Mt Arthur Coal

Annual Environmental Management Report FY16

30 September 2016

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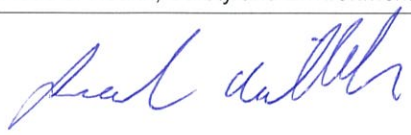
Document Details	
Name of Mine	Mt Arthur Coal
Mining Operations Plan Commencement Date	1 July 2015
Mining Operations Plan Completion Date	30 June 2020
AEMR Commencement Date	1 July 2015
AEMR Completion Date	30 June 2016
Name of Leaseholder	Hunter Valley Energy Coal Pty Ltd
Reporting Officer Name	Sarah Withell
Reporting Officer Title	Head of Health, Safety and Environment
Reporting Officer Signature	
Date 23/9/16	30 September 2016

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.

This Annual Environmental Management Report (AEMR) details Mt Arthur Coal's environmental and community performance for the period from 1 July 2015 to 30 June 2016. 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 Modification 1 (09_0062 MOD 1), referred to hereafter as the modification 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.

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

Table 1: AEMR requirements

Reference	Condition	AEMR section
EDG03 Guidelines	a) The current status of approvals leases and licences. b) A list of mine contacts. c) Actions arising from the previous AEMR review. d) Environmental risk management and control strategies.	Section 1
EDG03 Guidelines	For the previous 12 month period: a) Mining, mine development, and rehabilitation in relation to the Mining Operations Plan; b) Environmental performance in relation to the collective conditions of approvals, leases and licences; and c) Community relations and liaison.	a) Section 2 and 5 b) Section 3 and 1.1 c) Section 4.2
EDG03 Guidelines	It also looks to the next 12 months by: a) Proposing improvements in environmental performance and management systems; and b) Specifying environmental and rehabilitation targets to be achieved.	a) Section 3 b) Section 6
Condition 53d of Schedule 3 of the modification project approval	The Proponent shall: …. c) Report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary.	Section 3.16

Reference	Condition	AEMR section
Condition 3 of Schedule 5 of the modification project approval	By the end of June each year, the Proponent shall review the environmental performance of the project to the satisfaction of the Secretary. 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 Environmental 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

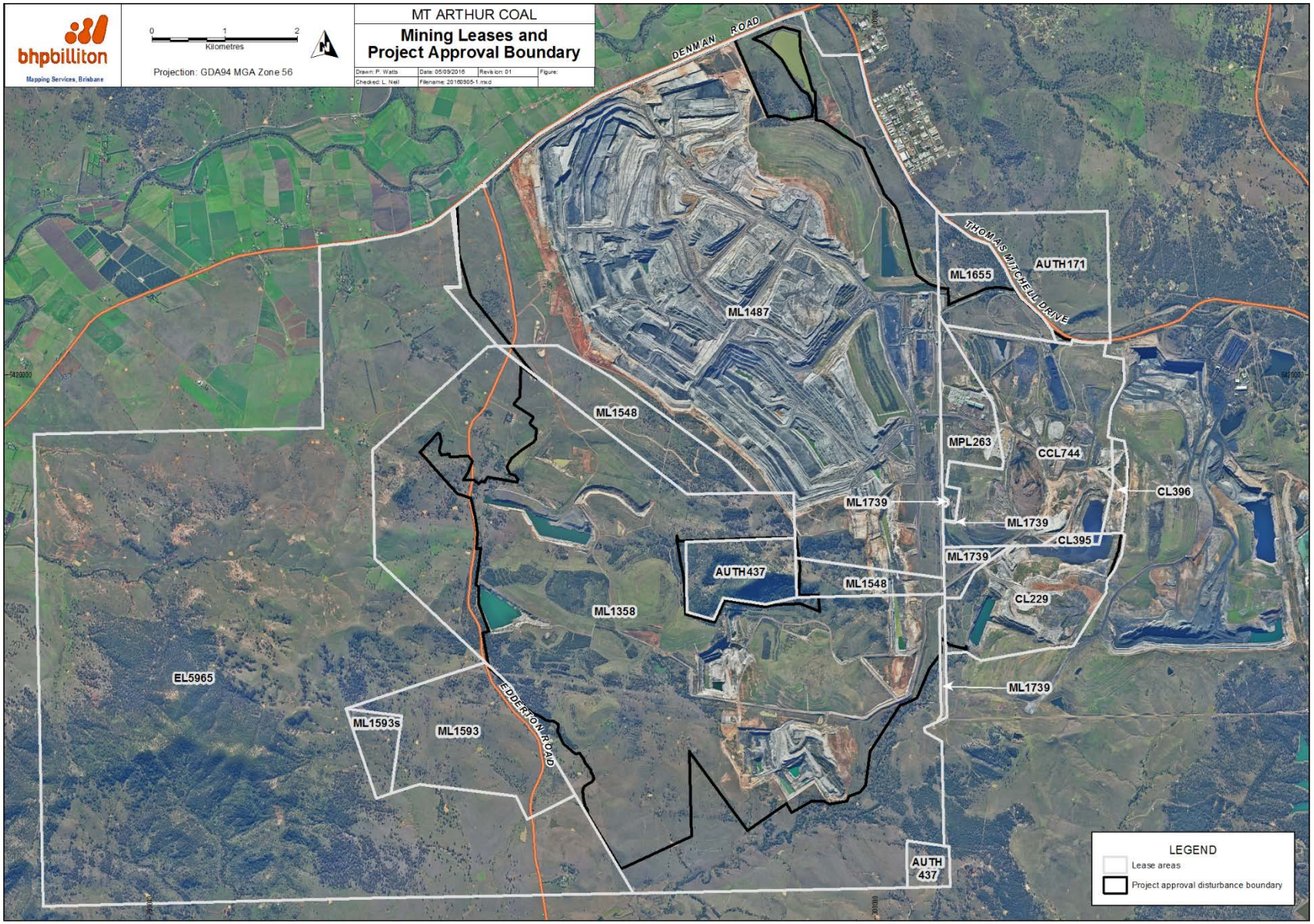


Figure 1: Location of the Mt Arthur Coal Mining Leases and Project Approval Boundary

Approvals, Leases and Licences

Mt Arthur Coal has a number of statutory approvals, leases and licences that regulate activities on site. Each of these 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 and Australia.

Project Approvals

In 2009, Mt Arthur Coal lodged an application under Part 3A of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act) to extend open cut operations and consolidate existing approvals for open cut mining operations and surface infrastructure. The project, as described in the Mt Arthur Coal Consolidation Project Environmental Assessment 2009 (referred to hereafter as the consolidation environmental assessment), was approved by the Minister for Planning on 24 September 2010 (Project Approval 09_0062). The open cut consolidation project approval permitted the extraction of up to 32 mtpa of Run-of-mine (ROM) coal from the open cut. Mt Arthur Coal also holds the Mt Arthur Coal Underground approval (PA 06_0091) which was granted in 2008.

In February 2013, Mt Arthur Coal lodged an application to modify the open cut consolidation project approval, under section 75W of EP&A Act. Approval for the modification (referred to hereafter as the modification project approval) was granted on 26 September 2014 and provides for a four year increase in consent life to 2026 and associated mine extension areas, changes to overburden emplacements, a new administration building and Coal Handling and Preparation Plant (CHPP) offices, relocation and upgrade of the explosive facility, rail loop duplications and an increase in maximum daily train numbers from 12 to 15. Although the open cut and underground mining operations are approved to rates of 32 million tonnes per annum (mtpa) and 8 mtpa, respectively, the total mine extraction rate is limited to 36 mtpa of ROM coal by the open cut consolidation project approval.

Mining Leases

Mt Arthur Coal holds nine Mining Leases (MLs) including one Mining Purposes Lease (MPL) and two subleases (Drayton subleases Coal Lease (CL) 395 and CL229). Each of the leases covers a different area of the active and future mining areas, has a different expiry date and set of conditions. An application was submitted in June 2014 for a mining lease for mining purposes for 46 hectares and approval is expected early in the next reporting period. Mt Arthur Coal is currently preparing a new mining lease for mining purposes which will cover Mt Arthur Coals existing water licence discharge channel. A mining lease over the existing approved water discharge channel is now required following amendments to the NSW Mining Act 1992. The mining lease will be lodged in the next reporting period. Mt Arthur Coal currently holds three exploration licences (EL) or authorisations (A) to prospect (EL5965, A171 and A437).

Environment Protection Licence

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

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

EPL 11457 was last issued on the 9 April 2015 and remains current from this date. The next review date is due on the 27 September 2019.

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 (DotE) that protects matters of national environmental significance including federally listed flora, fauna and ecological communities.

On 30 April 2012, Mt Arthur Coal was granted approval (EPBC 2011/5866) for the Mt Arthur Coal Extension Project.

In October 2014 an EPBC Referral was lodged with the Commonwealth DotE for the modification project approval areas. Now known as EPBC 2014/7377, the modification project was determined to be a controlled action in March

2015 and the Preliminary Documentation is currently being assessed. There were no public submission received during the public exhibition period and approval is expected in the next reporting period.

Table 2: Mt Arthur Coal's existing statutory approvals as at 30 June 2016

Description	Issue date	Expiry date
Project approvals issued by the DP&E		
Mt Arthur Coal Mine Open Cut Consolidation Project Modification 1 (09_0062 MOD 1)	26/09/2014	30/06/2026
Mt Arthur Coal Mine Underground Project (06_0091)	02/12/08	31/12/2030
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	21/09/2036
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	17/10/2032
MLA 476 (now ML1739)	27/07/2016	27/07/2037
A 171	27/10/2004	25/11/2015
A 437	04/03/1991	04/03/2020
EL 5965	14/07/2007	14/07/2017
Drayton sublease CL 395	13/04/2006 (registered 14/06/2013)	21/01/2029
Drayton sublease CL 229	13/04/2006 (registered 14/06/2013)	02/02/2024
EPL issued by the EPA		
EPL 11457	09/10/2001 (last updated on 09/04/2015)	Not specified
EPBC approval issued by the DotE		
EPBC 2011/5866	30/04/12 (varied on 14/11/2014)	30/06/2022

Mining Operations Plans

Mt Arthur Coal's mining operations plan (MOP) was approved on 15 July 2015, and covers the five-year period 1 July 2015 to 30 June 2020 (FY16-FY20). The MOP provides information pertaining to operating philosophy, mining method, rehabilitation method, water management and environmental management associated with current operations. The MOP has been prepared in accordance with the NSW Department of Trade and Investment,

Regional Infrastructure and Services – DRE, ESG3: Mining Operations Plan Guidelines, September 2013. It also serves as Mt Arthur Coal's rehabilitation management plan for the modification project approval 09_0062 MOD 1.

Mine Contacts

James Palmer started as the Asset President for NSWEC, BMC and Indomet Coal. NSW Energy Coal continues a Health, Safety and Environment (HSE) Business Partner team which is led by the Head of HSE Sarah Withell. Dawid Boshoff started as General Manager of Mt Arthur Coal Operations on 4 May 2016. Dawid replaces the two previous General Managers of Open Cut Operations and CHPP and Infrastructure as a single General Manager.

Furthermore BHP Billiton rolled out a change to its operating model by collectively grouping Assets by geographic regions. The new groups are Minerals Australia, Minerals Americas and Petroleum. Minerals Australia now has a centralised HSE support function referred to as Analysis and Improvement. The analysis and improvement support will be used across the Australian Assets and will assist Mt Arthur Coal to monitor and improve HSE systems. Contact details for personnel associated with environmental management at Mt Arthur Coal can be found in Table 3.

Table 3: Mt Arthur Coal management contact details

Name and role	Phone contact details
Dawid Boshoff, General Manager, Mt Arthur Coal	(02) 6544 5800
Donna McLaughlin , Superintendent Health, Safety and Environment Business Partner, Mt Arthur Coal	(02) 6544 5800
Luke Neil, Principal Environment Analysis and Improvement, Minerals Australia	(02) 6544 5800

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 DP&E and DRE conducted a review of the FY15 AEMR, including attending a site meeting and inspection at Mt Arthur Coal on 27 November 2015. In a letter dated 1 December 2016, DP&E noted that the FY15 AEMR generally satisfied the requirements for Annual Reviews in Condition 3, Schedule 5 of the consolidation project approval. The DP&E made several comments for consideration, which are listed in Table 4. Actions taken to address the comments from DP&E them. In a letter dated 26 August 2016, DP&E noted that the report was satisfactory to the Secretary however requested a rehabilitation audit to be completed during the next reporting period to determine compliance and identify any improvement opportunities.

Table 4: Actions Required at Previous AEMR Review

No.	Issue or observation	Action required by Mt Arthur Coal	Due	Completed	Comments
DPE - 1	Water management	Water management, and in particular the large amount of imported water used by the Mt Arthur mine was raised in last year's comments. The AEMR report does identify a number of water reduction initiatives, and these need to be continued to be implemented	FY 16 AEMR	Complete	Noted. Water reduction initiatives are discussed in section 2.8.
DPE - 2	Sheppard Ave air quality monitor	Table 14 of the AEMR report indicated the Sheppard Ave monitor measured an exceedance of air quality criteria 11 times. We are aware that the monitor is located near a dirt road. We have agreed that bitumen seal of the road may solve the exceedance problem. The other alternative is to move the monitor. The negotiations with the Muswellbrook race club need to be concluded and the dirt road sealed whilst the summer weather suits this type of work.	31 March 2016	Complete	A 100 m section of road at the entrance of the Muswellbrook Racecourse was sealed by Mt Arthur Coal in April 2016.
DPE - 3	Contaminated Land and Hydrocarbon Contamination	Section 3.5.3 advised that there were no hydrocarbon incidents in the reporting year. Mt Arthur mine was directed to undertake an audit	FY16 AEMR	Complete	Audit results are listed in section 3.5
DPE - 4	Denman Road bund	The Denman Rd bund was inspected and the works were progressing well. Whilst it took more time than expected to commence this work, it is good to see it has started and we were advised that vegetation establishment is expected to commence shortly. We were advised that in the works contract, a requirement is included to water plants to prevent high mortality rates over summer. We ask that Mt Arthur mine monitors the vegetation establishment carefully following planting to ensure there is not a delay in the vegetation establishment similar to that has occurred in the past.	FY16 AEMR	Will be completed in FY17 AEMR	The Denman Rd Bund was planted and plants were watered. The plant survival was poor and therefore further planting will be commenced in the next reporting period. Investigation into understanding why the planting was not successful is underway.

No.	Issue or observation	Action required by Mt Arthur Coal	Due	Completed	Comments
DPE - 5	Rehabilitation drainage works	On our inspection of the VD1 rehabilitation area we observed a number of graded drainage banks that were filled with sediment. Some were at the point of failure, should further stormwater runoff occur. A system needs to be put in place whereby these banks are inspected after rain, particularly until the vegetation cover reaches 70%. Should drainage banks overtop, repairs are expensive and will cause damage to a large area within the newly rehabilitated ground.	FY16 AEMR	Complete	Contour drains on VD1 and Saddlers rehabilitation were de-silted in April 2016. An inspection requirement has been included in the Rehabilitation and Ecological Monitoring Procedure for newly established rehabilitation (with less than 70 per cent ground cover) following a rainfall event of 25mm or more rain.
DPE - 6	Revegetation opportunities	An area of bare ground on the NE side of the VD1 dump was observed during the inspection. We were advised it was a former topsoil stockpile site. Areas like this should be revegetated once works are complete to prevent erosion.	FY16 AEMR	Complete	Following completion of works, the area was ripped and seeded using a pasture and woodland seed mix.
DRE -1		Rehabilitation mandatory audit request from DRE	14 October	Ongoing	Further information on the audit will be included in the FY17 AEMR

Mt Arthur Coal Environmental Management System

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

Mt Arthur Coal's EMS is 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.

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 reports 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.

Operations during the Reporting Period

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 ML1358, ML1487 and EL5965 to further define coal seam geology and geotechnical parameters of the resource. During the reporting period 17 boreholes were drilled totalling 5,955 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 variations from the MOP related to exploration activities.

Land Preparation

Clearing of vegetation is undertaken in accordance with Mt Arthur Coal's Biodiversity Management Plan (BMP) and 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 may inhabit trees. Any fauna found are relocated by Mt Arthur Coal personnel or local wildlife carers.

During the reporting period 115,500 cubic metres of topsoil was stripped ahead of advancing mining areas in the northern pits towards Denman Road (Table 5). Topsoil was recovered using excavators, dozers and trucks and placed directly onto reshaped areas to be rehabilitated. No topsoil was stockpiled during the reporting period. Between 200 to 450 millimetres of topsoil was recovered during stripping.

The volumes of topsoil stripped during the reporting period and the forecast for the next reporting period vary from predictions in the MOP. Less topsoil was stripped during the reporting period than predicted. The reduction in topsoil stripping is a result of less disturbance required as mining activities are concentrated 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 which will realign with the MOP at a later date.

Construction

In line with securing the sustainability of the operation, construction of both mining and infrastructure to support the open cut mine development continued during the reporting period. The following major projects were commenced, progressed or completed during the reporting period:

1. The existing groundwater monitoring network was upgraded to ensure that it would continue to provide adequate, comprehensive monitoring of ground water quality. Groundwater monitoring is undertaken for the purpose of:
    - quantifying changes to the groundwater system as a result of operations;
    - assessing the performance of the control measures used to limit the impact of any change; and for
    - meeting relevant legal and other requirements.

    The works involved:
    - minor upgrades to fourteen existing monitoring bores,
    - major upgrades to seventeen existing monitoring points,
    - installation of eight new or replacement monitoring bores; and
    - installation of four new Vibrating Wire Piezometers (VWP).

The scope of the upgrade works was endorsed by both the DP&E and the NSW Office of Water and was consistent with Mt. Arthur Coal's current operating conditions requiring no further approvals.

2. Construction of a network of Light Vehicle roads, within existing operational areas to reduce the interactions between Heavy Vehicles and Light Vehicles.
3. The upgrade of the capacity of the tailing disposal system from the CHPP is being staged over many years. Preliminary engineering on stage 2 of this facility was commenced.
4. A automated train load out facility was constructed to reduce dust and coal from leaving the wagons during transport.

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

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 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 Ayredale, Calool, Huon, Macleans, Roxburgh and Windmill Pits. Coal was mined from the Arrowfield, Bengalla, Bayswater, Broonie, Bowfield, Clanricard, Edinglassie, Edderton, Mt Arthur, Piercefield, Ramrod Creek, Transition, Unnamed, Vaux, Wynn and Warkworth coal seams as well as Base of Weathering. Approximately 22.3 million tonnes of run-of-mine coal was mined from the combined open cut operations.

The current MOP includes a forecast of 27 million tonnes of run-of-mine coal and 21 million tonnes of total saleable product coal for the reporting period. Mt Arthur Coal's mine performance figures for FY16, as summarised in, 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 modification project approval.

Table 5: Mine performance figures for FY16

Category	Unit	This reporting period (July 2015 to June 2016)	Estimated for next reporting period (July 2016 to June 2017)
Topsoil stripped	bcm	115,500	115,600
Topsoil used/spread	bcm	213,800	176,600
Overburden (including rehandle)	bcm	106,348,000	117,484,000
Run-of-mine coal mined	tonnes	22,344,000	27,434,000
Product (saleable) coal	tonnes	17,101,000	20,896,000
Washery reject (coarse and tailings)	tonnes	5,661,521	6,900,814

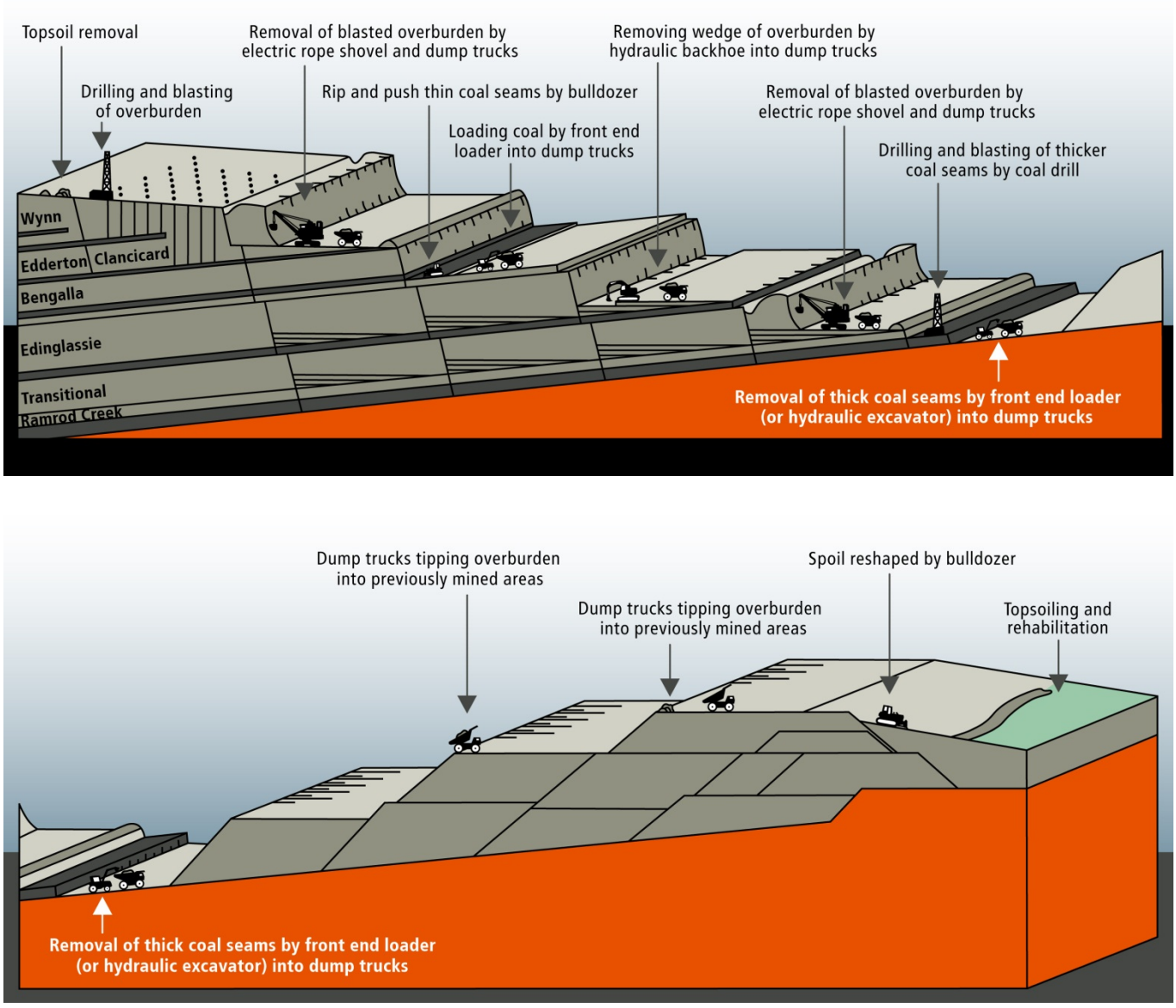


Figure 2: Mining sequence from topsoil removal to rehabilitation

Mineral Processing

After crushing to size and processing to remove impurities, coal is stockpiled prior to transport from site. During the reporting period approximately 17.1 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 15.9 million tonnes of export product coal was transported by rail to the Port of Newcastle and approximately 1.1 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 65 per cent coarse reject material (3.66 million tonnes) and 35 per cent coal fines, known as tailings (2.0 million tonnes). Due to an error in the forecasting calculation this is higher than forecast in the current MOP. 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 tailings storage facility.

In the FY14 AEMR it was noted that the first of four stages for the tailing storage facility expansion project had been completed with the pumping of tailings into the East Pit following the construction of the embankment to reduced

level (RL) 235m. During the reporting period, tailings continued to be pumped into the East Pit. Mt Arthur Coal also developed an operations and maintenance manual for the tailings storage facility. The manual outlines procedures to be implemented to ensure that the tailings storage facility is operated and maintained in accordance with the design objectives and regulatory requirements. The manual only outlines the requirements for stage one as the document will be updated as subsequent stages are initiated.

The expansion of the tailings storage facility went through a strategy development phase 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. The early phases of project development for the second stage of the project, is scheduled to commence in the next reporting period, with work planned to be carried out in FY17 and FY18.

As per the tailings storage facility operations and maintenance manual, the recovery of decant water from the tailings storage facility is expected to be quite challenging during the filling of stage one in the East Pit. At this stage it is uncertain as to whether a decant pond will develop or if the decant water will permeate through the perimeter of the pit to the Drayton Void water storage. Based on a planned tailings production rate, it is anticipated that the filling of stage one in the East Pit will be completed during FY18 and at this time a decant pond may develop in the north east corner of the East Pit.

During the reporting period there were no variations from the current MOP related to mineral processing except the minor forecasting calculation error for washery reject.

Overburden Management

Overburden is generally transported to emplacement areas within the mine void, performing a secondary function of reforming all previously mined areas prior to shaping and final rehabilitation. During the reporting period 106.3 million bank cubic meters of overburden was mined and handled (including rehandle). Overburden emplacement areas that were utilised during the reporting period include visual dump 1 (VD1) and contingency dumps 1 to 5 (CD1 to CD5). Heights of these emplacement areas at the end of June 2016 are shown in Table 6.

Table 6. Heights of overburden emplacement areas at the end of the reporting period

Emplacement area	Current minimum height (RL)	Current maximum height (RL)	Approved maximum height (RL)
VD1	260	310	360*
CD1 to CD5	30	310	360*

* Additional crests on the overburden emplacement areas have been incorporated to a maximum height of RL 375 in two locations in order to improve visual amenity and result in a less engineered appearance of the final landform.

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 166,364 tonnes, the closing circular stockpile inventory was 50,135 tonnes and the total saleable coal stockpile inventory at Mt Arthur Coal was 590,503 tonnes.

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

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 maintains a water balance for the operation to assist forecasting and modelling for different climatic and site scenarios. Flow meters and surveyed volumes are used to monitor water use and transfer of water between key water storages. 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 to 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 7. A breakdown of Mt Arthur Coal's water usage for tasks within the system is also provided in Figure 3.

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 7,075 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 decrease in water usage compared to FY15's use of 7,381 ML. Similar to results in previous years, the CHPP was the main consumer of water at Mt Arthur Coal as shown in Figure 3. Water consumption at the CHPP decreased in comparison to the previous reporting period in line with a decrease in CHPP washery feed (17.8 million tonnes of CHPP washery feed in FY15 compared with 16.5 million tonnes in FY16).

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 to remove the risk of dam wall failure;
- Upgrades to the integrated reticulation network to enable efficient management of water resources across the site for maximum practical capacity and water security; and
- Use of mechanical seals on the tailings disposal pumps at the CHPP.

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

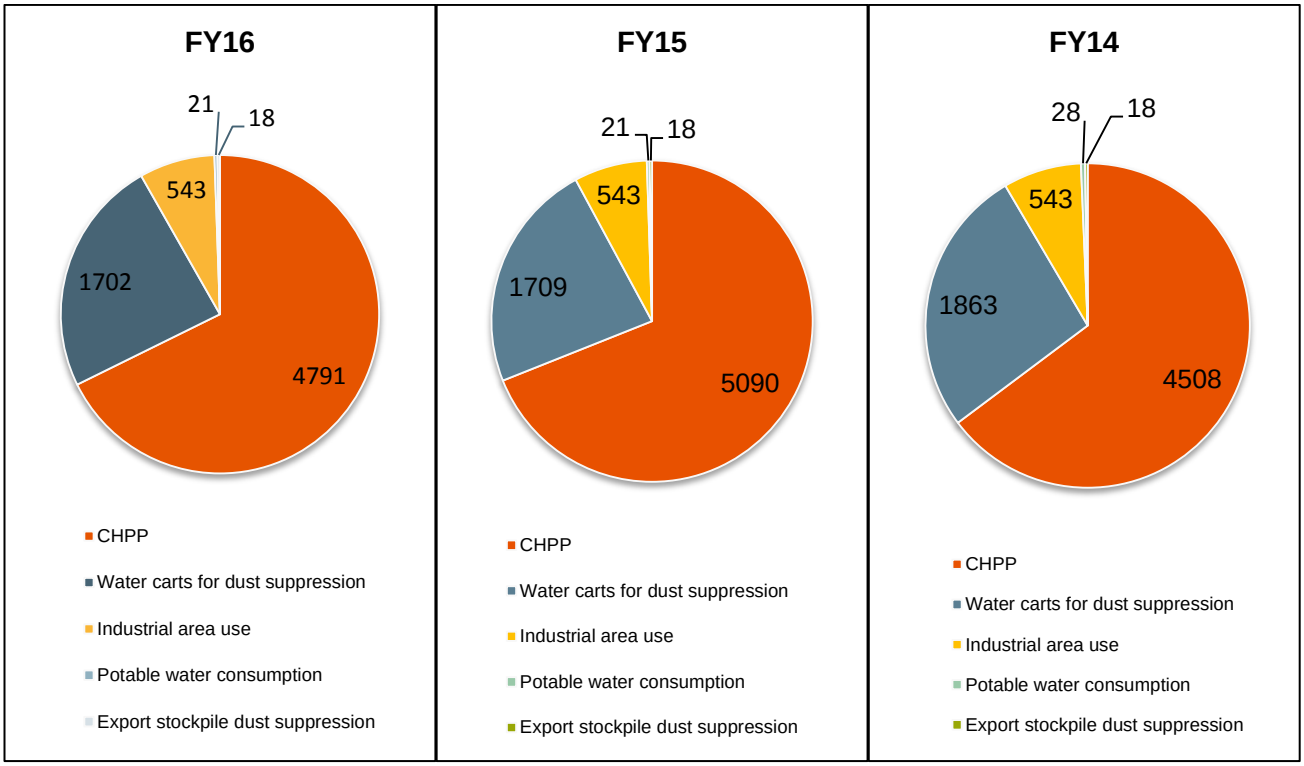


Figure 3: Composition and volumes in megalitres of Mt Arthur Coal site water usage

In line with predictions in the consolidation environmental assessment and the modification project environmental assessment, the majority of the operation's water supply was sourced from catchment runoff, as shown in Table 7. The second largest water input to site was pumping from the Hunter River of 3014 megalitres (ML) as authorized by water access licences.

Table 7: 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^	621	3315	0	3936
		Rivers and creeks (pumped from Hunter River)	3014	0	0	3014
	Ground Water	Aquifer interception (inflow to the open cut areas)	0	692	0	692
		Ore entrainment	0	1801	0	1801
	Third party water	Contract/municipal (potable water)	21	0	0	21
		Waste water (treated effluent from Council)	0	0	836	836
	Total inputs		3656	5808	836	10301
Outputs	Surface water	Discharge (to Hunter River under HRSTS)	0	0	0	0
	Other	Evaporation	3651	0	0	3651
		Entrainment	0	0	4203	4203
		Other (define)*	0	54	714	768
	Total outputs		3651	54	4917	7854
Balance						2446

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

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 positive 2,446 ML. Table 8 provides a surface water inventory for the reporting period, which shows an increase in total volume of water stored on site during the reporting period, by 250 ML. The difference between the change in water stored and the site water balance is less than 5 per cent of the total flows through the site and within the 10 per cent tolerance of the water accounting framework model.

Table 8: Mt Arthur Coal surface water inventory – operational storages

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	339	665	1,296
Main dam	279	19	1,075
CHPP dirty water dam	339	339	500
Drayton void*	1989	2010	2,276
Belmont void	1043	1202	2,281
McDonalds void	2366	2696	4,040
Total	6016	6266	10172

* 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

Mt Arthur Coal used approximately 23 per cent less than the licenced allocation over the reporting period as shown in Table 9 below.

Table 9: Mt Arthur Coal Water Licence Reconciliation for FY16

Licence Category	Licence Number	Committed Orders	Use
REGULATED RIVER (GENERAL SECURITY)	20AL201127	3926.0 ML	2810.9 ML
REGULATED RIVER (HIGH SECURITY)	20AL201126	0.0 ML	0.0 ML

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 relevant occupational, health and safety procedures, 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 variations from the MOP related to hazardous materials management activities.

Other Infrastructure Management

As noted in Section 2.8, the decommissioning of the Main Dam continued in the reporting period. Modifications to the site water network in the reporting period, primarily in the form of upgrades to transfer pump stations, pipelines and associated control systems that link a number of on-site water storage facilities, have enabled the Main Dam to be removed as a focal point for on-site water storage and distribution. Water levels in the main dam have, as a

consequence, been reduced significantly. The overall closure planning for the Main Dam is expected to be completed in FY17.

Decommissioning of the disused Bayswater No. 2 infrastructure area is continuing. An asbestos audit was completed along with a scope of works for the dismantling and removal of structures. Timing is being finalised pending filling and expansion of the adjacent tailings dam with the Bayswater No. 2 area being in the footprint of the dam.

A train load out automation project was completed during the reporting period. The project includes a range of benefits and is discussed further in Section 3.1.

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

Employment Details

Mt Arthur Coal monitors the residential location of existing employees to compare against predictions made in the consolidation environmental assessment. Approximately 76 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 2016. This is consistent with predictions in the consolidation environmental assessment and the previous reporting period (78 per cent as at 30 June 2015).

As at 30 June 2016, Mt Arthur Coal employed 1110 permanent and fixed-term contract employees and approximately 249 contractors on a full-time equivalent basis. This was a 16 per cent reduction in the number of permanent and fixed-term employees and a 6 per cent reduction in the number of contractors when compared to 30 June 2015 (1,315 and 264, respectively). Declining employee and contractor numbers for Mt Arthur Coal is consistent with the economic conditions in the local region and is reflective of the economic climate of the broader mining industry. Figure 4 illustrates the trend of Mt Arthur Coal employee numbers since 2009.

During the reporting period approximately 54 per cent of Mt Arthur Coal's new employees were recruited from the local area, defined as the Muswellbrook, Upper Hunter and Singleton LGAs. Included in this figure is the hiring of eight apprentices, 50% of which were from the local area for 2016 apprenticeship program. Mt Arthur Coal plans to recruit a further eight apprentices for the 2017 apprenticeship program.

The ongoing economic climate in the industry and the resulting difficult market circumstances have resulted in a continued decline in the number of vacancies. However, recruitment opportunities were provided to local residents during the reporting period and will continue to be provided during the next reporting period. 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.

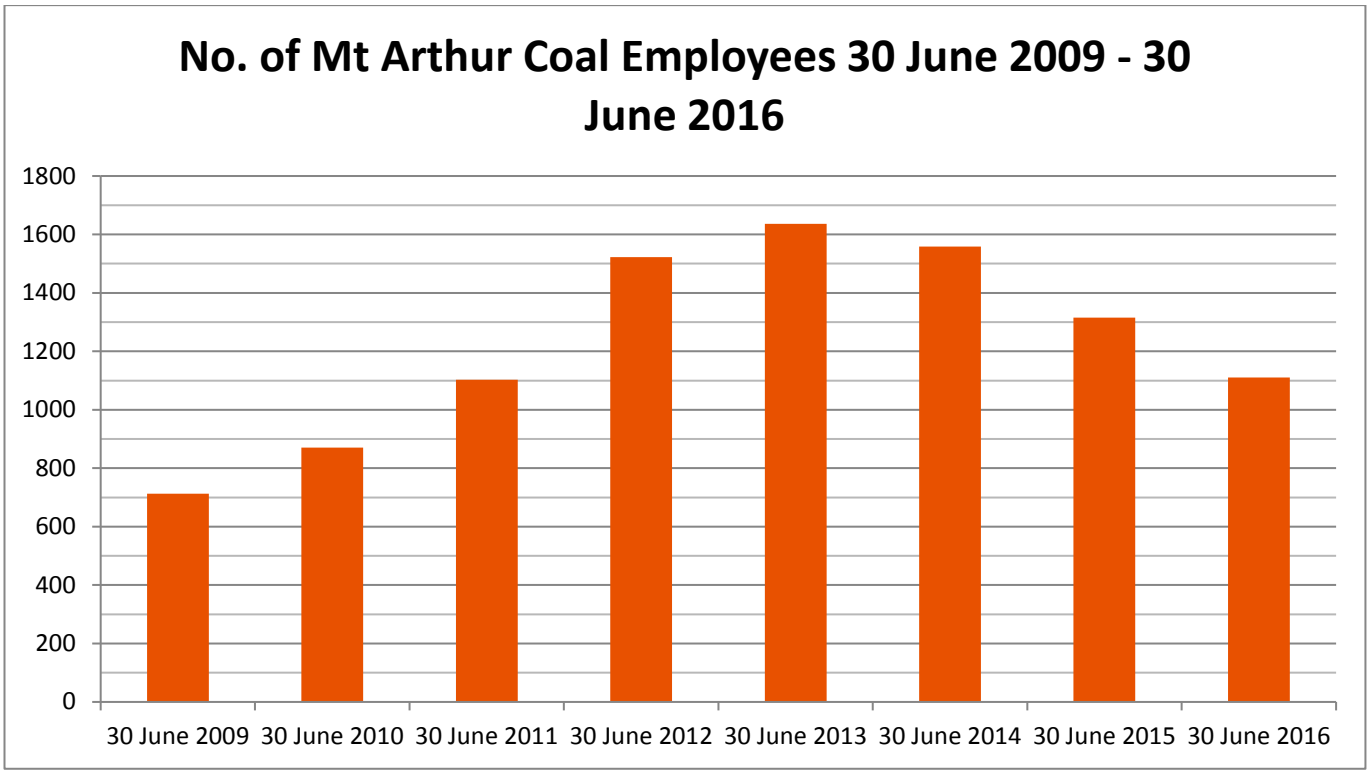


Figure 4: Mt Arthur Coal employee numbers from 30 June 2009 to 30 June 2016

Environmental Management and Performance

Mt Arthur Coal is committed to delivering high standards of environmental performance to meet or exceed legal and other requirements. This commitment extends to using leading practice initiatives where they add value in minimising 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 and modification project environmental assessments;
    - 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, project approval 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.

Air Quality

Environmental Management

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

- 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.

Mt Arthur Coal has an extensive air quality monitoring network and a series of alarm systems based on real-time monitoring data. The dust monitoring network consists of depositional dust gauges and fine particulate 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 dust gauges surrounding Mt Arthur Coal that are used for internal management purposes, to contribute to the assessment of long-term regional air quality trends. The locations of all depositional dust monitoring sites at Mt Arthur Coal are shown in 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 6.

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. The locations of all PM_{10} monitoring sites at Mt Arthur Coal are shown in Figure 6. In addition, Mt Arthur Coal operates one TEOM and one Electronic Beta Attenuation Monitor (E-BAM) that also records PM_{10} levels on a continuous basis. These supplementary monitors are used for proactive internal management purposes only as they are on Mt Arthur Coal land and not representative of nearby receivers. All real-time monitors are incorporated into a real-time short message service (SMS) alarm system that provides notifications to enable operational activities to be adjusted in response to air quality criteria.

During the planning phase of operations in-pit or low level dumps, that are protected from winds, are identified and set aside as part of the haulage schedule and dump design to enable dumping operations to be relocated to dumps that are less exposed during adverse weather conditions.

Mt Arthur Coal uses an advanced predictive dust model coupled with meteorological forecast data to predict maximum one hour PM_{10} concentration averages at various receptors surrounding the mine site up to 72 hours in advance. The model is used for operational preparation and contingency planning to appropriately manage dust during forecast adverse weather conditions and alerts mining supervisors as to when adverse weather conditions are predicted to arrive. This system complements the existing real-time dust management system based on real-time weather and dust measurement data inputs.

