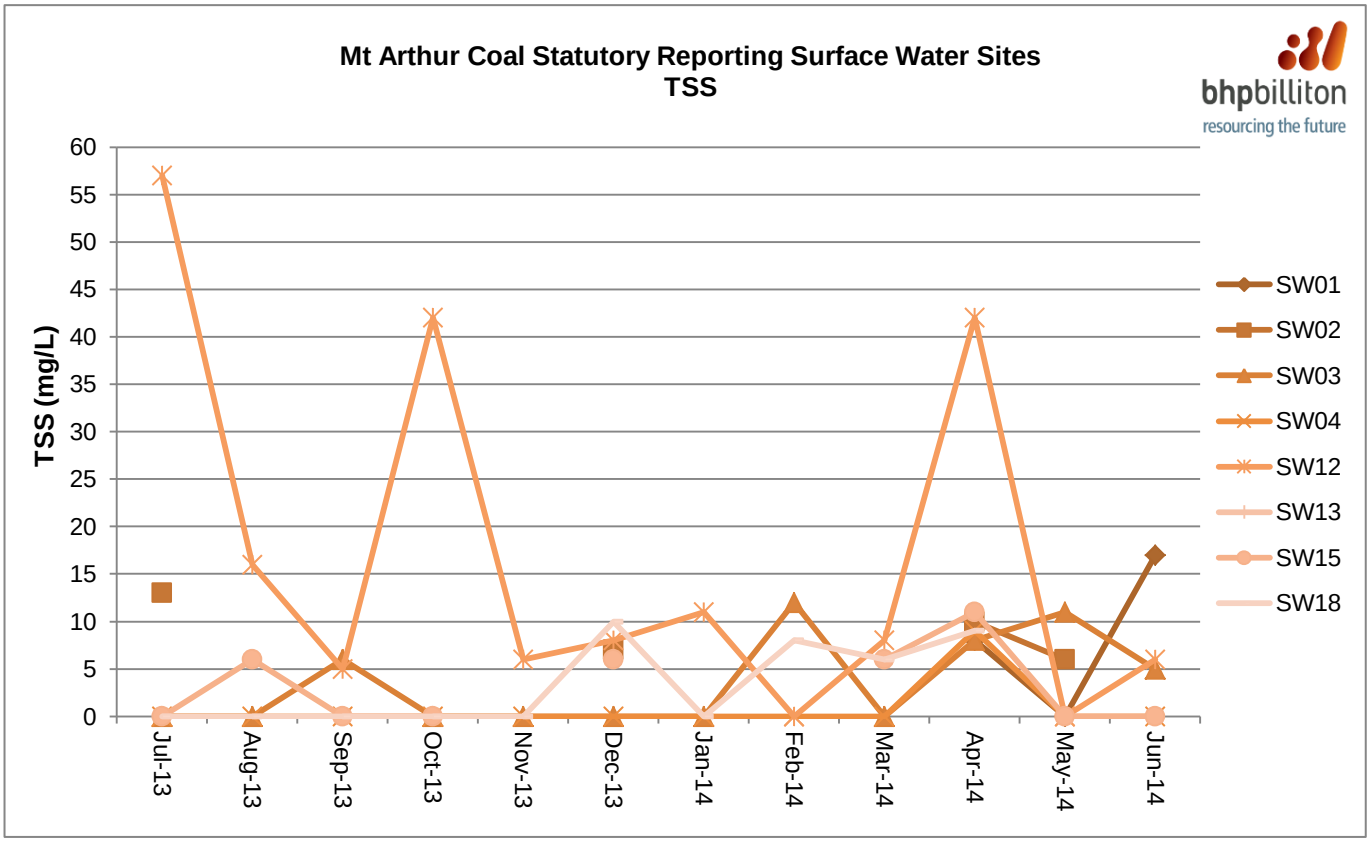


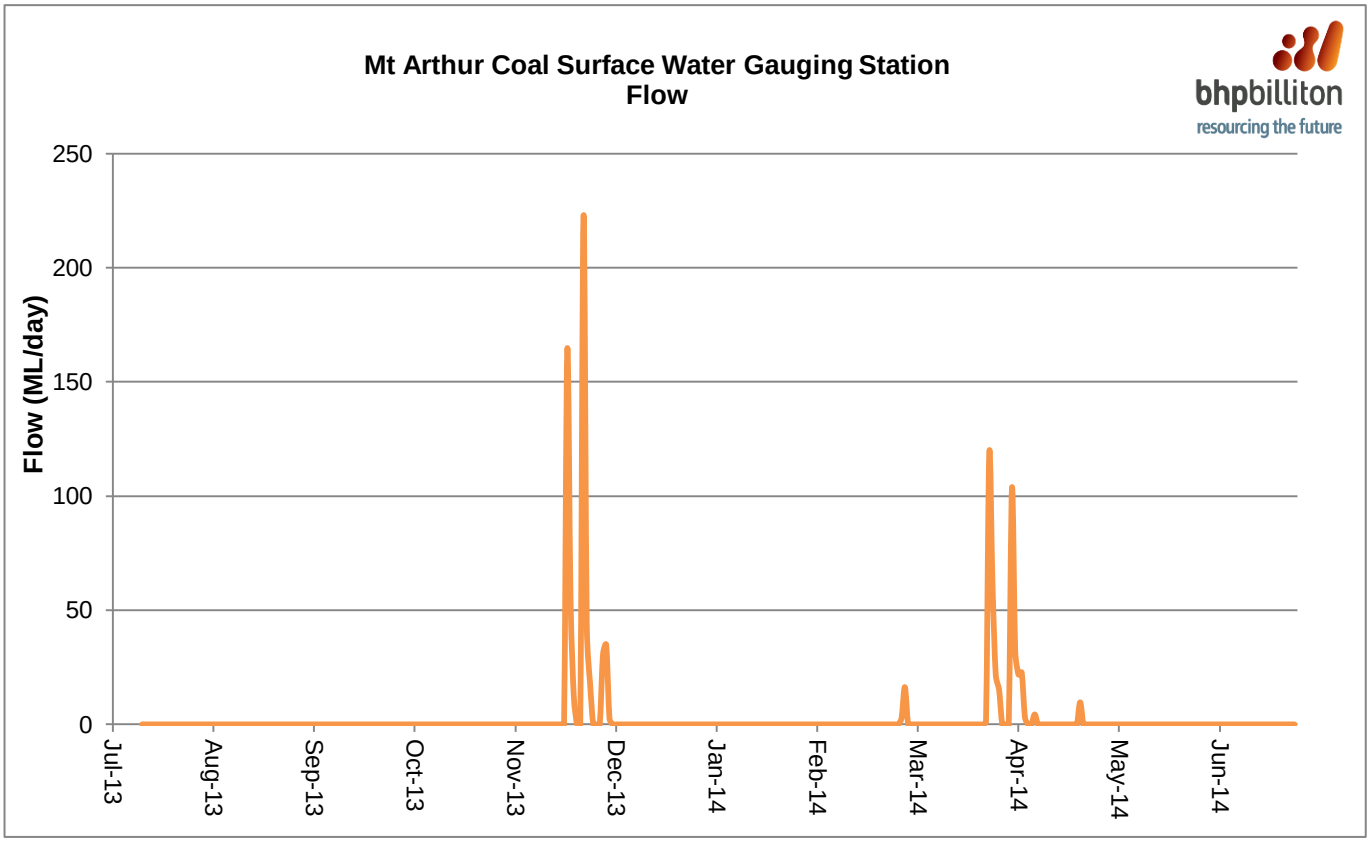
Figure 2B: Predicted annual average PM10 concentrations in µg/m³ due to emissions from the project and other sources in 2016 compared with FY14 measured concentrations – TEOMs

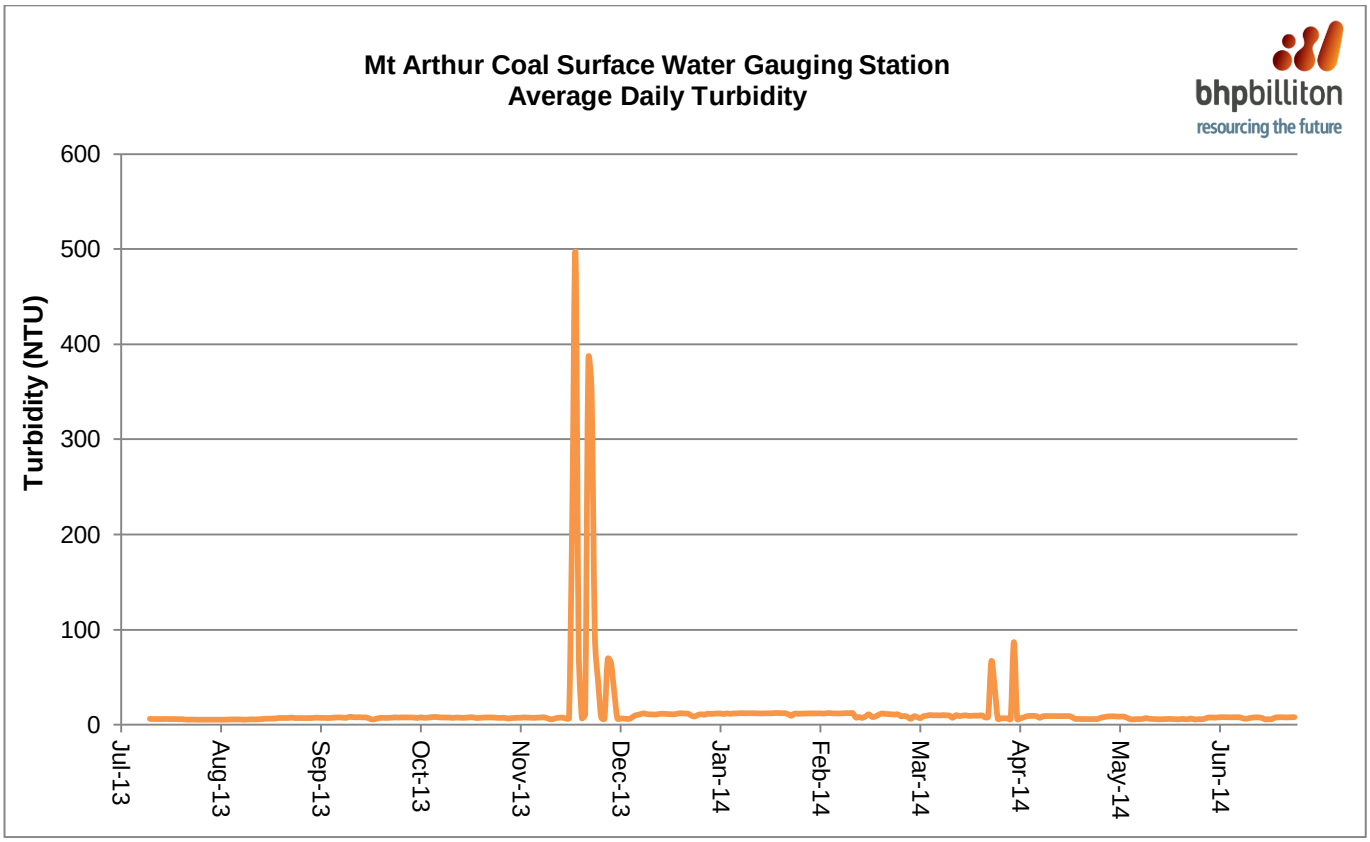
Appendix 3 - Surface Water Quality Monitoring Results

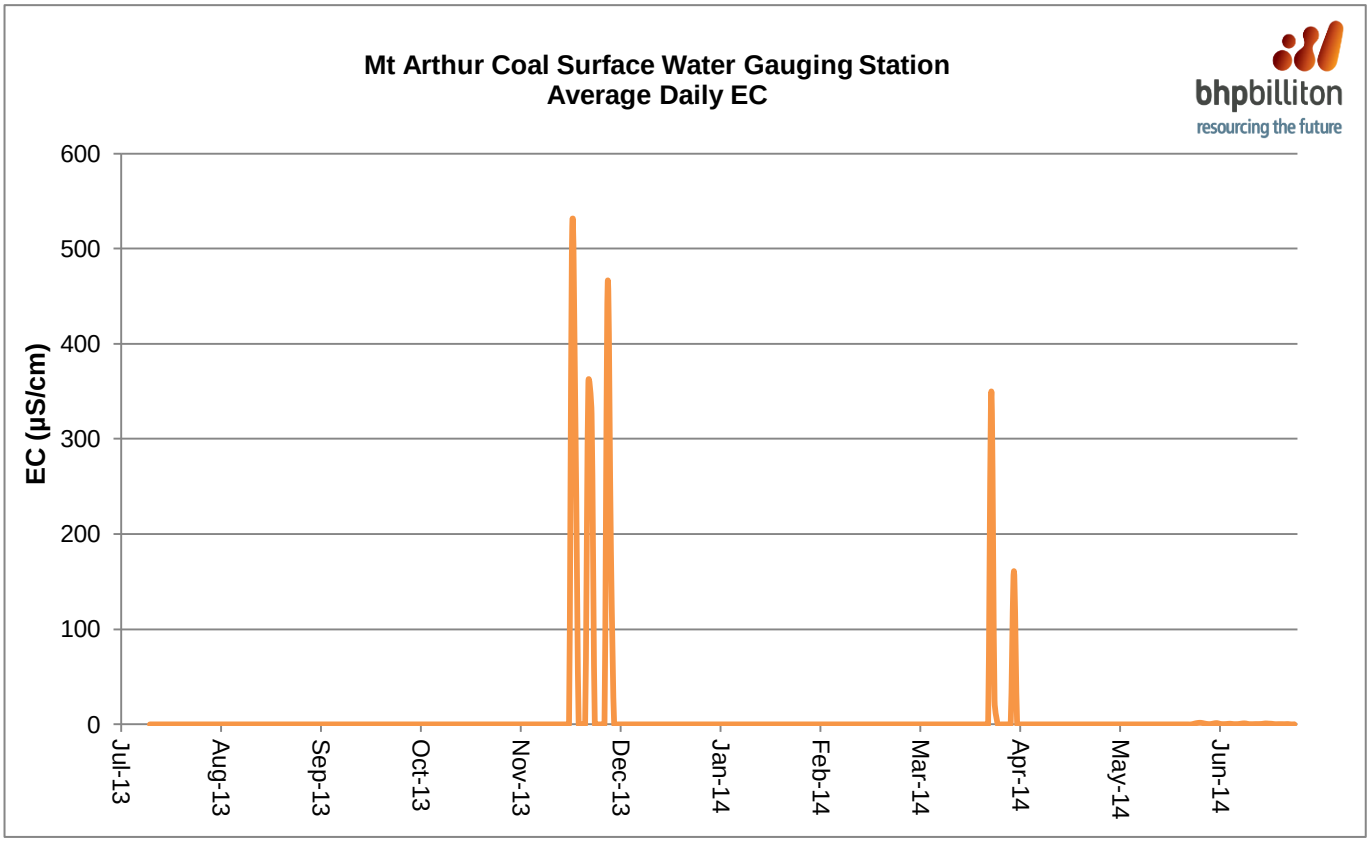




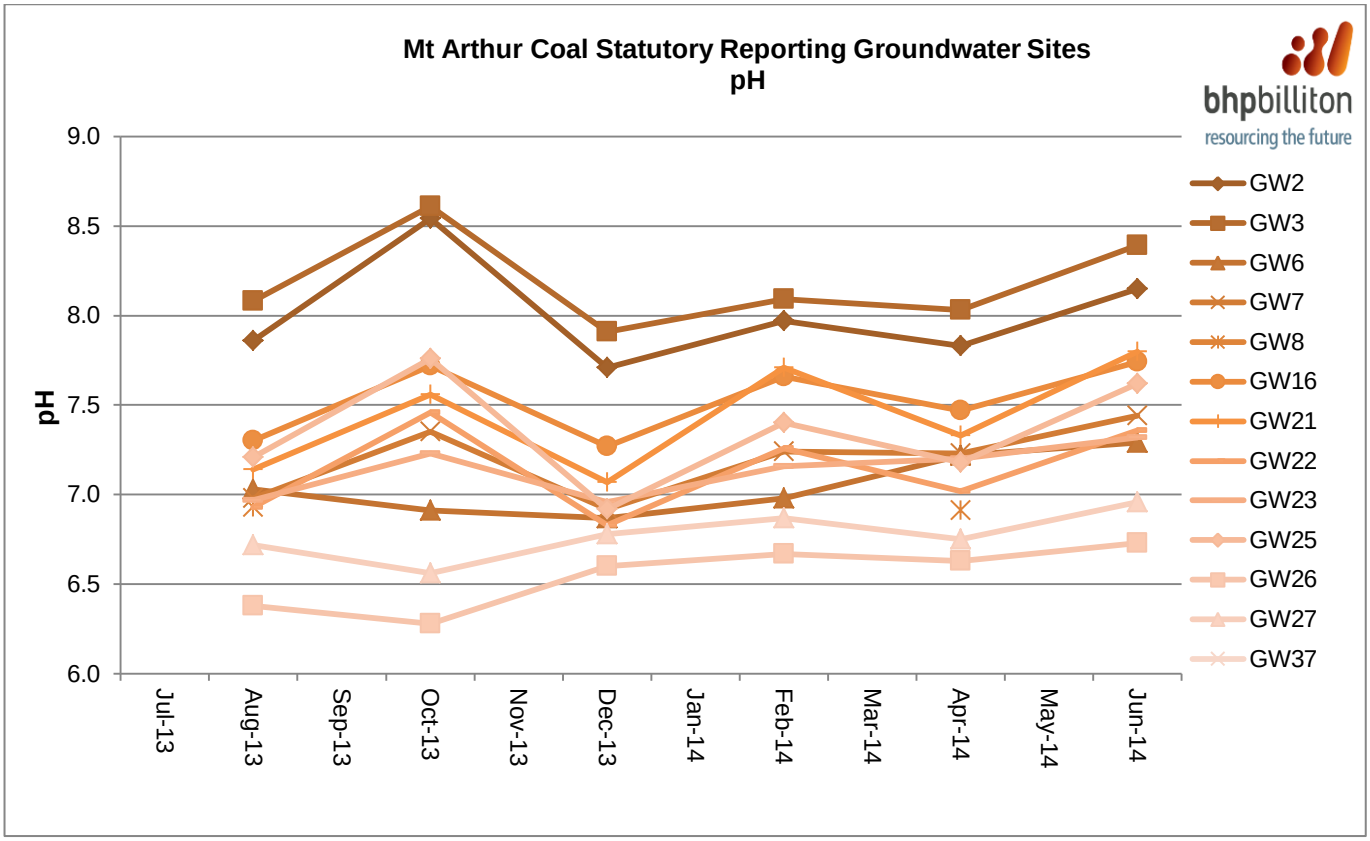

Mt Arthur Coal Statutory Reporting Surface Water Sites
TSS
bhpbilliton
resourcing the future
TSS (mg/L)
60
55
50
45
40
35
30
25
20
15
10
5
0
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
SW01
SW02
SW03
SW04
SW12
SW13
SW15
SW18

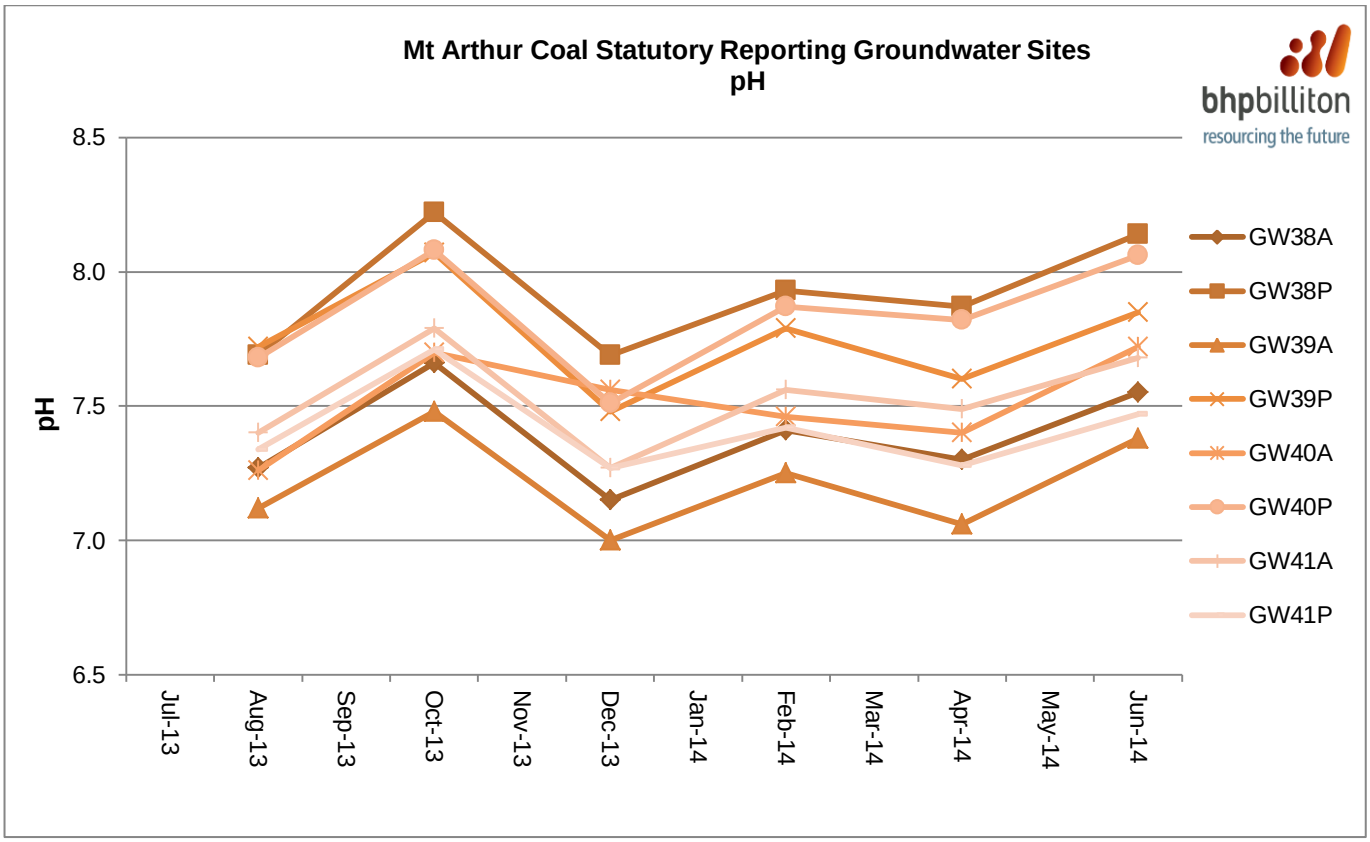

Mt Arthur Coal Surface Water Gauging Station
Flow
bhpbilliton
resourcing the future
Flow (ML/day)
250
200
150
100
50
0
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14