Dust plans are developed every shift based on the information provided in the predictive model and by taking into consideration information such as water cart availability, priority mining and dumping options, and any preparatory actions that need to be completed prior to the shift such as communication to the workforce on controls to be implemented. These plans allow the operation to be changed quickly in response to a dust event or adverse weather conditions.

A key dust management tool used throughout operations is the dust Trigger Action Response Plan (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 at acceptable levels. During the reporting period Mt Arthur Coal continued to use a dedicated supervisor role to assist with the dust TARP response, off site environmental inspections and the investigation and coordination of operational response to dust complaints.

Further controls to minimise impacts on air quality during operations include:

- deploying up to 11 water carts across site;
- using dedicated water carts for contractor projects;
- using dust suppressants on haul roads;
- maintaining a SMS alarm system for strong winds and high dust levels;
- 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;
- aerial seeding exposed overburden, where practicable; and
- use of Hydromulch to stabilise suitable overburden emplacement areas.

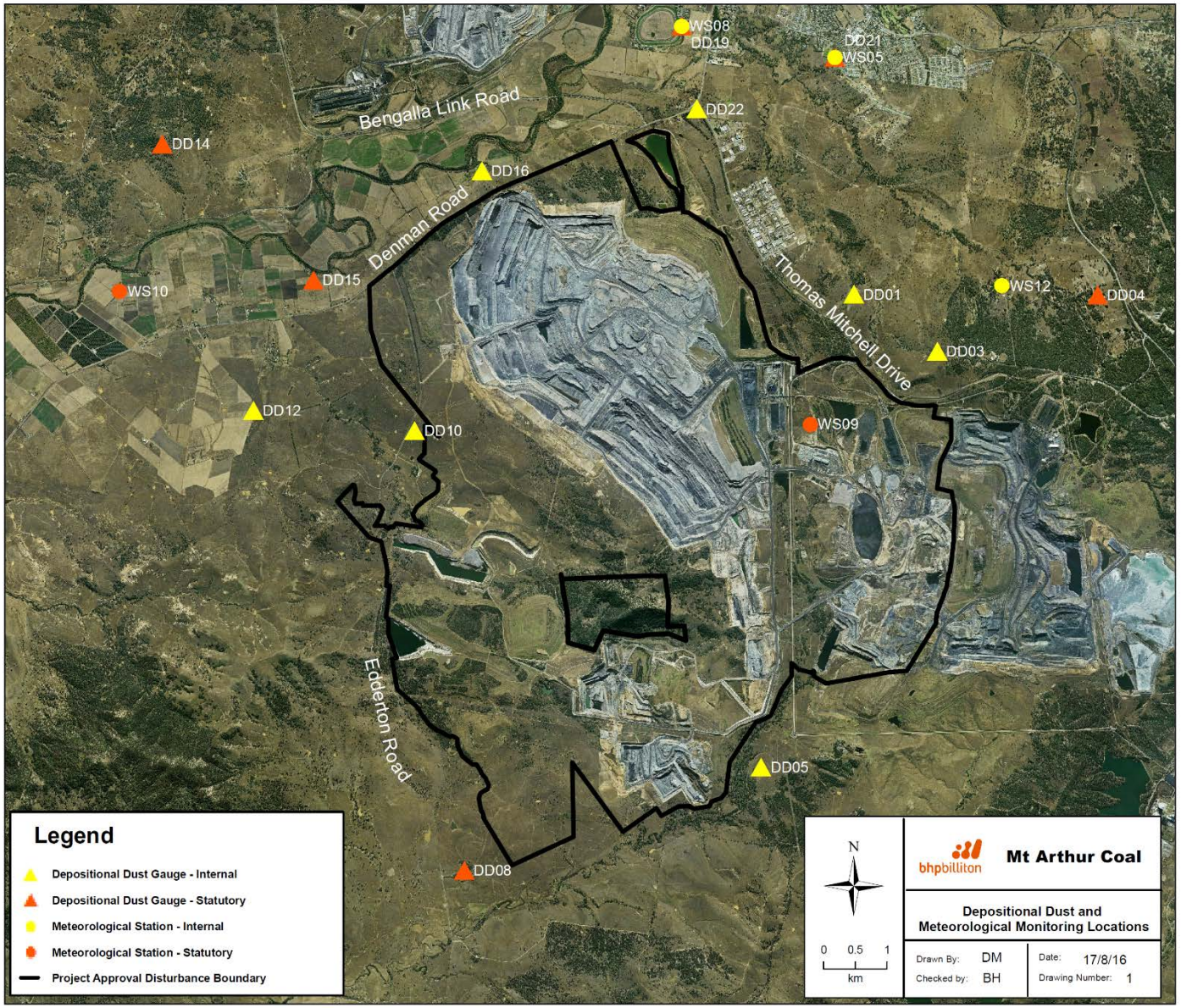


Figure 5: Mt Arthur Coal's depositional dust and meteorological monitoring locations

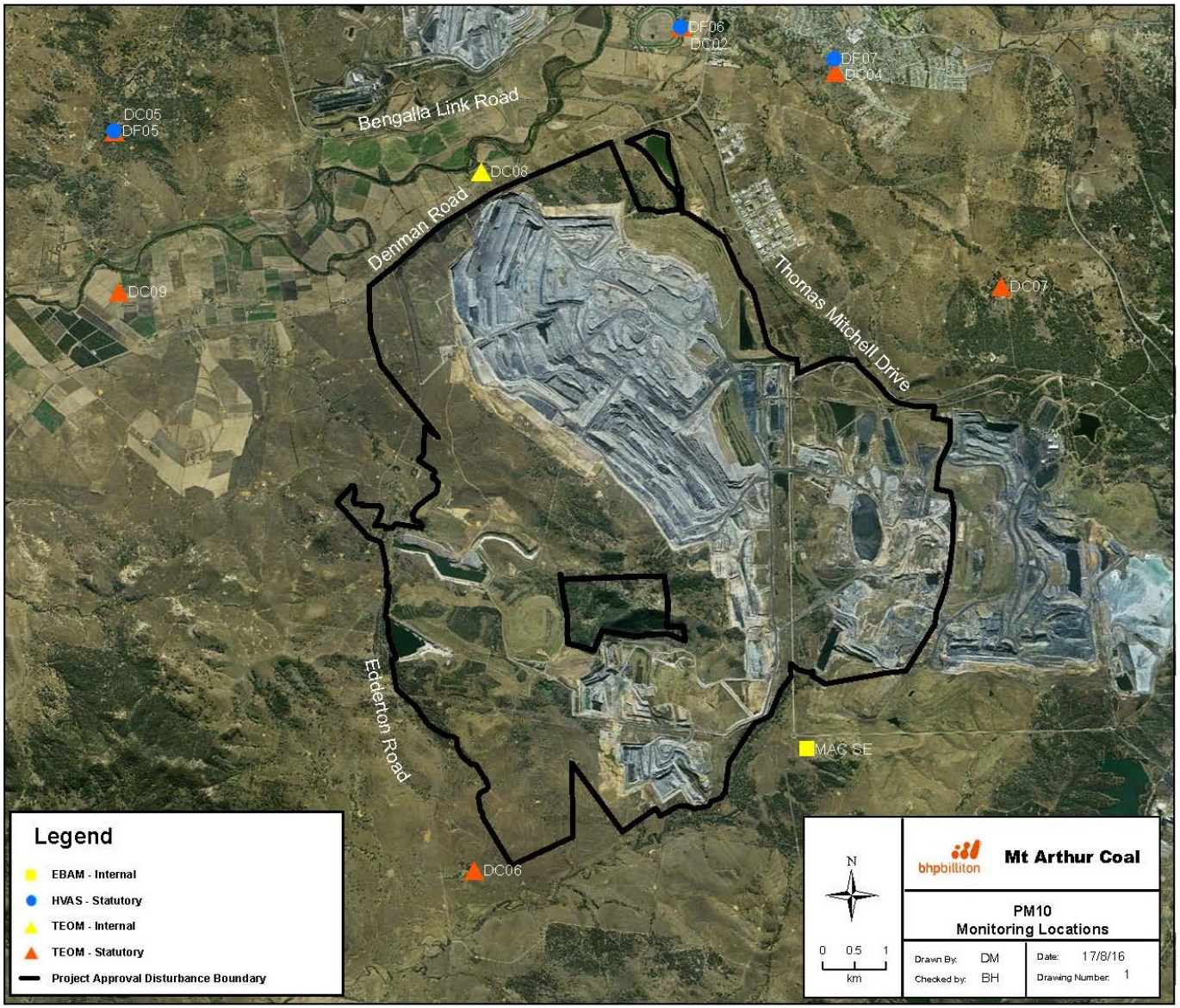


Figure 6: Mt Arthur Coal's HVAS and TEOM monitoring locations

During the reporting period Mt Arthur Coal aerial seeded approximately 194 hectares of exposed overburden not yet ready for final rehabilitation. This was completed in the absence of topsoil without the need for cultivation or irrigation with a season appropriate seed mix.

Hydromulch was also used during the reporting period on 6.1 hectares in areas mainly adjacent to roadways where access is readily available. The hydromulch product contains seed and a binding agent that provides instant stabilisation and reduces the amount of exposed ground. Hydromulch also contains a dye product to help improve visual amenity from offsite locations in the areas it is applied.

Mt Arthur Coal continued the use of dust suppressants on haul roads in the reporting period. 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.

Monitoring of representative exposed surface areas was undertaken during the previous reporting period, to meet the requirements of the Pollution Reduction Program, entitled Coal Mine Wind Erosion of Exposed Land Assessment. Several monitoring techniques were employed to determine the susceptibility of operational surfaces to wind-driven particulate emission and whether each surface type is considered to be stabilised. The results and analysis of the sampling campaign, including comparison of exposed surface area to predictions made within the consolidation environmental assessment were submitted in a report to the EPA in the reporting period.

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 NSW Office of Environment and Heritage (OEH) website.

A train load out (TLO) automation project was completed during the reporting period. The TLO automation project fills wagons automatically for a predetermined period to achieve the safe fill level of the wagons. The amount of coal loaded into the each wagon is verified by a Radar Level Sensor. The loading process will be halted if the wagons are not loaded correctly. The TLO ensures that rail wagons are not overloaded and therefore minimises the potential for dust emissions during rail transport. In addition, a High Definition Camera will record the loading process allowing post loading analysis. A weighbridge installed onto the tracks will also confirm the amount loaded into each wagon.

In April 2016, Mt Arthur Coal funded the resurfacing of a 100m section of road at the entrance of the Muswellbrook Racecourse. Historically on race days, the dirt road would impact air quality readings at the DC02 Sheppard Avenue monitor due to the increased traffic volume. The road sealing should reduce the number of non-mining related exceedances reported at this monitoring location.

Mt Arthur Coal also participated 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. One initiative to reuse old water cart tanks has helped reduce dust while maintaining the ability to be easily relocated throughout the mine. Fixed infrastructure such as Water Cart Fill Stations are typically installed outside the active mining area to avoid the capital cost of frequent relocation as the mine progresses. The fill station, solar control skid and modified redundant water tank design allows the whole installation to be relocated as the mine progress with the minimum amount of effort and resources.

Environmental Performance

As part of the modification project environmental assessment, air dispersion modelling was completed for representative periods in 2016, 2022 and 2026 calendar years. In this section, data for the reporting period has been evaluated against the 2016 modification project environmental assessment air dispersion modelling predictions.

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 - Air Quality Monitoring Results. Depositional dust gauge data capture rates for the reporting period were 100 per cent at all statutory sites.

In accordance with the modification project approval, the criterion for the maximum total deposited dust level is 4 grams per square metre per month (g/m2/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/m2/month.

For the duration of the reporting period, all depositional dust gauges remained below the criterion. Annual average depositional dust results remained consistent with FY15 results. Results for the reporting period were slightly higher than the FY15 annual average at DD08 and DD15, whilst being slightly lower than the FY15 average at all other monitors as shown in Table 10.

Table 10: Comparison of annual average deposited dust results

Site name	Site reference	FY16 annual average g/m^2/month	FY15 annual average g/m^2/month	FY14 annual average g/m^2/month	FY13 annual average g/m^2/month	FY12 annual average g/m^2/month
Antiene	DD04	2.3	2.7	2.2	1.9	1.7
Edderton Homestead	DD08	1.6	1.1	1.6	2.0	1.3
Roxburgh Road	DD14	1.8	2.1	2.1	1.9	1.5
Denman Road West	DD15	3.0	2.9	3.1	3.6	2.7
Sheppard Avenue	DD19	3.1	3.3	3.7	3.4	2.8
South Muswellbrook	DD21	1.8	2.2	2.0	2.2	1.7

The modification project environmental assessment predicted that one exceedance 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 did not show any exceedances.

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 impact assessment criteria for dust deposition (4 g/m^2/month) relates to an annual average.

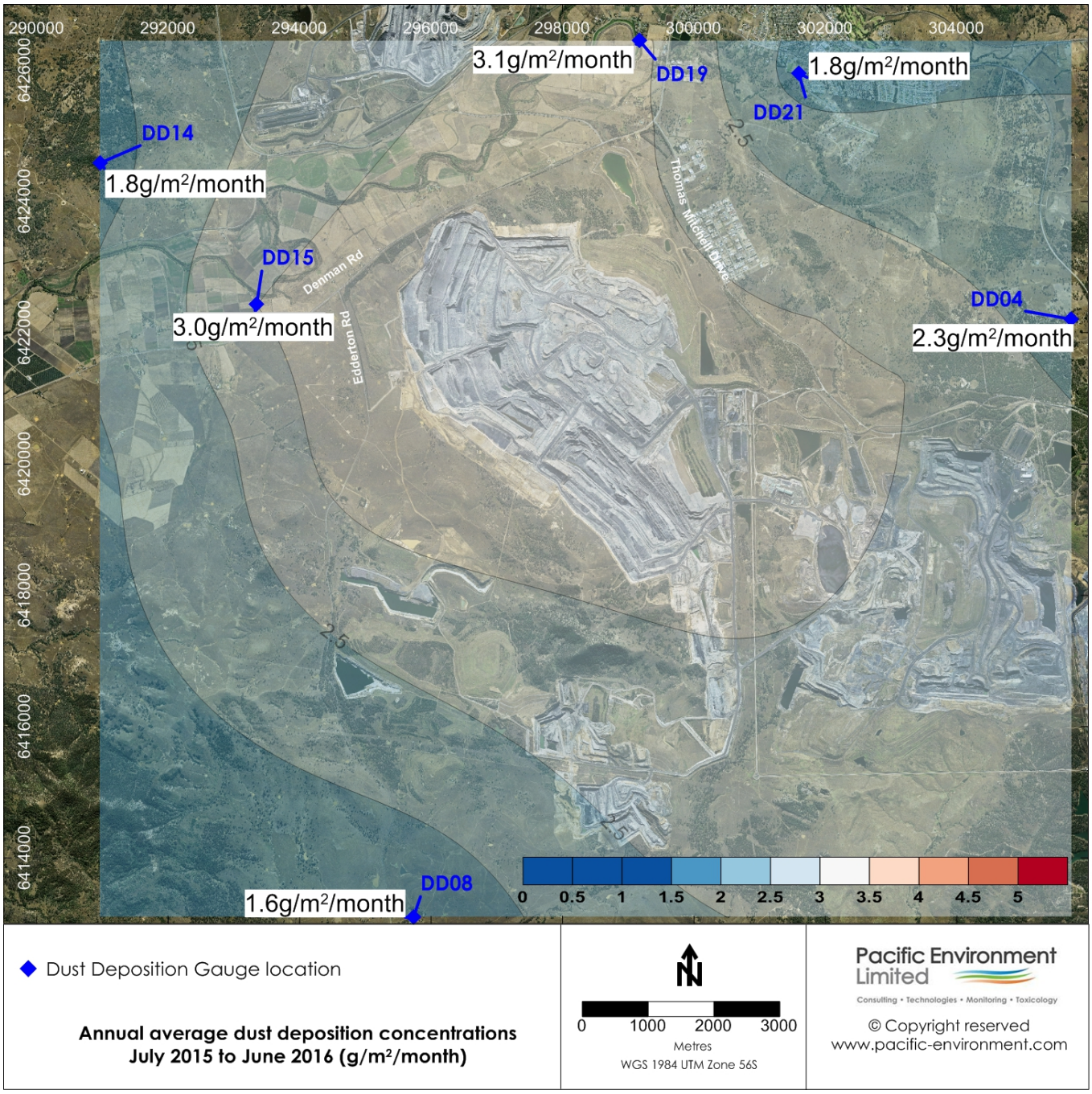


Figure 7: Annual depositional dust concentration

High Volume Air Samplers

A summary of results from the statutory HVAS PM_{10} monitoring sites for the reporting period is provided in Table 11 and further data can be found in Appendix 2 - Air Quality Monitoring Results.

The short term 24-hour impact assessment criteria of 50 µg/m^3 was exceeded eight 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 determine 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 13.

During the reporting period all of Mt Arthur Coal's HVAS monitors (DF05, DF06 and DF07) remained below the long-term annual impact assessment criteria. Annual averages for DF06 remained similar to the previous year, while there was a slight decrease for DF05 and DF07.

Table 11: Summary of HVAS PM_{10} results

Site name	Site reference	Minimum 24-hour result µg/m³	Maximum 24-hour result µg/m³	Reporting period annual average µg/m³
Roxburgh Road	DF05	1	53*	20
Sheppard Avenue	DF06	3	69*	29
South Muswellbrook	DF07	4	40	20

* 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/m³. Investigations found that Mt Arthur Coal's contribution to these results was less than 50 µg/m³ on all occasions.

Table 12: Wind directions used to calculate Mt Arthur Coal's contribution to 24 hour HVAS results

Site name	Site reference	Wind direction minimum (degrees)	Wind direction maximum (degrees)
Roxburgh Road	DF05	96	143
Sheppard Avenue	DF06	153	230
South Muswellbrook	DF07	170	250

Table 13: Elevated HVAS PM_{10} results

Date of event	Site name	Site reference	Direction from operation	Recorded 24 hour result ($\mu g/m^3$)	Mt Arthur Coal's contribution ($\mu g/m^3$)	Explanation of results
20/10/2015	Sheppard Avenue	DF06	North north east	69	5	Wind direction was predominantly from a north to north west direction on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately eight per cent of the day.
7/12/2015	Sheppard Avenue	DF06	North north east	62	1	Wind direction was predominantly from the south east on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately one per cent of the day.
12/01/2016	Sheppard Avenue	DF06	North north east	65	5	Wind direction was predominantly from the north north west on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately seven per cent of the day.
17/02/2016	Sheppard Avenue	DF06	North north east	53	9	Wind direction was predominantly from an easterly direction on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately seventeen per cent of the day.
23/02/2016	Roxburgh Road	DF05	North west	53	34	Wind direction was predominantly from the south east on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately sixty five per cent of the day.
29/02/2016	Sheppard Avenue	DF06	North north east	52	1	Wind direction was predominantly from the south east on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately two per cent of the day.
5/04/2016	Sheppard Avenue	DF06	North north east	59	13	Wind direction was predominantly from the south west on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately thirteen per cent of the day.
29/04/2016	Sheppard Avenue	DF06	North north east	56	9	Wind direction was predominantly from the north to north west on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately seventeen per cent of the day.

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 14. The 2016 predicted annual average PM_{10} contours compared with the FY16 annual average concentration measured at each HVAS monitor are shown in Appendix 2. The monitored data is below the predicted cumulative annual average PM_{10} concentrations at all sites. The measured concentrations at DF05 and DF07 were 20 per cent and 17 per cent less respectively than the predicted cumulative results from the 2016 model. DF06 measured result was 11 per cent higher than the predicted 2016 cumulative result, likely due to an unsealed road.

Table 14: Comparison of predicted and actual annual average HVAS PM_{10} results

Site name	Site reference	2016 – predicted cumulative µg/m³	FY16 actual annual average µg/m³	FY15 actual annual average µg/m³	FY14 actual annual average µg/m³	FY13 actual annual average µg/m³	FY12 actual annual average µg/m³
Roxburgh Road	DF05	25	20	22	20	19	16
Sheppard Avenue	DF06	26	29	29	29*	27	20
South Muswellbrook	DF07	24	20	22	22	21	17

Tapered Element Oscillating Microbalance Samplers

The TEOM PM_{10} data capture rates for the reporting period were marginally below 100 per cent at all statutory sites, as shown in Table 15. A summary of the results from the statutory real-time TEOM PM10 monitoring sites for the reporting period is provided in Table 17 and plots are provided in Appendix 2 - Air Quality Monitoring Results.

Table 15: FY16 data capture rates for TEOM PM_{10} monitors

Site name	Site reference	Data capture rate (per cent)	Reason data not captured
Sheppard Avenue	DC02	98.6	DC02 did not record valid/sufficient data for: • 1 day in January 2016 due to moisture within the instrument from rainfall creating unstable readings; • 2 days in February 2016 due to annual calibration; and • 2 days in April 2016 due to power outage.
South Muswellbrook	DC04	98.4	DC04 did not record valid/sufficient data for: • 4 days in November 2015 due to annual calibration; and • 2 days in February 2016 due to annual calibration.
Roxburgh Road	DC05	99.5	All applicable data captured during the reporting period. • 2 days in February for annual calibration zero testing
Edderton Homestead	DC06	97.3	DC06 did not record valid/sufficient data for: • 8 days in May 2016 due to unstable readings created by a sensor fault. • 2 days in February 2016 due to annual calibration
Antiene	DC07	92.7	DC07 did not record valid/sufficient data for: • 2 days in February 2016 due to annual calibration; • 11 days in February 2016 due to internal leak in operating system; • 10 days in March 2016 due to internal leak in operating system; and • 4 days in March due to power outage.
Wellbrook	DC09	98.6	DC09 did not record valid/sufficient data for: • 1 day in August 2015 due to power outage; and • 2 days in January 2015 due to power outage. • 2 days in February 2016 due to annual calibration

During the reporting period the short term 24-hour impact assessment criteria of 50 µg/m^3 was exceeded 12 times on 12 different days at statutory TEOM monitoring sites, including air emissions from all sources. An investigation into each of these events was undertaken using wind directional data to ascertain the operation's contribution and by assessing regional air quality trends and localised influences or events at the time. Table 15 shows the wind directions used for each monitor to calculate Mt Arthur Coal's contribution to TEOM results. On all occasion's 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 18 and reportable incidents are discussed in Section 3.1.3. Even though there were several exceedances. Substantial contribution of dust is likely to have come from an unsealed road in the area and wind direction shows that mostly Mt Arthur Coal was not the main contributor of dust.

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. The FY16 annual average was lower or equal to the FY15 annual average at all monitors, except the South Muswellbrook (DC04) and Roxburgh Road (DC05) monitors.

Table 16: 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	96	143
Edderton Homestead	DC06	354	76
Antiene	DC07	188	287
Wellbrook	DC09	75	135

Table 17: Summary of TEOM PM_{10} monitoring 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	0	108*	19
South Muswellbrook	DC04	0	48*	18
Roxburgh Road	DC05	0	56*	14
Edderton Homestead	DC06	1	37	12
Antiene	DC07	0	136*	14
Wellbrook	DC09	1	44	14

* These results, which include air emissions from all sources, were 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 18: Elevated TEOM PM_{10} Monitoring Results

Number	Date of event	Site name	Site reference	Direction from operation	Recorded result (µg/m)	Mt Arthur Coal's contribution (µg/m^3)	Explanation of results
1	23/07/2015	Antiene	DC07	East	136.4	1.9	Wind direction was predominately from the north north west on this day. The monitor was located downwind of Mt Arthur Coal's operations for approximately 9 per cent of the day.
2	11/09/2015	Sheppard Avenue	DC02	North north east	59.3	23.6	Wind direction was predominately from the north north west on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately 20 per cent of the day.
3	05/10/2015	Sheppard Avenue	DC02	North north east	59.0	0.0	Wind direction was predominately from the north north west on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately zero per cent of the day.
4	06/10/2015	Sheppard Avenue	DC02	North north east	60.2	0.0	Wind direction was predominately from the north north west on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately zero per cent of the day.
5	07/10/2015	Sheppard Avenue	DC02	North north east	54.1	0.0	Wind direction was predominately from the north north west on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately zero per cent of the day.
6	09/10/2015	Roxburgh Road	DC05	North west	56.0	29.1	Wind direction was predominately from the south east on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately 88 per cent of the day.

7	26/11/2015	Sheppard Avenue	DC02	North north east	57.9	4.6	Wind direction was predominately from the north west on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately 6 per cent of the day.
8	07/12/2015	Sheppard Avenue	DC02	North north east	108.6	7.7	Wind direction was predominately from the south west on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately 9 per cent of the day.
9	12/12/2015	Sheppard Avenue	DC02	North north east	76.0	13.3	Wind direction was predominately from the west south west on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately 21 per cent of the day.
10	15/12/2015	Sheppard Avenue	DC02	North north east	66.3	5.4	Wind direction was predominately from the east south east on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately 15 per cent of the day.
11	14/01/2016	Sheppard Avenue	DC02	North north east	54.9	1.6	Wind direction was predominately from the north on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately 5 per cent of the day.
12	25/02/2016	Sheppard Avenue	DC02	North north east	52.2	1.3	Wind direction was predominately from the north on this day. This monitor was located downwind of Mt Arthur Coal's operations for approximately 3 per cent of the day.

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 19. 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 Appendix 2 - Air Quality Monitoring Results. The measured concentrations of monitoring results at all locations in FY16 were between 25 and 45 per cent lower than the predicted cumulative results from the 2016 model.

Table 19: Comparison of predicted and actual annual average TEOM PM_{10} results

Site name	Site reference	2016 – predicted cumulative (µg/m^3)	FY16 actual annual average (µg/m^3)	FY15 actual annual average (µg/m^3)	FY14 actual annual average (µg/m^3)	FY13 actual annual average (µg/m^3)	FY12 actual annual average (µg/m^3)
Sheppard Avenue	DC02	26	19	20	23	22	16
South Muswellbrook	DC04	24	18	16	20	19	13
Roxburgh Road	DC05	25	14	12	18	19	10
Edderton Homestead	DC06	22	12	15	16	17	15
Antiene*	DC07	20	14	14	15	-	-
Wellbrook*	DC09	21	14	20	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 modification project approval, the TSP long-term annual impact assessment criteria is 90 µg/m^3 over an annual averaging period.

TSP results were calculated 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 20. The FY16 annual average was lower than the FY15 average at all monitors.

Table 20: Summary of TSP results

Site name	Site reference	FY16 annual average (µg/m^3)	FY15 annual average (µg/m^3)	FY14 annual average (µg/m^3)	FY13 annual average (µg/m^3)	FY12 annual average (µg/m^3)
Sheppard Avenue	DC02	47.5	49	59	54	41
South Muswellbrook	DC04	45	50	51	48	34
Roxburgh Road	DC05	35	40	44	47	26
Edderton Homestead	DC06	30	31	41	43	37
Antiene*	DC07	35	36	38	-	-
Wellbrook*	DC09	35	36	43	-	-

* Installed in FY14

Dust-related Community Complaints

During the reporting period twenty per cent of the total complaints received related to dust, as shown in Table 21. Investigation into the complaints revealed mining operations had already ceased at the time of the complaint. Results at the nearest monitor to the caller were checked and showed dust levels were not elevated at the time, as well as the 24 hour average remaining within regulatory criteria. The callers were advised of investigation and monitoring results if requested.

Table 21: Dust complaint statistics at Mt Arthur Coal

Dust complaints	FY16	FY15	FY14	FY13	FY12	FY11
Dust complaints received	26	7	24	44	10	18
Dust complaints received, as a percentage of total complaints	20%	6%	9%	19%	8%	24%

Reportable Incidents

All elevated results listed in Table 13 and Table 18 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. However based on the monitoring results it is clear that current controls are effective.

Further Improvements

During the next reporting period Mt Arthur Coal will continue to implement its existing dust controls and investigate, and where feasible, implement projects to mitigate, reduce or eliminate potential dust generated from mining activities.

Erosion and Sediment

Environmental Management

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

- 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.

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.

Amendments were made to the Surface and Ground Water Response Plan during the reporting period, which were approved by the DP&E. Revision to the Surface Water Monitoring Program was also completed and is further discussed in Section 3.3 These amendments ensure that rigorous reporting and investigation requirements are in place for measured results that are statistically different to the baseline water conditions.

Environmental Performance

In accordance with the ESCP, 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. The low results were a good example of the integrity of the controls even though there were several large rainfall events during the reporting period. These recorded results were low compared with results from previous financial years. TSS results are discussed further in Section 3.3.2 and presented in Appendix 3 - Surface Water Quality Monitoring Results. Water management features were also routinely inspected after significant storm events and maintained to ensure they are performing to design and prevent impacts on downstream waters.

During the reporting period monitoring of riparian vegetation was undertaken as part of the annual riparian vegetation and channel stability assessment (RVCSA), in accordance with the Surface Water Monitoring Program. Table 22 summarises the results of the riparian vegetation assessment undertaken at the monitoring sites. The total number of plant species recorded from each vegetation community assessment (VCA) plot ranged from 25 species at Quarry Creek to 49 species at Saddlers Creek. The proportion of species that are introduced species ranged from 35 per cent at Saddlers Creek to 64 per cent at Quarry Creek. The total condition score calculated for each surface site ranges from 24 (75 per cent) at White's Creek Diversion to 29 (91 per cent) at Saddlers Creek. Channel stability was monitored using an observational survey of the length of creek on Mt Arthur Coal property to log photographs and document dimensions for assessing quantitative changes over time of erosional and depositional features. The results of the channel stability assessment indicated that Saddlers Creek, Quarry Creek, Ramrod Creek and White's Creek Diversion are generally stable and/or stabilising and that this is taking place naturally as the riparian vegetation and ground cover regenerates.

Table 22: Riparian Vegetation Assessment- species diversity and total condition scores for FY16

	SW03 (Saddlers Creek)	SW04 (Quarry Creek)	SW12 (Ramrod Creek)	SW15 (White's Creek Diversion)
Number of native species (% of total)	32 (65)	9 (36)	18 (50)	13 (43)
Number of introduced species (% of total)	17 (35)	16 (64)	18 (50)	17 (57)
Total number of species	49	25	36	30
Total condition score (% of 32)	21 (91)	25 (78)	26 (81)	24 (75)

Reportable Incidents

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

Further Improvements

Consistent with commitments made in the consolidation and modification project environmental assessments, 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).

Surface Water

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 (SWMP); and
- MAC-ENC-PRO-032 Water Management.

The Surface Water Monitoring Program (SWMP) was revised to ensure consistency with the two-stage trigger exceedance protocol outlined in the Surface and Ground Water Response Plan. The revised SWMP was approved by DP&E on 17 July 2015 and was implemented from August 2015.

Water quality downstream of Mt Arthur Coal's operation is currently monitored by an independent consultant at ten statutory monitoring sites, plus Mt Arthur Coal's licensed discharge point.

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 8. 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 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.

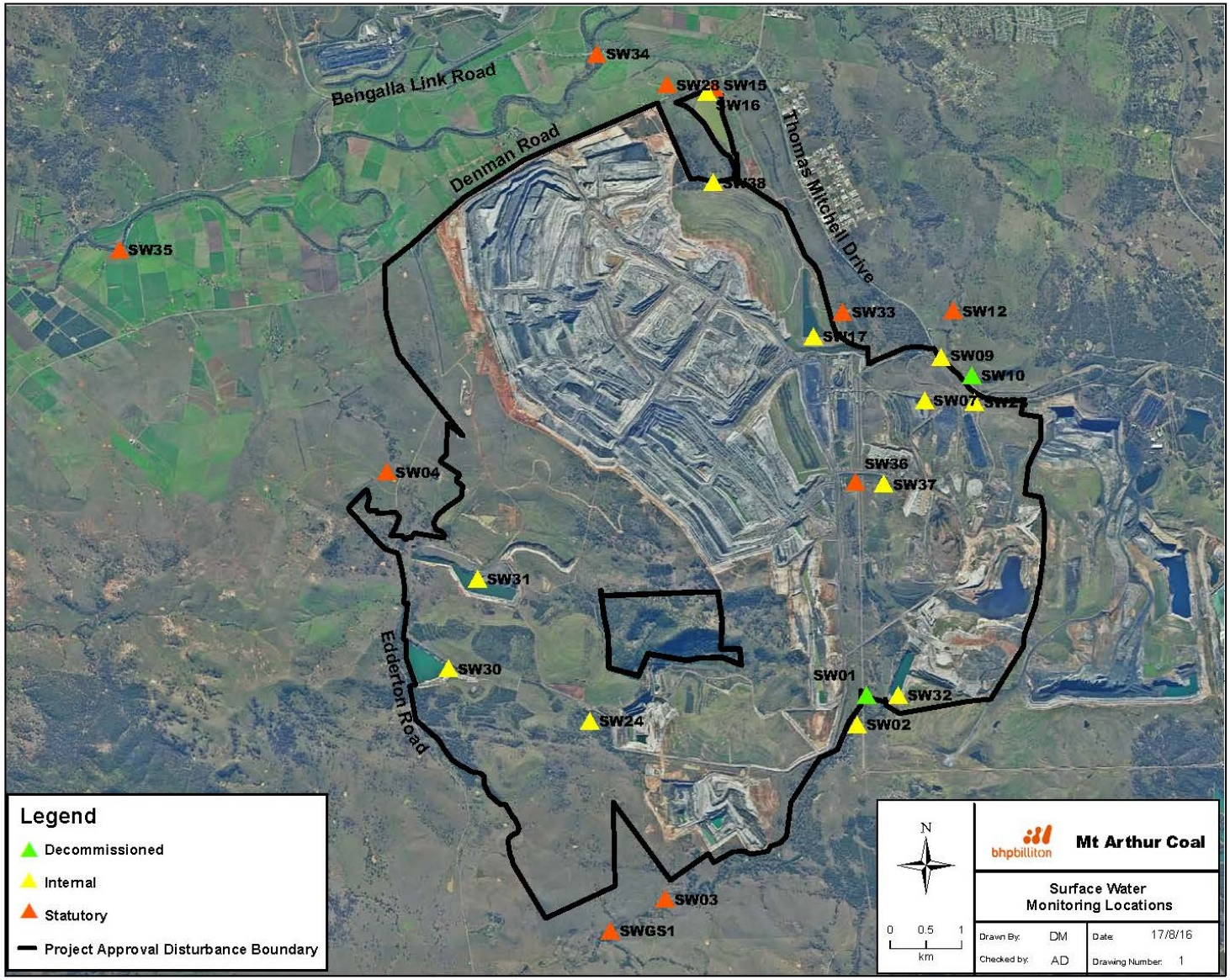


Figure 8: Mt Arthur Coal's surface water monitoring locations

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 - Surface Water Quality Monitoring Results.

In accordance with the surface water monitoring program, electrical conductivity (EC) and TSS now has a two stage trigger process. Assessment criteria outlines that the stage one trigger value for EC and TSS is triggered if the recorded value at a monitoring site is exceeded at the same location in subsequent sampling. Stage two is triggered after an exceedance.

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.

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) were subject to normal variations in response to the ephemeral nature of the creeks, local geology and weather conditions.

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 FY16 were generally consistent compared with previous financial years. FY16 surface water EC results were also generally consistent with previous financial years, with a slight decrease in the overall average values recorded. Surface water TSS results were generally low. Overall there is a decreasing TSS trend 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.

Table 23: Summary of statutory surface water quality monitoring results

FY16	**pH**	**EC (µS/cm)**	**TSS (mg/L)**
Minimum	6.92	1348	<5
Maximum	9.76	11040	102
Average	8.15	4663	30
FY15	**pH**	**EC (µS/cm)**	**TSS (mg/L)**
Minimum	7.05	1,569	<5
Maximum	9.14	9,090	108
Average	8.09	5,402	10
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	8
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	26
FY12	pH	EC (µS/cm)	TSS (mg/L)
Minimum	6.64	213	<5*
Maximum	9.08	9,950	828
Average	8.02	5,436	52

* Minimum TSS values were incorrectly reported as 5, rather than <5 in previous AEMRs. Average statistics for TSS have been recalculated by replacing <LOR values with half the LOR value.

Table 24 shows the data captures rates for each statutory surface water site during the reporting period. Data capture was 100 per cent at all sites, except for SW02 on Saddlers Creek was either dry or too low to sample during the reporting period with a capture rate of 50 percent and SW15 on Whites Creek was too low to sample during December and April with a capture rate of 83 percent. 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 downstream of the operation.

Table 24: Surface water data capture rates

Watercourses	Saddlers Creek		Quarry Creek	Ramrod Creek	Whites Creek	HRSTS Licensed Discharge Point
Site reference	**SW02**	**SW03**	**SW04**	**SW12**	**SW15**	**SW28**
Data capture rate	50%	100%	100%	100%	83%	N/A

Note: SW28 is only required during discharge events and there were no events 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. Peak flows and corresponding turbidity and EC results were recorded in late August 2015, mid November 2015, and January 2016 generally coinciding with significant rainfall events that occurred during the reporting period. The accuracy of the monitoring station is significantly lower during low flow due to the configuration of the probes at the gauging station.

Flow and turbidity results for SWGS1 for the reporting period are presented in plots in Appendix 3 - Surface Water Quality Monitoring Results 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

FY16	Flow (ML/day)	Average Daily EC (µS/cm)	Average Daily Turbidity (NTU)
Minimum	0	0	0
Maximum	254	1079	153
Average	2	15	2

Reportable Incidents

Mt Arthur Coal did not have any reportable incidents relating to surface water and did not receive any government fines or penalties related to surface water during the reporting period.

Further Improvements

Mt Arthur Coal will continue to use site water collected in both in-pit and out-of-pit storages prior to the use of 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.

Ground Water

Environmental Management

Ground water 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.

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.

As reported in the FY15 AEMR the Ground Water Monitoring Program (GWMP) was revised towards the end of the previous reporting period. The intent of the network upgrade was to improve bore integrity at existing monitoring locations and install new monitoring locations where required. The groundwater monitoring network was physically upgraded during November 2015 through to January 2016, which involved drilling new bores, either minor or major upgrades to existing bores and decommissioning of some former monitoring bores that were no longer required.

From 1 July 2015 to 31 January 2016 the monitoring program followed the 'During Upgrade Works' program as specified in Appendix 4 - Ground Water Quality Monitoring Results: Interim Monitoring Program in the GWMP and included monitoring of 30 statutory bore sites every two months for water quality and/or water level, as well as water level monitoring using three vibrating wire piezometers (VWPs) near Denman Road. The location of the ground water monitoring sites is shown in Figure 9.

From 1 February 2016 to 30 June 2016, once all bores had been physically upgraded, the monitoring program moved into the next phase and followed the 'Following Completion of Upgrade Works' program as specified in Appendix 3: Interim Monitoring Program in the GWMP. This included monitoring of 38 statutory bore sites monthly for water quality and/or water level, as well as water level monitoring using seven vibrating wire piezometers (VWPs). Analysis of all water samples is undertaken by a NATA accredited laboratory. The location of the ground water monitoring sites is shown in Figure 10.

Major upgrade works were undertaken at a number of existing monitoring bores. At some bores the screened interval changed within the existing bore as part of major works, resulting in the baseline data and trigger values presented in the GWMP no longer being applicable at some bores. The three affected bores are as follows: GW6, GW7 and BCGW18. DP&E and NSW Department of Primary Industry - Water (NOW) were advised of these affected bores and amendments were made to the exceedance reporting process to DP&E to reflect this change. Further investigations during the upgrade identified some additional minor works required, these are listed below:

- BCGW22 – replaced with a new bore (in the same area) as a windmill string was blocking access to the existing bore.
- GW38A – replace with a new bore (in the same area) as the existing bore is currently screened through alluvium and a shallow coal seam.
- GW41A – replace with a new bore (in the same area) as the existing bore is currently screened through alluvium and a shallow coal seam.
- OD1078 – replace with a new bore (in the same area) as the existing bore is screened across more than one aquifer.
- OD1079 – replace with a new bore (in the same area) as the existing bore is partially blocked and obstructing monitoring.

Mt Arthur Coal's Ground Water 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. As previously mentioned, the Surface and Ground Water Response Plan was revised to update the surface and ground water exceedance protocol which is based on a two-stage trigger process for water quality parameters, ensuring that rigorous reporting and investigation requirements are in place for measured results that are statistically different to the baseline water conditions.

The management measures associated with the alluvial ground water cut-off wall and flood levee constructed parallel to Denman Road along the northern boundary of the site to prevent both surface and subsurface migration from the Hunter River to the active pit, have also been incorporated into the Surface and Ground Water Response Plan. Specifically, the following safeguards associated with the ongoing management of this low permeability barrier wall were implemented to minimise, prevent or offset ground water leakage from the alluvial aquifer:

- Bimonthly visual inspection, utilising survey pins that have been installed in close proximity to the barrier wall to monitor movement;
- Annual structural engineering inspection of the barrier wall; •
- Ground water monitoring adjacent to the barrier wall to confirm the effectiveness of the wall and its' performance as a barrier in the long term;
- Quarterly vegetation maintenance inspections (the first of which will be undertaken during the next reporting period).

Vegetation cover of the Denman Rd bund wall has been effective with only minor erosion at the crest of the upstream face in isolated areas. It is proposed to undertake some spot seeding of the impacted areas in early spring which will

be monitored for effectiveness during the next reporting period. A total of twenty six survey monuments are installed at 50m chainages along the crest of the wall, these are monitored at six monthly intervals to assess vertical deformation. Survey monitoring information shows that the settlement of the embankment is as predicted. As shown in Figure 9 and Figure 10 for chainages 50-700m and chainages 750-1300m respectively. The annual structural engineering inspection of the barrier wall for the reporting period was undertaken in July 2016. No major structural issues with the wall were identified. Some minor works to address minor longitudinal surface cracking near to the upstream batter crest is proposed to be undertaken during the upcoming reporting period.

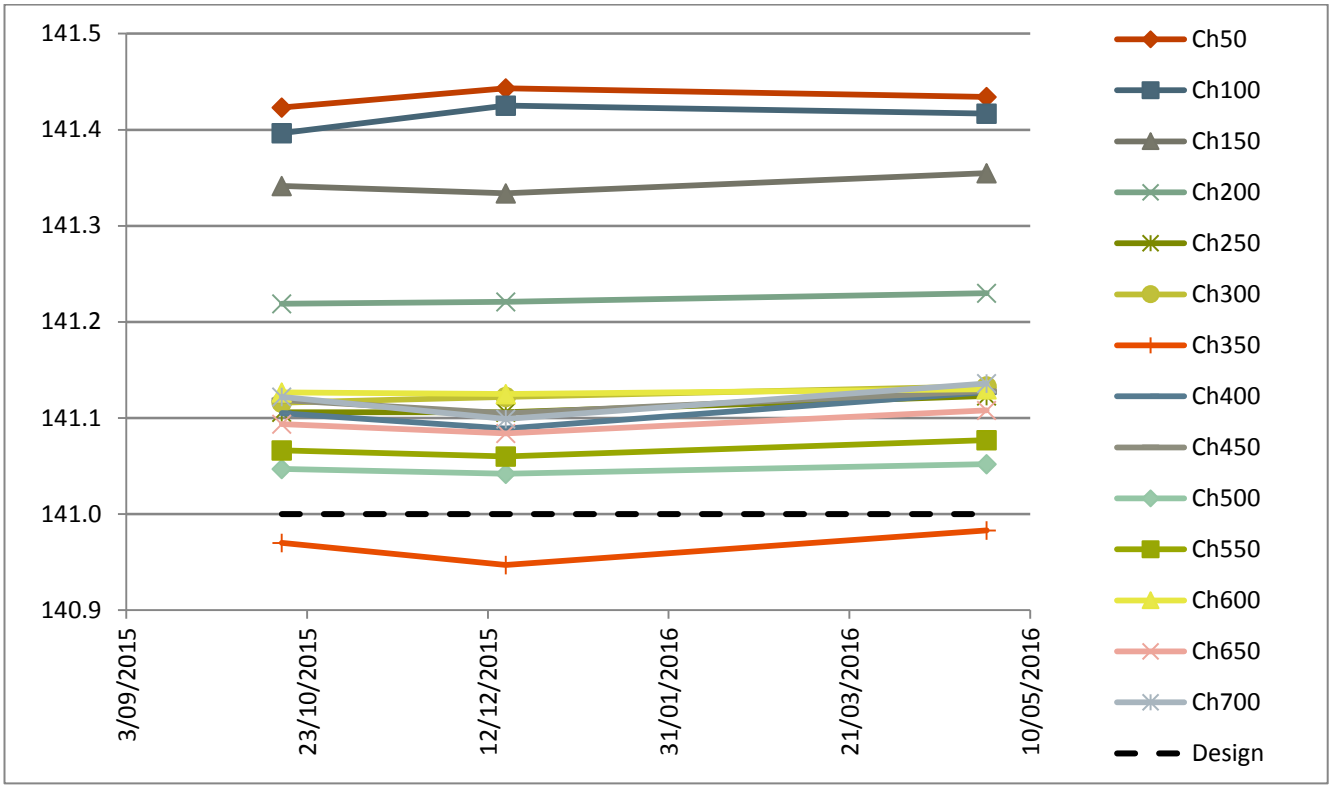


Figure 9: Denman Rd embankment survey monitoring results (chainages 50-700m)

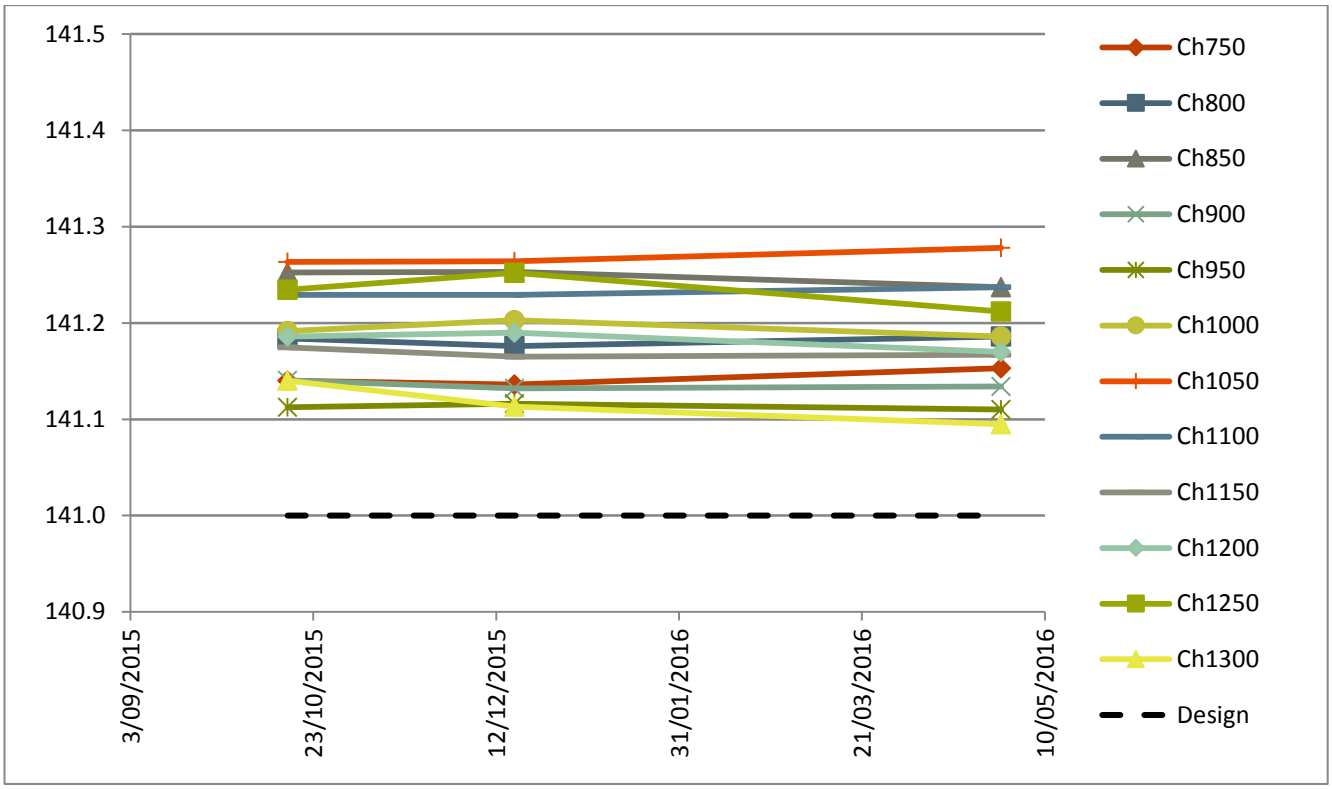


Figure 10: Denman Rd embankment survey monitoring results (chainages 750 – 1300m)

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. Information on projects undertaken by the Working Group is available on the Upper Hunter Mining Dialogue website.

It should be noted that during 2013 and 2014, a bentonite wall was installed along Denman Road in the vicinity of the F4 fault. This was installed to minimise groundwater level drawdown in the alluvium. Future drawdown to the west of this wall within the alluvium is likely to be minimal.

In this area, drawdown has been measured within the VWP installed to the west of the bentonite wall with results shown in Table 26. Variable drawdown has been recorded since monitoring commenced in September 2011 ranging from 45.91 m in the Edinglassie Seam to 57.27 m in the deeper Ramrod Creek Seam. A 43.94 m drawdown response has been recorded within the F4 Fault. Some drawdown is noted in the single site to the west of Saddlers Pit. However, the single data point in this area does not allow for contouring in this area.

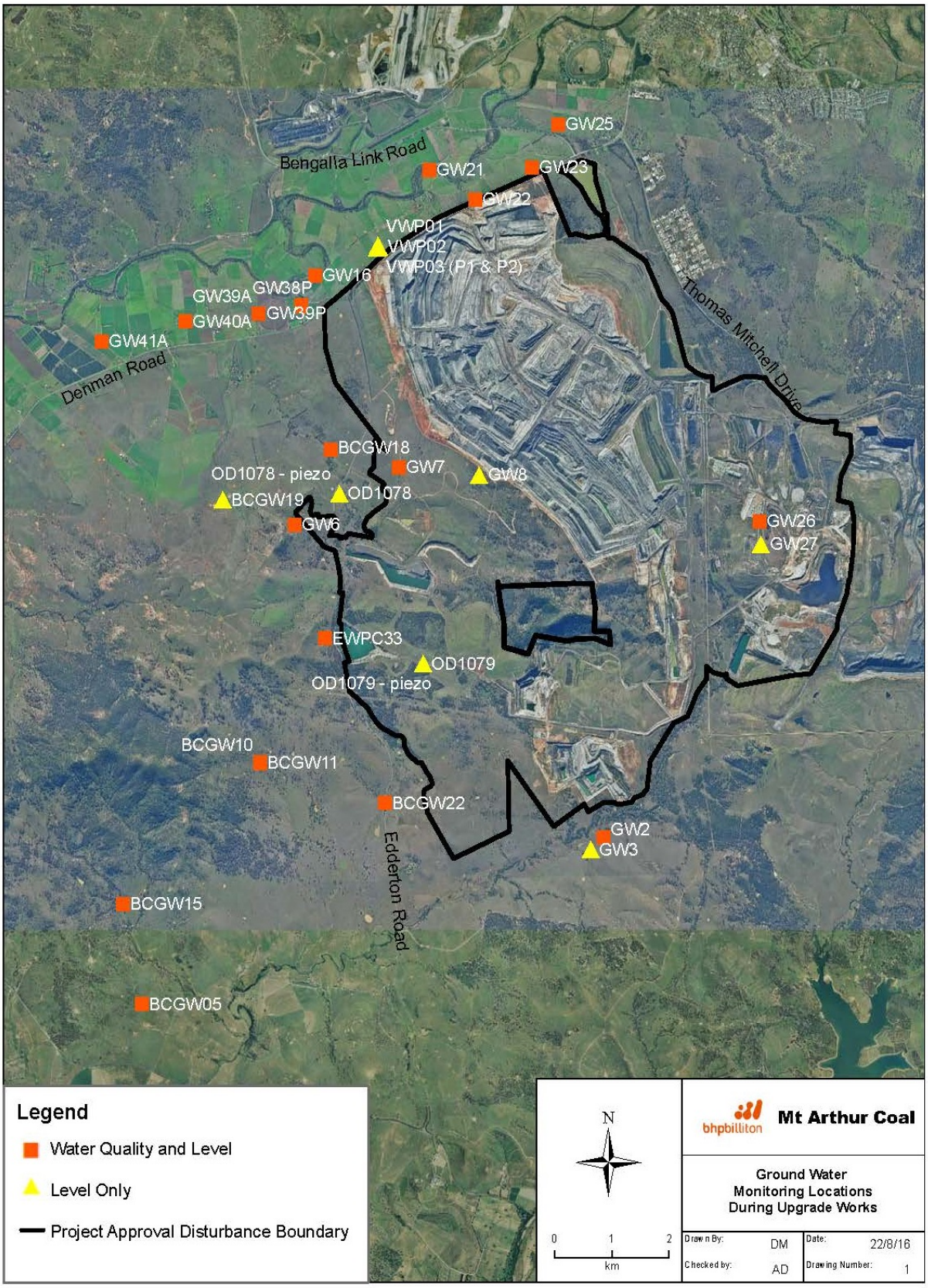


Figure 11. Mt Arthur Coal's ground water monitoring locations before upgrade

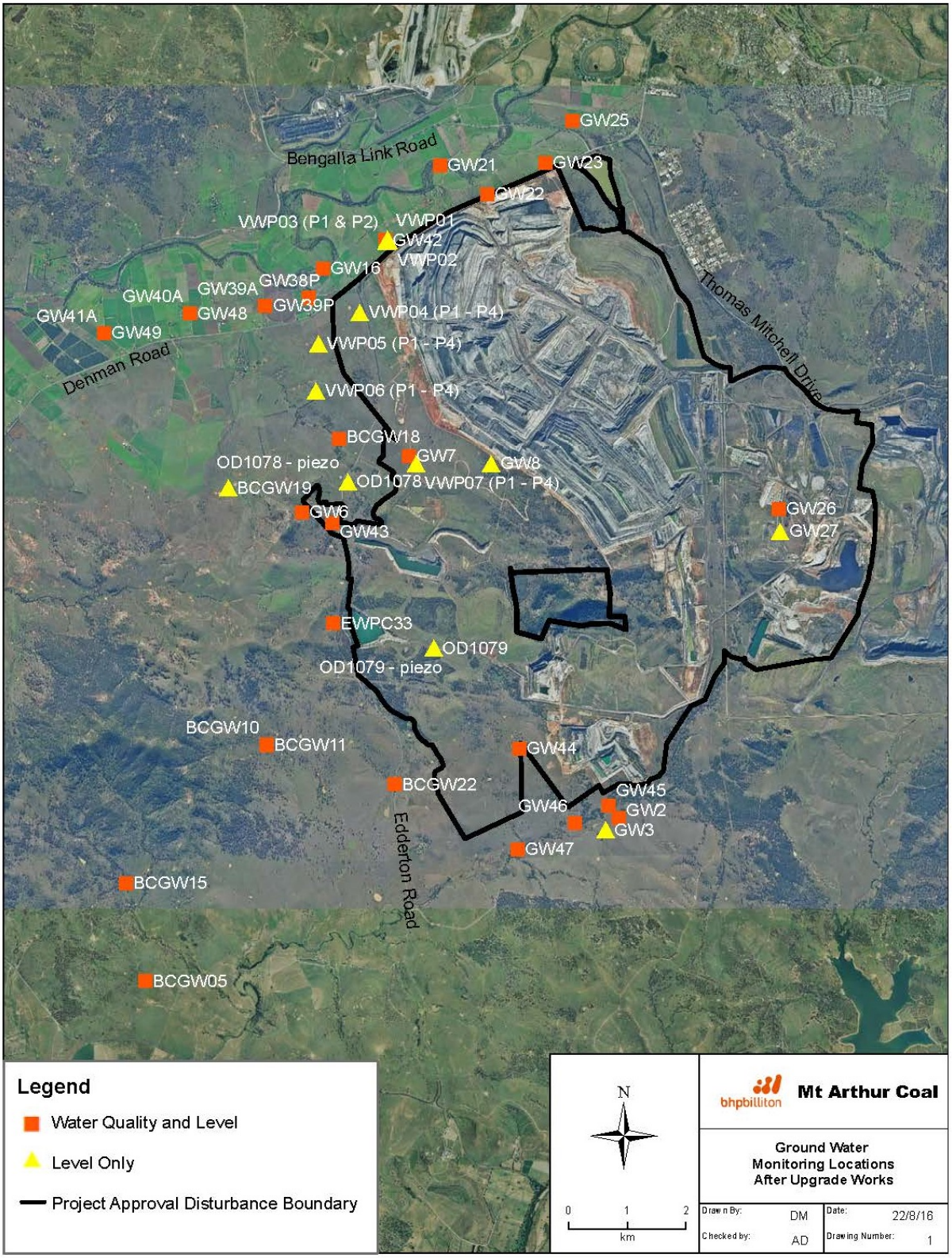


Figure 12: Mt Arthur Coal's ground water monitoring locations after upgrade

Environmental Performance

A summary of the ground water quality data for each key aquifer during the reporting period is provided in Table 26 with a comparison against data from previous financial years. Plots of ground water quality data during the reporting period for all statutory sites are provided in Appendix 4 - Ground Water Quality Monitoring Results.

Prior to implementation of the revised monitoring program, the trigger value for EC was triggered if the recorded value at a monitoring site is greater than the 90th percentile of baseline data for three consecutive readings. In accordance with the revised ground water monitoring program, there is now a two stage trigger process for EC. 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 26: Summary of ground water monitoring results by aquifer

Aquifer	**Sites**	**pH**			**EC (µS/cm)**			**Depth to water from top of casing (m)**		
FY16	Site references	Min.	Max.	Ave.	Min.	Max.	Ave.	Min.	Max.	Ave.
Saddlers Creek Alluvial	GW2, GW3	7.4	7.7	7.6	3,310	4,500	4,011	5.81	8.94	7.44
Hard Rock Ground Water (north west)	GW6, GW7, GW8	7.0	7.5	7.21	4,040	5,140	4,756	23.38	80.80	45.76
Hunter River Alluvial	GW16, GW21, GW22, GW23, GW25	5.9	7.6	7.2	669	5,640	3,091	9.34	80.57	24.39
West Cut Ground Water	GW26, GW27	6.4	6.7	6.5	4,150	5,960	5,241	47.66	49.24	48.6
FY15	Site references	Min.	Max.	Ave.	Min.	Max.	Ave.	Min.	Max.	Ave.
Saddlers Creek Alluvial	GW2, GW3	7.68	8.69	8.13	3,120	4,240	3,571	6.19	9.35	7.62
Hard Rock Ground Water (north west)	GW6, GW7, GW8	6.82	7.96	7.17	3,820	5,120	4,511	23.25	88.23	46.34
Hunter River Alluvial	GW16, GW21, GW22, GW23, GW25	6.53	8.03	7.33	742	5,430	3,326	9.30	65.20	27.43
West Cut Ground Water	GW26, GW27	6.10	7.05	6.55	4,400	6,370	5,488	42.63	47.19	45.35
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 Ground Water (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 Ground Water	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.

Aquifer	Sites	pH			EC (µS/cm)			Depth to water from top of casing (m)		
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 Ground Water (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 Ground Water	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 Ground Water (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 Ground Water	GW26, GW27	5.85	7.08	6.69	2,445	6,540	4,388	36.43	38.76	37.63

Ground water pH results were within the impact assessment criteria of 6.5-9.0. There were a number of exceedances of the EC trigger value and groundwater level trigger during the reporting period as listed in Table 27.

Table 27: Groundwater level and quality exceedances

Site references	Elevated months	Parameter	Investigation results
GW2, GW21, GW22	Aug 2015 to Dec 2015	Level	GW2 exceeded the groundwater level trigger (8.53m) in October (8.63m) and December (8.70m). Investigations revealed that the bore did not appear to be impacted by mining activities. The groundwater trigger value will be revised following the two year period of intense groundwater monitoring that commenced in February 2016. GW21 exceeded the groundwater level trigger (9.61m) in August (9.71m), October (9.82m) and December (9.91m). Investigations revealed that the change in groundwater level was likely to be caused by depressurisation of the Vaux seam and was consistent with modelled predictions in the EA. GW22 exceeded the groundwater level trigger (66.16m) in October (77.88m) and December (80.57m). As predicted the groundwater level drawdown had accelerated as mining approached the bore. The surface location of the bore was mined out in February 2016.
GW23	Dec 2015 to Feb 2016	Level	GW23 exceeded the groundwater level trigger (49.2m) in December (52.5m) and February (51.03m). Investigations revealed that the change in ground water level was likely be related to the mining related depressurisation of the coal seam and was consistent with modelled predictions in the EA.
BCGW18	Feb 2016	EC	The bore was previously screened across more than one hydrogeological unit and the upgrade may have sealed the less saline unit. As a result of the significant in-

			bore upgrade works undertaken at this site, the water level and quality triggers for this site as published in the Groundwater Monitoring Program are no longer valid. The upgraded bore will be a better representation of the fractured rock aquifer (regolith and/or coal seam).
GW2	Feb 2016 to Mar 2016	Level	GW2 exceeded the groundwater level trigger (8.53m) in February (8.63m) and March (8.68m). Investigations revealed that the bore did not appear to be impacted by mining activity. The groundwater trigger value will be revised following the two year period of intense groundwater monitoring that commenced in February 2016.
GW21, GW23, GW39P	Feb 2016 to Apr 2016	Level	GW21 exceeded the groundwater level trigger (9.61m) in February (9.95m), March (9.99m) and April (10m). As previously reported, the change in groundwater level at GW21 was likely to be caused by depressurisation of the Vaux seam. G23 exceeded the groundwater level trigger (49.2m) in March (52.56m) and April (51.69m). Investigations revealed that the change in ground water level was likely be related to the mining related depressurisation of the coal seam and was consistent with modelled predictions in the EA. GW39P exceeded the groundwater level trigger (9.52m) in March (9.60m) and April (9.61m). Investigations revealed that the depressurisation of the coal seams within the open cut mine was the likely cause of the decreasing water level in GW39P and the drawdown was within the predicted order of magnitude which was comparable to model predictions.
BCGW18	Mar to Apr 2016	EC	Triggers no longer applicable due to major upgrade works undertaken at this bore, which has changed the screened interval.
GW2	Apr to May 2016	Level	GW2 exceeded the groundwater level trigger (8.53m) in April (8.82m) and May (8.89m). Investigations revealed that the bore did not appear to be impacted by mining activities. The groundwater trigger value will be revised following the two year period of intense groundwater monitoring that commenced in February 2016.
GW2	May 2016	EC	The field meter was not calibrated on the day of the reading and therefore the lab result was used for the result.
GW23	May to June 2016	Level	G23 exceeded the groundwater level trigger (49.2m) in May (52.13m) and June (50.79m). Investigations revealed that the change in ground water level was likely be related to the mining related depressurisation of the coal seam and was consistent with modelled predictions in the EA.

Ground water depth at most bores remained relatively stable. 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) in Appendix 4 - Ground Water Quality Monitoring Results.

The modelled head for FY16 was extracted for all model slices from the consolidation project ground water model and compared to measured data in June 2016. Appendix 4 - Ground Water Quality Monitoring Results shows the result, with negative values showing where the model under predicts mine impacts (blue and red markers) and positive values showing where the model over predicts mine impacts (green, orange and yellow markers). The largest difference in modelled versus measured results is 110.5 metres of drawdown being over predicted by the model at EWPC33. 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 showing small negative values indicating the model may have slightly under predicted impacts in this area; however, future drawdown to the west of the bentonite wall within the alluvium is likely to be minimal.

With regards to the alluvial cut-off wall, ground water monitoring adjacent to the barrier was undertaken during the reporting period utilising vibrating wire piezometer (VWP) data from VWP01, VWP02 and VWP03 (1 and 2) located between the Hunter River and the alluvial cut-off wall. The four VWPs installed into the underlying Permian geology beneath the Hunter River Alluvium northwest of the Mt Arthur North (MAN) open pit and adjacent Denman Road have been operating since August 2011.

Groundwater levels within the Edinglassie and Ramrod Creek coal seams and the F4 Fault have declined between 45 m (Edinglassie Seam – footwall block) and 57 m (Ramrod Creek Seam). In contrast, nearby Hunter River Alluvial aquifer monitoring bores GW16, GW21 and GW42 (limited data; drilled January 2016), have remained relatively static with only a nominal decline in groundwater levels up to 0.75 m observed over the same period (i.e., since

January 2013) (Table 26). It should be noted that small gaps in the Hunter River Alluvium data set are due to a lack of manual measurements over the corresponding time period. These relatively static groundwater levels seen within the alluvium indicates the depressurisation observed in the underlying Permian coal seam does not appear to have propagated upwards into the Hunter River Alluvium in the vicinity of GW16 and GW21. These bores are located approximately 1.2 km northwest and 1.4 km southeast from the aforementioned VWP monitoring bores. That is, the nominal decline observed in these nearby alluvium monitoring bores is most likely a response to naturally occurring seasonal conditions.

Whilst the VWP data show mining related depressurisation of the coal seam aquifers, future potential impact to the alluvial groundwater aquifer will also incorporate an analysis of GW42 which is situated adjacent to the VWP monitoring bores. This monitoring bore was installed as part of a drilling program in this area in early 2016.

Data capture rates was below 100 per cent at 14 of the 46 ground water sites, as discussed in Table 28. No data was captured at seven of these bores during the reporting period, hence these bores are not presented in Appendix 4.

Table 28: Ground water data capture rates

Site	Data capture rate	Comments
GW2	88%	A water quality sample was not collected during August 2015 due to a malfunctioning pump.
GW6, GW7	75%	A water quality sample was not collected during August 2015 due to slow recharging of bore after purging. A water quality sample was not taken due to upgrade works that had been completed in October 2015 making the results invalid.
GW22	67%	This site was decommissioned in February 2016 due to mine progression.
GW23	50%	A water quality sample was not collected during October 2015 as there was no access to the site as a result of surrounding earth works. No longer sampled for water quality from April 2016 due to poor recharge at this bore affecting sample quality. Monthly level dips at this bore continued at this bore continued until June 2016 to confirm if this bore would recharge in the absence of monthly purging.
GW26	88%	A water quality sample was not collected during August 2015 due to a malfunctioning pump.
GW39P	75%	A water quality sample was not collected during August 2015 due to inability to purge bore using hand bailer. Water quality was not sampled in February 2016 as the well was blocked.
BCGW05, BCGW10, BCGW11, and BCGW15	0%	There was no access to these background monitoring bores for the duration of the reporting period as the land owner denied access to Mt Arthur Coal. Mt Arthur Coal is currently working on an access agreement with the landholder.
EWPC33	88%	A water quality sample was not collected during August 2015 due to inability to purge bore using hand bailer.
GW44	40%	Bore was too deep to sample in February 2016. A suitable pump for sampling (a low-flow pump) was able to be sourced from April to sample this bore. A water quality sample was not collected during June 2016 due to inability to purge bore using low flow pump.

Reportable Incidents

Mt Arthur Coal reported exceedances of EC trigger values during the reporting period to the DP&E. In accordance with the Surface and Ground Water Response Plan internal investigations were 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 exceedances and investigation findings are summarised in Table 27. In all instances investigation findings concluded that the data did not indicate that ground water had been impacted by mining. EC trigger levels at all sites that remained within the revised ground water network were reviewed as part of the comprehensive review of all ground water monitoring sites.

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

Further Improvements

During the next reporting period, Mt Arthur Coal will continue to monitor hydro-geomorphological conditions and evidence of any ground water ingress as operations progress towards the Hunter River alluvials, including monitoring of the alluvial cut-off wall.

As part of the upgraded Ground Water Monitoring Program Mt Arthur Coal will update the trigger values once the new baseline data has been established. Data will be reviewed during FY17 following the network upgrade works. If a baseline cannot be established due to variation in measurements Mt Arthur Coal will continue to review on a quarterly basis until it can be established, as committed to the DP&E.

Contaminated Land and Hydrocarbon Contamination

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-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.

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 *Protection of the Environment Operations Act 1997* (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 identified Mt Arthur Coal will plan and undertake the management method in accordance with relevant legislative requirements.

The approved Remedial Action Plan (RAP) for the former Bayswater No. 2 infrastructure area indicates identified soil and ground water impacts will be managed through the placement of overburden/tailings material to facilitate a

capping layer on top of the impacted media. Therefore, prior to this placement, no further action for identified soil and ground water impacts at the site is deemed to be 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.

An environmental response desktop exercise was undertaken during the reporting period on 29 February 2016 to assess site response against relevant procedures, including the requirements of the Pollution Incident Response Management Plan (PIRMP). The exercise simulated a hydrocarbon spill on the Mt Arthur Coal site, with potential runoff of pollutants into a clean waterway downstream of the operation. The exercise indicated general compliance with the PIRMP.

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.

Further Improvements

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

Flora and Fauna

Environmental Management

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

- MAC-ENC-MTP-047 Rehabilitation Strategy;
- MAC-ENC-PRO-012 Land Management;
- MAC-ENC-MTP-050 Biodiversity Management Plan (BMP);
- MAC-ENC-PRG-007 Onsite and Near Offsite Offset Management Program;
- MAC-ENC-PRG-008 Offset Management Program – Middle Deep Creek Offset Area; and
- MAC-ENC-PRO-080 Rehabilitation and Ecological Monitoring Procedure.

Mt Arthur Coal has a management strategy in place to limit impacts on native flora and fauna. The BMP together with the Offset Management Programs (OMPs) effectively manage habitat areas within and in the vicinity of the mine and associated conservation and biodiversity offset areas, reducing potential impacts and improving general habitat quality.

The biodiversity offset areas managed by Mt Arthur Coal, including expansions and additions in the reporting period, are:

- Mount Arthur Conservation Area (99 hectares);
- Saddlers Creek Conservation Area (426 hectares);
- Thomas Mitchell Drive Offsite Offset Area (495 hectares);
- Thomas Mitchell Drive Onsite Offset Area (222 hectares);
- Roxburgh Offset Area (110 hectares);
- Middle Deep Creek Offset Area (992 hectares); and
- Oakvale Offset Area (253.5 hectares).

On 30 June 2014 Mt Arthur Coal submitted the 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. The DoE approved the BMP on 12 August 2014. The BMP was revised in December 2015, however the revised version was only approved by the DP&E, and is yet to be approved by DoE.

In accordance with the modification project approval, suitable arrangements to provide appropriate long-term security for the Mt Arthur Coal biodiversity offset areas are to be made. A similar obligation exists under the EPBC approval. In June 2015, conservation agreement applications for the approved Mt Arthur Coal biodiversity offset areas were submitted to the Office of Environment and Heritage (OEH). The assessment of these conservation agreements will progress during the next reporting period.

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

The program now includes 24 monitoring sites, located throughout rehabilitation in the woodland corridor and remnant vegetation across the Mt Arthur Coal operational area and the offset areas, with the provision for additional monitoring sites to come online throughout the woodland corridor in the future and at the Middle Deep Creek East and Oakvale Offset Areas during the next reporting period. The monitoring sites include remnant vegetation sites for reference as well as active revegetation and natural regeneration areas. These sites are monitored on a rotational schedule as described in the monitoring program, with the sites monitored during the reporting period shown in Figure 13.

Pasture rehabilitation areas are monitored under the Grazing Potential Monitoring Program in the Rehabilitation and Ecological Monitoring Procedure. Under this program Ground and Pasture Assessments (GPA) were undertaken for all pasture areas in March 2016 by a qualified ecologist.

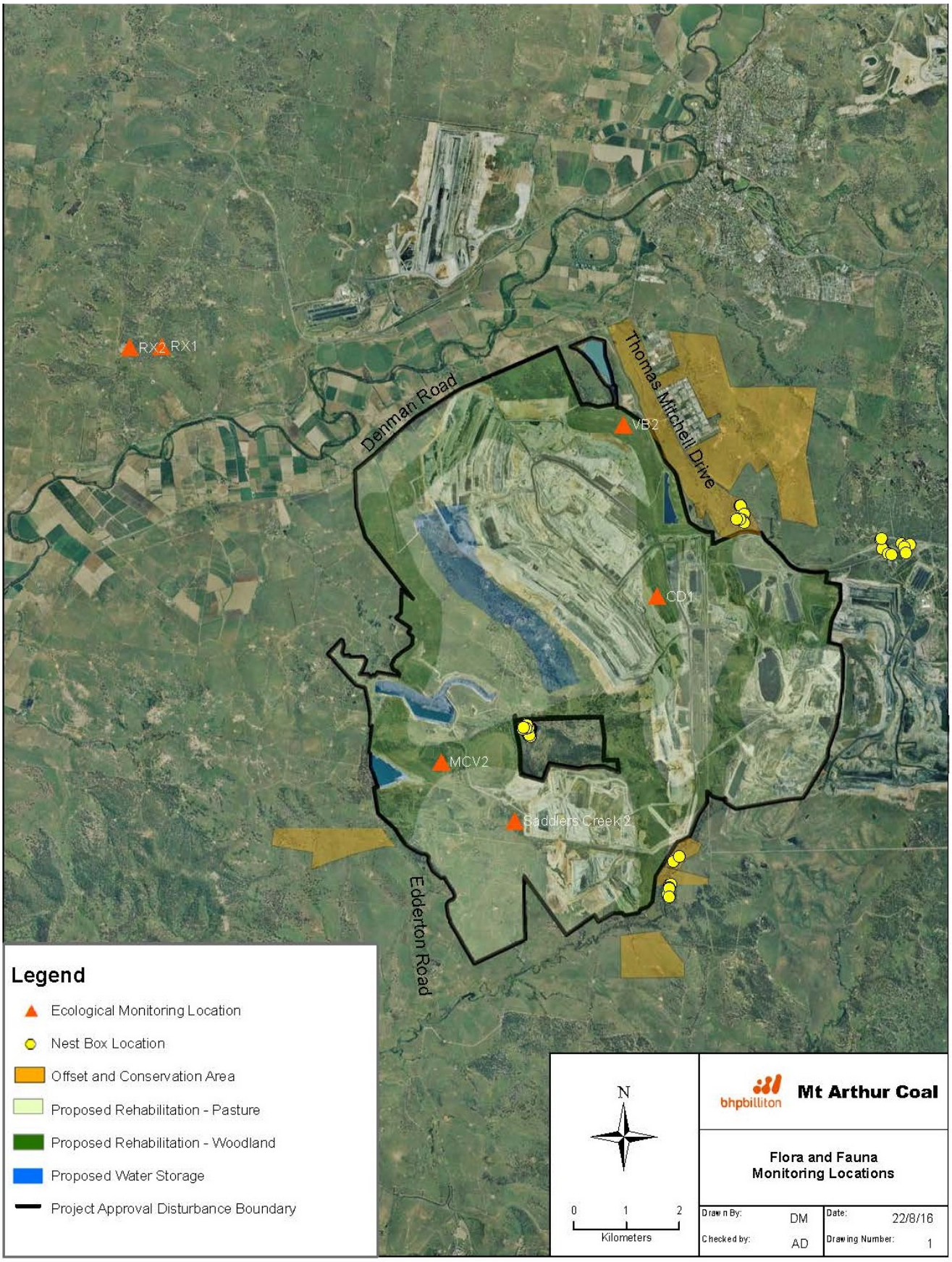


Figure 13: On-site and near-site flora and fauna monitoring locations

Environmental Performance

The annual ecological development monitoring program, using vegetation community assessments and fauna surveys, was undertaken over seven days in November and December 2015 by independent consultants. The annual survey assessed diversity and habitat condition across six sites, as shown in Figure 13, in accordance with the rotational schedule of the monitoring program:

- Three rehabilitation sites in the woodland corridor;
- One remnant vegetation sites as reference for the woodland corridor;
- Two remnant revegetation sites in the conservation and offset areas as references for future active revegetation works; and
- Four nest box monitoring locations.

Woodland Corridor Rehabilitation Results

The rehabilitation sites Visual Bund 2 (VB2), Contingency Dump 1 (CD1) and McDonalds Void 2 (MCV2) and the remnant vegetation sites Saddlers Creek 2 (SC2), Roxburgh Offset Area 1 (RX1) and Roxburgh Offset Area 2 (RX2), as shown in Figure 13, were surveyed in November and December 2015. Sites RX1 and RX 2 are new monitoring sites.

The number of flora and vertebrate fauna species for the woodland corridor rehabilitation sites is provided in Table 29 along with the condition assessment score applied by the ecologists. The score is designed to be indicative of ecological health and is calculated using a simplified scoring system of condition attributes for each site. Condition attributes include canopy dieback, canopy health, erosion, vegetation patch shape, epicormic growth, weed invasion, mid strata density, ground strata density and connectivity.

Table 29: Flora and fauna species recorded and condition assessment scores for woodland rehabilitation

Parameter	VB2	CD1	MCV2	Saddlers Creek 2
Native flora species (per cent of total)	15 (50%)	17 (49%)	14 (50%)	37 (74%)
Introduced flora species (per cent of total)	15 (50%)	18 (51%)	14 (50%)	13 (26%)
Total flora species	30	35	28	50
Total condition assessment score (out of 32)	25 (78%)	27 (84%)	27 (84%)	29 (91%)
Amphibians	0	0	0	2
Reptiles	3	2	2	1
Birds	14	8	15	23
Mammals	10	5	9	11
Total fauna species	28	16	27	38
Threatened fauna species^	3	1	2	4
Introduced fauna species	1	1	1	1

^ Does not include migratory- or marine-listed species declared under the EPBC Act

At MVC2 the recorded flora diversity and structural complexity and fauna diversity are broadly comparable to its reference site Saddlers Creek 2. MVC2 is also considered to provide good quality habitat with high foraging resources and some refuge resources, including logs, woody debris and stag trees. The native flora species diversity of MCV2 is less than that recorded at Saddlers Creek 2, however with comparable levels of introduced species diversity and no noxious weeds. Of the 28 native flora species recorded at MCV2, 13 were recorded in reference site Saddlers Creek 2.

The diversity of fauna species at MCV2 in FY16 is comparable to fauna diversity recorded at Saddlers Creek 2 in FY16, except that no amphibian species were recorded at MCV2. The absence of amphibian species at MCV2 is likely due to the lack of water or aquatic habitats and the general location of the site on a hill rise. All mammal species that were recorded at MCV2 in FY16 were also recorded at Saddlers Creek 2.

Overall, the diversity of fauna at MCV2 is considered to be trending towards diversity levels recorded at Saddlers Creek 2, which supports a faunal assemblage dominated by bird species.

CD1 experienced a large drop in flora species diversity from 2009 to 2010 and has since shown a recovery of flora species diversity from 2010 to FY16. The diversity of fauna species recorded at CD1 has increased slightly since the site was last monitored in 2012. The increase in native fauna species diversity is represented by additional bat and bird species.

The total flora species diversity at VB2 has decreased since 2004. Although the native species diversity in FY16 is higher than the native species diversity recorded in 2012, the overall native species diversity is lower compared with monitoring results from 2004. This decrease may not be significant as the native species diversity has been highly variable across years and may still be stabilising. Overall, the native species diversity has generally been maintained across monitoring years.