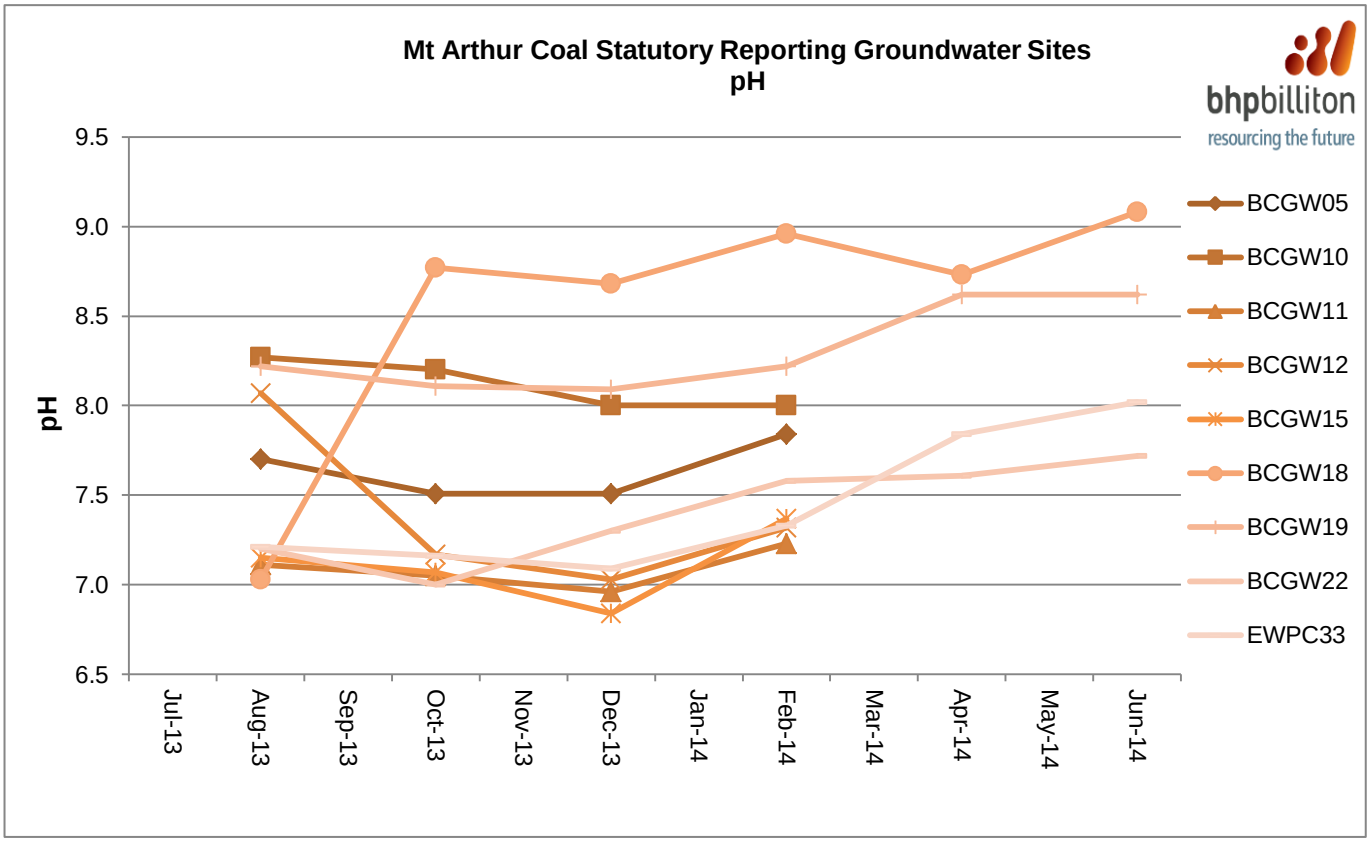

Mt Arthur Coal Surface Water Gauging Station
Average Daily Turbidity
bhpbilliton
resourcing the future
Turbidity (NTU)
600
500
400
300
200
100
0
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14

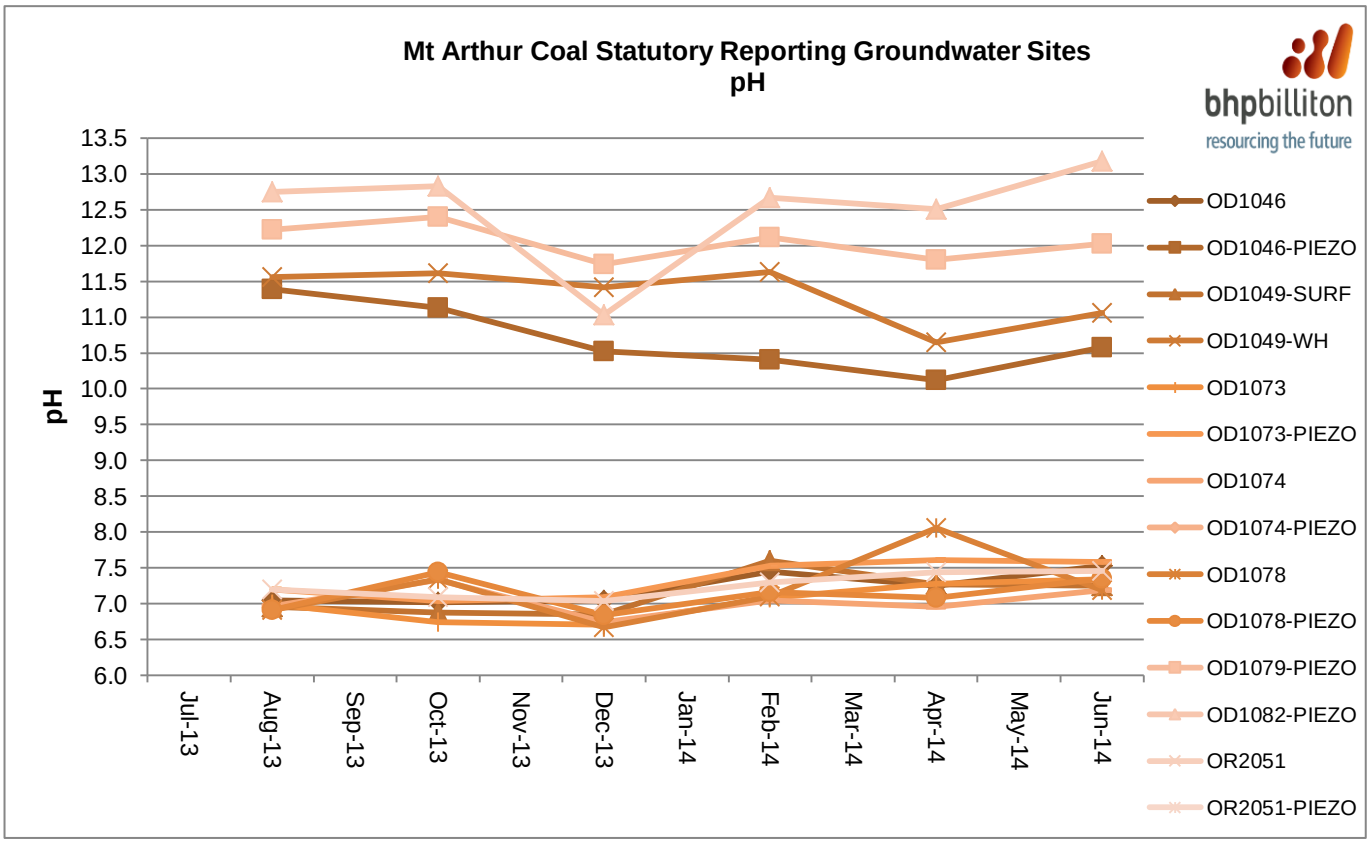

Mt Arthur Coal Surface Water Gauging Station
Average Daily EC
bhpbilliton
resourcing the future
EC (µS/cm)
600
500
400
300
200
100
0
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14

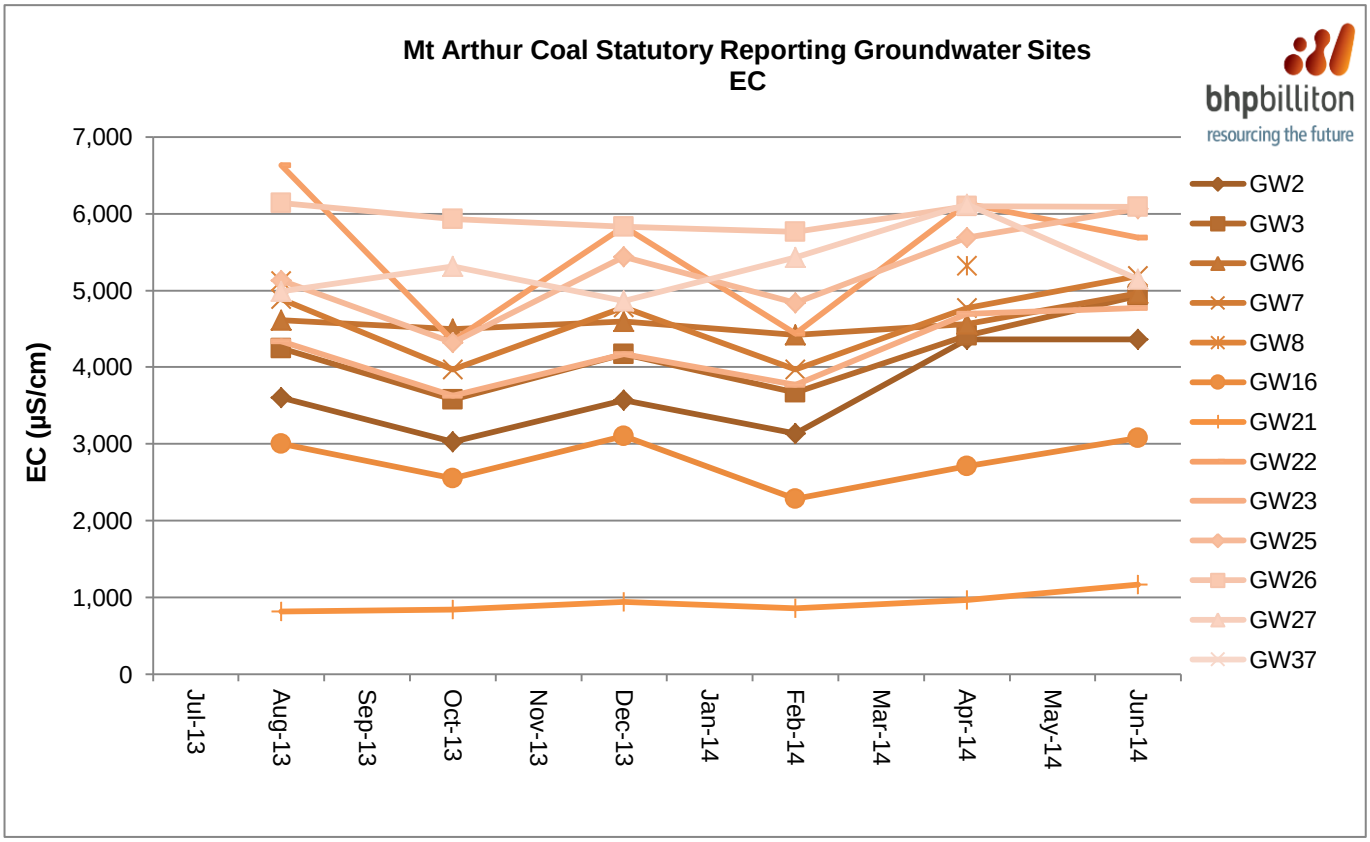
Appendix 4 - Groundwater Quality Monitoring Results

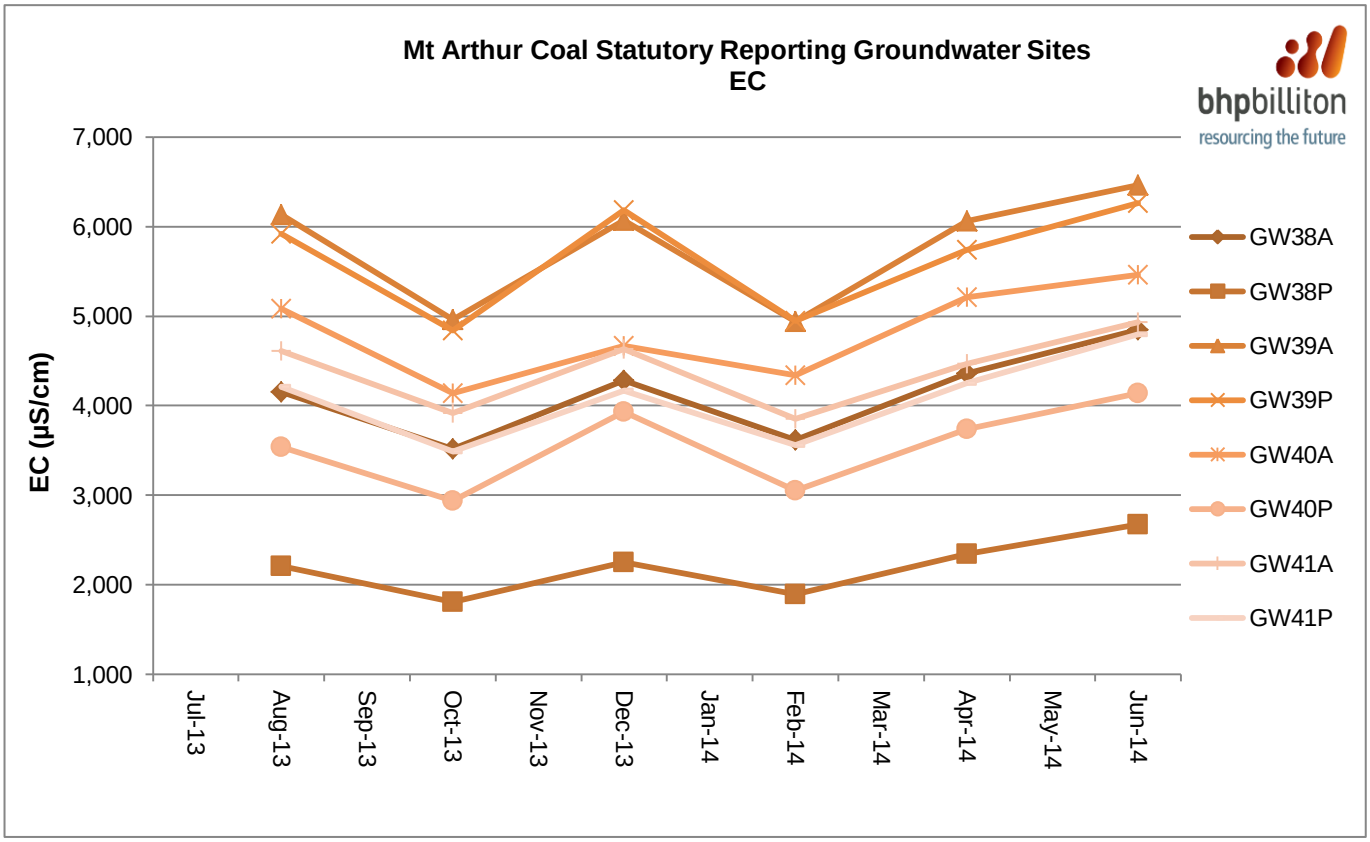


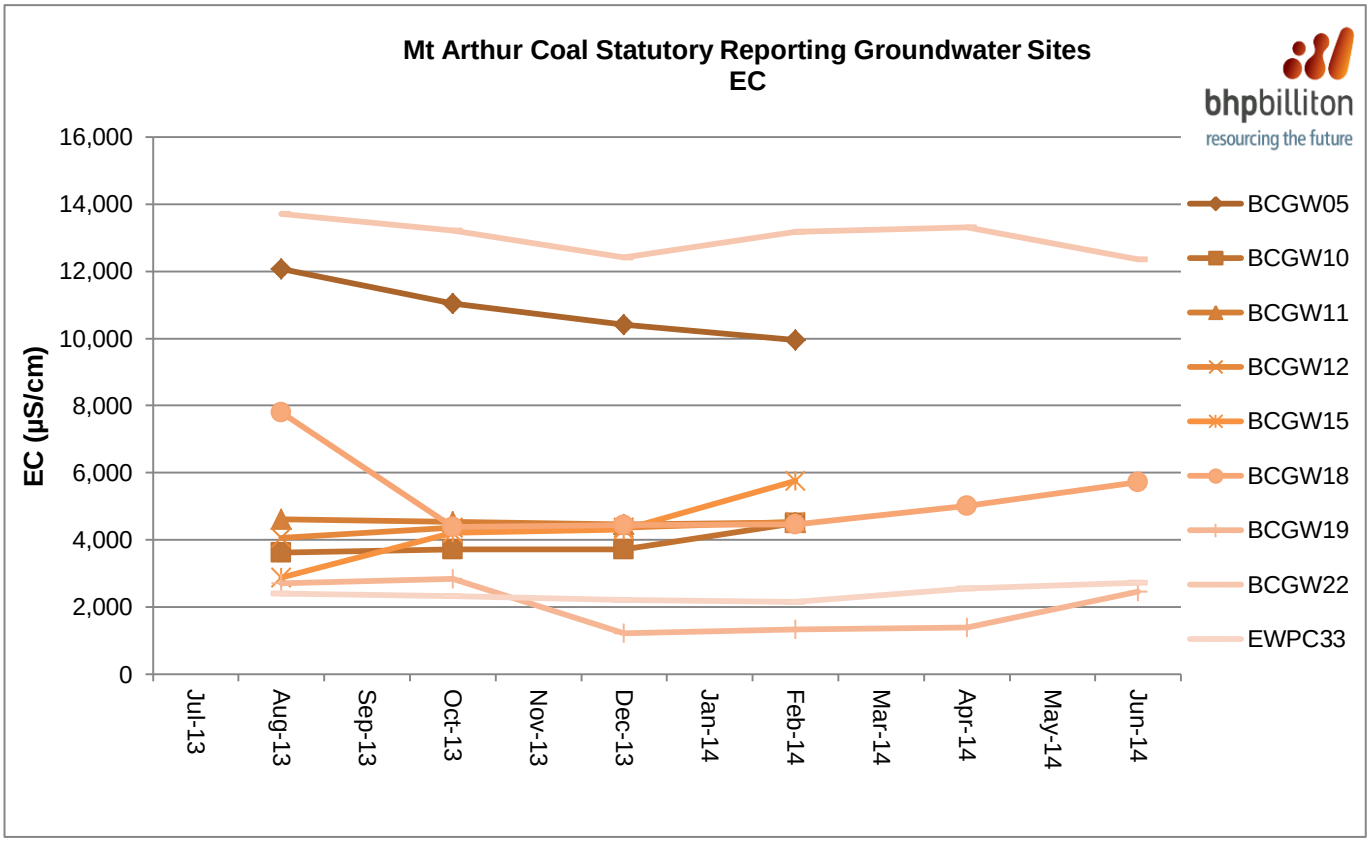


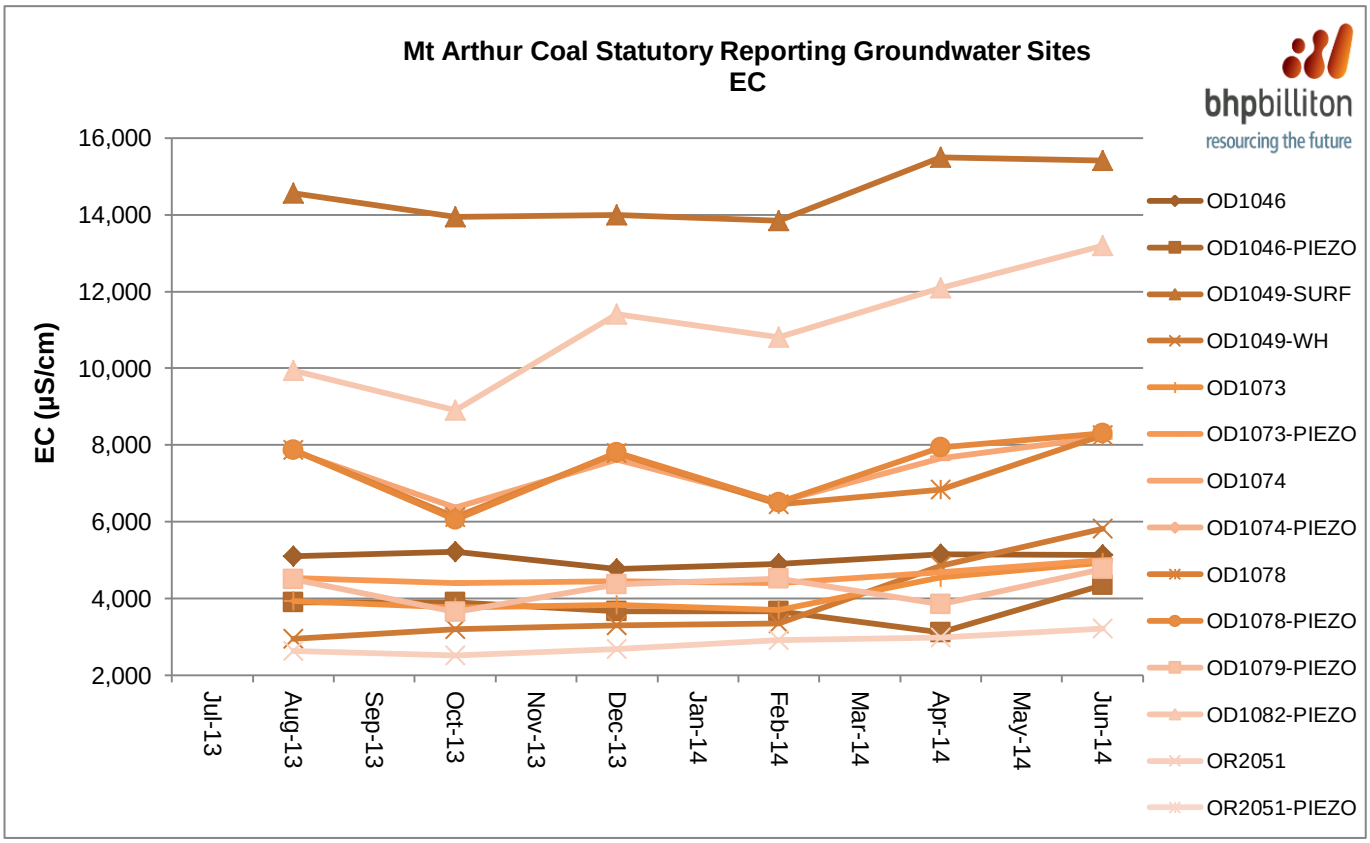

Mt Arthur Coal Statutory Reporting Groundwater Sites
pH
bhpbilliton
resourcing the future
pH
9.5
9.0
8.5
8.0
7.5
7.0
6.5
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
BCGW05
BCGW10
BCGW11
BCGW12
BCGW15
BCGW18
BCGW19
BCGW22
EWPC33


Mt Arthur Coal Statutory Reporting Groundwater Sites
pH
bhpbilliton
resourcing the future
pH
13.5
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
6.0
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
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)
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
GW2
GW3
GW6
GW7
GW8
GW16
GW21
GW22
GW23
GW25
GW26
GW27
GW37


Mt Arthur Coal Statutory Reporting Groundwater Sites
EC
bhpbilliton
resourcing the future
EC (µS/cm)
7,000
6,000
5,000
4,000
3,000
2,000
1,000
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
GW38A
GW38P
GW39A
GW39P
GW40A
GW40P
GW41A
GW41P


Mt Arthur Coal Statutory Reporting Groundwater Sites
EC
bhpbilliton
resourcing the future
EC (µS/cm)
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
BCGW05
BCGW10
BCGW11
BCGW12
BCGW15
BCGW18
BCGW19
BCGW22
EWPC33