The following threatened fauna species, all listed as vulnerable under the TSC Act, were identified during monitoring of the woodland corridor rehabilitation, not including migratory- or marine-listed species declared under the EPBC Act:

- Grey-crowned babbler (eastern subspecies) (Pomatostomus temporalis temporalis) was identified at Saddlers Creek 2;
- Speckled warbler (Chthonicola sagittata) was identified at MCV2;
- Eastern bentwing-bat (Miniopterus orianae oceanensis)(syn. M.schreibersii oceanensis) was identified at Saddlers Creek 2, MCV2 and VB2;
- Eastern freetail-bat (Mormopterus norfolkensis) was identified at Saddlers Creek 2 and VB2; and
- Grey-headed flying fox (Pteropus poliocephalus) was identified at Saddlers Creek 2, CD1 and VB2 (also listed as vulnerable under the EPBC Act).

Pasture Rehabilitation Results

Ground and pasture assessments for pasture rehabilitation areas commenced during March 2016 in accordance with the Grazing Potential Monitoring Program and were completed by an independent and suitably qualified ecologist. These sites and the location of the soil samples are shown in Figure 14.

To assess the floristic and condition assessment at the rehabilitation and reference sites, a method was developed in accordance with Department of Primary Industries and adapted to suit a long-term monitoring project. This involved establishing seven permanent 50 metre transects within the mine rehabilitation and three permanent 50 metre transects at the reference sites, shown in Figure 14.

The baseline monitoring for the GPA revealed that the rehabilitated grassland areas support a diversity of native species, have an appropriate vegetation cover and soil characteristics are generally in accordance with approved guidelines. The grassland rehabilitation was found to comprise pasture characteristics that can support beef cattle production, with the addition of appropriate fencing and water.

Although the baseline data indicated that rehabilitated grassland should be able to support beef cattle grazing, recommendations were provided to increase the species diversity and cover abundance of the grassland, which will improve resilience and therefore reduce the risk of impacts from drought conditions.

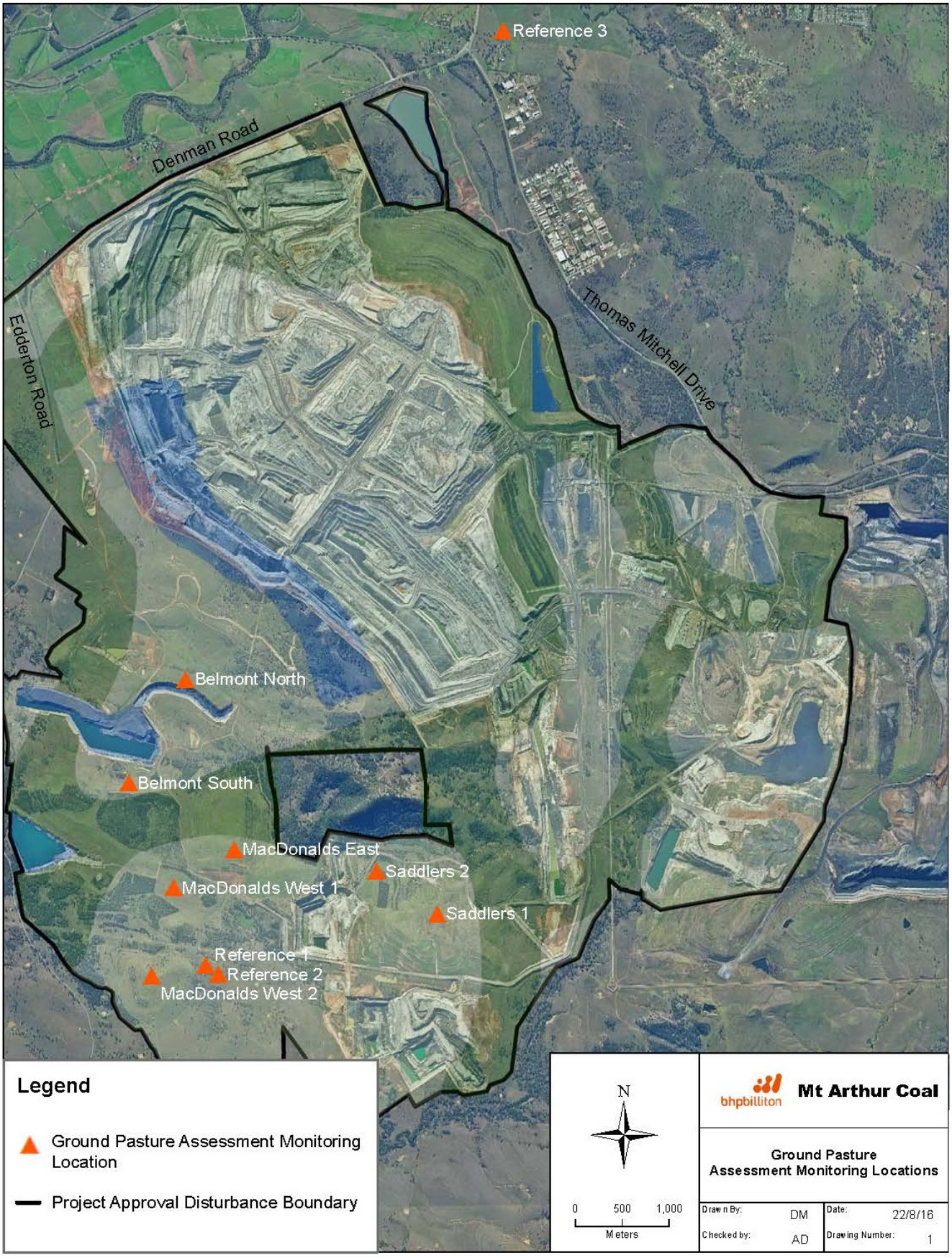


Figure 14: Location of pasture areas assessed and soil sample locations

Conservation and Offset Areas Results

Mt Arthur Coal has established a variety of biodiversity and conservation areas in order to compensate for impacts on biodiversity values. During the reporting period flora and fauna monitoring was undertaken at the Roxburgh Offset Area for the first time in November and December 2015 as shown in Figure 11:

- RX1 on the Roxburgh Conservation Area; and
- RX2 on the Roxburgh Conservation Area;

The number of flora and vertebrate fauna species for the conservation and offset area sites is provided in Table 30 along with the condition assessment score applied by the ecologists.

Table 30: Flora and fauna species recorded and condition assessment scores for conservation and offset areas

Parameter	RX1	RX2
Native flora species (per cent of total)	38 (88%)	25 (53%)
Introduced flora species (per cent of total)	5 (12%)	22 (47%)
Total flora species	43	47
Total condition assessment score (out of 32)	30 (94%)	24 (75%)
Amphibians	3	0
Reptiles	3	4
Birds	18	18
Mammals	6	8
Total fauna species	30	31
Threatened fauna species	2	3
Introduced fauna species	0	1

The total flora and fauna diversity of both RX1 and RX2 in its inaugural monitoring year is outlined in Table 30. As the Roxburgh Offset Area was monitored for the first time in FY16 results cannot be compared to previous years data.

The following threatened fauna species, all listed as vulnerable under the TSC Act, were identified during monitoring of the conservation and offset areas:

- brown treecreeper (eastern subspecies)(*Climacteris picumnus victoriae*) was identified at RX1 and RX2;
- eastern bentwing-bat (*Miniopterus schreibersii oceanensis*) was identified at RX1 and RX2; and
- grey-headed flying fox (*Pteropus poliocephalus*) was identified at SAD1 and TMDON1 (also listed as vulnerable under the EPBC Act).

Monitoring in subsequent years will occur in areas of both active revegetation and natural regeneration on the offset and conservation areas, to monitor the progress of required vegetation communities on these sites and the condition of the conservation and offset areas overall against MOP completion criteria.

Nest Box Monitoring Results

A total of 53 nest boxes were inspected across the four sites (Mount Arthur, Saddlers Creek, Thomas Mitchell Drive Onsite Offset and MACT) in November and December 2015 during the reporting period, as shown in Figure 13.

Overall, the condition of the nest boxes monitored was good, with only a small number showing some degree of disrepair or requiring replacement. Four nest boxes at MACT, three at Thomas Mitchell Drive Onsite Offset, one at Mount Arthur and one at Saddlers Creek require repair, replacement or removal. Two boxes at Thomas Mitchell Drive Onsite Offset could also not be located.

The results of the nest box monitoring during the reporting period revealed relatively low occupancy rates of between zero and 40 per cent in nest boxes at all sites, as shown in Table 31. The reason for the low occupancy rates occurring at Thomas Mitchell Drive Onsite Offset may be the low levels of vegetation connectivity in a north-south direction and the high fence bounding Thomas Mitchell Drive to the east which would present a substantial barrier to native arboreal fauna. Connectivity in this area will increase with time as the rehabilitation to the west of this area progresses.

The low occupancy results at Saddlers Creek are consistent with previous monitoring events of boxes at this location, which were installed in 2012. It is likely that the low rates of occupation at Saddlers Creek are a result of the nest boxes being relocated in 2012 and installed at low heights, typically less than four metres from the ground. This area additionally has an abundance of naturally occurring hollows for native fauna to utilise.

Table 31: Nest box monitoring results

Nest box monitoring location	Total nest boxes	Number of boxes occupied	Number of boxes showing signs of occupancy, but no occupants present	Number of boxes showing no sign of habitation	Occupancy Rate
Mount Arthur	25	8 (common brushtail possums) 2 (sugar gliders)	4 (leafy nest material of glider species)	11 (one contained bees)	40%
MACT	14	0	1 (leafy nest material of glider species)	13	0%
Saddlers Creek	9	1 (common brushtail possum)	1 (leafy nest material)	7 (one contained ants)	11%
Thomas Mitchell Drive Onsite Offset	7*	0	0	5	0%

* Two of these nest boxes could not be located.

A number of nest boxes across the monitoring locations contained leafy nesting material which is most likely created by a glider species, either squirrel glider (*Petaurus norfolcensis*) or sugar glider (*Petaurus breviceps*). Gliders are known to utilise numerous roost sites within an area, so no assumptions of density can be made from this nesting material.

A comparison of the nest box results in FY16 with FY15 indicates that for Mount Arthur and Saddlers Creek, the occupancy rates increased. For MACT and TMD Onsite, occupancy rates decreased. These occupancy rate changes are due to a difference in occupation of only one or two nest boxes and overall, the number of occupied nest boxes at each site is considered to be relatively consistent from FY15 to FY16.

Additional Activities Undertaken on the Conservation and Offset Areas

Signage was maintained at the entrances to the conservation and offset areas during the reporting period to further control access to these areas. These signs also indicate that revegetation works are in progress and specify that the collection of firewood is prohibited as it provides necessary habitat in these areas.

Waste and infrastructure inspections were undertaken on all the conservation and offset areas during the reporting period and a waste and infrastructure register developed to assist in prioritising and budgeting for the removal of waste items. All items were recorded with GIS coordinates and photographs. Most waste items are planned for

removal unless they are considered to be providing habitat for native species and some infrastructure (i.e. tenanted houses and water tanks) is to remain at this stage.

Sections of fence at the Saddlers Conservation Area, particularly along drainage lines were damaged during high rainfall events during the reporting period. Approximately 2.2 kilometres of fence was rewired and strained. These sections of damaged fence were repaired promptly to minimise instances of cattle owned and run by Drayton Coal Mine on neighbouring land entering the conservation area.

Substantial lengths of new fencing were erected at the Middle Deep Creek Offset Area during FY14, so the majority of fencing for this offset area is in excellent condition and is not expected to require substantial repairs for many years. Approximately 700 metres of new fence was installed in the north of the Oakvale offset area to redefine the boundary.

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.

Further Improvements

Mt Arthur Coal will continue monitoring the population of *Diuris tricolor* in the Thomas Mitchell Drive Onsite Offset Area during the next reporting period to continue the population study of this species at this locality.

Mt Arthur Coal will continue to implement the Ecological Development Monitoring Program during the next reporting period, as required.

Mt Arthur Coal will continue removing waste items and repairing sections of fence that require maintenance in conservation and biodiversity offset areas during the next reporting period.

Weed and Feral Animal Management

Environmental Management

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

- MAC-ENC-MTP-047 Rehabilitation Strategy;
- MAC-ENC-PRO-012 Land Management;
- MAC-ENC-MTP-050 Biodiversity Management Plan;
- MAC-ENC-PRG-007 Onsite and Near Offsite Offset Management Program; and
- MAC-ENC-PRG-008 Offset Management Program – Middle Deep Creek Offset Area.

Areas of weed impact are continually monitored through scheduled inspections conducted by Mt Arthur Coal and local land managers. Monitoring of weeds and feral animals is assisted by feedback from mining personnel, contractors and lessees to identify areas of weed infestation and animal sightings. 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 and feral animal control programs also include all biodiversity offset and conservation areas.

Annual weed assessments were conducted by land management consultants on the Mt Arthur Coal site as well as the biodiversity offset and conservation areas between 21 September and 25 November 2015 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 and the biodiversity offset and conservation areas primarily target weeds that are locally declared under the *Noxious Weeds Act 1993*.

Environmental Performance

Weeds

The FY16 annual weed assessment identified 22 weeds in total across the Mt Arthur Coal site and the biodiversity offset and conservation areas, including five locally declared noxious weeds as shown in Table 32. No new noxious weed species were recorded in the assessment areas compared to the FY15 annual weed assessment.

Table 32: Weeds identified at Mt Arthur Coal and the biodiversity offset and conservation areas

Assessment Area	Total number of weeds recorded	Number of noxious weeds recorded	Noxious weed species recorded
Mt Arthur Coal Site and Onsite Conservation Areas	19	5	African boxthorn (*Lycium ferocissimum*) Mother-of-millions (Bryophyllum delagoense) Prickly pear (*Opuntia stricta*) St John's wort (Hypericum perforatum) Tiger pear (Opuntia aurantiaca)
Thomas Mitchell Drive Offsite and Roxburgh Offset Areas	13	4	African boxthorn (*Lycium ferocissimum*) Prickly pear (*Opuntia stricta*) St John's wort (Hypericum perforatum) Tiger pear (Opuntia aurantiaca)
Middle Deep Creek Offset Area	12	3	Prickly pear (*Opuntia stricta*) St John's wort (*Hypericum perforatum*) Tiger pear (*Opuntia aurantiaca*)

Mt Arthur Coal targeted over 390 hectares of land for weed treatment during the reporting period. Priority areas for treatment included the mine site boundary, rehabilitation areas and the biodiversity offset and conservation areas.

Weed treatment techniques included boom spraying, spot spraying with a quick-spray unit and also manual removal when treating weeds in the vicinity of the known *Diuris tricolor* population in the Thomas Mitchell Drive Onsite Offset Area.

Weed treatment primarily targeted all locally declared noxious weeds, as listed in Table 31. Other weed species were also treated when in the vicinity of noxious weeds, such as Galenia. Observations during the weed treatment program and follow up inspections indicate that treatment has largely been effective.

Feral Animals

Wild dog and fox management activities continued on land owned by Mt Arthur Coal during the reporting period. A vertebrate pest management program involved 1080 baiting, targeting wild dogs (*Canis lupus familiaris*) and foxes (*Vulpes vulpes*) was undertaken during April and May 2016. Due to no sightings of feral cats (*Felis catus*), cat management was not undertaken during the reporting period. Opportunistic shooting was also carried out on the offsite offset areas during the program, which targeted wild dogs, foxes and feral pigs (*Sus scrota*). The Middle Deep Creek Offset Area and Oakvale Offset Area was included in the vertebrate pest management program during this reporting period.

Results from the wild dog and fox baiting program were excellent, with a baiting efficiency of 86 per cent across all baited areas, including the Middle Deep Creek and Oakvale Offset Areas. The Mt Arthur Coal mine site, onsite conservation and offset areas and nearby offsite offset areas (referred to as the MAC Complex in Table 33) as a whole had a baiting efficiency of 84 per cent with 167 baits taken from a total of 200 laid, while the Middle Deep Creek and Oakvale Offset Area had a baiting efficiency of 89 per cent, with 189 baits taken from the 212 baits laid. The baiting efficiency of this program was higher compared with baiting efficiencies of the previous six programs as listed in Table 33, which had a maximum of 73 per cent in May/June 2015.

Table 33: Baiting results from feral animal control programs

Program date and location	Baiting sites	Baits laid	Baits taken by wild dogs or foxes	Baits taken by non-target feral animals i.e. pigs	Baits taken by Undetermined species	Total baits taken	Percentage of baits taken (baiting efficiency)
May 2016 MAC Complex	50	200	84	-	83	167	84%
May 2016 Middle Deep Creek and Oakvale offset area	53	212	57	18	114	189	89%
May/June 2015 Middle Deep Creek Offset Area	40	120	80	7	-	87	73%
May/June 2015 MAC Complex	67	201	129	0	-	129	64%
February 2014 MAC Complex	70	210	85	1	-	86	41%
May/June 2013 MAC Complex	65	195	80	0	-	80	41%
February 2013 MAC Complex	62	186	79	0	-	79	42%
May/June 2012 MAC Complex	62	186	57	0	-	57	31%

During the reporting period 37 feral pigs were also shot at the Middle Deep Creek and Oakvale Offset Areas. Two feral deer, a male fox and three rabbits were also shot at the Middle Deep Creek and Oakvale Offset Areas during the program.

Reportable Incidents

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

Further Improvements

During the next reporting period Mt Arthur Coal will conduct an annual weed assessment. Weed management priorities will be revised based on the outcomes of the assessment.

During the next reporting period, Mt Arthur Coal will also run another vertebrate pest management program on site and across all conservation and offset areas.

Blasting

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. During the year, all statutory blast monitors were calibrated in accordance with relevant Australian Standards.

The modification project approval was granted on 26 September 2014 which resulted in BP08 (Edinglassie) no longer being required as a statutory monitor from this date, as the blast impact assessment criteria for heritage sites was removed from the project approval and replaced with blast impact assessment criteria for public infrastructure. Mt Arthur Coal has five statutory blast monitors, as listed below and shown in Figure 13:

- BP04 (South Muswellbrook);
- BP07 (Sheppard Avenue);
- BP09 (Denman Road West);
- BP10 (North Yammanie); and
- BP11 (Balmoral Road).

A predictive fume model has continued to be used in the reporting period that allows Mt Arthur Coal to model the expected path and dispersion of fume from a blast and provide an indication of nitrogen oxide emissions at the premise boundary. The predictive fume model forms part of the pre-blast environmental assessment to gauge the risk of potential impacts on the surrounding community and the environment. This pre-blast 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 number of blasts were delayed at Mt Arthur Coal due to unfavourable weather conditions determined through this process.

During the reporting period, Mt Arthur Coal continued to use an additional weather station in the northern part of the mine to improve the availability of meteorological data for pre-blast assessments and other operational purposes.

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 airblast overpressure 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 includes modelling 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;
- notifying other mines and nearest residents of proposed blast times;
- advertising planned blast and road closure times on MSC's blast notices website (www.muswellbrook.nsw.gov.au/index.php/blasting-notices);
- the use of electronic initiation systems in higher risk areas to reduce vibration;
- the use of on-site wind socks to enable wind conditions to be assessed at the time of firing;
- the use of helium filled balloons to assess wind conditions 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.

The modification project approval states a ground vibration limit for public infrastructure of 50 millimetres per second (mm/s), unless Mt Arthur Coal has a written agreement with the relevant owner of the public infrastructure to exceed these criteria and advises the DP&E in writing of the terms of the agreement.

In October 2014 Mt Arthur Coal sought approval from the DP&E for an alternative ground vibration limit for public infrastructure affected by blasting at the mine, until agreements could be negotiated with relevant public infrastructure owners. The DP&E approved an interim ground vibration limit of 100 mm/s applicable exclusively to blasting in the Windmill Pit, to address potential blast impacts on Denman Road and the 66 kilovolt transmission lines and fibre optic cables adjacent to Denman Road. This interim limit was effective from 26 September 2014 to 31 December 2015.

There were no changes to the Roads and Maritime Services agreement from April 2015 during the reporting period. On 22 December 2015 (effective from 1 January 2016) Ausgrid agreed in writing to increase the ground vibration blast impact assessment criteria for Denman Road to 100 mm/s with 10 percent of blast events that occur during any 12 month period allowed to exceed this limit up to 150 mm/s. Ausgrid also requested that Mt Arthur Coal notify them of any blasts that exceed 100 mm/s in the vicinity of Ausgrid public infrastructure along Denman Road.

On 23 December 2015 Telstra agreed in writing to increase the ground vibration blast impact assessment criteria for Telstra public infrastructure along Denman Road to 70 mm/s with no allowable exceedances. Telstra were unable to undertake the additional testing planned for Q1 2016 due to weather delays but were able to complete testing on 30 June 2016. Updates will be provided in the following period for reporting regarding the matter.

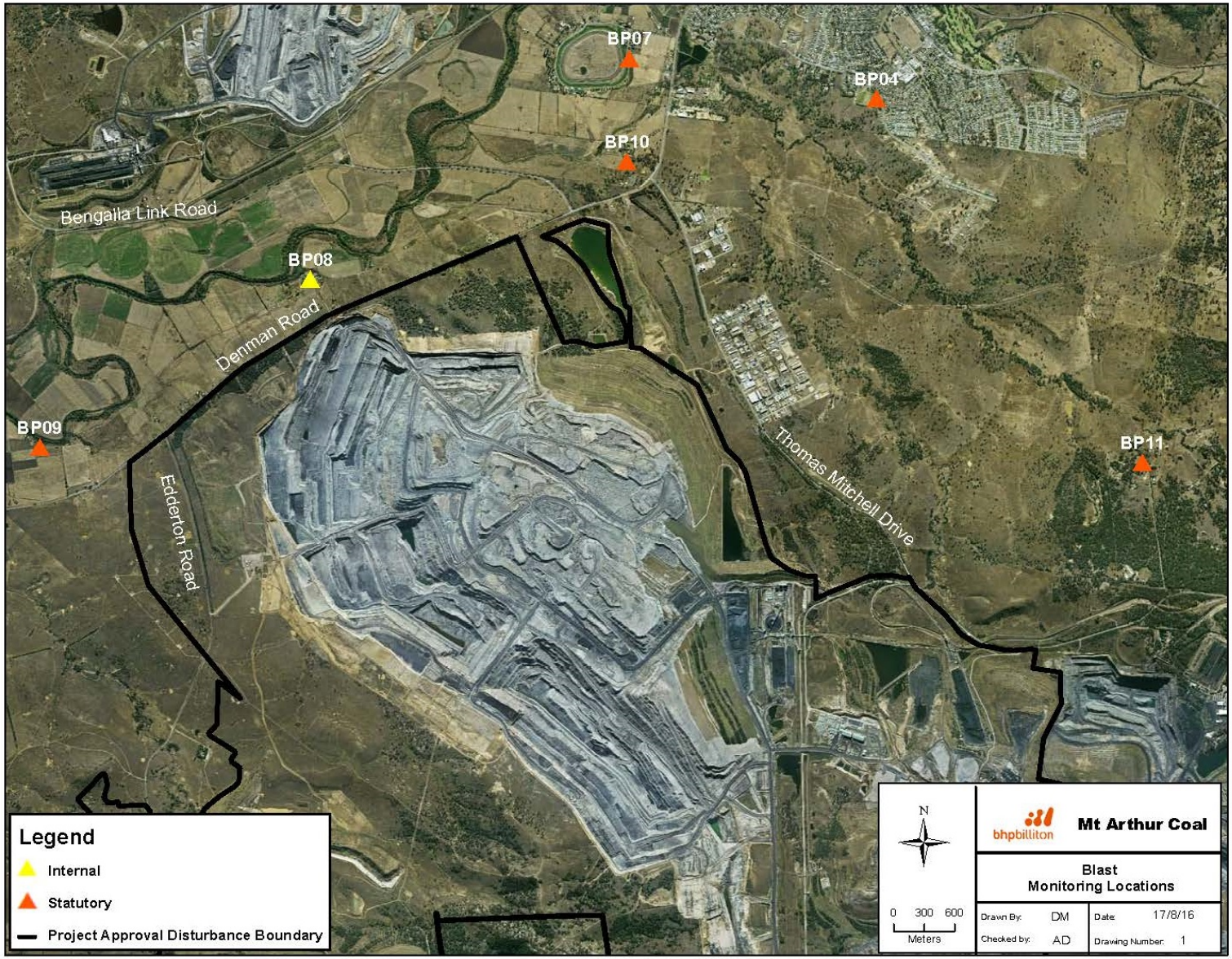


Figure 15: Mt Arthur Coal's blast monitoring locations

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 100 per cent at all statutory sites. Blast impact assessment criteria as specified in the Project Approval 09_0062 and modification project approval are provided in Table 34.

Table 34: Blast impact assessment criteria

Location	Applicable statutory blast monitors	Airblast overpressure (dBL)	Ground vibration (mm/s)	Allowable exceedance
Residence on privately owned land	BP04 BP07 BP09 BP10 BP11	120	10	0%
		115	5	5% of the total number of blasts in a financial year
Public infrastructure	N/A	-	100^	0%

^ Interim criteria as approved by the DP&E.

There were 192 blast events during the reporting period. In accordance with the consolidated project approval and subsequent modification, blasting activities in the applicable portion of the reporting period were only undertaken between 8 am and 5 pm Monday to Saturday, inclusive. No blasts were undertaken outside of approved blasting hours during the reporting period and no blasting was carried out on Sundays or public holidays.

Blast monitoring statistics for the current and previous reporting periods are provided in Table 35. 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. Results will only be compared to the modification project environmental assessment when mining operations move west of the mining area approved under the consolidation project.

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.

Table 35: Summary of statutory blast monitoring results

Parameter	Statistic	FY16	FY15	FY14	FY13	FY12
Ground vibration (mm/s)	Average	0.23	0.30	0.46	0.34	0.44
	Maximum valid result	5.09 at BP09 (Denman Road West)	7.06 at BP08 (Edinglassie)	5.99 at BP08 (Edinglassie)	7.42 at BP09 (Denman Road West)	7.40 at BP08 (Edinglassie)
	Valid blasts above 5 mm/s threshold^	1	1	0	2	0
Airblast overpressure (dBL)	Average	95.4	93.9	96.1	94.8	96.8
	Maximum valid result*	117.7 at BP10 (North Yammanie)	124.3 at BP08 (Edinglassie)*	120.2 at BP08 (Edinglassie)*	120.0 at BP04 (South Muswellbrook)	124.1 at BP08 (Edinglassie)*

Parameter	Statistic	FY16	FY15	FY14	FY13	FY12
	Valid blasts above 115 dBL threshold^	5	1	3	11	7

^ Excluding BP08 (Edinglassie).
* 133 dBL Project Approval impact assessment criteria at Edinglassie

Calculated blast monitoring results for blasts in Roxburgh and Windmill Pits that met criteria specified in the Supplementary Blast Monitoring Program are presented in Table 36. No blasts exceeded the public infrastructure ground vibration criteria during the reporting period.

Table 36: Summary of public infrastructure blast monitoring results

Shot code*	Date and time	Monitor	Calculated ground vibration at public infrastructure (mm/s)	Project Approval impact assessment criteria (mm/s)
WMn3220/VU_P1	17/05/2016 11:35:57 AM	BP09 - Denman Road West	57.7	70
MCw2510/EG_P2	6/05/2016 2:12:08 PM	BP10 - North Yammanie	24.5	70
MCw2609/BA	2/05/2016 10:47:20 AM	BP10 - North Yammanie	34.3	70
WMn3017/VU	6/04/2016 11:52:24 AM	BP10 - North Yammanie	50.2	70
MCw2611/BA	6/04/2016 11:48:43 AM	BP09 - Denman Road West	27.1	70
WMn3119/VU	18/03/2016 12:08:15 PM	BP09 - Denman Road West	54.9	70
MCe2509/EG	25/02/2016 1:55:44 PM	BP10 - North Yammanie	23.1	70
WMn3322/MUU	16/10/2015 1:49:37 PM	BP09 - Denman Road West	67.0	100
WMn3422/MUU_ext	15/09/2015 10:44:52 AM	BP09 - Denman Road West	53.7	100
WMn3422/MUU	7/09/2015 2:32:39 PM	BP09 - Denman Road West	57.8	100
WMn2816/BR	7/09/2015 2:30:30 PM	BP09 - Denman Road West	39.2	100
WMn3422/MUU	22/08/2015 12:24:30 PM	BP09 - Denman Road West	62.0	100

Note that impact assessment criteria is 100mm/s pre 23 Dec 2015 and decreased to 70mm/s post 23 Dec 2016.

Blasting-related Community Complaints

Complaints regarding blasting impacts, including blast vibration, airblast overpressure, dust and fume, accounted for 10 per cent of the total complaints received during the reporting period, which was substantially lower than the previous reporting period (Table 37). During the reporting period, 13 complaints recorded related to blast vibration

and/or airblast overpressure. All blast vibration and airblast overpressure results were within maximum regulatory criteria on dates when complaints were received in relation to these issues.

Table 37: Blasting complaint statistics at Mt Arthur Coal

Blasting complaints	FY16	FY15	FY14	FY13	FY12
Blasting complaints received	13	35	52	37	55
Blasting complaints received, as a percentage of total complaints	9%	30%	20%	16%	42%

Reportable Incidents

No blast ground vibration or airblast overpressure results were recorded at any of the statutory blast monitors above the maximum limits of 10 mm/s or 120 dBL respectively during the reporting period. Of the 192 blast events fired during the reporting period five valid blasts were recorded above the airblast overpressure criteria of 115 dBL however remained below the five per cent limit criteria for overpressure during the reporting period were:

- BP10 on 31 August 2015 recorded 115.7dBL;
- BP09 on 18 September 2015 recorded 115.4dBL;
- BP10 on 11 January 2016 recorded 115.2dBL;
- BP10 on 18 March 2016 recorded 117.7dBL; and
- BP07 on 17 May 2016 recorded 116.6dBL.

One valid blast was recorded above the ground vibration criteria of 5 mm/s (BP09 on 21 January 2016 recorded 5.09 mm/s), as shown in Table 37, however remained below the five per cent limit criteria for ground vibration during the reporting period.

There were no reportable blast fume events during the reporting period, with no blast fume events resulting in fume rating above level 3. Improvements to the blast fume management strategy made in FY14 continued to be used during the reporting period to minimise the risk of blast fume generation.

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.

Noise

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, and satisfying the conditions of the modification project approval, 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. Further noise management and monitoring detail can be found in the programs listed above. Mt Arthur Coal has eight statutory monitoring locations as shown in Figure 14

During the reporting period Mt Arthur Coal engaged acoustic consultants to update the predictive noise model for Mt Arthur Coal 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.

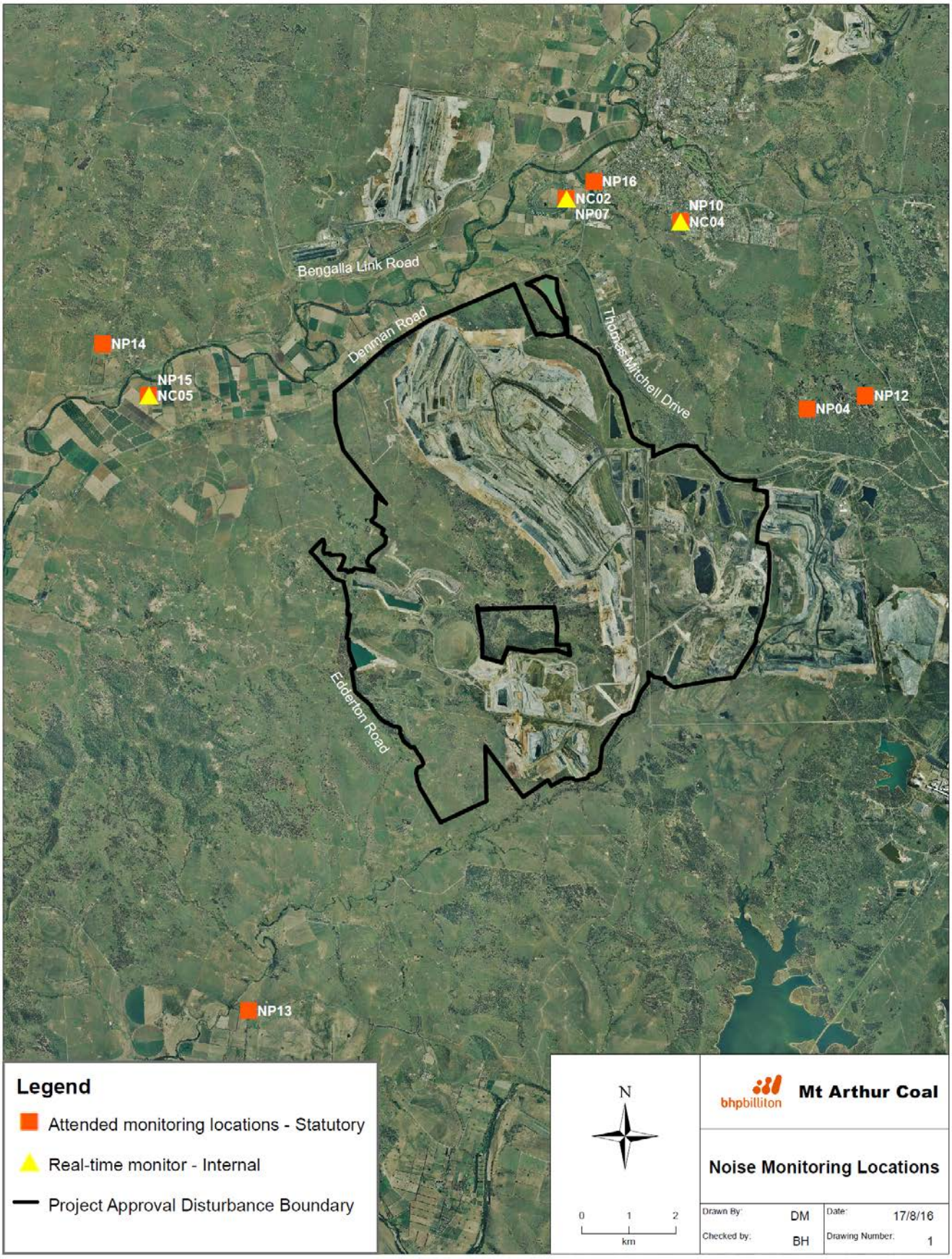


Figure 16: Mt Arthur Coal's noise monitoring locations

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. A summary of results from Mt Arthur Coal's attended noise monitoring in the reporting period is provided in Table 38. Where a remeasure was required on the same night to determine the sustained noise level, only the remeasure result is shown.

A noise impact assessment was completed in 2013 as part of the modification project environmental assessment. Noise modelling was completed for 2016, 2022 and 2026 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 modification project environmental assessment. The predicted noise levels at Mt Arthur Coal for model year 2016 are shown in Table 38.

Table 38: $L_{Aeq\ (15min)}$ 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	H	D	D & F	B
Project approval noise impact assessment criteria (Intrusive criteria) ($L_{Aeq\ (15min)}$)	38	39	39	39	35	35	35	37
Peak predicted noise level for receiver zone for 2016	41	30	29	48	N/A	42	37	39
28-29 July 2015	IA*	38*	NM*	IA*	IA*	32*	33*	37*
16-17 August 2015	33*^	38*	34*	32*	IA*	IA*	IA*	IA*^
10-11 September 2015	IA*	33	IA	IA	IA*	30*	28^	IA
20-21 October 2015	IA	27	IA	IA	IA*	NM*	24*	31*
19-11 November 2015	29*	IA*	33*^	33*	IA*	IA*	IA*	IA*^
10-11 December 2015	32*	<30*	IA*	33*	<20	<25	28	IA*
20-21 January 2016	IA*	IA*	IA*	IA*	IA*	NM*	<30*	IA*
18-19 February 2016	IA	IA*	IA	IA*	IA*	<30*	<30*	IA*
3-4 March 2016	IA*	IA*	<30*	IA*	<30*	28*	30*	31*
14-15 April 2016	IA	32	IA	IA	<25	28	27	31
5-6 May 2016	34*	IA*	37*	32*^	IA*	IA*	IA*	35*^
14-15 June 2016	<30*	31*	31*	<30*	<25*	28*	<30*	34*
$L_{A1\ (1min)}$	**NP04**	**NP07**	**NP10**	**NP12**	**NP13**	**NP14**	**NP15**	**NP16**
Representative residential assessment zone	A	C	E	G	H	D	D & F	B
Project approval noise impact assessment criteria ($L_{A1\ (1min)}$)	45	45	45	45	45	45	45	45
28-29 July 2015	IA*	40*	NM*	IA*	IA*	39*	35*	40*

$L_{Aeq\ (15min)}$	NP04	NP07	NP10	NP12	NP13	NP14	NP15	NP16
16-17 August 2015	44*	45*^	36*	41*	IA*	IA*	IA*	IA*^
10-11 September 2015	IA*	36	IA	IA	IA*	38*	32^	IA
20-21 October 2015	IA	29	IA	IA	IA*	30*	28*	34*
19-11 November 2015	29*	IA*	33*^	33*	IA*	IA*	IA*	IA*^
10-11 December 2015	36*	<30*	IA*	36*	<20	<25	41	IA*
20-21 January 2016	IA*	IA*	IA*	IA*	IA*	NM*	30*	IA*
18-19 February 2016	IA	IA*	IA	IA*	IA*	<30*	33*	IA
3-4 March 2016	IA*	IA*	<30*	IA*	<30*	32*	35*	34*
14-15 April 2016	IA	35	IA	IA	NM	31	36	35
5-6 May 2016	37*	IA*	40*	33*^	IA*	IA*	IA*	37*^
14-15 June 2016	33*	35*	38*	32*	<25*	33*	32*	38*

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.
^ Remeasured result

A comparison of FY16 noise monitoring results to previous years is presented in Table 39 and Table 40. A decrease in maximum ($L_{Aeq(15\ min)}$) noise levels is shown for all sites except NP04, and NP07 in FY16. A decrease in $L_{A1(1min)}$ noise levels has occurred at NP10, NP12, and NP13 for FY16. While other sites have recorded fluctuating $L_{A1(1min)}$ results over the last 5 years. Data capture was 100 per cent at all attended noise monitoring sites, however, on three occasions noise levels from Mt Arthur Coal were audible but too low to measure.

Table 39: $L_{Aeq\ (15min)}$ attended noise monitoring results in decibels in comparison to previous years

Monitoring Site	FY16 ($L_{Aeq(15\ min)}$)		FY15 ($L_{Aeq(15\ min)}$)		FY14 ($L_{Aeq(15\ min)}$)		FY13 ($L_{Aeq(15\ min)}$)		FY12 ($L_{Aeq(15\ min)}$)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
NP04	IA	34*	IA	35	IA	39*	IA	38	IA	36
NP07	IA	38*	IA	34^	<30	38	IA	40	IA	33
NP10	IA	37*	IA	39	IA	39	IA	41	IA	37
NP12	IA	33*	IA	36	IA	37	IA	25	IA	-
NP13	IA	<30*	IA	29*	IA	<30	IA	25	IA	-
NP14	IA	30*	IA	34*	IA	27	<30^	<30^	-	-
NP15	IA	33*	IA	37*	IA	31	IA^	IA^	-	-
NP16	IA	37*	IA	37*	NM	39	IA^	IA^	-	-

* 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.
^ Only one monitoring event in year
NM – Mt Arthur Coal's operations were audible but not measurable.
IA – Mt Arthur Coal's operations were inaudible.
- – Site not included in monitoring program, no data available.

Table 40: $L_{A1\ (1min)}$ attended noise monitoring results in decibels in comparison to previous years

Monitoring Site	FY16 ($L_{Aeq(1\ min)}$)		FY15 ($L_{Aeq(1\ min)}$)		FY14 ($L_{Aeq(1\ min)}$)		FY13 ($L_{Aeq(1\ min)}$)		FY12 ($L_{Aeq(1\ min)}$)	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
NP04	IA	44*	IA	41*	IA	44	IA	43	IA	37
NP07	IA	45*	IA	45*	34	44	IA	42	IA	37
NP10	IA	40*	IA	44*	IA	45	IA	43	IA	34
NP12	IA	41*	IA	43*	IA	43	IA	40	IA	IA
NP13	IA	<30*	IA	33*	IA	31	IA	26	-	-
NP14	IA	39*	IA	36*	IA	33	30^	30^	-	-
NP15	IA	41	IA	37*	IA	33	IA^	IA^	-	-
NP16	IA	40*	IA	39*	NM	42	IA^	IA^	-	-

* 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.
^ Only one monitoring event in year
IA – Mt Arthur Coal's operations were inaudible.
- – Site not included in monitoring program, no data available.

Low frequency assessment was carried out in accordance with the NSW Industrial Noise Policy (INP) and Broner methods, as prescribed in the modification project approval. In order to reflect the additional impact of low frequency noise, the INP requires that a 5dB modifying factor be added to the total A-weighted average noise energy level over a 15 minute period ($L_{Aeq\ (15\ min)}$) generated by Mt Arthur Coal when the total C-weighted average noise energy level over a 15 minute period ($L_{Ceq\ (15\ min)}$) minus total $L_{Aeq\ (15\ min)}$ is greater than 15 decibels (dB).

The application of the modifying factor resulted in no exceedances of the modification project approval $L_{Aeq\ (15\ min)}$ Impact Assessment Criteria where Mt Arthur Coal was audible and meteorological conditions were suitable as detailed in the modification project approval.

Noise-related Community Complaints

During the reporting period, 53 per cent of the total complaints received at Mt Arthur Coal were related to noise, as shown in Table 41. Callers did not request to be called back regarding investigation and monitoring results. Investigation revealed no unusual mining operations were occurring at the time of complaints. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks.

Table 41: Noise complaint statistics at Mt Arthur Coal

Noise complaints	FY16	FY15	FY14	FY13	FY12
Noise complaints received	69	45	145*	141*	43
Noise complaints received, as a percentage of total complaints	53%	38%	57%	60%	33%

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

Reportable Incidents

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

Further Improvements

Mt Arthur Coal will continue to manage noise in accordance with the Noise Management Plan and project approval and other licence conditions.

Visual Amenity and Lighting

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. The modification project environmental assessment has not yet been incorporated into this process as visual simulations constructed for this environmental assessment were for the year 2026.

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.

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 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.

In accordance with the modification project approval, the Visual Impacts Management Report was revised and provided to the DP&E as a staged submission during the previous reporting period. The report was revised to reflect changes to the mine landform associated with the modification project. Further work is being progressed with relevant stakeholders to ensure the approval intent is addressed.

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 operational 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. Aerial seeding and hydro-mulching programs undertaken on overburden dumps have slightly reduced this contrast from previous reporting periods. 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 year 2016.

During the reporting period earthworks were carried out on the Denman Road visual bund to lower the gradient of the slope to improve vegetation establishment. In addition to the earthworks, approximately 17,500 tubestock were planted along the Denman Road visual bund to help reduce the visual impact created by Mt Arthur Coal mining activities. The Denman Road visual bund was inspected by the DRE and DP&E during their FY15 AEMR inspection. The improvement in the Denman Road visual bund design was positively received.

Mt Arthur Coal continued to operate more than 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. Mt Arthur Coal are continuing to assess the economic feasibility of the lights and options for potential deployment across the entire site.

Hydromulch continued to be utilised during this reporting period. The Hydromulch product contains seed and a binding agent that provides instant stabilisation and reduces the amount of exposed ground. The Hydromulch utilised also contains a dye product to help improve visual amenity from offsite locations. Although it has been established that in time the dye will fade, the dye product will still improve visual relief immediately until the seed germinates and becomes established.

Lighting-related Community Complaints

Lighting complaints accounted for 15 per cent of the total complaints received during the reporting period, as shown in Table 42. 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 a decrease in the number of lighting complaints compared with the previous year. This is likely due to the operational management located in the north of the mine site.

Table 42: Lighting complaint statistics at Mt Arthur Coal

Lighting complaints	FY16	FY15	FY14	FY13	FY12	FY11
Lighting complaints received	19	24	30	9	16	2
Lighting complaints received, as a percentage of total complaints	15%	21%	12%	4%	12%	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.

Further Improvements

In accordance with the requirements of the modification project approval items below will be implemented:

- Owners of significantly affected residences or significantly affected areas on privately-owned land subject to tourist and/or general public access (as identified in the report) will be notified of their entitlement to additional mitigation measures to reduce the visibility of the mine from their properties.
- Upon request from significantly affected owners a property specific visual mitigation plan will be prepared in consultation with the owner outlining reasonable and feasible mitigation measures to be implemented.

Lighting from Mt Arthur Coal will also 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. Trials and feasibility studies into improving the lighting system in operational areas will be continued in the next reporting period.

Aboriginal Cultural Heritage

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 modification project approval and continue its active partnership with the Aboriginal community.

Environmental Performance

Mt Arthur Coal 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 Reconciliation Action Plan and NSW Energy Coal Diversity Plan.

During December 2015, salvage works were undertaken in pre-strip areas in advance of the active pit by registered archaeologists in consultation with attending representatives from the Aboriginal community. Artefacts were collected and recorded in accordance with the methodology detailed in the Aboriginal Heritage Management Plan. A total of 383 Aboriginal objects were salvaged. Mudstone and silcrete artefacts were the most common raw material types salvaged followed by quartz and porcelanite. The most common artefact types were flakes, flake fragments and cores. A number of mature trees were inspected for evidence of cultural scarring but no such markings were identified.

Aboriginal archaeological due diligence assessments were undertaken for minor project work in the reporting period. All assessment were undertaken in accordance with the Due Diligence Code of Practice for the Protection of Aboriginal Objects (DECCW 2010) and the NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects (Minerals Council 2010).”

In accordance with the Aboriginal Heritage Management Plan a visual inspection was undertaken on the three AHIMS registered grinding groove sites within the Mt Arthur Coal modification project environmental assessment boundary. Results showed that two of the three grinding groove sites were considered to be in good condition and showed minimal exfoliation and minor evidence of weathering. One of the grinding grooves was considered to be in fair condition due to evidence of weathering by water flow.

A temporary Keeping Place was established on site at Mt Arthur Coal during FY14 in consultation representatives of the local Aboriginal community. The Keeping Place stores artefacts that are collected during archaeological salvage programs and access to the collections is available to the Aboriginal community for cultural, educational and research purposes. Mt Arthur Coal also maintains a database of Aboriginal Heritage Information Management System (AHIMS) registered archaeological sites.

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.

Further Improvements

Mt Arthur Coal will continue to work with the Aboriginal community in the management of cultural heritage including the temporary Keeping Place and interpretative display.

European Cultural Heritage

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.

Environmental Performance

In total Mt Arthur Coal 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.

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.

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.

Spontaneous Combustion

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 former 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 plan showing the areas of spontaneous 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 current active mining areas. During the reporting period mine plans were developed to conduct the treatment required to manage spontaneous combustion outbreaks.

Mt Arthur Coal revised the Spontaneous Combustion Control Program during the reporting period to address prioritisation of capping works when spontaneous combustion is located in proximity to the operation's boundary. Control works for outbreaks located within 500m of the premises boundary are implemented as soon as practicable. Control measures for pit walls showing signs of spontaneous combustion have been included in the revised control program.

Environmental Performance

During the reporting period there was a decrease in the area recorded as being affected by spontaneous combustion at Mt Arthur Coal. A total of 1737 m² of land was treated for spontaneous combustion in the reporting period. A summary of spontaneous combustion in the reporting period is shown in Table 43.

Following scheduled capping works that took place in the previous reporting period and in consultation with the DP&E a spontaneous combustion action plan was prepared by Mt Arthur Coal. The plan which was primarily focussed on easily accessible areas commenced the hauling and stockpiling of clay material for capping on 1 July 2015. Capping earthworks then commenced on 15 July 2015.

To validate recently capped areas and identify remaining areas of spontaneous combustion for management, Mt Arthur Coal, in conjunction with neighbouring Anglo American Drayton Coal mine, commissioned a thermal imagery scan flight. The flight was undertaken late in the evening on 27 July 2015. Results showed monthly visual inspections had accurately picked up most areas of spontaneous combustion, with a couple of exceptions in hard to access areas.

In accordance with the action plan, large scale capping of spontaneous combustion outbreaks in the Bayswater No. 2 and Drayton sublease areas was undertaken in July 2015 and due to some wet weather delays continued in early August 2015. During these months, approximately 1678 m² of land was treated for spontaneous combustion by a dedicated fleet of equipment and resources as shown in Table 43 and Figure 17. Figure 18 shows locations of spontaneous combustion at Mt Arthur Coal at start of reporting period and Figure 19 shows Locations of spontaneous combustion at Mt Arthur Coal at the end of the reporting period.

Table 43: Summary of spontaneous combustion at Mt Arthur Coal in FY16

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 2015	2,438	74	90	0	2,274
August 2015	2,274	0	1588	113	799
September 2015	799	13	0	2	788
October 2015	788	0	35	22	775
November 2015	775	2	0	8	781
December 2015	781	107	24	4	654
January 2016	654	0	0	5	659
February 2016	659	0	0	18	677
March 2016	677	0	0	10	687
April 2016	687	11	0	4	680
May 2016	680	0	0	10	690
June 2016	690	0	0	17	707
Total	**2,438**	**207**	**1737**	**213**	**707**

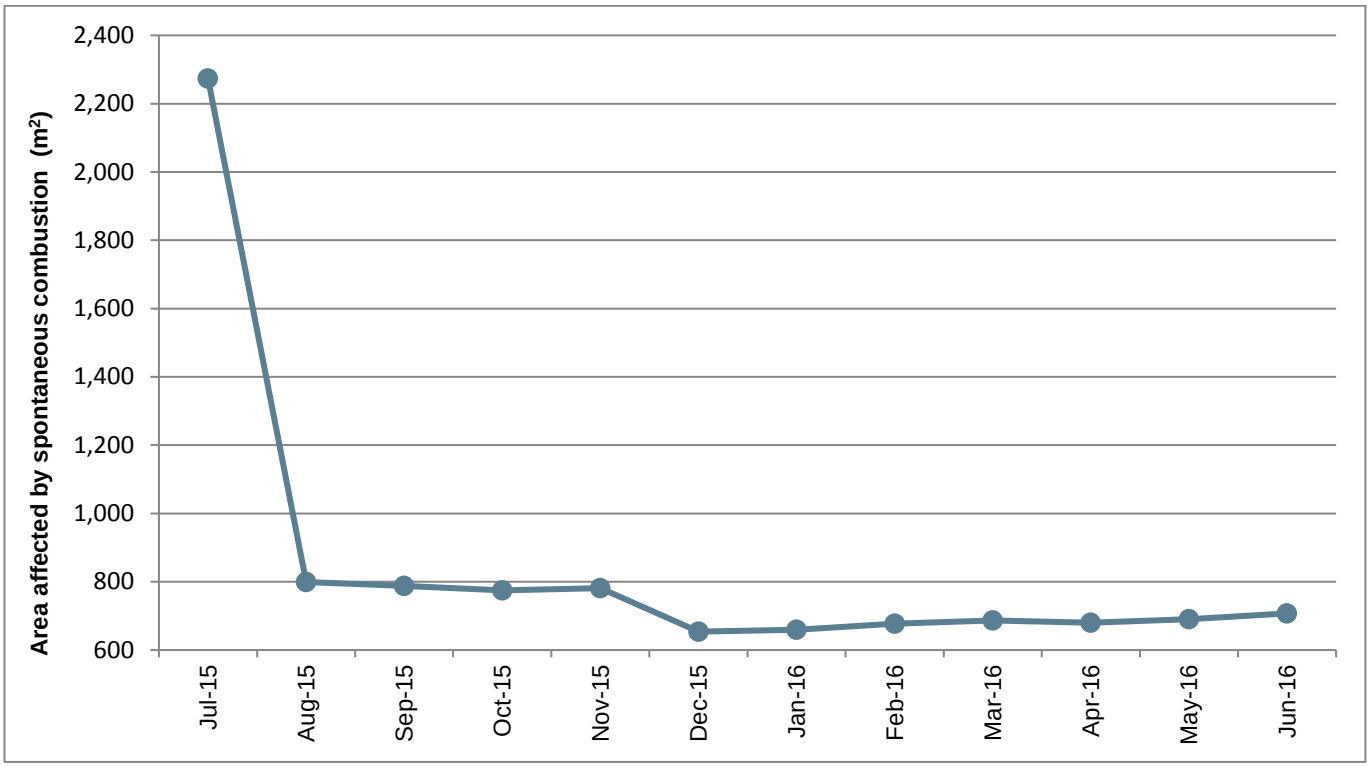


Figure 17: Area affected by spontaneous combustion at Mt Arthur Coal over past 12 months

Spontaneous Combustion-related Community Complaints

During the reporting period Mt Arthur Coal received no complaints regarding odour from spontaneous combustion. This is an improvement on FY15 where five complaints were received. Complaints regarding odour or smoke from spontaneous combustion are shown below in Table 44.

Table 44: Spontaneous combustion complaint statistics at Mt Arthur Coal

Spontaneous combustion complaints	FY16	FY15	FY14	FY13	FY12	FY11
Spontaneous combustion complaints received	0	5	0	3	1	0
Spontaneous combustion complaints received, as a percentage of total complaints	0%	4%	0%	1%	1%	0%

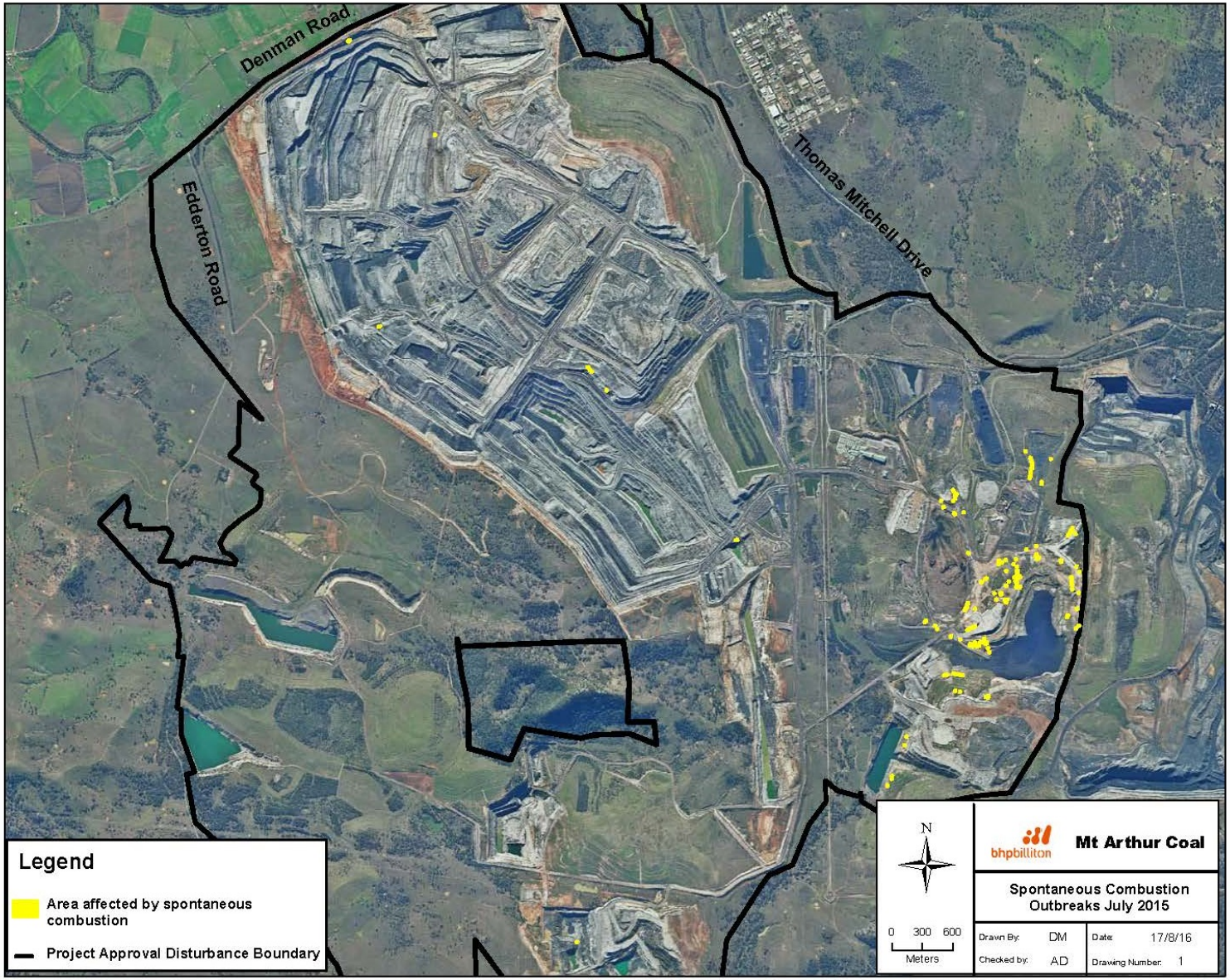


Figure 18: Locations of spontaneous combustion at Mt Arthur Coal at start of reporting period

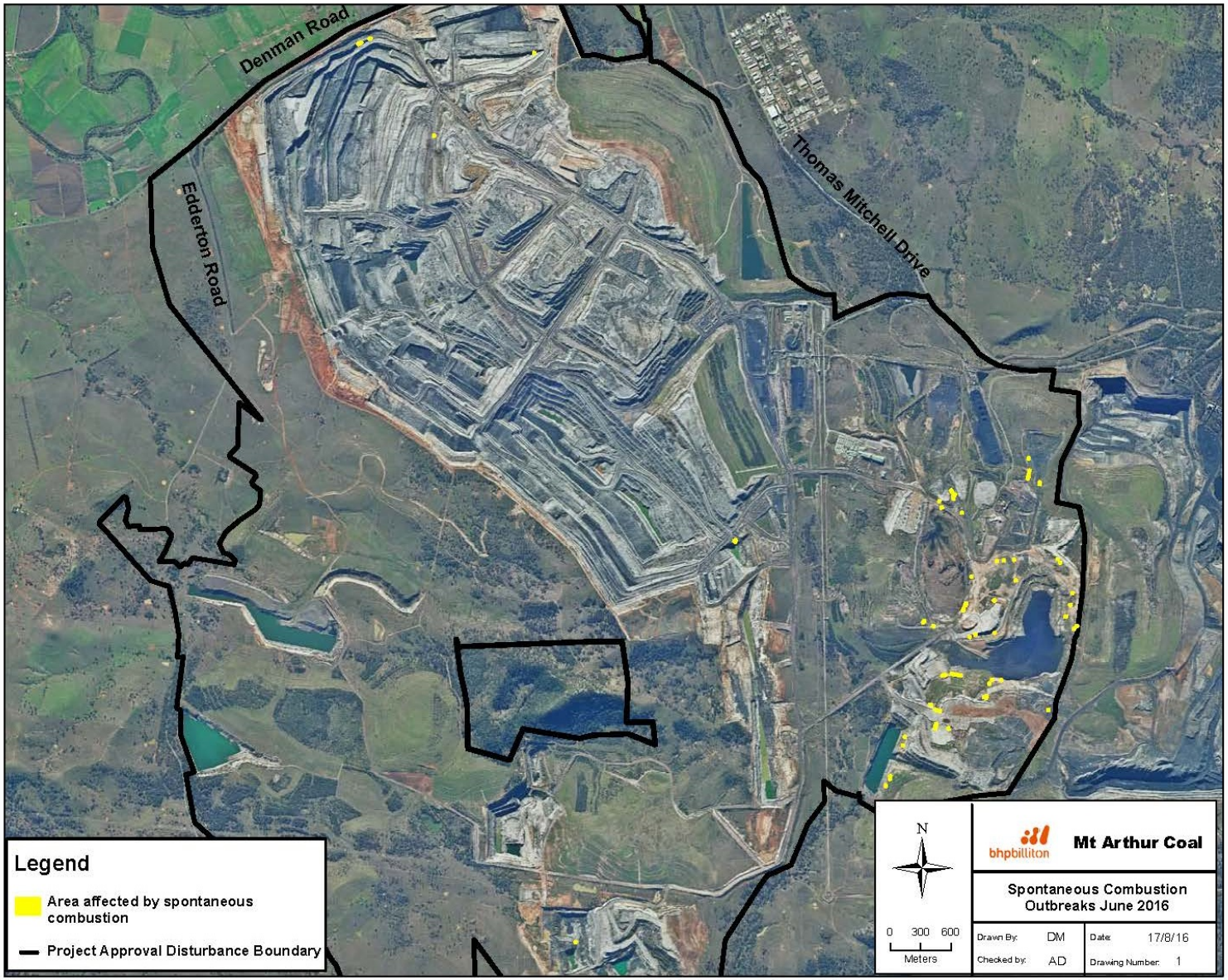


Figure 19: Locations of spontaneous combustion at Mt Arthur Coal at end of reporting period

Reportable Incidents

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

Further Improvements

Mt Arthur Coal will continue to cap readily accessible areas of spontaneous combustion during the next reporting period.

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.

Bushfire

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.

Environmental Performance

During the reporting period there was one minor grassfire at Mt Arthur Coal on 21 November 2015. The grassfire was less than one hectare in size and occurred under power lines to the east of the CHPP. The grassfire was responded to immediately by Mt Arthur Coal's emergency response team.

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.

Mt Arthur Coal liaised with the NSW Rural Fire Service regarding bushfire management at all offsite and onsite offset areas. On 13 January 2016 Mt Arthur Coal provided the NSW Rural Fire Service with mapping of access points, key access tracks, asset protection zones and on site water storages that could be used for fire suppression.

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.

Further Improvements

During the next reporting period Mt Arthur Coal will continue to manage bushfire risk in accordance with relevant procedures and will put a tank and pump in at Middle Deep Creek Offset for firefighting purposes in FY17.

Greenhouse Gas and Energy

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.

Environmental Performance

Mt Arthur Coal estimates its greenhouse gas emissions and energy use in accordance with the National Greenhouse and Energy Reporting Act 2006 (NGER).

Total emissions were 524 kt CO2-e in the FY16 reporting period, of which direct (scope 1) emissions accounted for 83 per cent, and scope 2 emissions from the use of grid-based electricity accounted for the remaining 17 per cent (Figure 20). As in the previous reporting period, Mt Arthur Coal used NGER Method 2 measurement of its open fugitive emissions, which remained static in absolute terms (39 kt CO2-e) and as a proportion of total scope 1 emissions (9%). Fugitive emissions are expected to slowly increase in future, as mining at Mount Arthur progresses into areas with higher in-situ methane contents. Fuel combustion will continue to constitute the bulk of emissions from Mt Arthur Coal. Fuel use accounted for more than 90% of scope 1 emissions and 75% of total emissions in the reporting period. Energy use was similarly dominated by diesel fuel (94%), with electricity making up the balance as displayed in Figure 20.

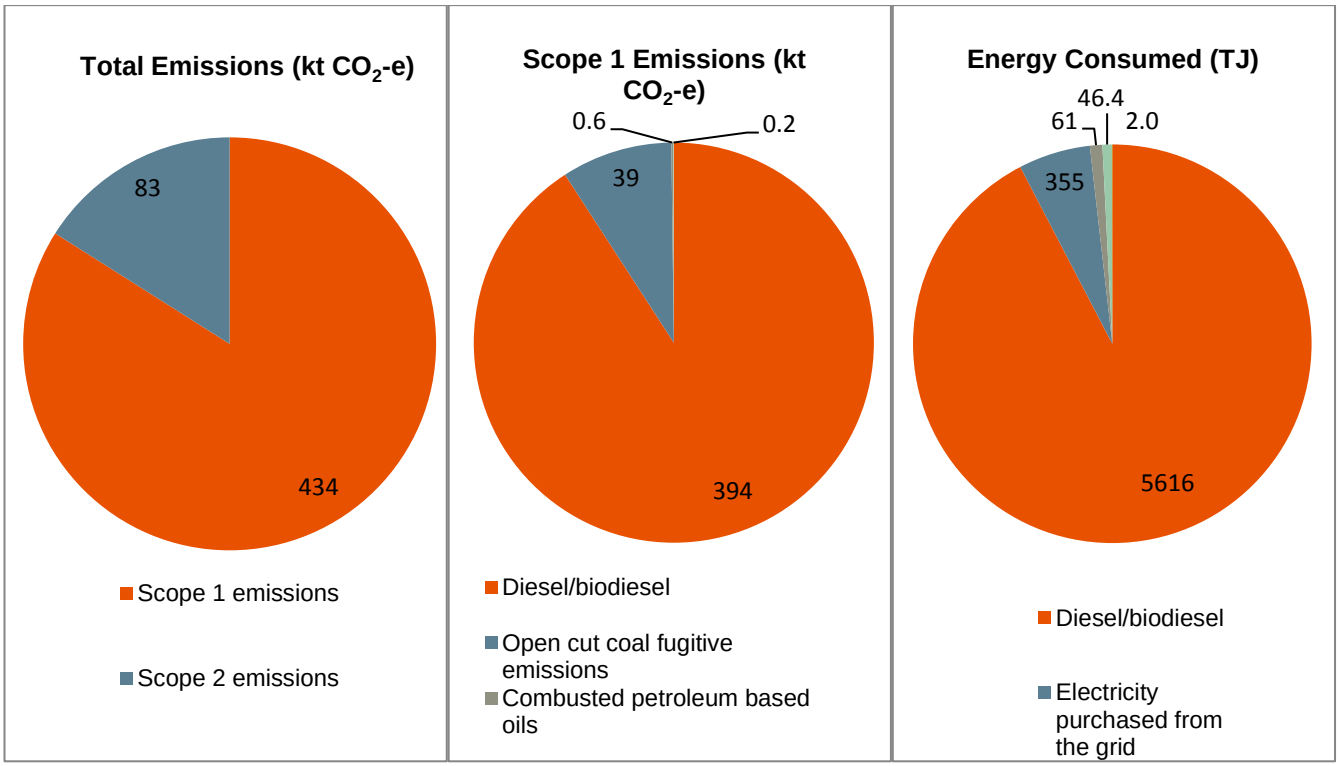


Figure 20: Composition of Mt Arthur Coal emissions and energy consumption during the reporting period

Mt Arthur Coal continues to utilise the 'super bridge' in the active mining area to reduce haulage distances in the pit, which in turn reduces diesel usage. During the reporting period this project is estimated to have contributed approximately 28 kt CO2-e of greenhouse gas emissions abatement at Mt Arthur Coal, with productivity improvements focused on decreasing diesel usage per tonne of coal produced delivering another 25 kt CO2-e of estimated abatement. Other energy efficiency activities during the reporting period brought the total estimated amount of abatement to 56 kt CO2e or about 10% of total emissions.

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.

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.

Waste Management

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.

Environmental Performance

During the reporting period Mt Arthur Coal's activities generated approximately 3,328 tonnes of waste sent off site for management, which was approximately a 13 per cent decrease on the previous financial year's result of 3,831 tonnes. Approximately 76 per cent of the total waste produced and sent off site for management was recycled, as shown in Figure 21. This is a slightly higher result when compared with results from FY15 (75 per cent).

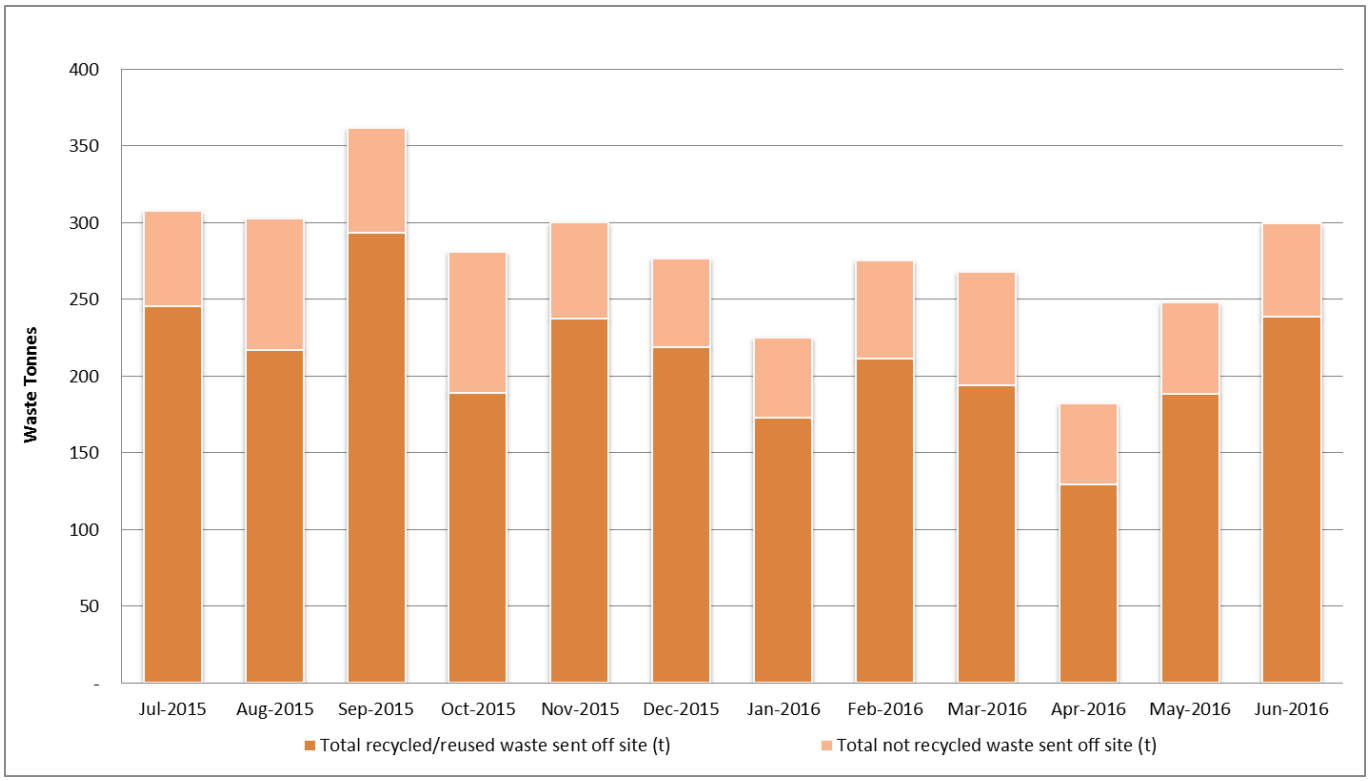


Figure 21: Waste disposal from Mt Arthur Coal

During this reporting period all effluent continued to be treated onsite, rather than sent off site for treatment. The breakdown and largest four contributors to total waste sent off site for management are shown in Figure 22 for FY16, FY15 and FY14. Waste oil has remained the largest contributor to waste sent off site across all three years.

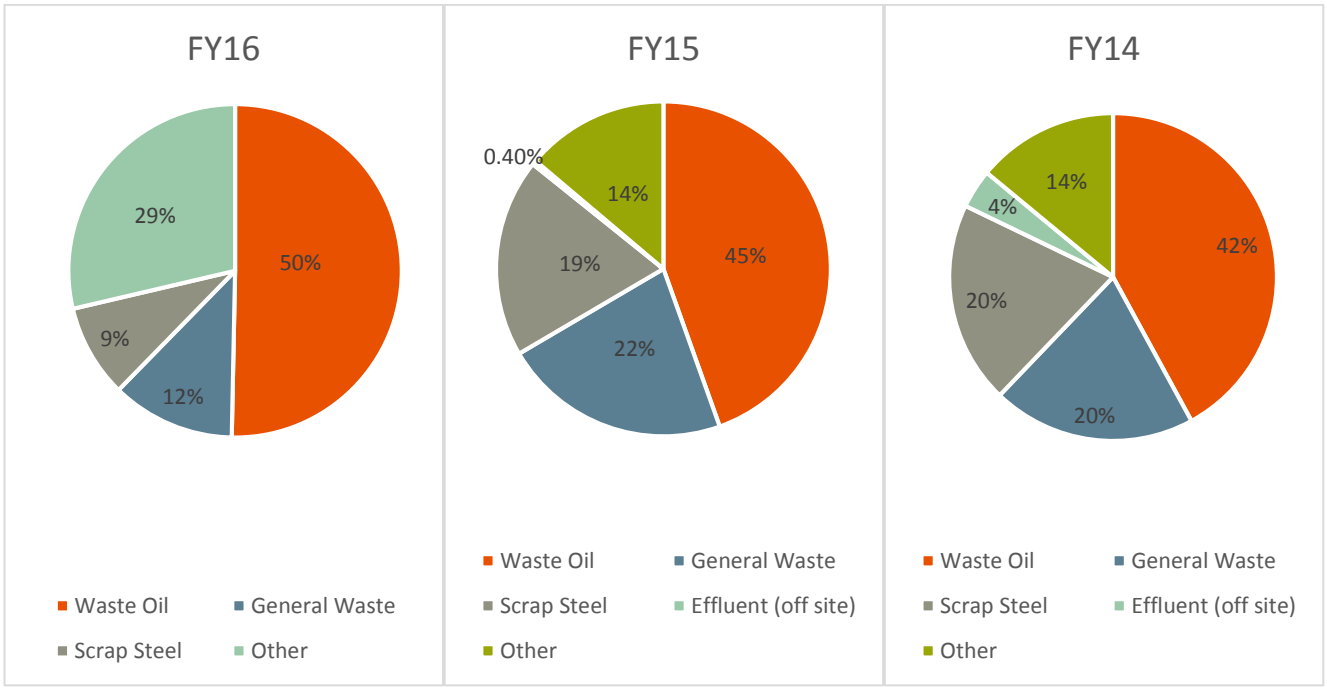


Figure 22: Breakdown of total waste sent off site for management showing largest contributors

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.

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.

Public Safety

Environmental Management and Performance

During the reporting period Mt Arthur Coal maintained a security fence around much of the perimeter of its site to ensure no unauthorised access to mining areas. A number of boom gates also exist to restrict unauthorised or unintentional access to the active mining and infrastructure areas.

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.

Further Improvements

Mt Arthur Coal will continue to maintain the perimeter security fence and boom gates at identified entry points to active mining and infrastructure areas during the next reporting period.

Meteorological Data

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.

A secondary statutory real-time meteorological station, located off site to the north west of the mine at Wellbrook (WS10), 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.

During the reporting period Mt Arthur Coal installed a meteorological station (WS11) between the northern part of the operations and Denman Road which is used for internal management purposes, in particular for blast management in this area. 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 in Figure 5.

Environmental Performance

A summary of meteorological data recorded at WS09 and WS10 during the reporting period is provided in Table 45 and Figure 22, along with a comparison to monitoring results from previous financial years. 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:

- Power outage at WS10 between 23 January 2016 and 4 February 2016 caused by a lighting strike. The monitor was partially repaired on 4 February 2016.

- No wind data at WS10 for the month of February 2016 until the wind sensor was replaced. The wind sensor was damaged by lightning strike in January 2016

- No solar radiation or sigma theta data at WS10 captured between 4 February 2016 and 1 May 2016. Sensors were damaged by lightning strike in January 2016. Availability of replacement parts by supplier caused delay for repair.

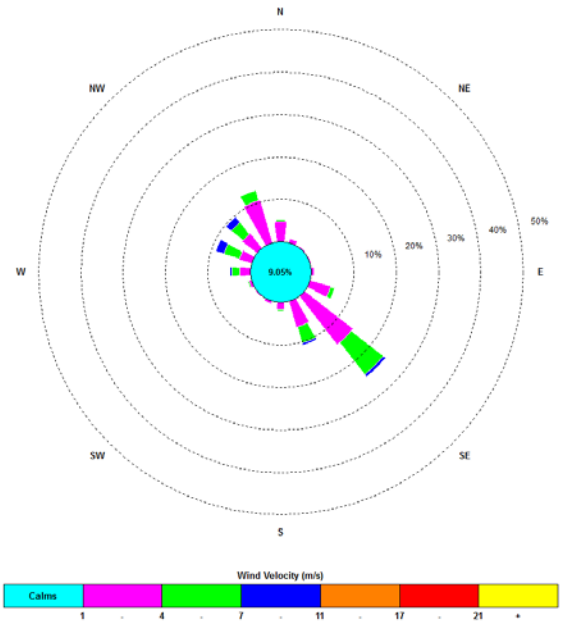
- No data available from WS10 between 23 April 2016 and 26 April 2016 due to a system failure of the data logger which required replacement.

Table 45: Summary of meteorological results from WS09 and WS10

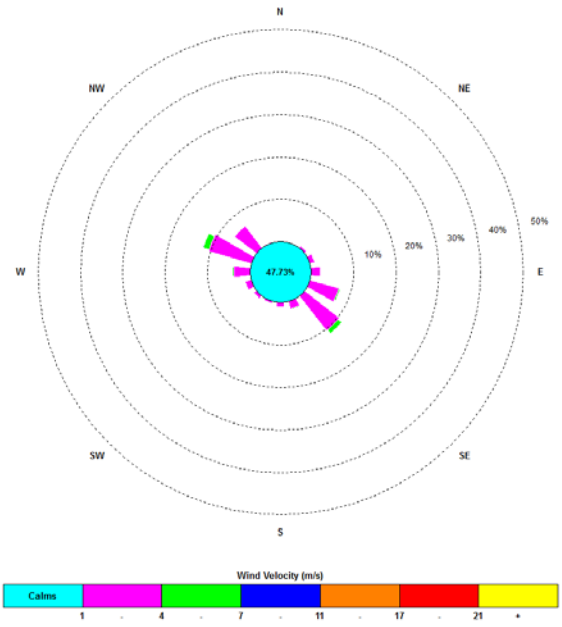
Parameter	Units	WS09					WS10		
		FY16	FY15	FY14	FY13	FY12	FY16	FY15	FY14*
Total rainfall	mm	578.4	207.4^	638.2	542.6	783.2	507.0	555.8	359.2
Maximum monthly rainfall	mm	126.2 (Jan 2016)	154.0 ^ (Apr 2015)	194.0 (Nov 2013)	135.4 (Jan 2013)	162.2 (Nov 2011)	93.4 (Jan 2016)	131.6 (Apr 2015)	212.2 (Nov 2013)
Minimum monthly rainfall	mm	5.4 (Feb 2016)	14.0 ^ (Jun 2015)	5.0 (Aug 2013)	4.2 (Oct 2012)	10.8 (Jul 2011)	2.4 (Feb 2016)	15.2 (Aug 2015)	0.0 (Mar and Apr 2014)
Maximum monthly temp.	°C	38.5 (Feb 2016)	37.7 (Oct 2014)	38.2 (Dec 2013)	42.6 (Jan 2013)	34.6 (Jan 2012)	42.4 (Feb 2016)	45.7 (Dec 2014)	38.7 (Jan 2014)
Minimum monthly temp.	°C	-0.7 (June 2016)	0.7 (Jun 2015)	1.0 (Jul 2013)	0.0 (Jul 2012)	0.9 (Jul 2011)	-4.1 (June 2016)	-5.5 (Aug 2014)	-2.8 (Aug 2013)

* Commissioned on 22 August 2013, hence full FY14 dataset is not available.
^ Valid rainfall data only available from 8/3/15 to 30/6/15.