Mt Arthur Coal Statutory Reporting Groundwater Sites
EC
bhpbilliton
resourcing the future
EC (µS/cm)
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
OD1046
OD1046-PIEZO
OD1049-SURF
OD1049-WH
OD1073
OD1073-PIEZO
OD1074
OD1074-PIEZO
OD1078
OD1078-PIEZO
OD1079-PIEZO
OD1082-PIEZO
OR2051
OR2051-PIEZO

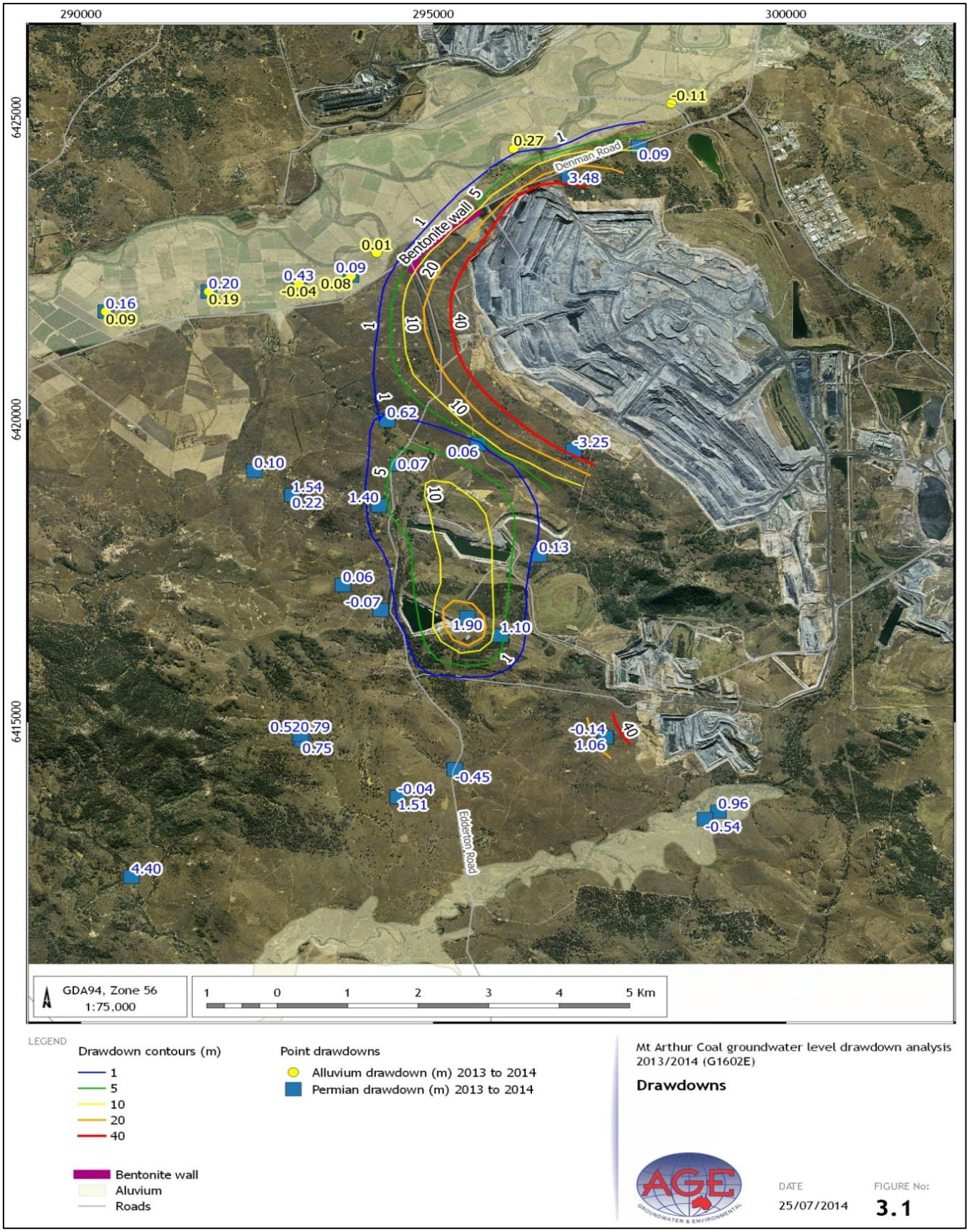


Figure 4A: Total measured groundwater drawdown contours and groundwater drawdown data points for the reporting period

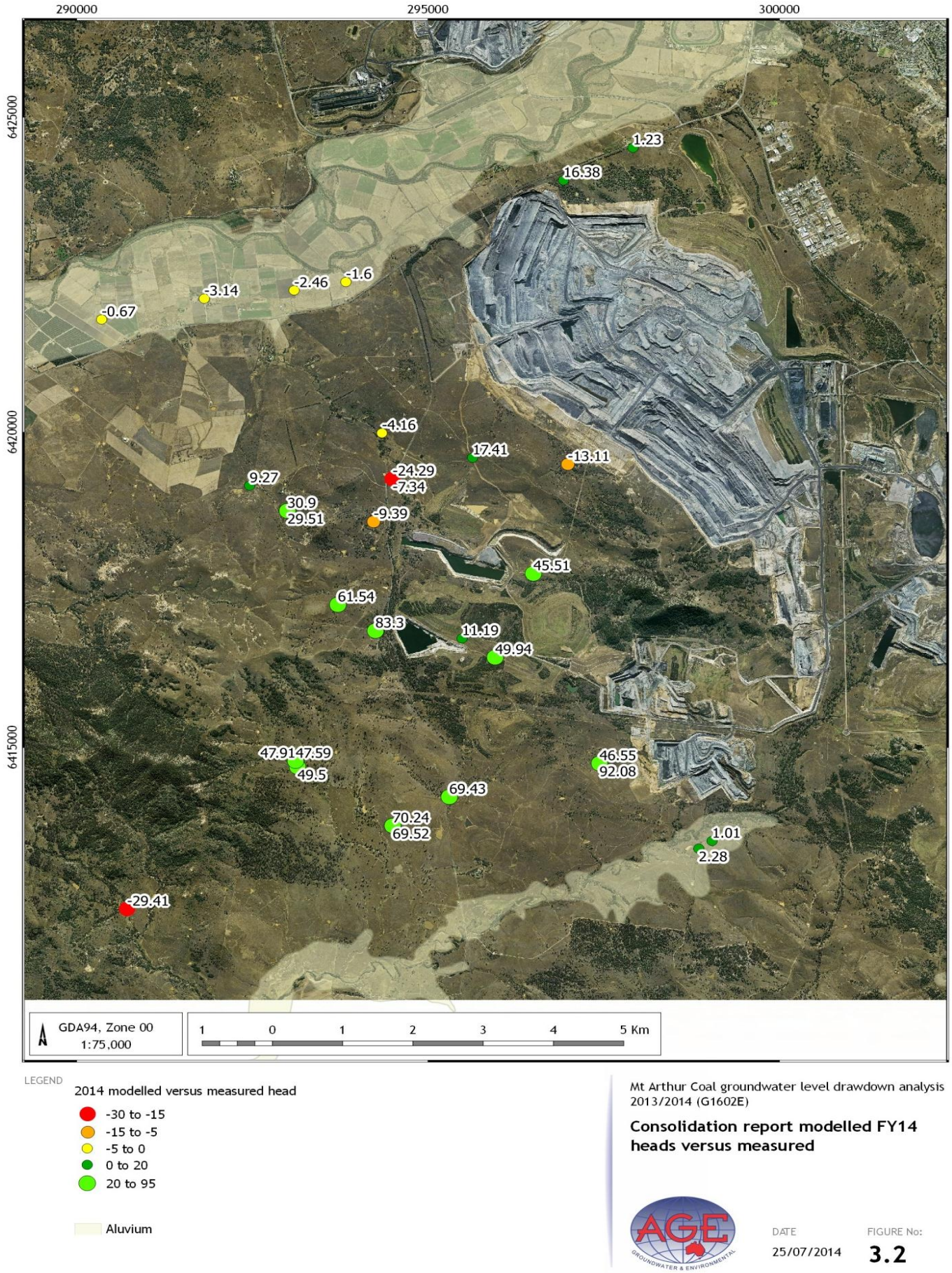
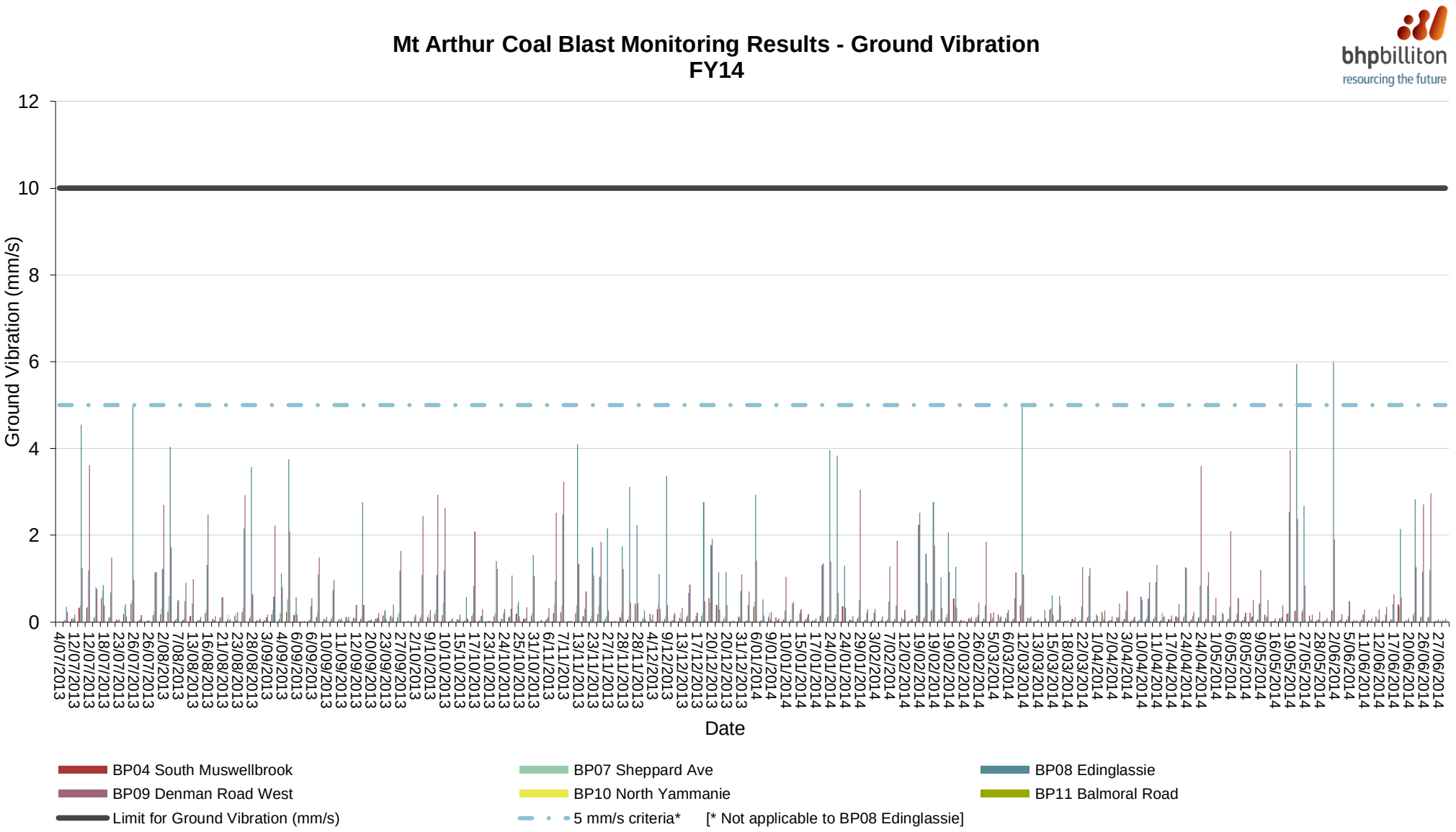
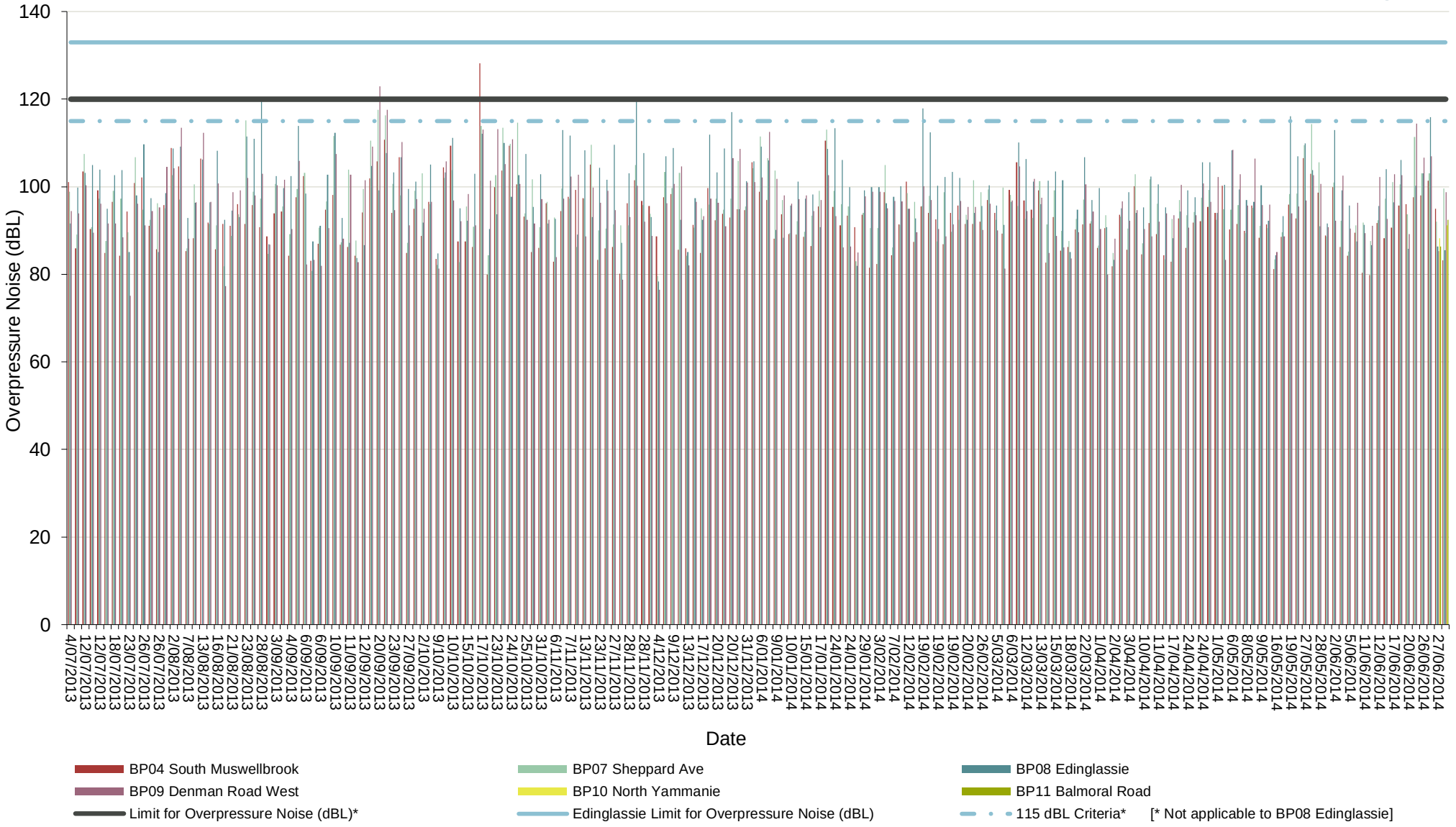