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 at WS09 and west north-west at WS10, as shown in Figure 23.



WS09



WS10

Figure 23: Mt Arthur Coal annual wind rose for FY16 from WS09 and WS10

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.

Further Improvements

Mt Arthur Coal will continue to record and utilise meteorological data from its two statutory monitors during the next reporting period.

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.

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 newspapers and at www.bhpbilliton.com.

When a complaint is received, it is investigated, and if appropriate, action is taken to address the issue. When requested, the caller is advised of the investigation outcomes and actions taken to address complaints. 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 modification project approval requirements, Mt Arthur Coal also posts a monthly complaints summary at www.bhpbilliton.com.

During the reporting period, Mt Arthur Coal received 130 complaints from community members and near neighbours. Two of these complaints were made 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 24 and a complete register of complaints is presented in Appendix 7 - Community Complaints Register.

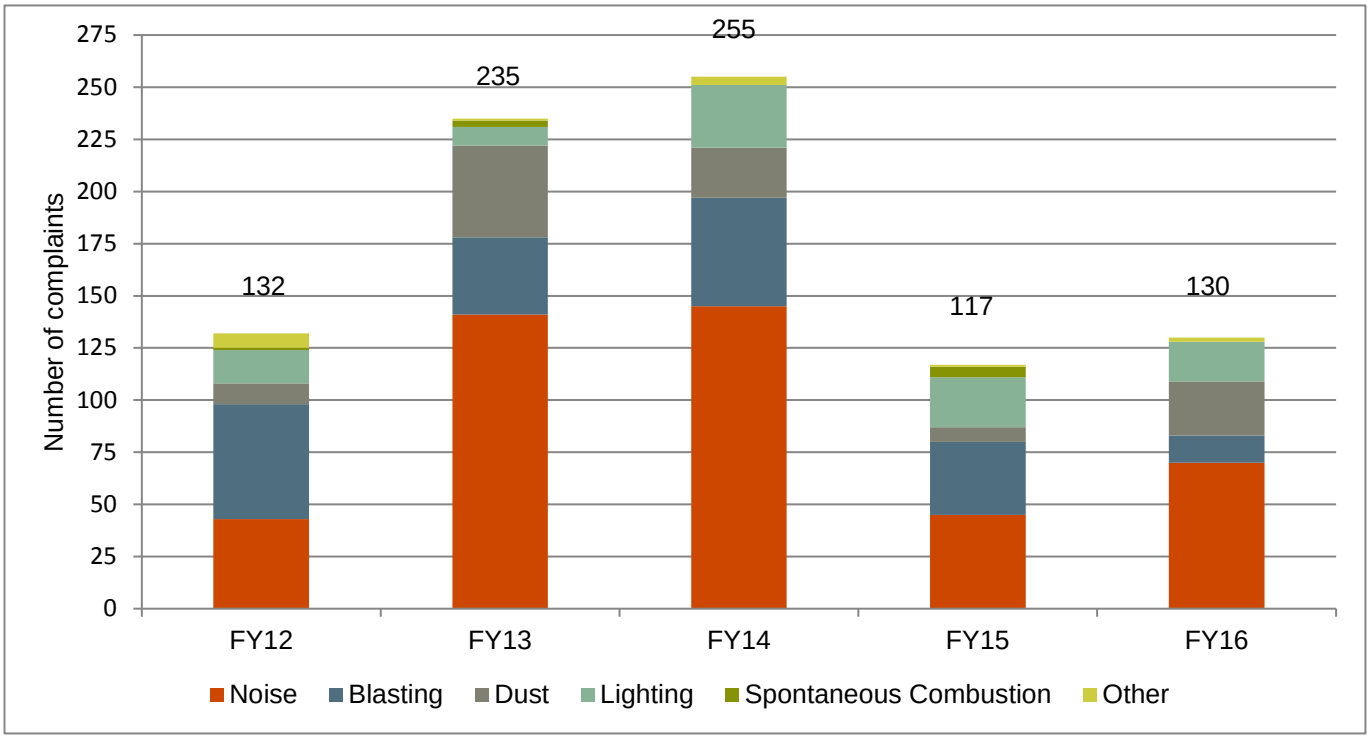


Figure 24: Comparison of complaints received during current and previous financial years

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.

Community Liaison

Mt Arthur Coal has a 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.

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, Community Consultative Committee (CCC) meeting minutes and documents, community complaint records, environmental monitoring information, environmental audits, environmental management plans and AEMRs.

To inform the community about its operations, projects and community investment activities, Mt Arthur Coal also 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 the Company's community newsletters, continued to operate during the reporting period to allow the community to contact the operation directly to ask questions or raise concerns about the mine's activities.

Community Consultative Committee

During the reporting period, Mt Arthur Coal coordinated and participated in four CCC meetings as shown in Table 44.

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;
- work undertaken by the Upper Hunter Mining Dialogue.

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 spur line. The dates of these meetings are provided in Table 46. It is anticipated that Anglo American's Drayton Coal will cease railing coal in FY17 and therefore make the requirement of a Joint CCC redundant.

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 Mt Arthur Coal. All CCC meeting minutes and documents are made available on the BHP Billiton website once approved by the Chair and the committee.

Table 46: Mt Arthur Coal CCC meetings

Mt Arthur Coal CCC
16 September 2015
16 December 2016
10 March 2016
8 June 2016
Mt Arthur Coal and Drayton Coal Joint CCC
16 September 2015 (coordinated by Mt Arthur Coal)
8 June 2016 (coordinated by Drayton Coal)

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 environmental management. During the reporting period, Mt Arthur Coal conducted site visits by stakeholders including university students.

Community Investment

Mt Arthur Coal aims to invest 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;
- 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 47 lists the organisations, projects and events supported by Mt Arthur Coal during the reporting period.

Table 47: Community funding recipients for FY16

Organisation	Project or activity
Graham (Polly) Farmer Foundation*	Muswellbrook Partnerships for Success
Hunter Life Education*	School health education program
Muswellbrook South Public School*	School health education program
Upper Hunter Community Services Inc.*	Community Capacity Building Project
Muswellbrook Shire Council*	Community Capacity Building Project
Muswellbrook Race Club	2015 Gold Sponsors Club member
Aberdeen Highland Games	2015 Aberdeen Highland Games
Upper Hunter Wine and Food Affair	2016 Upper Hunter Wine and Food Affair
Muswellbrook and Upper Hunter Eisteddfod	2016 Muswellbrook and Upper Hunter Eisteddfods
Muswellbrook Chamber of Commerce and Industry Inc.	2015 business awards
Singleton Chamber of Commerce and Industry Inc.	2015 business awards
2nd Muswellbrook Scouts	Management of Mt Arthur Coal marquees
Northern Agricultural Association	2015 Singleton Show
Wild Life Aid	2015 Donation
Singleton Chamber of Commerce and Industry Inc.	2016 Hunter Coal Festival

* Mt Arthur Coal investment more than $60,000.

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 redevelopment of Campbell's Corner in Muswellbrook.

Employee Participation

Mt Arthur Coal employees are encouraged to be active members of their community 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 48.

Table 48: Events supported and attended by Mt Arthur Coal employees in FY16

Event
Muswellbrook PCYC Christmas Appeal
Muswellbrook and Upper Hunter Eisteddfod
Aberdeen Highland Games
Aberdeen Highland Games Ceilidh
Hunter Coal Festival
Upper Hunter Wine and Food Affair
Muswellbrook Cup Day at Muswellbrook Race Club
Muswellbrook Chamber of Commerce Business Awards and monthly breakfast meetings
Singleton Chamber of Commerce Business Awards and lunch meetings
Picnic in the Park, organised by Upper Hunter Community Services
Harmony Day
Annual Stakeholder Appreciation Event

BHP Billiton encourages employees who are active citizens in their communities by supporting causes closest to their heart through the Matched Giving Program. Whether through financial donations or giving their time, the Matched Giving Program recognises the contribution of our employees and matches their efforts. Funded by BHP Billiton Sustainable Communities, the program doubles employees' personal donations, making it one of the most generous workplace giving programs. In FY16, Mt Arthur Coal employee contributions benefited more than 23 not-for-profit organisations, such as the Police Citizens Youth Club (PCYC) and Westpac Rescue Helicopter Service Muswellbrook, which received approximately $282,678 as part of the program.

Rehabilitation

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 accordance with the:

- Mt Arthur Coal's MOP;
- Rehabilitation Strategy MAC-ENC-MTP-047;
- Biodiversity Management Plan MAC-ENC-MTP-050; and the
- 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. Investigation into more natural landform design (geofluvial) has progressed in the reporting period. The geofluvial design uses natural features in the landscape to shape the landform and results in erosion resistant drainage lines.

Drainage lines report to sediment dams, which allow for the settling of suspended solids. Design and construction of the sediment dams is consistent with the 'Blue Book' (Managing Urban Stormwater: Soils & Construction, Volume 1, 4th Edition, 2004 and Volume 2E Mines and Quarries, 2008). Following bulk reshaping and drainage construction, the overburden surface is subject to a final trim and deep ripping in preparation for topsoil placement.

Topsoil 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 as well as ameliorant requirements; and
- Felling and mulching trees in situ on disturbance areas to increase organic content within the topsoil that was used directly on rehabilitation areas.

Additional measures generally undertaken when topsoil stockpiling include restricting stockpile height to generally three 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 and establishing cover crops and spraying topsoil stockpiles to manage weeds.

Topsoil was placed and spread to an approximate depth of 200 to 300 millimetres on rehabilitation areas. 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.

During the reporting period Mt Arthur Coal completed 56.8 hectares of rehabilitation across five sites as listed in Table 49. This is in accordance with the total rehabilitation proposed in the current MOP for FY16, which was 51.3 hectares. 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.

Table 49: Mt Arthur Coal rehabilitation claimed for FY16

Location	FY16 MOP commitment (hectares)	FY16 rehabilitated area (hectares)
VD1	20.3	11.8
Drayton Void	20	13.5
Saddlers East	0	10.5
Saddlers South	11	14.8
MacDonalds	0	6.2
Total	51.3	56.8

The 56.8 hectares of rehabilitation indicated in Table 49 includes 32.5 hectares of grazing pasture rehabilitation (land capability class six), 12.5 hectares of native woodland rehabilitation, and 11.8 hectares of box-gum woodland rehabilitation. The methodology for revegetation of rehabilitated areas was selected to support the designated post-mining land use, as presented in the MOP.

Within this reporting period all rehabilitation at Saddlers East, MacDonalds and Drayton Void, as well as a portion of Saddlers South (2.3 hectares) was sown to pasture. All areas sown to pasture, except for MacDonalds rehabilitation, were broadcast sown in a single pass using a tractor-mounted seeder box. It was determined that it was safer, more efficient and much more effective to hand broadcast seed for the MacDonalds rehabilitation area. The pasture seed mix used by Mt Arthur Coal during the reporting period is shown in Table 50. In addition, fertiliser at a rate of 100 kilograms per hectare was added to the pasture seed mix sown in FY16.

Table 50: 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) or Oats (winter)	10
Total	54

During this reporting period, the majority of Saddlers South rehabilitation was sown to native woodland (12.5 hectares), while all of VD1 rehabilitation (11.8 hectares) was sown to box-gum woodland. Woodland rehabilitation was either broadcast sown by a tractor-mounted seeder box (Saddlers South rehabilitation) or by hand (VD1 Rehabilitation) with a seed mix targeting the establishment of *Upper Hunter Box-Ironbark Woodland* vegetation community (which is the same community as the *Central Hunter Box/Ironbark Woodland*).

Both woodland seed mixes consist of appropriate native tree, shrub and grass species. The native woodland seed mix used for Saddlers South is shown in Table 51 and box-gum woodland seed mix used for VD1 rehabilitation is shown in Table 52. The seed mixes also include 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, particularly for the native grass species, the native woodland seed mix was generally broadcast sown by tractor in two passes.

Both woodland seed mixes and rates, as specified in the MOP, were varied in consultation with an independent specialist. The revised species mix, confirmed as belonging to the *Upper Hunter Box-Ironbark Woodland* vegetation community required, includes additional species to promote a more robust and resilient vegetation community as well as lower seed rates for some species considered to be too high in the MOP given the number of potential germinates for each species.

To limit ant predation all woodland seed was chemically treated prior to dispersal. Seed inoculant was also added to woodland seed mixes, which comprises up to six species of both *ecto* and *endo mycorrhiza, trichoderma, bacillus* and beneficial bacteria to ensure maximum plant growth is achieved in the shortest time possible. These additions also start the soil nutrient cycling process much earlier, leading to a more robust vegetation community over time. No fertiliser was used on any woodland rehabilitation as past experience has shown that fertiliser tends to promote invasive species rather than natives.

Within Saddlers South native woodland rehabilitation and VD1 rehabilitation drainage infrastructure was sown with the pasture seed mix, as specified in the MOP, to aid in erosional control.

Table 51: Mt Arthur Coal native woodland seed mix used on Saddlers South rehabilitation

Species	Scientific name	Seed mix (kg/ha)
Narrow-leaved ironbark	Eucalyptus crebra	0.2
Spotted gum	Corymbia maculata	0.3
Grey box	Eucalyptus moluccana	0.3
Forest red gum	Eucalyptus tereticornis	0.1
Black wattle	Acacia salicina	0.3
Fan wattle	Acacia amblygona	0.2
Silver-Stemmed wattle	Acacia parvipinnula	0.2
Hickory wattle	Acacia falcata	0.2
Australian indigo	Indigofera australis	0.1
Sticky hop-bush	Dodonaea viscosa	0.2
Bull oak	Allocasuarina leuhmanni	0.2
Tick bush	Kunzea ambigua	0.1
Native blackthorn	Bursaria spinosa	0.1
Mixed native grasses:		2.0
Wiregrasses	Aristida species (includes A. ramosa, A. personata, A. vagans)	
Wallaby grasses	Austrodanthonia species (includes A. setacea, A. fulva, A. caespitosa)	
Rough spear grass	Austrostipa scabra	

Species	Scientific name	Seed mix (kg/ha)
Slender bamboo grass	Austrostipa verticillata	
Pitted bluegrass	Bothriochloa decipiens	
Red grass	Bothriochloa macra	
Scented top grass	Capillipedium spicigerum	
Windmill grass	Chloris truncata	
Yellow buttons	Chrysocephalum apiculatum	
Barbed wire grass	Cymbopogon refractus	
Queensland bluegrass	Dichanthium sericeum	
-	Digitaria species	
Hairy panic	Panicum effusum	
Spreading panic	Paspalidium distans	
Slender rat's tail grass	Sporobolus creber	
Couch	Cynodon dactylon	1.0
Oats		5.0
Jap Millet		2.0
Total	-	12.5

Table 52: Mt Arthur Coal box-gum woodland seed mix used on VD1 rehabilitation

Species	Scientific name	Seed mix (kg/ha)
Narrow-leaved ironbark	Eucalyptus crebra	0.2
White box	Eucalyptus albens	0.3
Grey box	Eucalyptus moluccana	0.3
Blakely's Red Gum	Eucalyptus blakelyi	0.3
Kurrajong	Brachychiton populneus	0.2
Showy wattle	Acacia decora	0.3
Kangaroo thorn	Acacia paradoxa	0.3
Lightwood	Acacia implexa	0.2
Hickory wattle	Acacia falcata	0.2
Sticky hop-bush	Dodonaea viscosa	0.3

Species	Scientific name	Seed mix (kg/ha)
Black she-oak	Allocasuarina littoralis	0.2
Native blackthorn	Bursaria spinosa	0.1
Mixed native grasses:		2.0
Wiregrasses	Aristida species (includes A. ramosa, A. personata, A. vagans)	
Wallaby grasses	Austrodanthonia species (includes A. setacea, A. fulva, A. caespitosa)	
Rough spear grass	Austrostipa scabra	
Slender bamboo grass	Austrostipa verticillata	
Pitted bluegrass	Bothriochloa decipiens	
Red grass	Bothriochloa macra	
Scented top grass	Capillipedium spicigerum	
Windmill grass	Chloris truncata	
Yellow buttons	Chrysocephalum apiculatum	
Barbed wire grass	Cymbopogon refractus	
Queensland bluegrass	Dichanthium sericeum	
-	Digitaria sp.	
Hairy panic	Panicum effusum	
Spreading panic	Paspalidium distans	
Slender rat's tail grass	Sporobolus creber	
Couch	Cynodon dactylon	1.0
Oats		5.0
Jap Millet		2.0
Total	-	13.15

During the reporting period Mt Arthur Coal collected approximately 11.1 kilograms of seed from August 2015 to April 2016. Seed was collected from remnant native vegetation located on Mt Arthur Coal owned land in the vicinity of the operation within conservation and offset areas. A further 1.6 kilograms of seed was collected from remnant native vegetation at the Middle Deep Creek Offset Area during November and December 2015 and March 2016. This seed is used for rehabilitation of disturbed areas and to develop tubestock for planting in identified areas of the mine site and within conservation and offset areas.

Under the modification project approval, Mt Arthur Coal has committed to rehabilitate 500 hectares of White Box – Yellow Box – Blakely's Red Gum Woodland (referred to as Box Gum Woodland) to provide large areas of habitat adjacent to the conservation and offset areas and enable connectivity for fauna and flora throughout the woodland rehabilitation corridor. As part of this commitment, approximately 4,000 tubestock of Box Gum Woodland shrubs and trees were planted in a 10 hectare portion of the VD1 rehabilitation area in June 2016. This tubestock was planted in

rehabilitation undertaken in 2004, 2005 and 2006. An additional 4,000 tubestock over 10 hectares will be planted during the next reporting period to continue to modify and enhance existing VD1 rehabilitation. In addition to the VD1 tubestock planted, in accordance with the revised Biodiversity Management Plan, approximately:

- 12,000 tubestock were planted over 30 hectares at Thomas Mitchell Drive Offsite Offset Area; and
- 12,000 tubestock were planted over 30 hectares at the Middle Deep Creek/Oakvale Offset Area;

Note: Wherever possible tubestock used were developed using seed collected from the conservation and offset areas.

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

In Appendix 8 - Rehabilitation Plan 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 53.

A grazing trial was carried out in the reporting period. Considerable interest was shown by media following presentation of interim results at the 2016 Mine Rehabilitation conference held in Singleton in April. This was followed by a similar presentation at a national mine rehabilitation workshop in Adelaide in May. Final results from the first batches of steers at both Mt Arthur and Hunter Valley Operations showed an advantage in weight, fat cover and value to steers grazing the rehabilitated mine pastures. This is consistent with the amount of pasture biomass available at each site during the study period.

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. A summary of these activities can be found in Table 54.

The aerial seeding program at Mt Arthur Coal also continued during the reporting period with approximately 192 hectares of exposed overburden not yet ready for final rehabilitation seeded with a season appropriate seed mix, as discussed in Section 3.1.

Table 53: Mt Arthur Coal rehabilitation summary

Domain	Area affected or rehabilitated (hectares)		
	Reporting period (1 July 2015 - 30 June 2016)	**Previous reporting period (1 July 2014 - 30 June 2015)**	**Next reporting period (estimated) (1 July 2016 - 30 June 2017)**
A: MINE LEASE AREA			
A1 Mine lease area	8,485	8,475	8,532
B: DISTURBED AREAS			
B1 Infrastructure area	452	445	452
B2 Active mining areas	1,066	1,070	1105
B3 Unshaped waste emplacement	1,567	1,556	1678
B4 Tailings storage facility	111	103	126
B5 Shaped overburden emplacement	1	61	0
Other disturbed land	38^	19^	78^
All disturbed areas	3,236	3,253	3439
C: REHABILITATION PROGRESS			
C1 Total Rehabilitated area – except for maintenance	1,101	1,041	1,142
D: REHABILITATION ON SLOPES			
D1 10 to 18 degrees	24.5	22.9	24.5
D2 Greater than 18 degrees	0	0	0
E: SURFACE OF REHABILITATED LAND			
E1 Pasture and grasses	478	445	497
E2 Native forests or ecosystems	620	596	633
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 erection pad.

Topsoiling testing prior to use on FY16 rehabilitation indicated that ameliorants (i.e. gypsum or lime) were required only for Saddlers South rehabilitation. Soil testing indicated that 80 tonnes of gypsum was required to be spread over the 14.8 hectare area. In addition to this, an Organic Growth Medium (OGM) was incorporated into a portion of topsoil at the Drayton Void rehabilitation (10 hectares) as a trial to determine its effectiveness for future use. Further information on topsoil and maintenance activities is presented in Table 54.

Table 54: Maintenance activities on rehabilitated land

Nature of treatment	Area affected or rehabilitated hectares			Comment, control strategies or treatment
	Reporting period (1 July 2015 - 30 June 2016)	Previous reporting period (1 July 2014 - 30 June 2015)	Next reporting period (estimated) (1 July 2016 - 30 June 2017)	
Additional erosion control works	2.5	0	To be determined	A drop structure was constructed on Saddlers East FY15 rehabilitation during the reporting period (approximately 1 hectare). Approximately 12 days were dedicated to maintenance of contour drains within rehabilitation areas during the reporting period (approximately 1.5 hectares). Additional erosion control work for the next reporting period will be determined by regular on-site inspections of rehabilitation and scheduled in as required.
Re-topsoiling	0	0	0	-
Soil treatment	24.8	0	0	Fertiliser was added to all pasture seed mix sown at a rate of 100 kilograms per hectare. The requirement for topsoil to be treated during the next reporting period will be determined by chemical testing prior to use.
Reseeding and replanting*	10 undertaken on rehabilitated land and 60 undertaken on offset areas	10 undertaken on rehabilitated land	10	4,000 tubestock were planted on VD1 rehabilitation during the reporting period. In addition to this, approximately 24,000 tubestock were planted on offset areas. Tubestock planting during the next reporting period will occur on a further 10 hectares of VD1 existing rehabilitation.
Weed Control*	390	920	To be determined	Over 390 ha of land at the Mt Arthur Coal site, including buffer land and conservation and offset areas was treated for weeds, primarily noxious weeds, during the reporting period, as discussed in Section 3.7. Works in the next reporting period will be determined based on the annual weed survey to be undertaken early in the next reporting period.
Feral animal control*	4,515.5	4,280	4,515.5	Wild dog and fox baiting was undertaken across the Mt Arthur Coal site, including buffer land and conservation and offset areas, as discussed in Section 3.7. The Oakvale Offset Area (235.5 ha) was included in the formal baiting program for the first time during the reporting period.

* Areas quoted for these treatments include the conservation and offset areas as well as buffer land around the operation

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 55 outlines a progress summary of Mt Arthur Coal's performance against targets set for the FY15 period.

Mt Arthur Coal has established the following targets for the next reporting period, FY17:

- continue the rehabilitation grazing study project;
- employ at least eight first-year apprentices from the local community;
- continue investigations to determine the amount of water from the tailings storage facility lost to seepage that is being recovered at the Drayton Void;
- Submission of revised Rehabilitation Strategy with Geofluvial landform design

Table 55: Mt Arthur Coal's performance against targets for FY16

Target	Status	Performance
Investigate and, where feasible, implement projects to mitigate, substitute, reduce or eliminate energy consumption and greenhouse gas emissions.	Ongoing	Mt Arthur Coal continues to investigate greenhouse gas emissions and energy consumption reductions
Investigate and, where feasible, implement projects to reduce water consumption.	Ongoing	Projects to reduce water consumption in the reporting period include: • completed the removal of the main dam as the focal point of Mt Arthur Coal's site water network which has provided a flexible water network system that can transfer between most site storages for maximum practical capacity and water security; • completed upgrades to the integrated reticulation network to enable efficient management of water resources across the site; • the continued use of mechanical seals on the tailings disposal pumps to reduce leakage and wastage of water at the CHPP; • ongoing reuse of tailings return water collected via interception of seepage at Drayton Void water storage and utilised for dust suppression; and • the continuation of a CHPP thickener optimisation project to decrease water usage at the CHPP by reducing the need to manually flush the system with water.
Continue the rehabilitation grazing study project	Ongoing	The grazing project is providing good results and will continue into the next reporting period
Employ at least eight first-year apprentices from the local community	Complete	Completed during the reporting period
Undertake an audit of rehabilitated areas and the Denman Road visual bund, to the satisfaction of DRE	Due FY17	The Audit will be completed in FY 17
Continue investigations to determine the amount of water from the tailings storage facility lost to seepage that is being recovered at the Drayton Void	Ongoing	This project to determine the positive water balance is still underway and further update will be provided in the next AEMR
Complete works for the ground water monitoring network upgrade	Complete	The groundwater network has been upgraded and new trigger values will be calculated when sufficient data is available.
Assess and plan for tree screening along sections of the Edderton Road boundary and implement the plan to schedule	Ongoing	Further assessment will be completed in FY17 depending on the mine plan progression in that area

Target	Status	Performance
Revise the Spontaneous Combustion Control Program to address prioritisation of capping works when there is the potential for smoke or odour to leave the premise boundary	Complete	Substantial improvement in Spontaneous combustion was made in the reporting period
Continue to trial hydromulch with dye product on exposed overburden emplacement areas with the aim to improve dust control and visual amenity	Ongoing	Hydromulch has been successful and is expected to continue to be used in appropriate areas
Revise the air quality management plan and blast management plan to reflect the requirements of the modification project approval	FY17	Will be updated and submitted for approval in FY17
Carry out a joint thermal imagery scan flight with Anglo American Drayton Coal mine over spontaneous combustion affected areas of the two operations	Complete	Aerial image aligned with known Spontaneous combustion areas in monthly monitoring

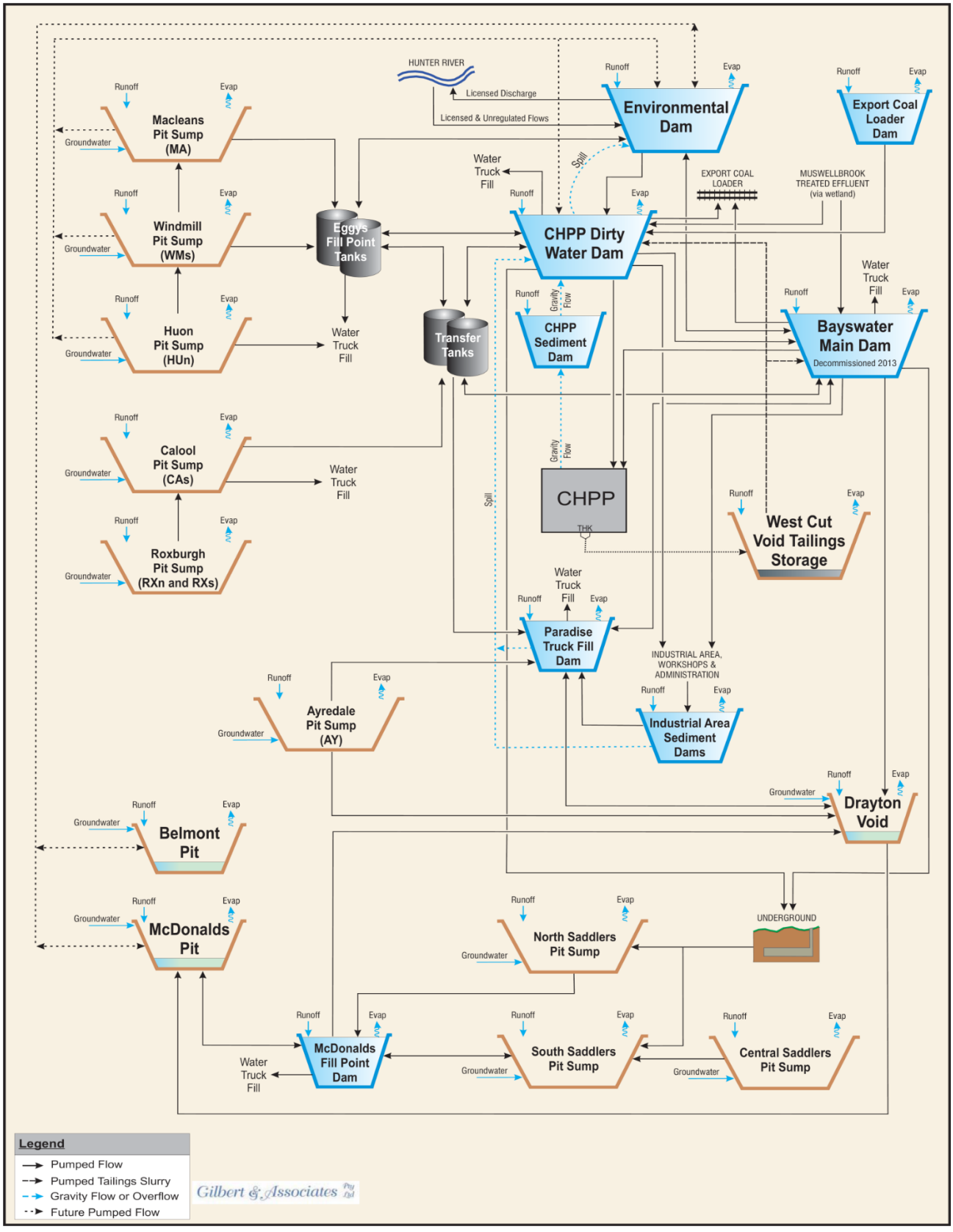
Acronyms

A	Exploration Licence Authorisation
AEMR	Annual Environmental Management Report
AHIMS	Aboriginal Heritage Information Management System
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)
DotE	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
EL	Exploration Licence
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence
EMS	Environmental Management System
ESCP	Erosion and Sediment Control Plan
FY	Financial Year
GIS	Geographical Information Systems

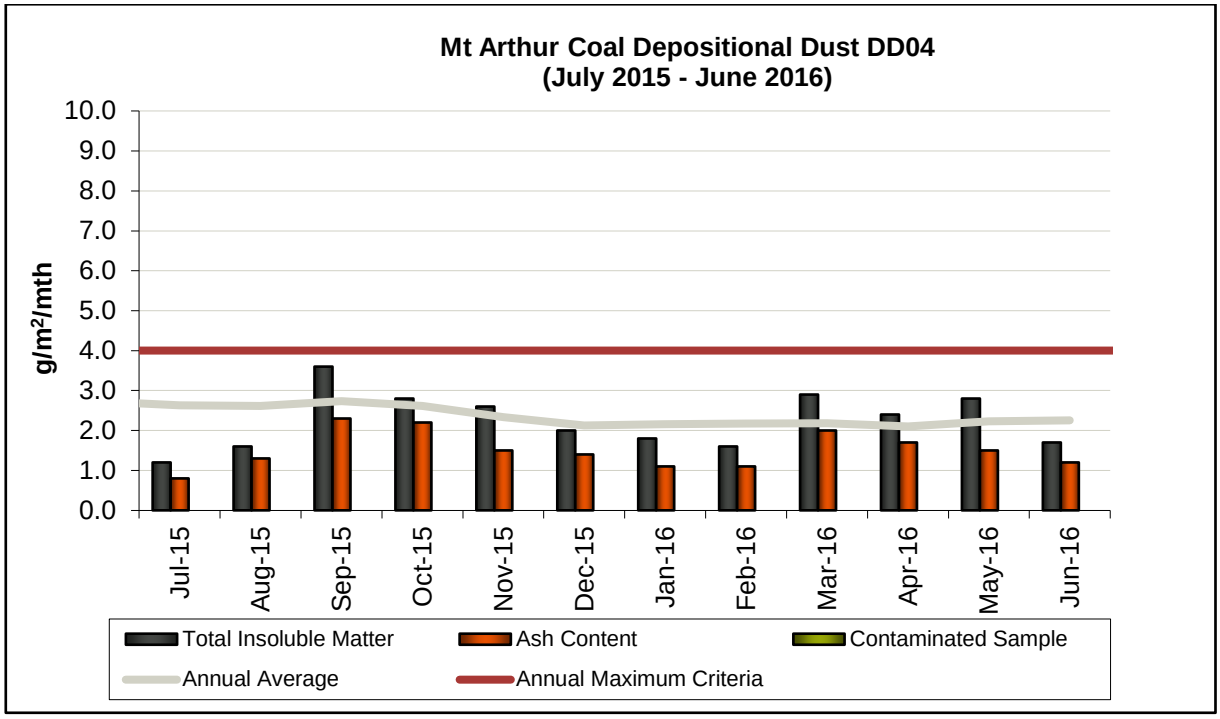
GPA	Ground and Pasture Assessment
ha	Hectares
HRSTS	Hunter River Salinity Trading Scheme
HVAS	High Volume Air Sampler
INP	Industrial Noise Policy
ISO	International Standards Organisation
LED	Light-emitting Diode
LGA	Local Government Area
$L_{Aeq\ (15min)}$	A-weighted average noise energy over a 15 minute period
$L_{Ceq\ (15min)}$	C-weighted average noise energy over a 15 minute period
$L_{A1\ (1min)}$	The highest A-weighted 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
m/s	Metres per second
mm	Millimetres
mm/s	Millimetres per second
MOP	Mining operations plan
ML	Megalitre
ML	Mining lease
MPL	Mining purpose lease
MSC	Muswellbrook Shire Council
Mt	Mount
mtpa	Million tonnes per annum
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

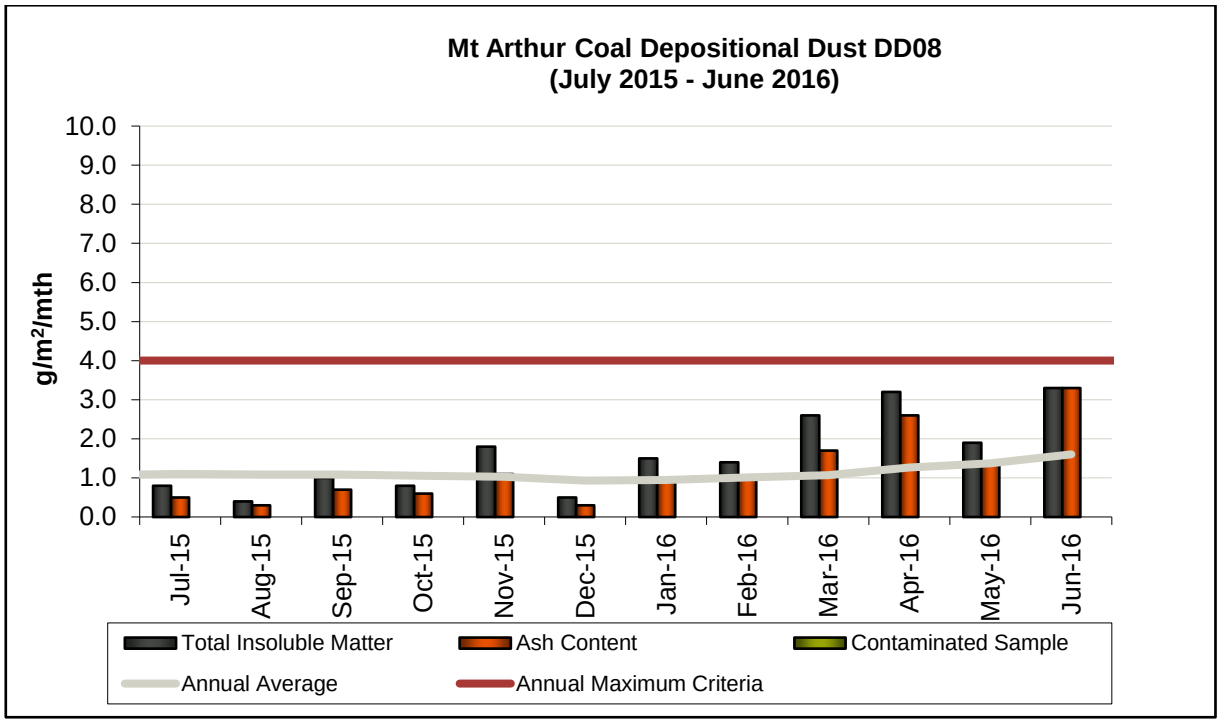
NGO	Non-government Organisation
NOW	NSW Department of Primary Industry - Water
NSW	New South Wales
OCE	Open Cut Examiner
OEH	NSW Office of Environment and Heritage
OMP	Offset Management Plan
pH	Potential hydrogen
PIRMP	Pollution Incident Response Management Plan
POEO Act	Protection of the Environment Operations Act 1997
PM_{10}	Particulate matter less than 10 microns in size
PRP	Pollution Reduction Program
RAP	Remedial Action Plan
ROM	Run of Mine
RL	Reduced Level
SMS	Short Message Service
SPMP	Sustainable Pasture Management Plan
TARP	Trigger Action Response Plan
TEOM	Tapered Element Oscillating Microbalance Samplers
TSC Act	Threatened Species Conservation Act 1995
TSP	Total Suspended Particulate
TSS	Total Suspended Solids
VD	Visual Dump
VPA	Voluntary Planning Agreement
VWP	Vibrating Wire Piezometers
WS	Weather Station
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

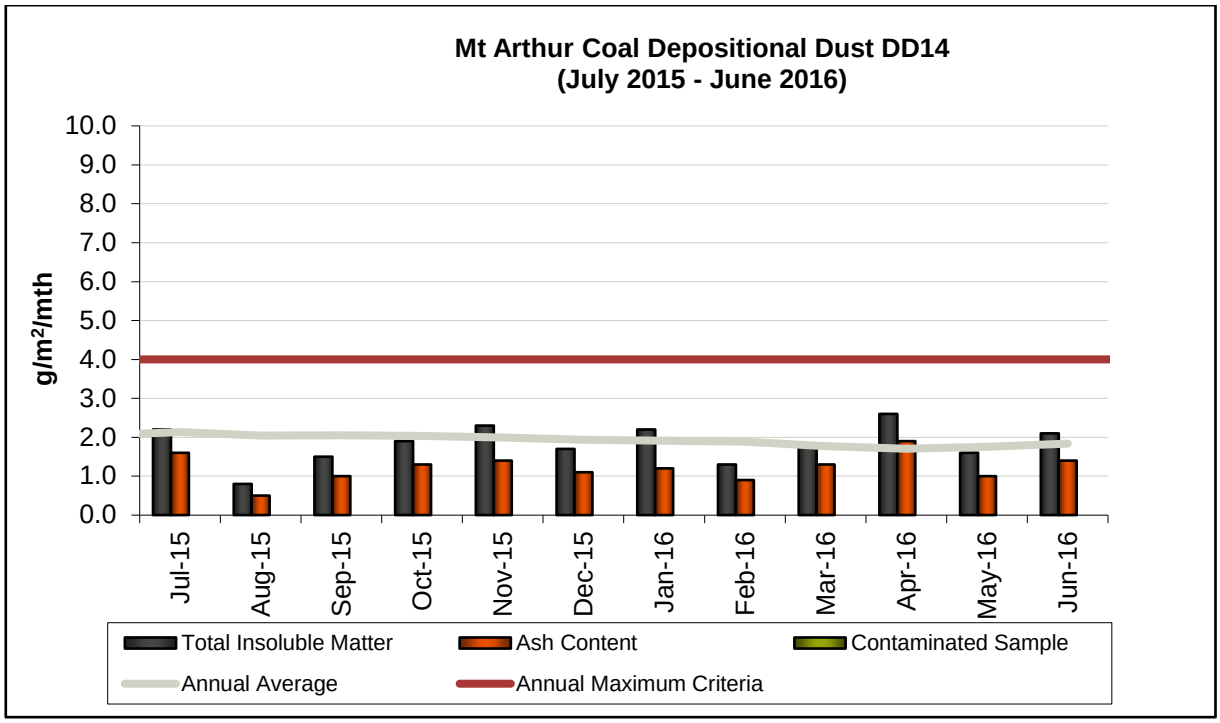
Appendix 1 - Overview of Surface Water Management System

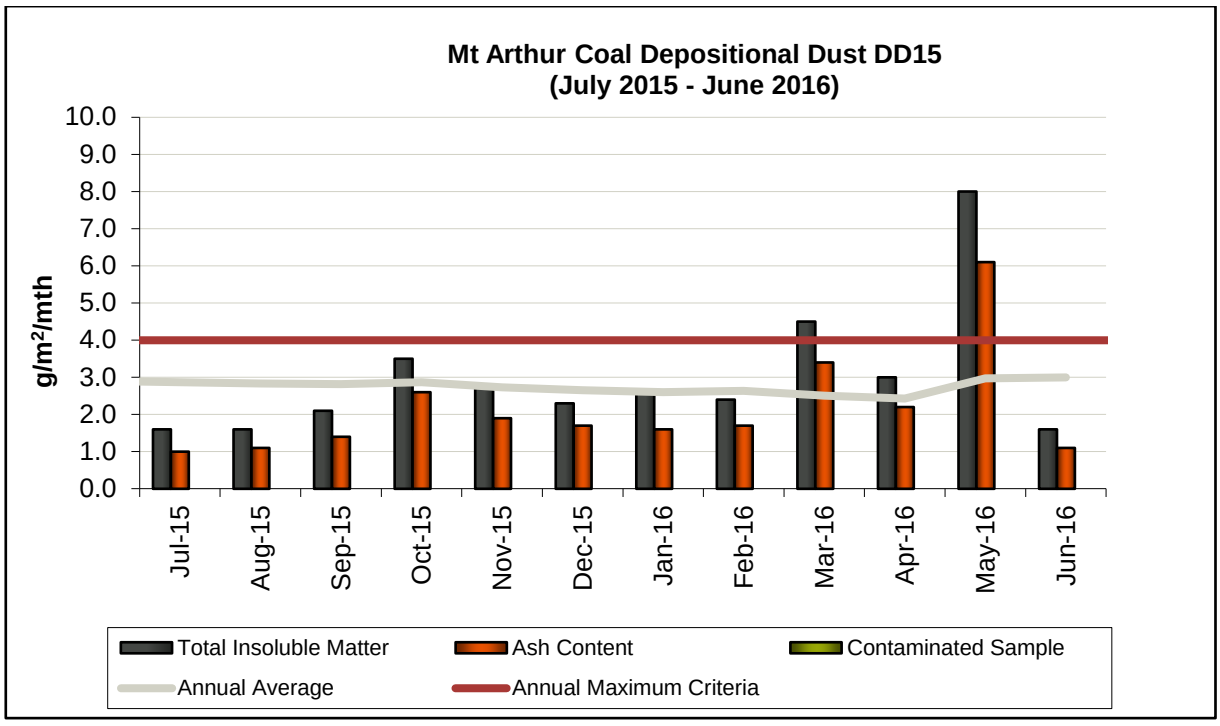


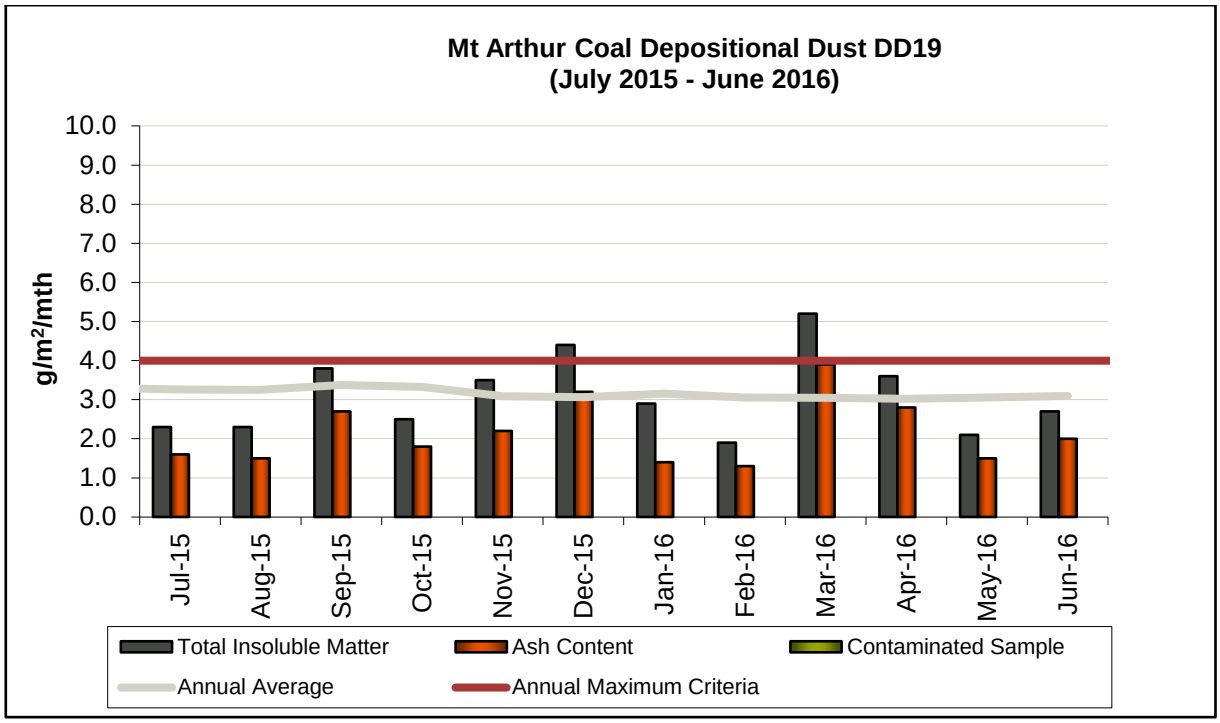
Appendix 2 - Air Quality Monitoring Results

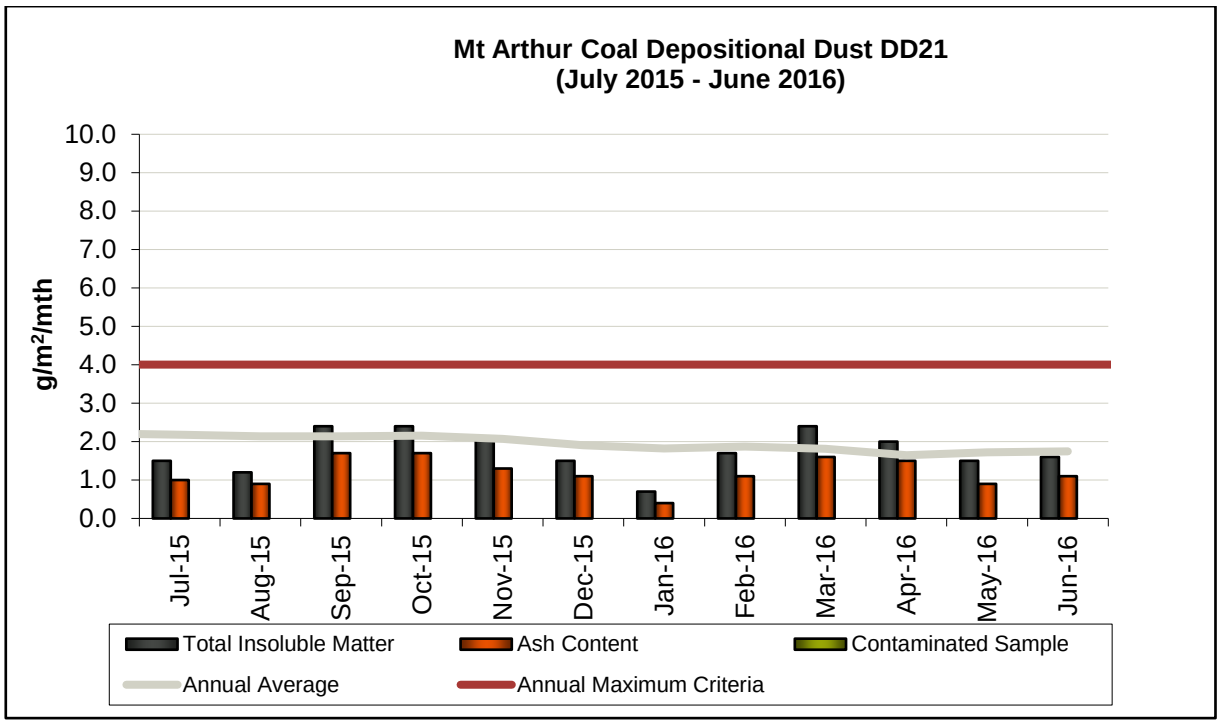


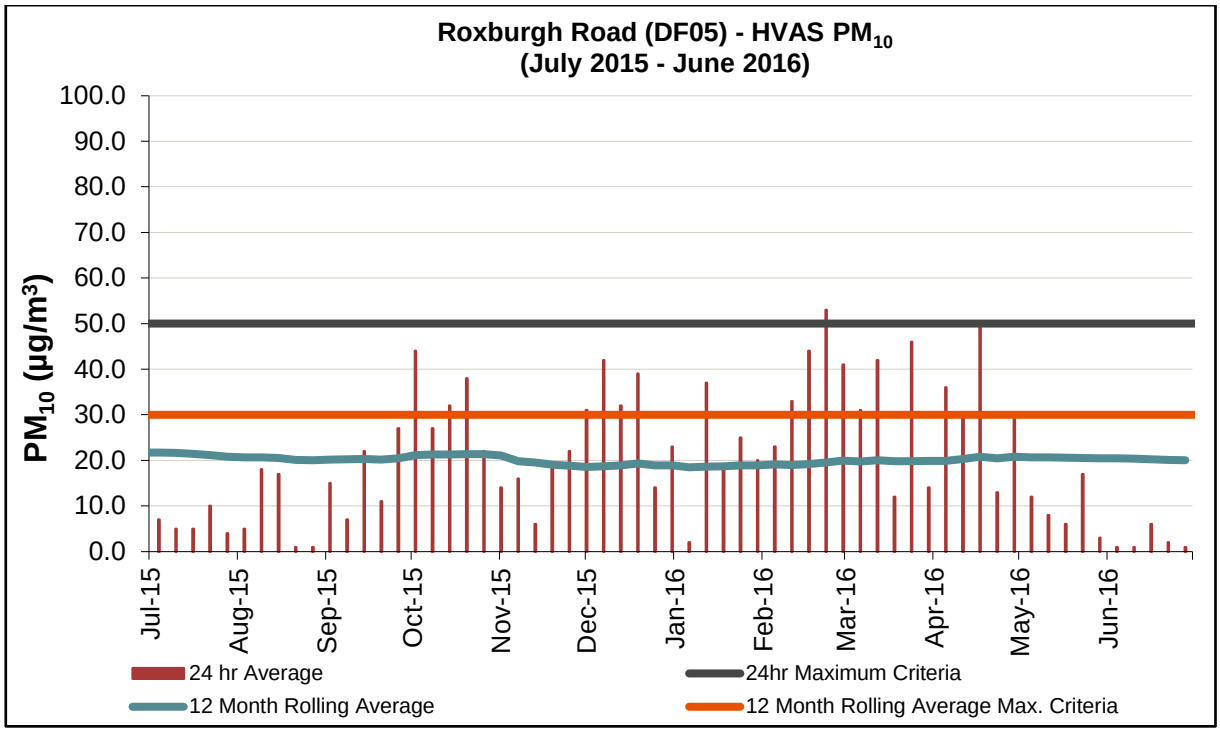


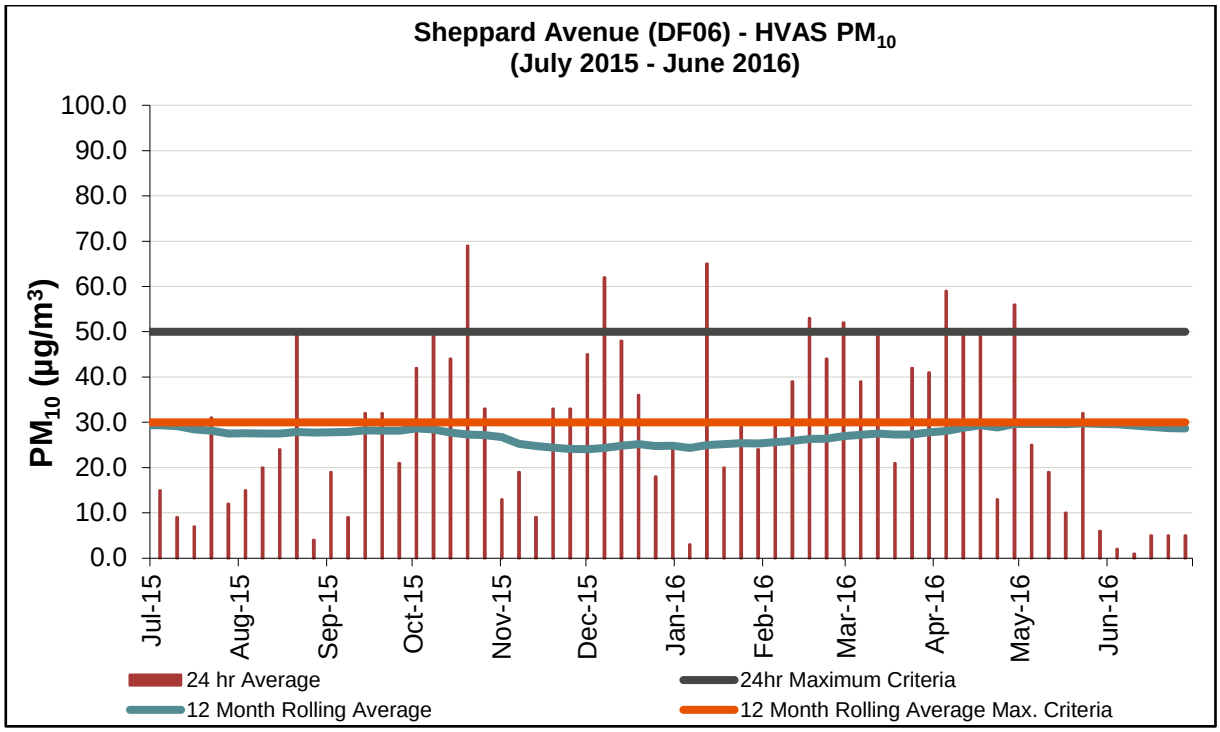

Mt Arthur Coal Depositional Dust DD14
(July 2015 - June 2016)
g/m²/mth
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
Total Insoluble Matter
Ash Content
Contaminated Sample
Annual Average
Annual Maximum Criteria

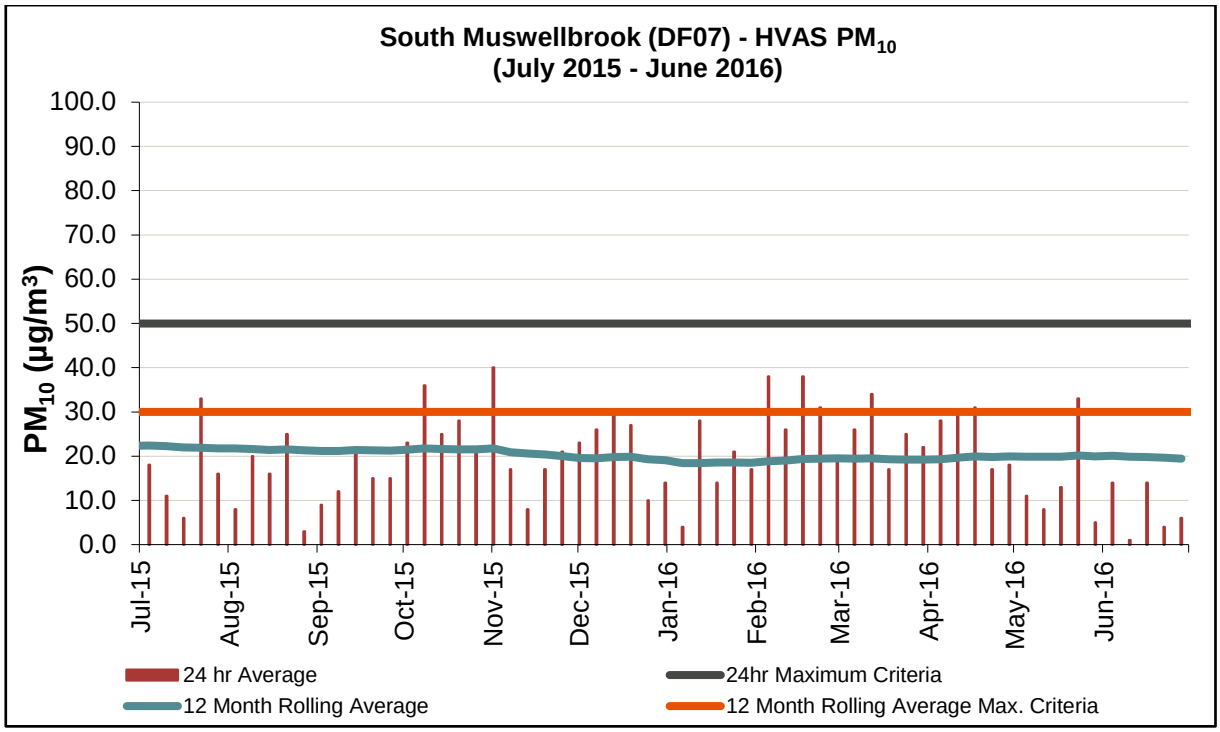

Mt Arthur Coal Depositional Dust DD15
(July 2015 - June 2016)
g/m²/mth
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
Total Insoluble Matter
Ash Content
Contaminated Sample
Annual Average
Annual Maximum Criteria


Mt Arthur Coal Depositional Dust DD19
(July 2015 - June 2016)
g/m²/mth
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
Total Insoluble Matter
Ash Content
Contaminated Sample
Annual Average
Annual Maximum Criteria


Mt Arthur Coal Depositional Dust DD21
(July 2015 - June 2016)
g/m²/mth
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
Total Insoluble Matter
Ash Content
Contaminated Sample
Annual Average
Annual Maximum Criteria


Roxburgh Road (DF05) - HVAS PM10
(July 2015 - June 2016)
PM10 (µg/m3)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
24 hr Average
24hr Maximum Criteria
12 Month Rolling Average
12 Month Rolling Average Max. Criteria


Sheppard Avenue (DF06) - HVAS PM10
(July 2015 - June 2016)
PM10 (µg/m3)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
24 hr Average
24hr Maximum Criteria
12 Month Rolling Average
12 Month Rolling Average Max. Criteria


South Muswellbrook (DF07) - HVAS PM10
(July 2015 - June 2016)
PM10 (µg/m3)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
24 hr Average
24hr Maximum Criteria
12 Month Rolling Average
12 Month Rolling Average Max. Criteria

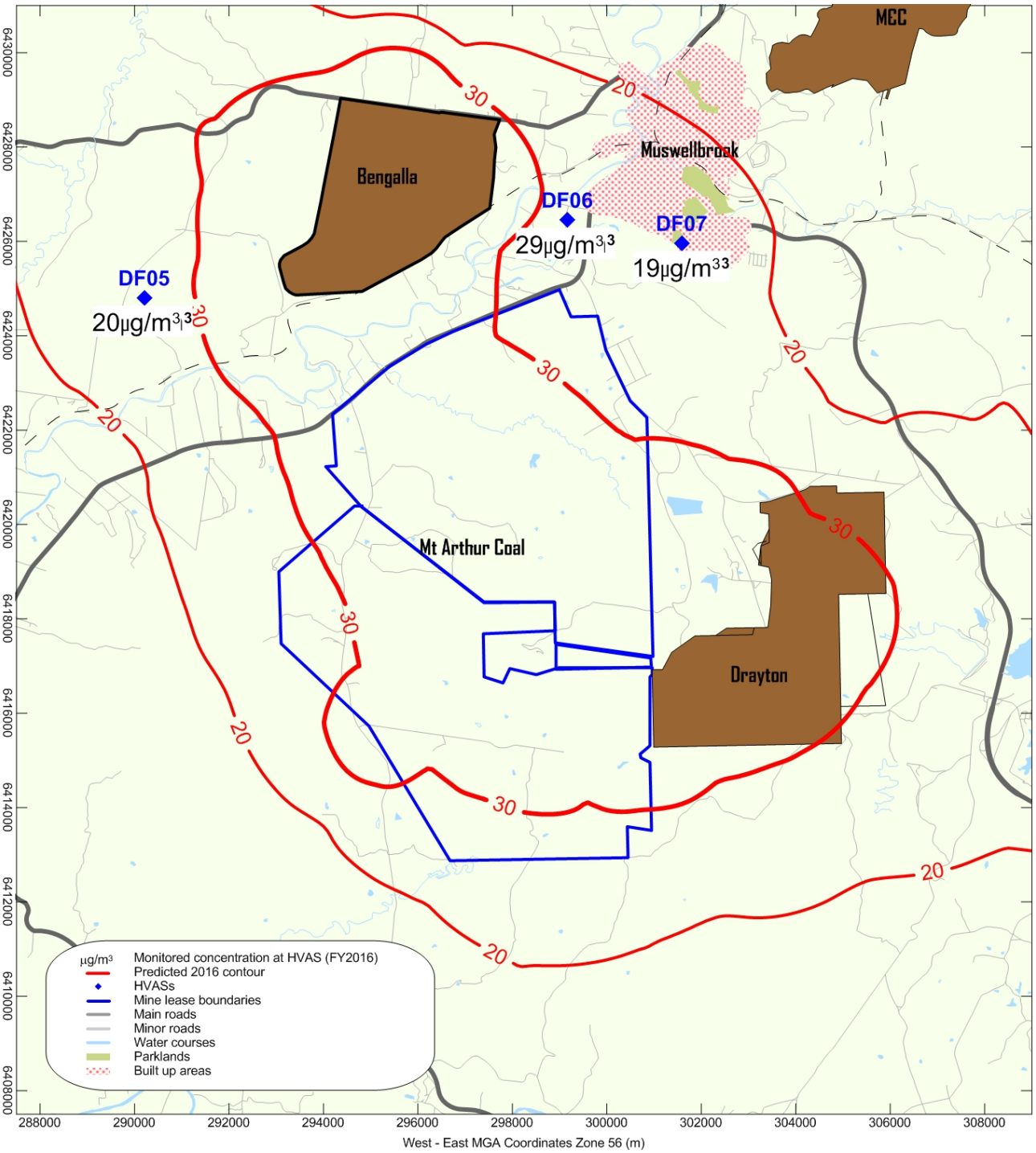
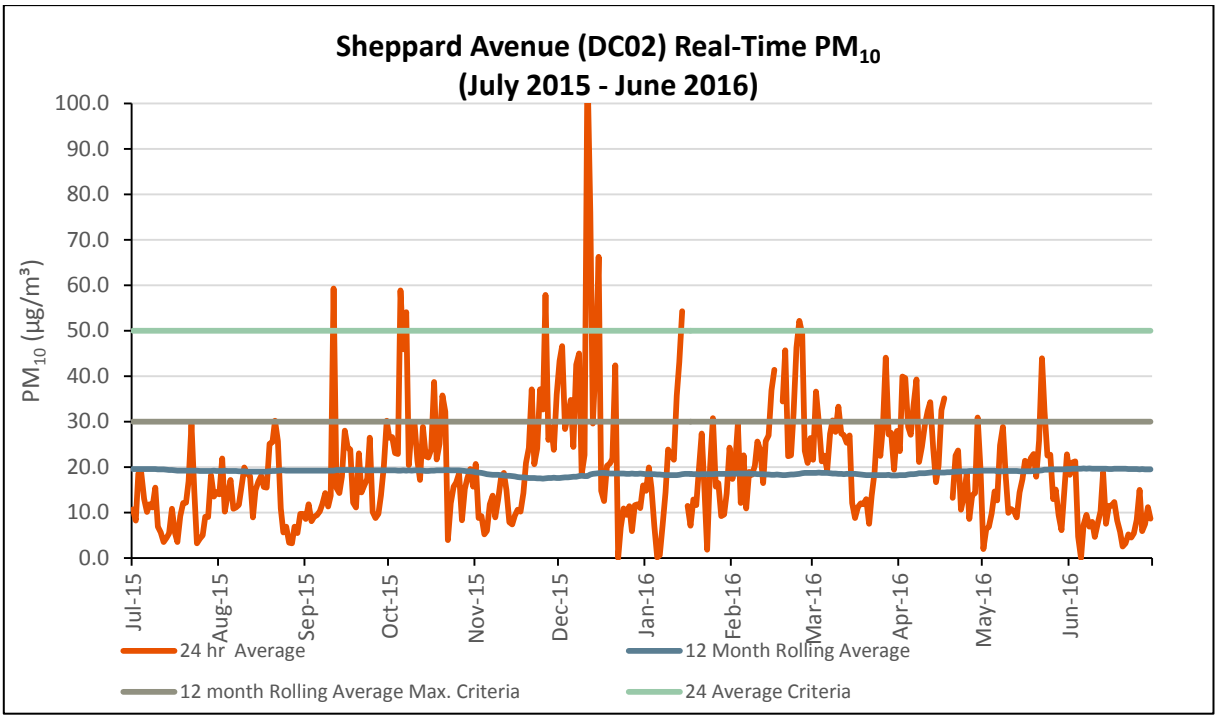
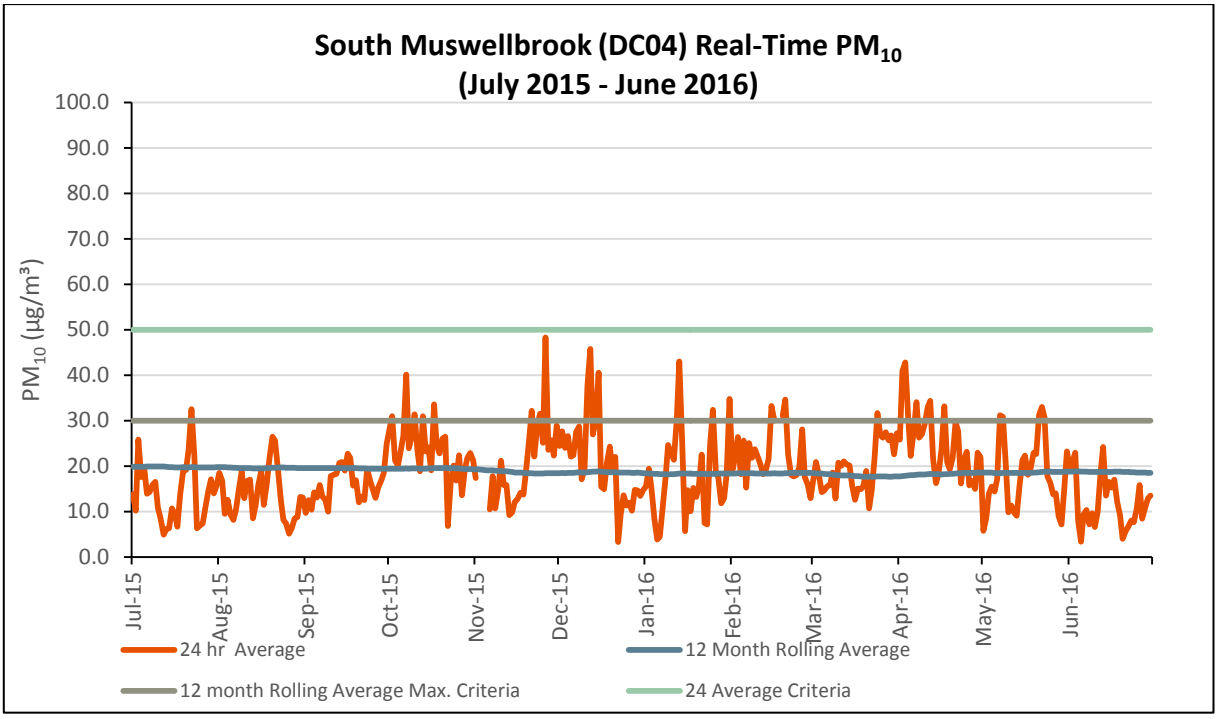
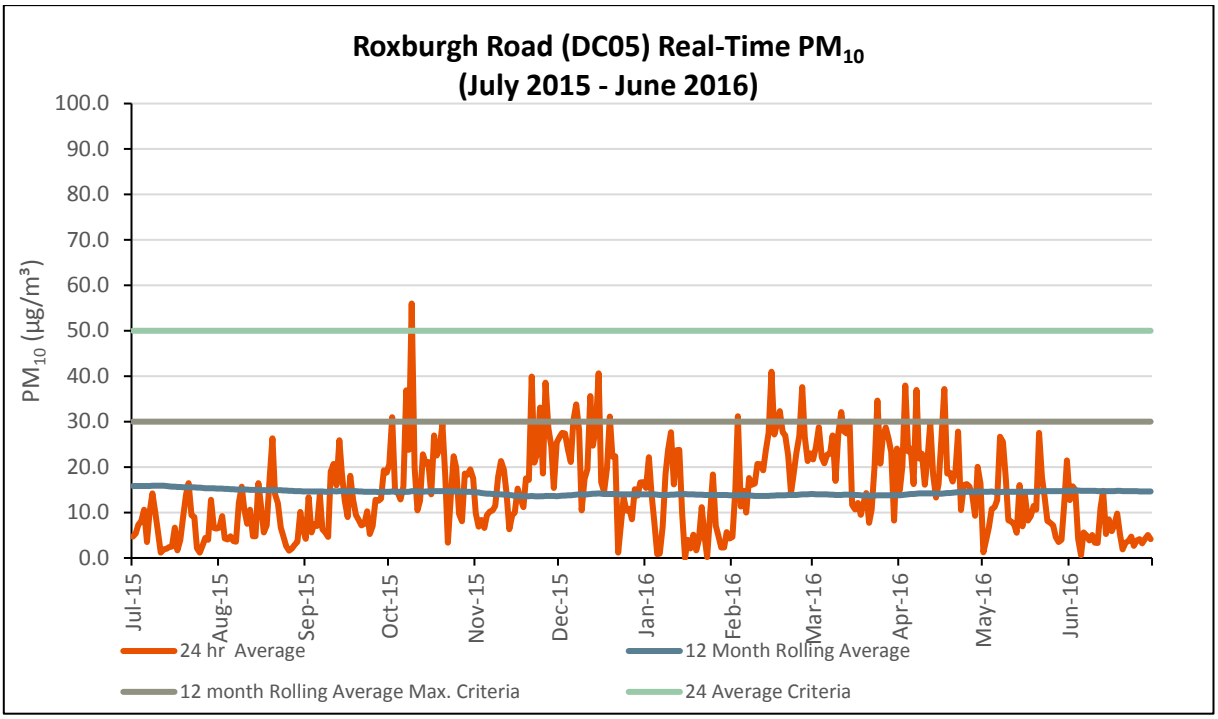
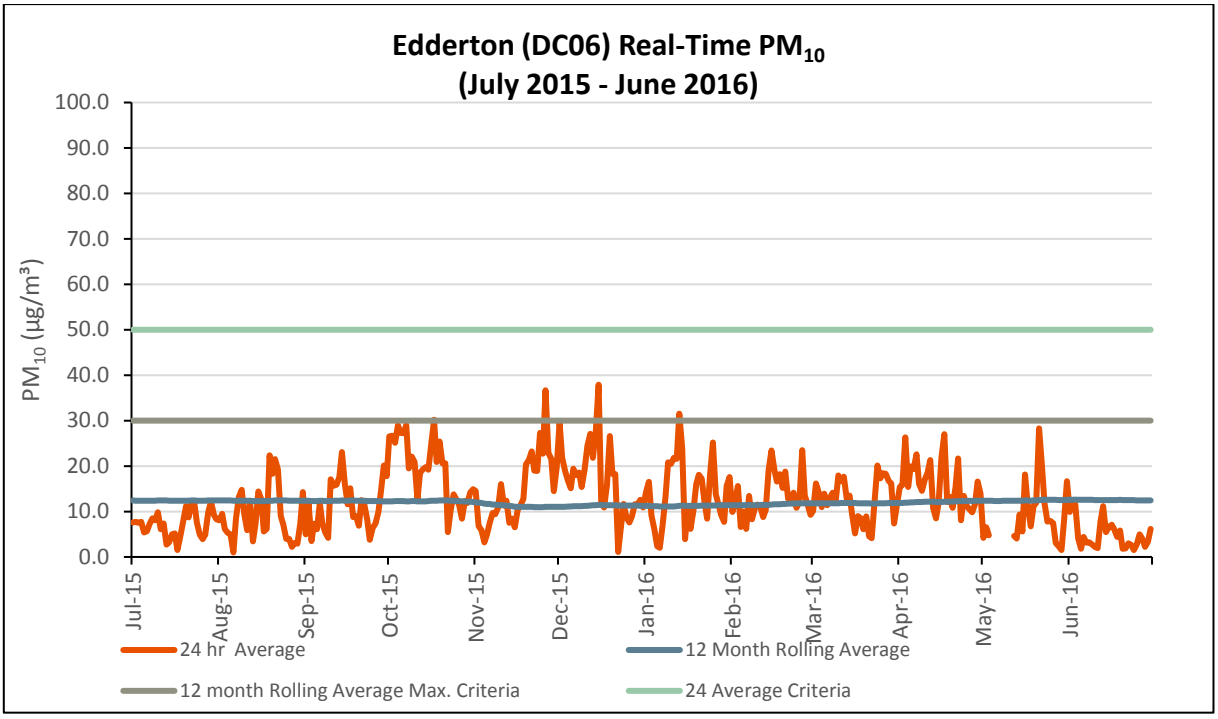


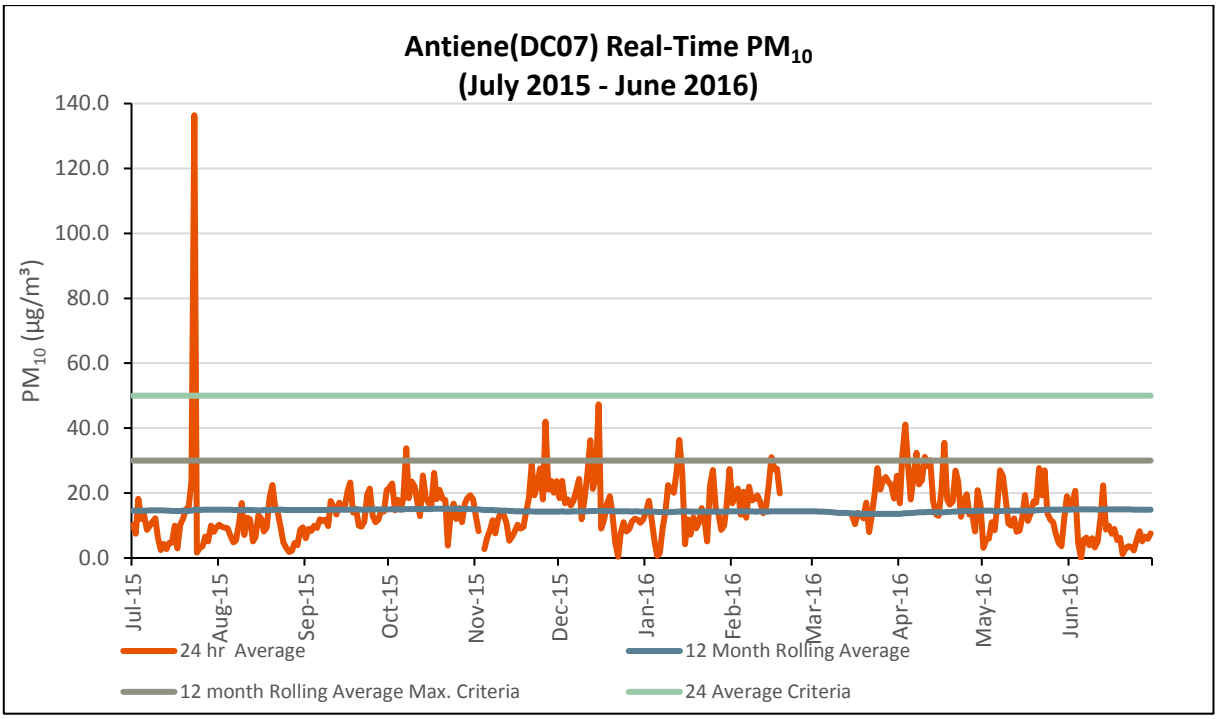
Figure 2A: Predicted annual average PM_{10} concentrations in µg/m³ due to emissions from the project and other sources in 2016 compared with FY16 measured concentrations – HVAS

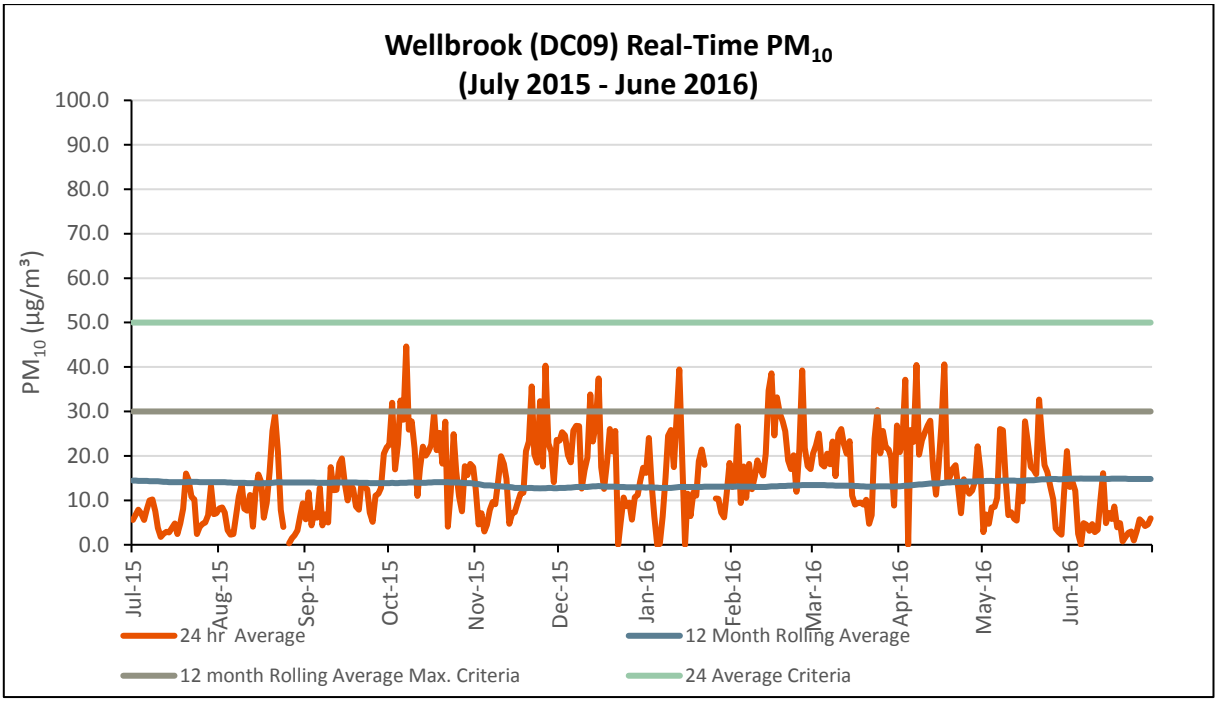

Sheppard Avenue (DC02) Real-Time PM10
(July 2015 - June 2016)
PM10 (µg/m³)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
24 hr Average
12 Month Rolling Average
12 month Rolling Average Max. Criteria
24 Average Criteria