Figure 4B: Modelled versus measured groundwater drawdown comparison

Appendix 5 - Blast Monitoring Results



Mt Arthur Coal Blast Monitoring Results - Overpressure Noise FY14



Appendix 6 - Meteorological Data

WS09	Temperature 2m (°C)			Temperature 10m (°C)			Relative 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 2013	1.0	11.9	22.2	1.6	11.7	20.9	27.3	70.7	95.5	0.0	2.6	11.5	2.9	17.4	99.5	0.0	181.7	1027.5	25.4	3
August 2013	2.0	13.9	27.7	2.5	13.5	26.5	16.8	51.4	95.0	0.0	4.0	13.3	3.2	14.7	97.4	0.0	263.7	1184.3	5.0	1
September 2013	7.0	18.2	32.7	7.0	17.8	31.5	10.8	49.6	94.0	0.0	3.8	14.0	2.5	16.1	101.2	0.0	351.7	1434.3	28.6	2
October 2013	4.6	20.0	35.7	4.7	19.5	34.1	7.3	43.9	92.2	0.0	4.2	17.1	4.0	18.1	93.5	0.0	425.3	1636.5	11.8	4
November 2013	11.1	20.1	36.4	11.1	19.5	34.9	6.7	60.7	94.2	0.0	3.7	13.3	3.9	18.2	100.0	0.0	335.5	1746.1	194.0	8
December 2013	10.1	23.2	38.2	10.0	22.6	36.9	14.8	55.3	93.1	0.0	3.8	14.6	3.8	18.6	102.3	0.0	406.7	1792.2	21.8	3
January 2014	15.3	24.5	37.7	15.2	24.0	36.7	5.2	56.4	91.3	0.0	4.1	10.9	5.8	19.6	93.4	0.0	408.6	1687.1	8.4	1
February 2014	13.8	22.9	37.2	13.6	22.6	36.3	12.1	65.8	92.2	0.0	3.7	13.0	5.9	17.8	95.0	0.0	339.1	1693.2	96.0	7
March 2014	11.6	20.7	30.6	12.2	20.7	29.7	28.9	72.4	93.7	0.0	3.0	12.0	3.3	17.6	100.8	0.0	289.1	1543.8	129.0	8
April 2014	6.8	18.1	32.9	N/A	N/A	N/A	N/A	N/A	N/A	0.0	2.5	8.6	0.0	17.4	94.8	0.0	246.8	1585.9	92.8	6
May 2014	4.5	14.3	24.7	N/A	N/A	N/A	N/A	N/A	N/A	0.0	2.6	12.1	2.3	16.9	100.0	0.0	201.4	1169.5	13.8	3
June 2014	4.2	11.6	19.5	N/A	N/A	N/A	N/A	N/A	N/A	0.0	3.5	18.1	4.2	16.6	101.7	0.0	163.2	995.9	11.6	5

Note: 10m temperature and humidity data was not available from 30 May to 30 June 2014 due to a broken sensor.

WS10	Temperature 2m (°C)			Temperature 10m (°C)			Relative Humidity (%)			Wind speed (m/s)			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.		
August 2013	-2.8	13.0	28.3	-0.2	14.3	27.8	19.1	61.3	98.8	0.2	2.6	10.6	1.1	189.6	770.1	0.2^	0^
September 2013	1.3	16.3	33.2	3.8	17.2	32.6	12.0	58.4	99.0	0.0	2.9	13.5	1.1	226.5	963.0	35.4	2
October 2013	0.0	18.3	36.4	1.8	19.2	35.0	7.1	51.9	99.0	0.0	3.2	14.6	1.1	281.7	1116.9	8.4	3
November 2013	5.9	19.4	37.0	8.5	19.9	36.3	6.3	65.8	99.0	0.0	3.3	11.7	0.1	258.8	1186.3	212.2	10
December 2013	5.4	22.3	38.1	7.6	22.9	38.1	18.4	62.9	98.8	0.0	3.3	14.1	1.0	321.4	1214.8	21.4	3
January 2014	10.9	24.5	38.7	13.4	24.7	37.8	5.5	60.4	98.0	0.0	4.2	12.5	0.1	309.9	1107.9	11.2	3
February 2014	10.2	23.6	38.6	12.2	23.9	37.5	10.3	67.3	96.7	0.0	3.8	12.2	1.1	258.7	1050.6	33.8^	4^
March 2014	6.8	20.1	31.4	9.3	20.6	30.6	28.3	78.6	99.0	N/A	N/A	N/A	1.1	171.4	1002.5	0.0^	0^
April 2014	7.5	19.4	30.6	10.3	19.9	30.5	N/A	N/A	N/A	N/A	N/A	N/A	1.1	137.5	835.0	0.0^	0^
May 2014	-0.2	12.6	26.7	2.3	13.7	26.5	N/A	N/A	N/A	0.0	0.7	3.8	1.1	131.4	1031.3	15.2	4
June 2014	-2.7	10.7	20.6	0.2	11.6	20.3	N/A	N/A	N/A	0.0	1.2	6.9	1.2	108.5	665.6	21.4	5

^ This is not an accurate reflection of rainfall or number of rain days at the operation for these months in FY14, due to substantial amounts of valid data not being recorded in February, March and April 2014. This weather station also only commenced data logging on 22 August 2013.

Note: Wind speed data was not available from 17 February to 5 May 2014 due to a damaged anemometer (damaged by a lightning strike). Valid relative humidity data was not available from 29 March 2014 due to a faulty sensor.

Appendix 7 - Community Complaints Register

Date and time	From	Issue	Lodgement type	Investigation and response to caller
6/07/2013 4:56 AM	Muswellbrook	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.
7/07/2013 6:52 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.
7/07/2013 2:35 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.
8/07/2013 11:31 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.
9/07/2013 8:12 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.
12/07/2013 12:56 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.
12/07/2013 10:22 AM	Hunter Valley	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.
12/07/2013 12:00 PM	Roxburgh 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.
12/07/2013 12:01 PM	New England Highway	Blast Overpressure Noise	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 requested not to be advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
14/07/2013 12:52 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.
14/07/2013 4:59 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.
18/07/2013 3:37 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.
18/07/2013 12:25 PM	Racecourse 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.
24/07/2013 7:47 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. Attempts to contact caller to advise of investigation and monitoring results were unsuccessful.
27/07/2013 7:54 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 limits. Caller was advised of investigation and monitoring results.
29/07/2013 10:00 AM	Roxburgh Road	Operational Noise	Phone Call	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 limits. Caller was advised of investigation and monitoring results.
1/08/2013 5:22 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.
2/08/2013 2:06 PM	Muswellbrook	Blast Vibration	Community Response Line	Investigation revealed conditions were suitable for blasting. Caller was advised of investigation results.
3/08/2013 3:48 AM	Denman Road	Lighting	Community Response Line	Investigation revealed location of light, which was repositioned. Caller did not request to be called back regarding investigation results.
4/08/2013 4:19 AM	Denman Road	Lighting	Community Response Line	Investigation revealed location of light, which was repositioned. Caller did not request to be called back regarding investigation results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
4/08/2013 9:38 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of light, which was repositioned. Caller was unable to be contacted to advise of investigation results.
5/08/2013 11:18 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of light, which was repositioned. Caller was unable to be contacted the following day.
7/08/2013 10:37 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of light, which was redirected. Caller was advised of action taken.
8/08/2013 11:20 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Caller was advised of investigation results.
8/08/2013 11:22 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected. Attempts were made to contact caller to advise of investigation results and action taken.
9/08/2013 5:29 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected. Caller was advised of investigation and action taken.
11/08/2013 9:15 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Caller was advised of investigation results.
15/08/2013 10:38 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.
16/08/2013 11:36 AM	Roxburgh Road	Blast Vibration	Community Response Line	Investigation revealed weather conditions were suitable for blasting. Monitoring results were within regulatory criteria. Caller was unable to be contacted to advise of investigation results.
17/08/2013 1:16 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.
17/08/2013 3:46 AM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected. Caller did not request to be called back regarding investigation results.
17/08/2013 2:07 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.
18/08/2013 10:16 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed lights were shining at north west end of the pit. Corrective action was taken to redirect lights to shine further south. Caller was advised of investigation results and corrective action taken.
24/08/2013 11:48 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected. Caller did not request to be called back regarding investigation results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
27/08/2013 10:48 AM	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 over the phone and in writing.
28/08/2013 9:51 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 monitoring benchmark levels. Caller did not request to be called back regarding investigation results.
28/08/2013 9:51 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 did not request to be called back regarding investigation results.
28/08/2013 9:53 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected. Caller did not request to be called back regarding investigation results.
29/08/2013 9:08 AM	Denman	Blast Vibration	Email	Received from the EPA on behalf of a resident. Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results indicated overpressure noise and ground vibration levels were within regulatory criteria. The EPA was advised of investigation and monitoring results.
1/09/2013 1:19 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 to advise of investigation and monitoring results.
2/09/2013 5:24 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 did not request to be called back regarding investigation and monitoring results.
2/09/2013 11:04 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.
3/09/2013 1:42 PM	Denman	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 did not request to be called back regarding investigation and monitoring results.
3/09/2013 1:42 PM	Roxburgh 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 with follow up letter as requested.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
4/09/2013 12:47 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.
4/09/2013 7:30 AM	Denman Road	Blasting Dust	In Person	Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. Caller did not request to be called back regarding investigation and monitoring results.
4/09/2013 11:35 AM	Denman Road	Blasting Dust	Email	Received from the EPA on behalf of a resident. Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. The EPA was advised of investigation and monitoring results.
4/09/2013 12:02 PM	Roxburgh Road	Blasting Dust	Community Response Line	Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. Caller was advised of results.
4/09/2013 2:06 PM	Denman Road	Blasting Dust	Email	Received from the EPA on behalf of a resident. Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. The EPA was advised of investigation and monitoring results.
8/09/2013 8:22 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 to advise of investigation and monitoring results.
8/09/2013 9:29 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.
10/09/2013 9:00 AM	Roxburgh Road	General Dust	Phone Call	Investigation revealed mining operations had already decreased at the time of complaint and all trucks were dumping at low dumps within the pit. Monitoring results at the nearest monitor indicated dust levels were within regulatory criteria. Caller was advised of investigation and results.
12/09/2013 2:15 PM	Other	General Dust	Email	Received from the EPA on behalf of a resident. Investigation revealed mitigation measures had been implemented at the time. Monitoring results at all monitors indicated dust levels were not elevated and the 24 hour average remained within regulatory criteria. The EPA was advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
14/09/2013 4:49 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 to advise of investigation and monitoring results.
16/09/2013 4:18 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 to advise of investigation and monitoring results.
16/09/2013 7:49 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.
20/09/2013 1:23 PM	Denman Road	General Dust	Email	Received from the EPA on behalf of a resident. Investigation revealed mining operations had already ceased at the time. Monitoring results at the nearest monitor indicated dust levels were elevated at the time, but the 24 hour average remained within regulatory criteria. The EPA was advised of the investigation and monitoring results.
23/09/2013 5:26 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.
10/10/2013 9:30 AM	Thomas Mitchell Drive	Blasting Dust	Email	Received from the EPA on behalf of a resident. Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results at the nearest monitor indicated dust levels were not elevated and the 24 hour average remained within regulatory limits. The EPA was advised of investigation and monitoring results.
11/10/2013 7:39 AM	Roxburgh Road	General Dust	Community Response Line	Investigation confirmed mining operations had been reduced prior to the call. Monitoring results indicated dust levels were within regulatory limits at the time. Caller was advised via message of investigation and monitoring results.
12/10/2013 1:56 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.
12/10/2013 -	Other	General Dust	Email	Received from the EPA on behalf of a resident. Investigation revealed mining operations had been altered and reduced and measures had been implemented at the time. Monitoring results at all monitors indicated dust levels were not elevated and the 24 hour average remained within regulatory limits. The EPA was advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
13/10/2013 12:57 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.
13/10/2013 1:04 AM	Other	Operational Noise	Email	Received from the EPA on behalf of a resident. Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at all real-time monitors indicated noise levels were within internal benchmark monitoring levels. The EPA was advised of investigation and monitoring results.
13/10/2013 9:50 AM 12:13 PM 1:02 PM	Other	General Dust	Community Response Line	Received from the EPA. Investigation revealed mining operations had been reduced prior to the call. Validated monitoring results at all monitors indicated dust levels were not elevated and the 24 hour average remained within regulatory limits. The EPA was advised of investigation and monitoring results.
13/10/2013 10:30 AM	Other	General Dust	Email	Received from the EPA. Investigation revealed mining operations had been reduced prior to the call. Validated monitoring results at all monitors indicated dust levels were not elevated and the 24 hour average remained within regulatory limits. The EPA was advised of investigation and monitoring results.
13/10/2013 2:30 PM	Other	General Dust	Email	Received from the EPA. Investigation revealed mining operations had been reduced prior to the call. Validated monitoring results at all monitors indicated dust levels were not elevated and the 24 hour average remained within regulatory limits. The EPA was advised of investigation and monitoring results.
15/10/2013 6:00 AM	Antiene	Operational Noise	Phone call	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 did not request to be called back regarding investigation and monitoring results.
19/10/2013 4:04 AM	Roxburgh Road	Low Frequency 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.
20/10/2013 3:04 AM	Roxburgh Road	Low Frequency 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.
22/10/2013 10:43 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.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
28/10/2013 12:37 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.
28/10/2013 11:10 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.
28/10/2013 11:10 PM	Other	Operational Noise	Email	Received from the EPA on behalf of a resident. Investigation revealed no unusual mining operations were occurring at the time. Monitoring results at all real-time monitors indicated noise levels were within internal benchmark monitoring levels. The EPA was advised of investigation and monitoring results.
29/10/2013 2:32 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.
31/10/2013 8:15 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.
1/11/2013 12:47 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
2/11/2013 3:49 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
3/11/2013 9:09 AM	South Muswellbrook	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Results at the nearest monitor indicated dust levels were not elevated, and the 24 hour average remained within regulatory requirements. Caller did not request to be called back regarding investigation and monitoring results.
4/11/2013 12:59 AM	South Muswellbrook	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Results at the nearest monitor indicated dust levels were not elevated, and the 24 hour average remained within regulatory requirements. Caller did not request to be called back regarding investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
6/11/2013 3:12 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
7/11/2013 4:47 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
7/11/2013 1:09 PM	Denman Road	Blasting Dust	Community Response Line	Investigation revealed weather conditions were suitable for blasting at the time. Results at the nearest monitor indicated dust levels were not elevated, and the 24 hour average remained within regulatory requirements. Caller was advised of investigation and monitoring results.
7/11/2013 1:16 PM	Roxburgh Road	Blasting Dust	Community Response Line	Investigation revealed weather conditions were suitable for blasting at the time. Results at the nearest monitor indicated dust levels were not elevated, and the 24 hour average remained within regulatory requirements. Caller was advised of investigation and monitoring results.
7/11/2013 1:18 PM	Racecourse Road	Blast Overpressure Noise	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 requirements. Caller was advised of investigation and monitoring results.
7/11/2013 1:46 PM	Denman Road	Blast Overpressure Noise	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 requirements. Caller was advised of investigation and monitoring results.
7/11/2013 1:48 PM	Racecourse Road	Blast Overpressure Noise	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 requirements. Caller was advised of investigation and monitoring results.
7/11/2013 1:53 PM	Roxburgh Road	Blast Overpressure Noise	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 requirements. Caller was advised of investigation and monitoring results.
8/11/2013 4:49 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
12/11/2013 1:02 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed operations had ceased for the night due to weather conditions. Results at the nearest real-time monitor indicated noise was 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
19/11/2013 8:00 PM	Other	Low Frequency Noise	Email	Received from the EPA on behalf of a resident. Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. The EPA was advised of investigation and monitoring results.
19/11/2013 10:43 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. Caller did not request to be called back regarding investigation and monitoring results.
19/11/2013 10:49 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
20/11/2013 6:59 PM	Denman Road	Other	Community Response Line	Caller was concerned about increased kangaroo numbers around the mine site.
20/11/2013 11:17 PM	Roxburgh Road	Low Frequency Noise	Phone Call	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
21/11/2013 7:39 PM	Denman Road	Other	Community Response Line	Caller was concerned about the number of dead kangaroos on the road adjacent to the mine site. Caller was advised to contact shire council ranger to discuss.
23/11/2013 10:50 AM	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 requirements. Caller was advised of investigation and monitoring results.
24/11/2013 12:04 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
25/11/2013 10:51 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. Caller was unable to be contacted regarding investigation and monitoring results.
27/11/2013 11:11 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. Caller was unable to be contacted regarding investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
27/11/2013 11:15 PM	Other	Low Frequency Noise	Email	Received from the EPA on behalf of a resident. Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. The EPA was advised of investigation and monitoring results.
28/11/2013 1:25 PM	Other	Blasting Dust	Email	Received from the EPA on behalf of a resident. Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results at the nearest monitor indicated dust levels were not elevated, and the 24 hour average remained within regulatory requirements. The EPA was advised of investigation and monitoring results.
28/11/2013 1:26 PM	Muswellbrook	Blasting Dust	Community Response Line	Investigation revealed weather conditions were suitable for blasting at the time. Monitoring results at the nearest monitor indicated dust levels were not elevated, and the 24 hour average remained within regulatory requirements. Caller was advised of investigation and monitoring results.
30/11/2013 11:22 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise was within internal benchmark monitoring levels. Caller was advised of investigation and monitoring results.
1/12/2013 11:21 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
4/12/2013 1:59 PM	Racecourse Road	Blast Overpressure Noise	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 unable to be contacted regarding monitoring results.
9/12/2013 4:46 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
13/12/2013 3:32 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
15/12/2013 1:41 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted regarding investigation and monitoring results.
15/12/2013 10:55 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted regarding investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
16/12/2013 3:45 PM	Denman Road	General Dust	Email	Received from the DP&E on behalf of a resident. Investigation revealed mining operations had already ceased at the time. Monitoring results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. The DP&E was advised of investigation and monitoring results.
16/12/2013 4:15 PM	Denman Road	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Monitoring results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. Caller was advised of investigation and monitoring results.
18/12/2013 3:27 PM	Denman Road	General Dust	Community Response Line	Investigation revealed mining operations were continuing as usual and all water trucks were in operation. Monitoring results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. Caller was advised of investigation and monitoring results.
20/12/2013 11:30 PM	Denman Road	General Dust	Email	Investigation revealed mining operations had already ceased at the time. Monitoring results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. Caller was advised of investigation and monitoring results.
22/12/2013 3:52 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
24/12/2013 4:45 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
28/12/2013 12:17 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
28/12/2013 11:04 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
29/12/2013 11:30 AM	Other	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Monitoring results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. Caller did not request to be called back regarding investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
30/12/2013 11:32 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
30/12/2013 11:44 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
31/12/2013 1:52 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
31/12/2013 12:10 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.
1/01/2014 12:01 AM	Other	Low Frequency Noise	Email	Received from the EPA on behalf of a resident. Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. The EPA was advised of investigation and monitoring results.
1/01/2014 12:30 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
1/01/2014 12:56 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
6/01/2014 1:05 PM	Racecourse 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.
7/01/2014 3:36 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
7/01/2014 8:07 AM	Denman Road	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. Caller was advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
10/01/2014 10:40 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
14/01/2014 12:52 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
14/01/2014 10:55 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
14/01/2014 8:59 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of investigation results and action taken.
16/01/2014 1:33 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
17/01/2014 2:37 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
17/01/2014 11:38 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
17/01/2014 10:56 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed mining operations had ceased in western end of the pit. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
17/01/2014 4:36 PM	Denman Road	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. Caller did not request to be called back regarding investigation and monitoring results.
20/01/2014 2:09 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed mining operations had ceased in western end of the pit. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
21/01/2014 11:27 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed mining operations had ceased in western end of the pit. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
24/01/2014 5:34 PM	New England Highway	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. Caller was advised of investigation and monitoring results
24/01/2014 5:35 PM	Other	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. Caller did not request to be called back regarding investigation and monitoring results.
24/01/2014 1:25 PM	Denman Road	Blast Fume	Email	Received from the DP&E on behalf of a resident. Investigation revealed that the blast fume was contained on the mine site and wind conditions were suitable for blasting at the time. The DP&E was advised of the investigation results.
27/01/2014 12:57 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed mining operations had ceased in western end of the pit. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
31/01/2014 11:30 PM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
1/02/2014 11:22 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
1/02/2014 11:22 PM	Roxburgh Road	Lighting	Community Response Line	Investigation was unable to reveal the location of lights to redirect or turn them off. Caller was advised of investigation results.
5/02/2014 12:58 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
7/02/2014 8:59 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
7/02/2014 1:59 PM	Antiene	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.
9/02/2014 7:58 PM	Roxburgh Road	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Results at the nearest monitor indicated dust levels were not elevated at the time and the 24 hour average remained within regulatory criteria. Caller was advised of investigation and monitoring results.
10/02/2014 12:01 AM	Roxburgh Road	Lighting	Phone Call	Received from the DP&E on behalf of a resident. Investigation revealed location of lights, which were redirected. The DP&E was advised of the investigation results and action taken.
11/02/2014 1:25 PM	Denman Road	Lighting	Phone Call	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of the investigation results and action taken.
11/02/2014 9:47 PM	South Muswellbrook	Lighting	Community Response Line	Investigation revealed location of lights, which operations turned off and redirected. The caller advised the following morning that one of the lights was inadvertently turned back on. Further investigation was undertaken and the light was moved from the dump.
11/02/2014 10:58 PM	South Muswellbrook	Lighting	Community Response Line	A mine employee attended the caller's residence to investigate and identify the location of the lights, which were redirected or turned off by 14/02/2014.
12/02/2014 5:16 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
12/02/2014 7:26 PM	South Muswellbrook	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Results at the nearest monitor indicated dust levels were not elevated and the 24 hour average remained within regulatory criteria. Caller was advised of investigation and monitoring results.
15/02/2014 5:14 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed minimal mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
15/02/2014 8:59 AM	Roxburgh Road	Low Frequency Noise	Community Response Line	Investigation revealed operations had ceased due to unfavourable weather conditions. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
18/02/2014 11:35 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
18/02/2014 10:23 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
19/02/2014 2:52 PM	Racecourse Road	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
19/02/2014 2:55 PM	Racecourse Road	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
19/02/2014 2:55 PM	Thomas Mitchell Drive	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
19/02/2014 2:55 PM	Thomas Mitchell Drive	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
19/02/2014 2:55 PM	Thomas Mitchell Drive	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
19/02/2014 2:55 PM	Other	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
19/02/2014 2:55 PM	Muswellbrook	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
19/02/2014 2:55 PM	Thomas Mitchell Drive	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
19/02/2014 3:16 PM	Thomas Mitchell Drive	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
19/02/2014 3:40 PM	Thomas Mitchell Drive	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
19/02/2014 3:42 PM	Thomas Mitchell Drive	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
19/02/2014 4:23 PM	Muswellbrook	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
19/02/2014 7:14 PM	Thomas Mitchell Drive	Blast Fume	Community Response Line	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
20/02/2014 10:00 AM	New England Highway	Blast Fume	Phone Call	Caller was advised that the blast was timed to ensure that the wind conditions would prevent fume from travelling off site. However, due to a change in conditions immediately after the blast, some fume did travel towards the Muswellbrook industrial area.
21/02/2014 1:59 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
24/02/2014 10:53 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
24/02/2014 10:53 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of the investigation results and action taken.
25/02/2014 11:52 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
1/03/2014 4:37 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
3/03/2014 5:29 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
3/03/2014 11:51 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller did not request to be called back regarding investigation and monitoring results.
4/03/2014 2:32 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
6/03/2014 8:41 AM	Muswellbrook	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Results at the nearest monitor indicated dust levels were not elevated at the time and the 24 hour average remained within regulatory criteria. Caller was advised of investigation and monitoring results.
7/03/2014 1:23 PM	Muswellbrook	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Results at the nearest monitor indicated dust levels were not elevated at the time and the 24 hour average remained within regulatory criteria. Caller was advised of investigation and monitoring results.
7/03/2014 10:49 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
8/03/2014 11:34 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
9/03/2014 12:28 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
9/03/2014 8:06 PM	Skellatar Stock Route	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of investigation results and action taken.
9/03/2014 11:12 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
10/03/2014 1:17 AM	Skellatar Stock Route	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of investigation results and action taken.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
10/03/2014 8:00 PM	Skellatar Stock Route	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of investigation results and action taken.
11/03/2014 3:16 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
11/03/2014 10:27 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
12/03/2014 10:27 PM	Antiene	General Dust	Community Response Line	Investigation revealed mining operations had already ceased at the time. Results at the nearest monitor indicated dust levels were not elevated at the time and the 24 hour average remained within regulatory criteria. Caller was advised of investigation and monitoring results.
13/03/2014 1:54 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller did not request to be called back regarding investigation and monitoring results.
15/03/2014 10:27 AM	Racecourse Road	Blasting Dust	Community Response Line	Investigation revealed weather conditions were suitable for blasting at the time. Results at the nearest monitor indicated dust levels were not elevated at the time and the 24 hour average remained within regulatory criteria. Caller did not request to be called back regarding investigation and monitoring results.
15/03/2014 12:43 PM	Muswellbrook	Blast Fume	Community Response Line	Investigation revealed weather conditions were suitable for blasting at the time and that fume was slightly visible but did not leave the mine site. Caller was advised of investigation and monitoring results.
19/03/2014 11:02 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of investigation results and action taken.
19/03/2014 11:03 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
19/03/2014 11:34 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
20/03/2014 10:08 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
22/03/2014 11:49 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
26/03/2014 12:23 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
28/03/2014 5:43 PM	Denman Road	Other (Water)	Community Response Line	Investigation revealed water leaving mine site and flowing over Denman Road. Caller was advised of investigation results and action taken.
29/03/2014 11:24 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of investigation results and action taken.
30/03/2014 11:57 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
4/04/2014 1:27 PM	Denman Road	Other (Water)	Community Response Line	Investigation revealed water leaving mine site and flowing over Denman Road. Caller was advised of investigation results and action taken.
5/04/2014 4:06 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
6/04/2014 2:36 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
8/04/2014 3:30 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller did not request to be called back regarding investigation and monitoring results.
9/04/2014 9:25 AM	Antiene	Train Noise	Community Response Line	Results at the nearest real-time monitor indicated noise levels were within internal benchmarks and given geographical location of generated noise would be a cumulative effect. Caller was advised of investigation and monitoring results.
10/04/2014 6:33 AM	Antiene	Train Noise	Community Response Line	Results at the nearest real-time monitor indicated noise levels were within internal benchmarks and given geographical location of generated noise would be a cumulative effect. Caller was advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
11/04/2014 11:27 AM	Racecourse Road	Blast Vibration and Blast Fume	Community Response Line	Investigation revealed weather conditions were suitable for blasting at the time. Fume was slightly visible but did not leave the mine site. Results indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
17/04/2014 7:12 AM	Antiene	Train Noise	Community Response Line	Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
16/04/2014 12:36 AM	Muswellbrook	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
16/04/2014 11:49 PM	Muswellbrook	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
17/04/2014 2:10 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
19/04/2014 1:01 AM	Muswellbrook	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
22/04/2014 4:51 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
22/04/2014 11:19 PM	Muswellbrook	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
24/04/2014 12:45 PM	Antiene	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 was advised of investigation and monitoring results.
28/04/2014 9:00 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
28/04/2014 9:01 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of investigation results and action taken.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
6/05/2014 12:52 AM	South Muswellbrook	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
7/05/2014 8:45 AM	Antiene	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 was advised of investigation and monitoring results.
8/05/2014 9:28 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back regarding investigation and monitoring results.
8/05/2014 9:29 AM	Other	Blast Vibration	Community Response Line	Investigation revealed weather conditions were suitable for blasting at the time. Results indicated overpressure noise and ground vibration levels were within regulatory criteria. Caller was advised of investigation and monitoring results.
8/05/2014 9:30 AM	Other (Unknown)	Operational Noise	Email	Received from the EPA on behalf of a resident. Investigation revealed no unusual mining operations were occurring at the time. Results at all real-time monitors indicated noise levels were within internal benchmarks, except at South Muswellbrook, however exceedances at this monitor were due to local noise sources. The EPA was advised of investigation and monitoring results.
12/05/2014 1:17 AM	South Muswellbrook	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was unable to be contacted to be advised of investigation and monitoring results.
12/05/2014 3:14 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back regarding investigation and monitoring results.
16/05/2014 1:43 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back regarding investigation and monitoring results.
18/05/2014 3:03 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back regarding investigation and monitoring results.
19/05/2014 11:32 AM	Denman Road	Blast Overpressure Noise	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.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
21/05/2014 11:55 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back regarding investigation and monitoring results.
26/05/2014 10:20 AM	Racecourse Road	Operational Noise	Phone Call	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was advised of investigation and monitoring results.
2/06/2014 11:53 AM	Racecourse Road	Blast Overpressure Noise	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.
5/06/2014 2:10 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back.
6/06/2014 11:55 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of three potential nuisance lights, which were all redirected or relocated so that the lights were no longer visible. Caller was unable to be contacted to be advised of investigation results and action taken.
7/06/2014 12:01 AM	Roxburgh Road	Lighting	Email	Received from the EPA on behalf of a resident. Investigation revealed location of three potential nuisance lights, which were all redirected or relocated so that the lights were no longer visible. The EPA was advised of investigation and monitoring results.
7/06/2014 10:33 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back.
8/06/2014 12:41 AM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of nuisance light, which was lowered and redirected so that the light was no longer visible. Caller was advised of investigation results and action taken.
9/06/2014 11:24 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back.
10/06/2014 11:23 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back.
10/06/2014 11:27 PM	Roxburgh Road	Operational Noise	Email	Received from the EPA on behalf of a resident. Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. The EPA was advised of investigation and monitoring results.

Date and time	From	Issue	Lodgement type	Investigation and response to caller
11/06/2014 11:00 PM	Roxburgh Road	Operational Noise	Email	Received from the EPA on behalf of a resident. Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. The EPA was advised of investigation and monitoring results.
12/06/2014 12:23 AM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back.
13/06/2014 7:12 AM	Roxburgh Road	Lighting	Phone Call	Received from the DP&E on behalf of a resident. Investigation did not identify any potential nuisance lights. The DP&E was advised of investigation results.
13/06/2014 7:12 AM	Roxburgh Road	Lighting	Community Response Line	Investigation did not identify any potential nuisance lights. Caller was advised of investigation results.
17/06/2014 11:09 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back.
18/06/2014 10:34 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back.
22/06/2014 10:59 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back.
22/06/2014 11:13 PM	Roxburgh Road	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller was not called back.
24/06/2014 6:42 PM	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of investigation results and action taken.
26/06/2014 11:15 AM	Denman Road	Blasting Dust	Community Response Line	Investigation revealed weather conditions were suitable for blasting at the time. Results at the nearest monitor indicated dust levels were not elevated at the time, and the 24 hour average remained within regulatory criteria. Caller was advised of investigation and monitoring results.

Appendix 8 - Rehabilitation Plan