South Muswellbrook (DC04) Real-Time PM10
(July 2015 - June 2016)
PM10 (µg/m³)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
24 hr Average
12 Month Rolling Average
12 month Rolling Average Max. Criteria
24 Average Criteria


Roxburgh Road (DC05) Real-Time PM10
(July 2015 - June 2016)
PM10 (µg/m³)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
24 hr Average
12 Month Rolling Average
12 month Rolling Average Max. Criteria
24 Average Criteria


Edderton (DC06) Real-Time PM10
(July 2015 - June 2016)
PM10 (µg/m³)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
24 hr Average
12 Month Rolling Average
12 month Rolling Average Max. Criteria
24 Average Criteria


Antiene(DC07) Real-Time PM10
(July 2015 - June 2016)
PM10 (µg/m³)
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
24 hr Average
12 Month Rolling Average
12 month Rolling Average Max. Criteria
24 Average Criteria


Wellbrook (DC09) Real-Time PM10
(July 2015 - June 2016)
PM10 (µg/m³)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
24 hr Average
12 Month Rolling Average
12 month Rolling Average Max. Criteria
24 Average Criteria

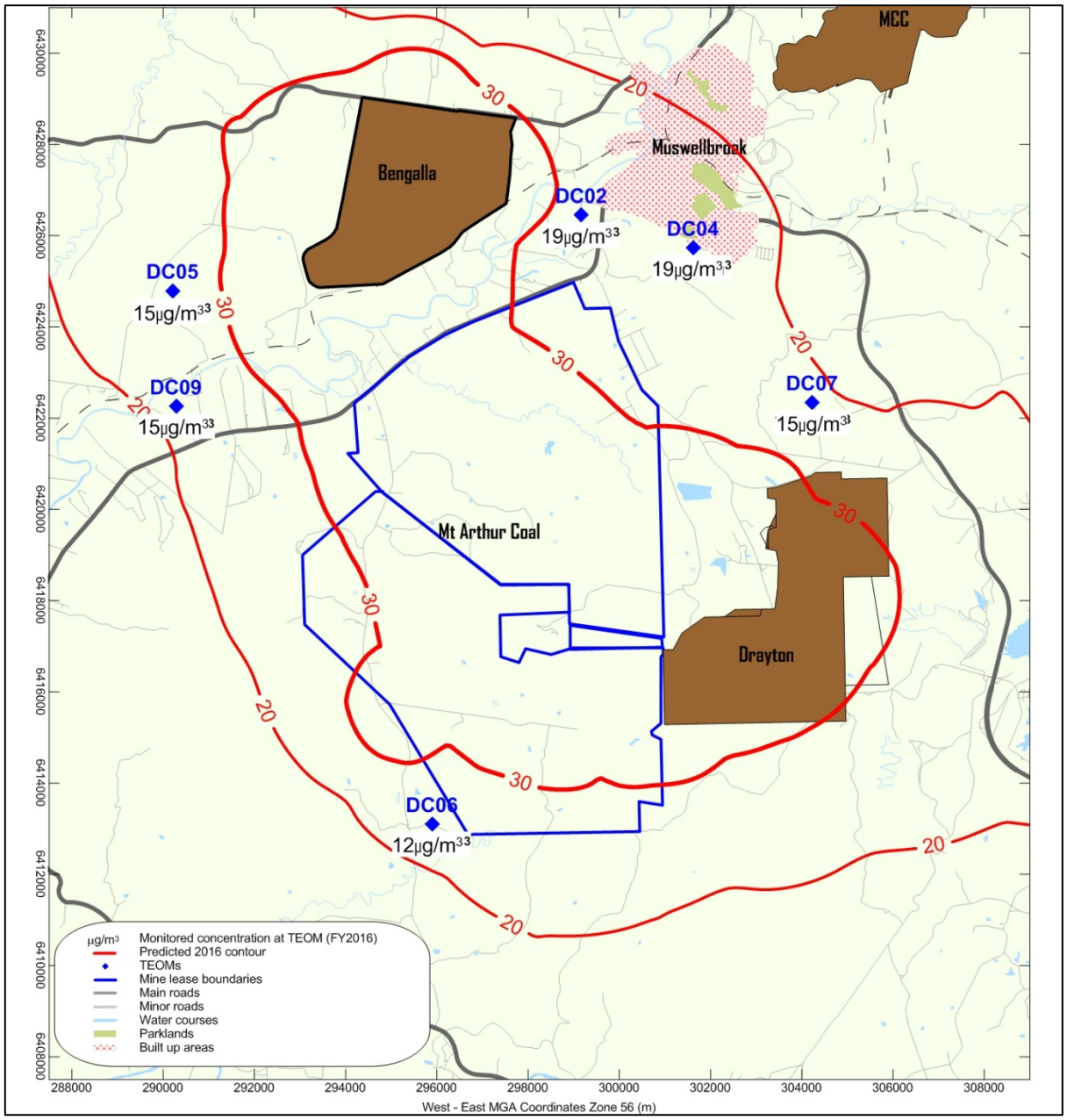
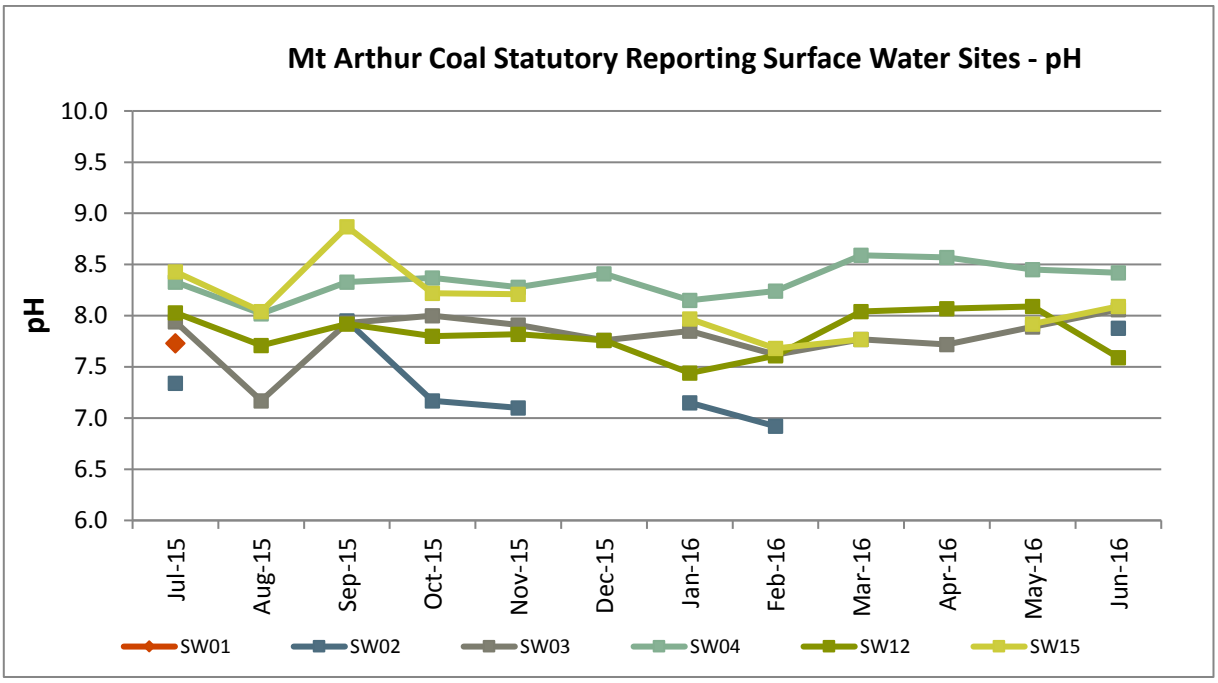
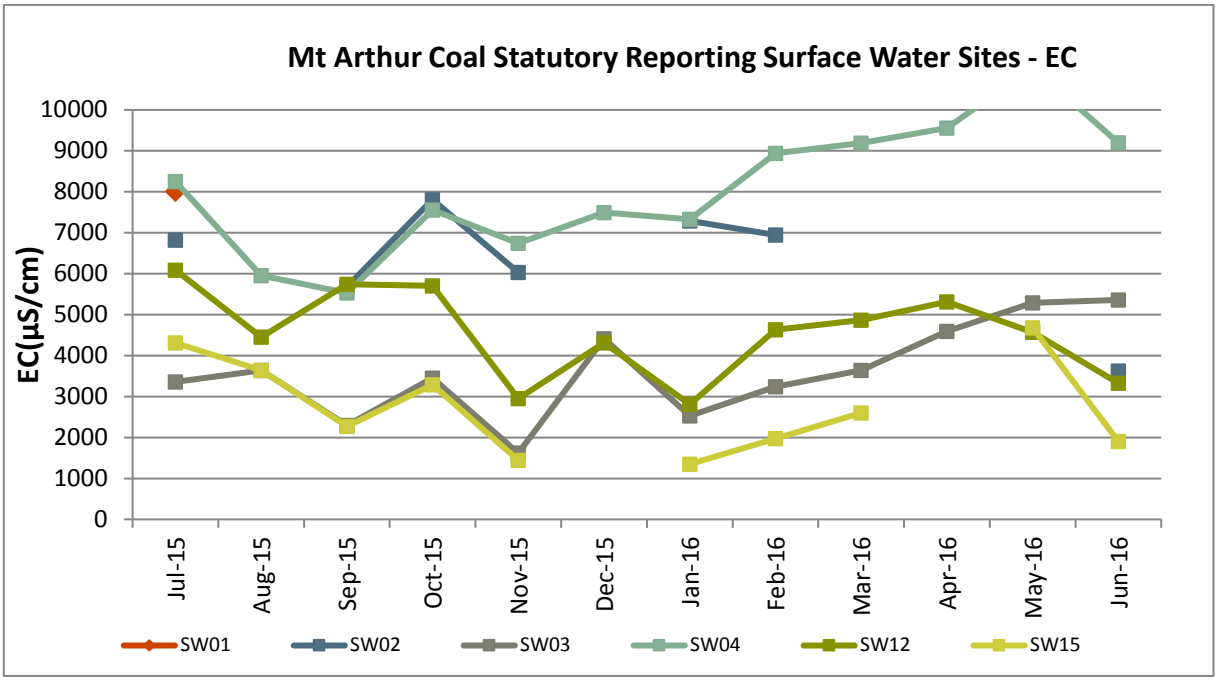
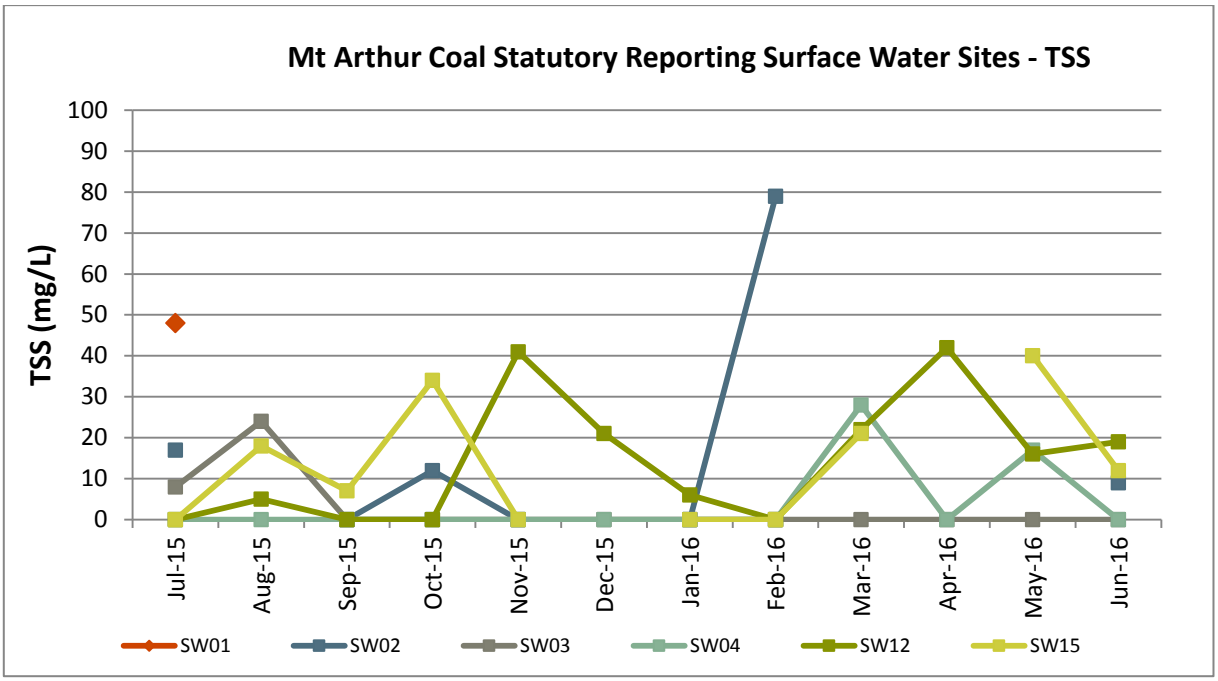


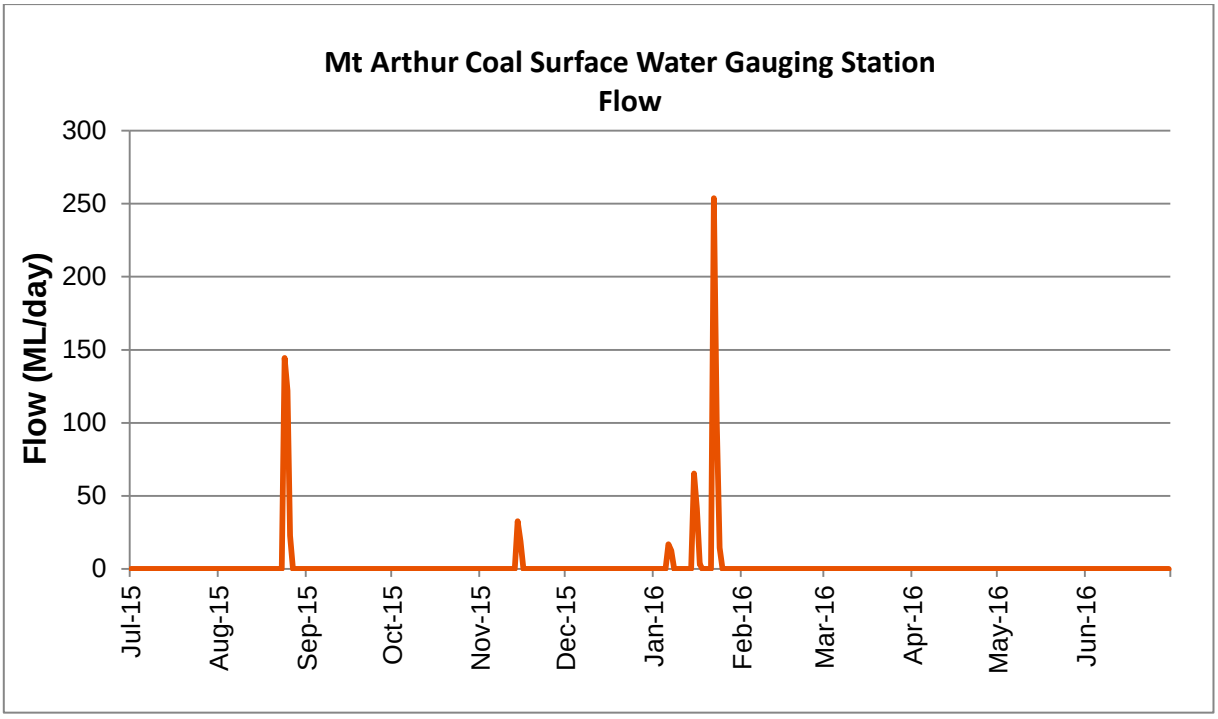
Figure 2B: Predicted annual average PM_{10} concentrations in µg/m³ due to emissions from the project and other sources in 2016 compared with FY15 measured concentrations – TEOMs

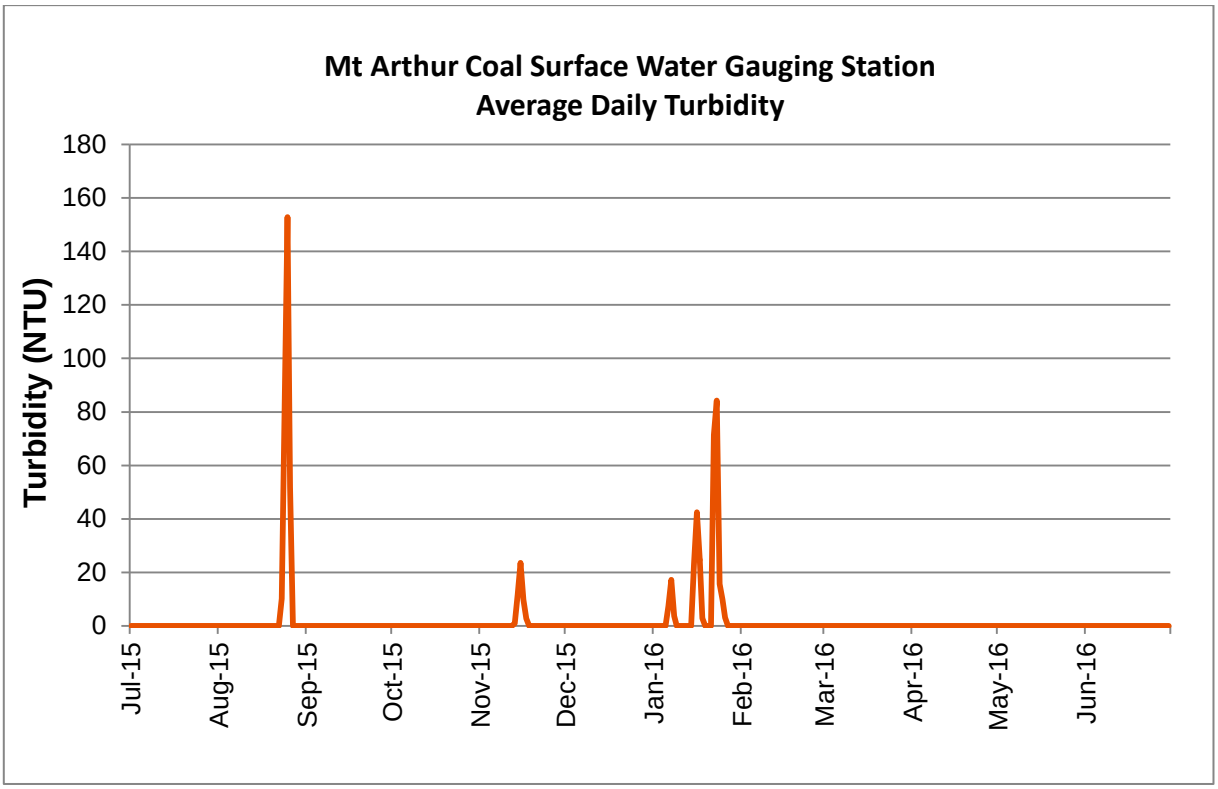
Appendix 3 - Surface Water Quality Monitoring Results

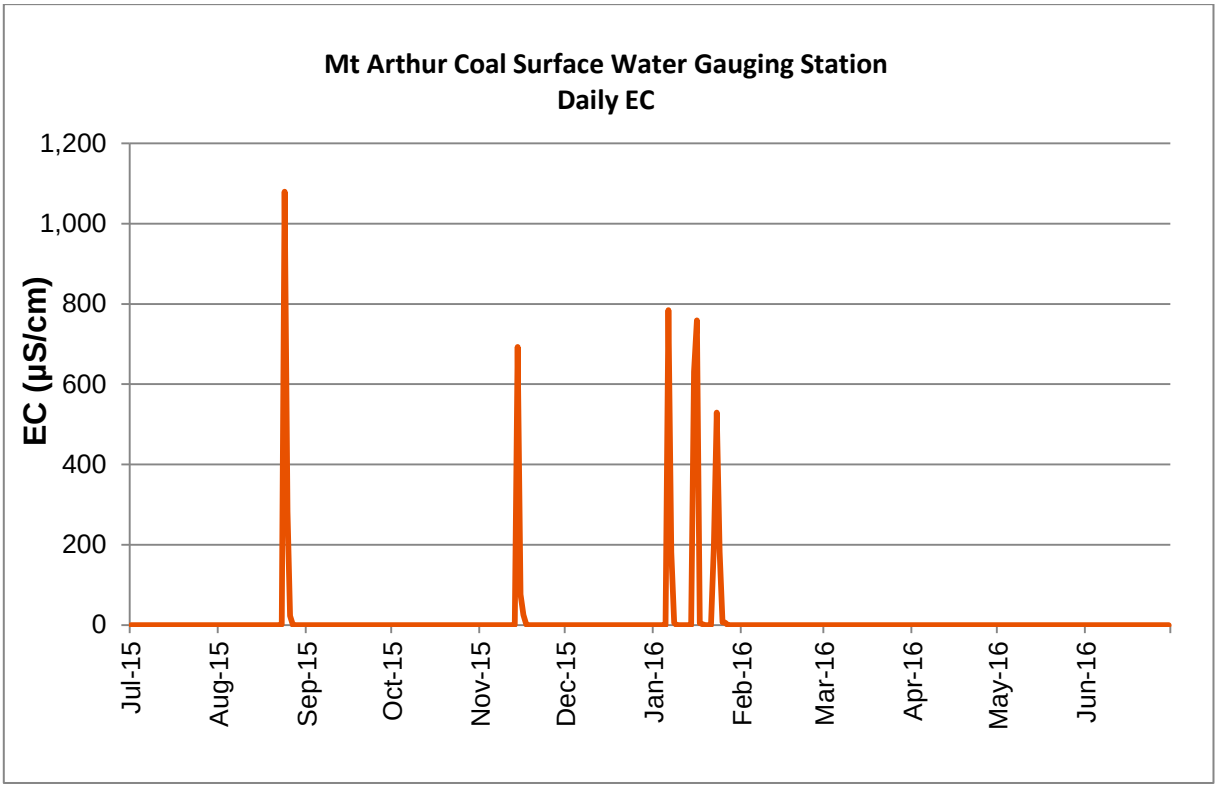




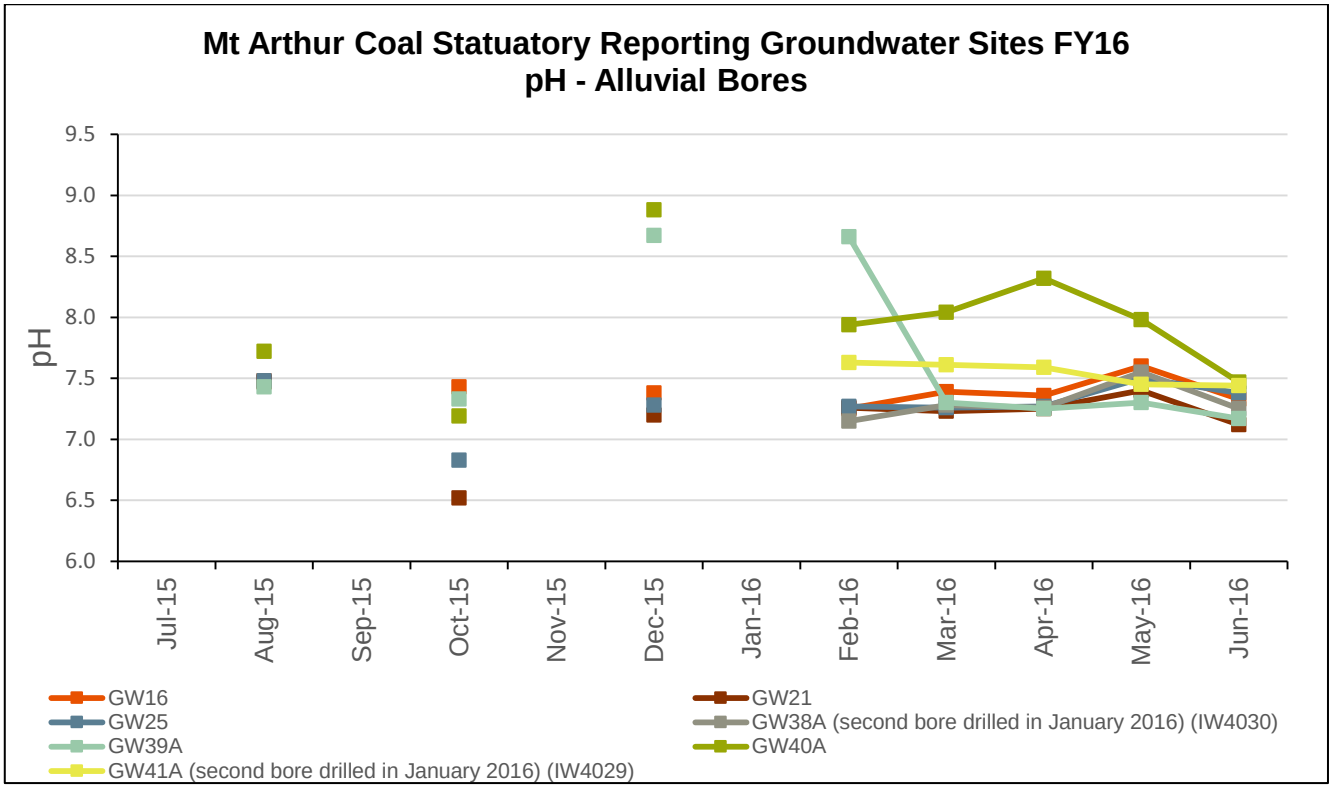

Mt Arthur Coal Statutory Reporting Surface Water Sites - TSS
TSS (mg/L)
100
90
80
70
60
50
40
30
20
10
0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
SW01
SW02
SW03
SW04
SW12
SW15

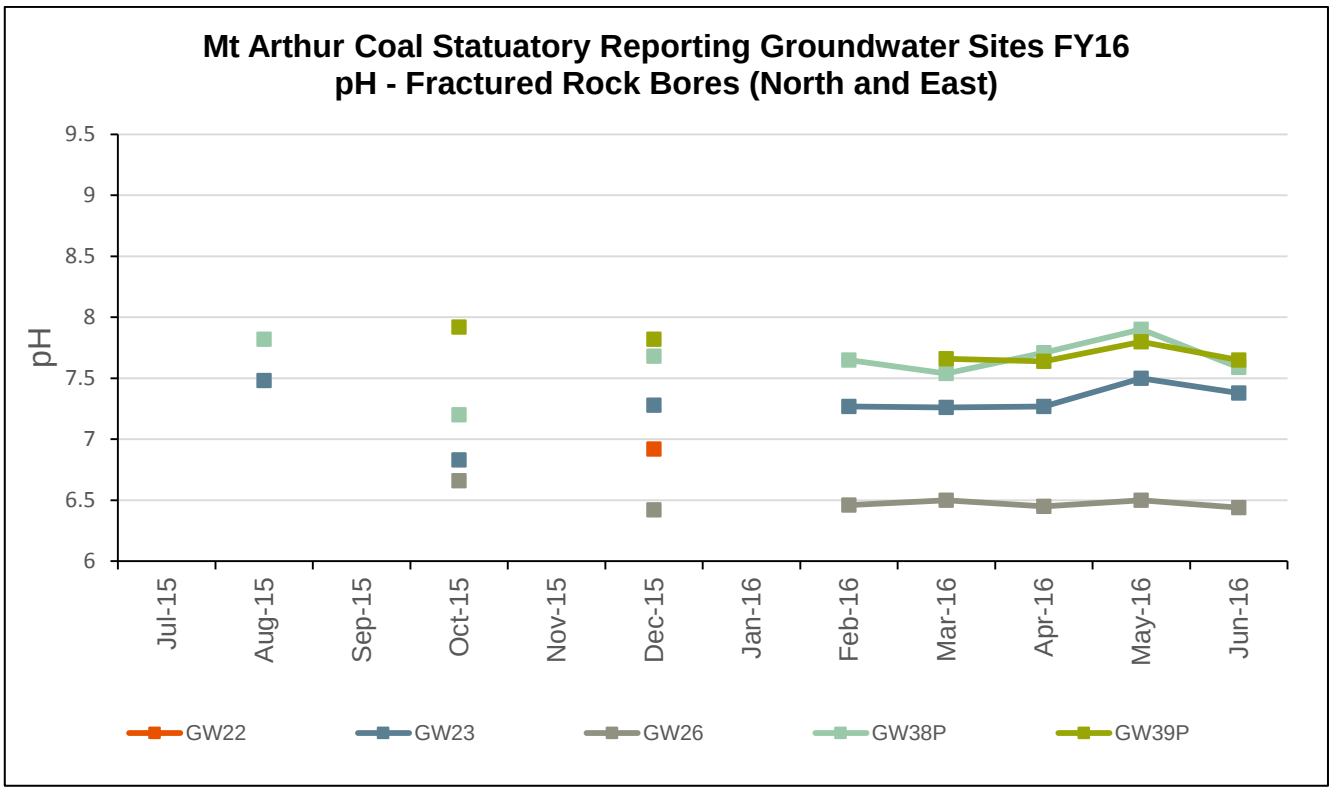

Mt Arthur Coal Surface Water Gauging Station
Flow
Flow (ML/day)
300
250
200
150
100
50
0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16

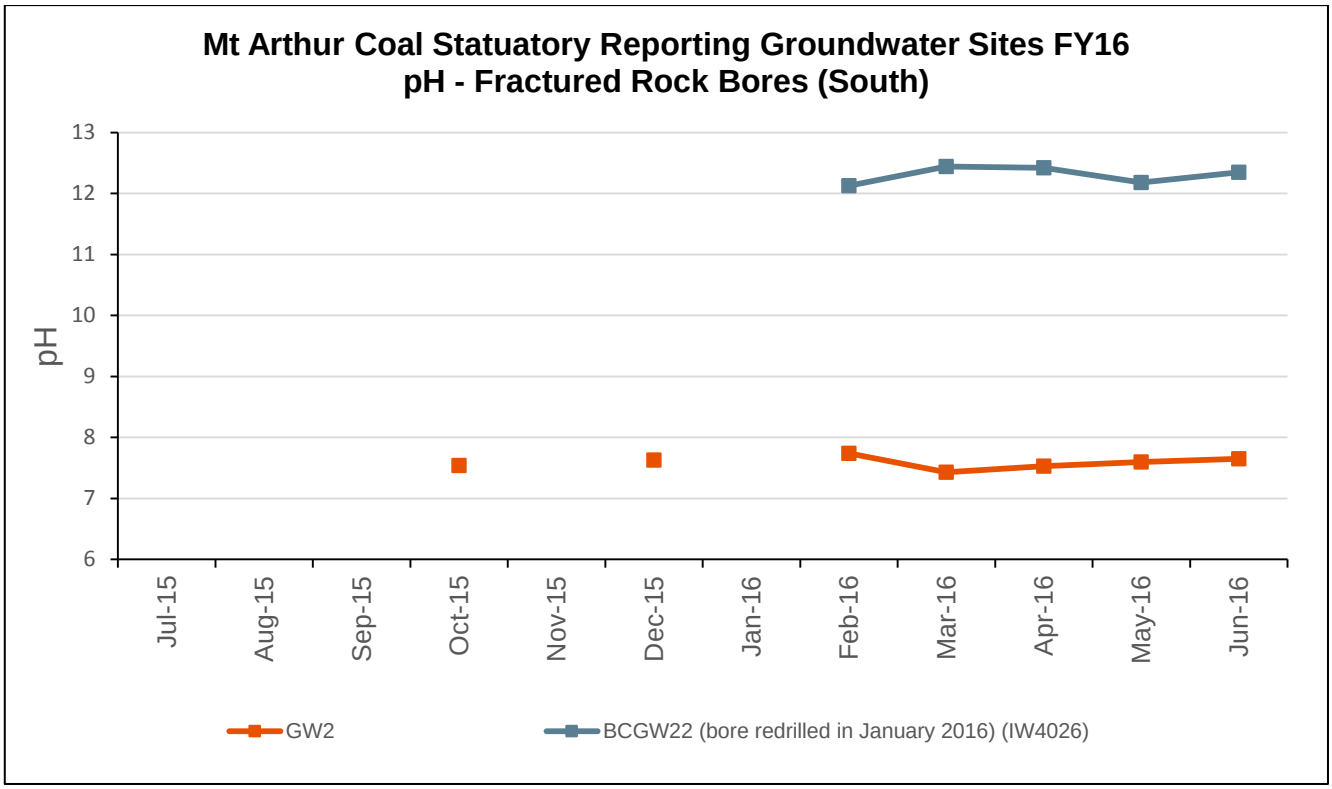

Mt Arthur Coal Surface Water Gauging Station
Average Daily Turbidity
Turbidity (NTU)
180
160
140
120
100
80
60
40
20
0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16

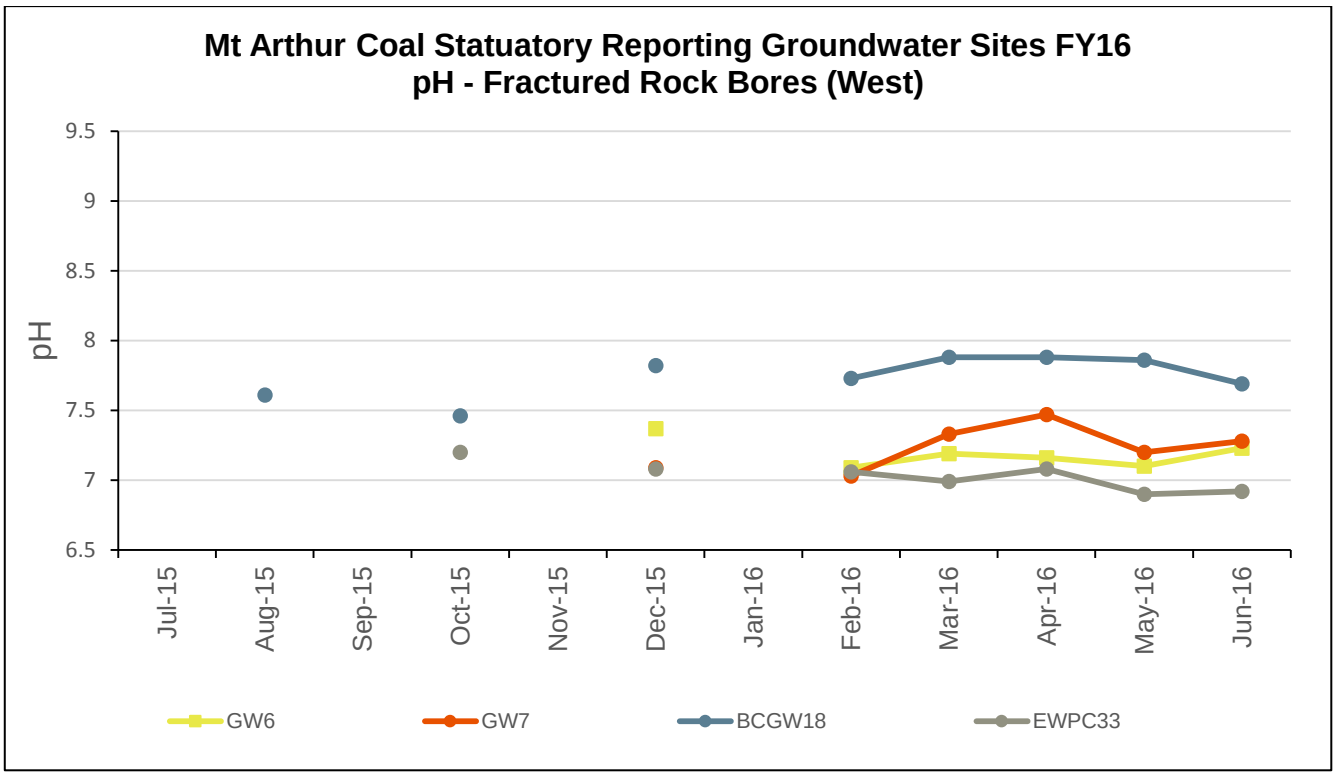

Mt Arthur Coal Surface Water Gauging Station
Daily EC
EC (µS/cm)
1,200
1,000
800
600
400
200
0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16

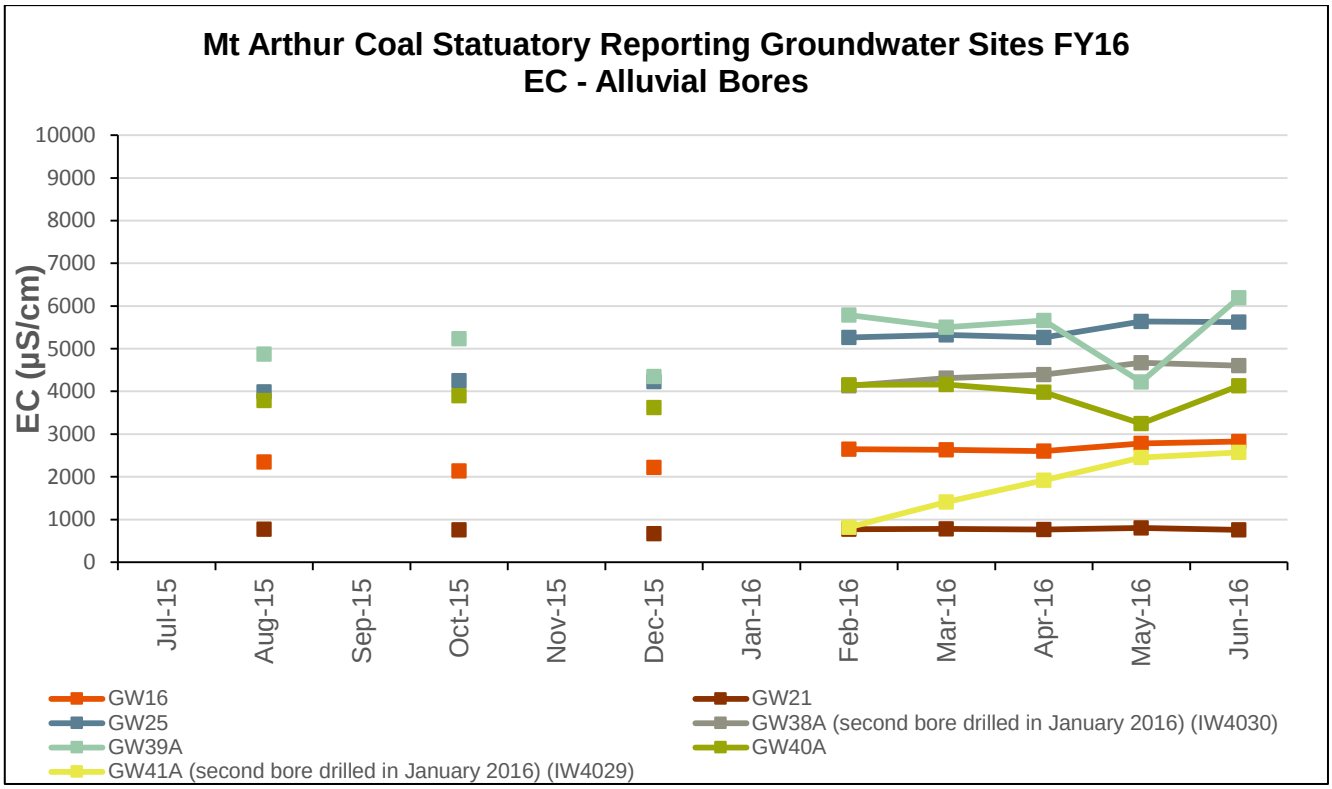
Appendix 4 - Ground Water Quality Monitoring Results

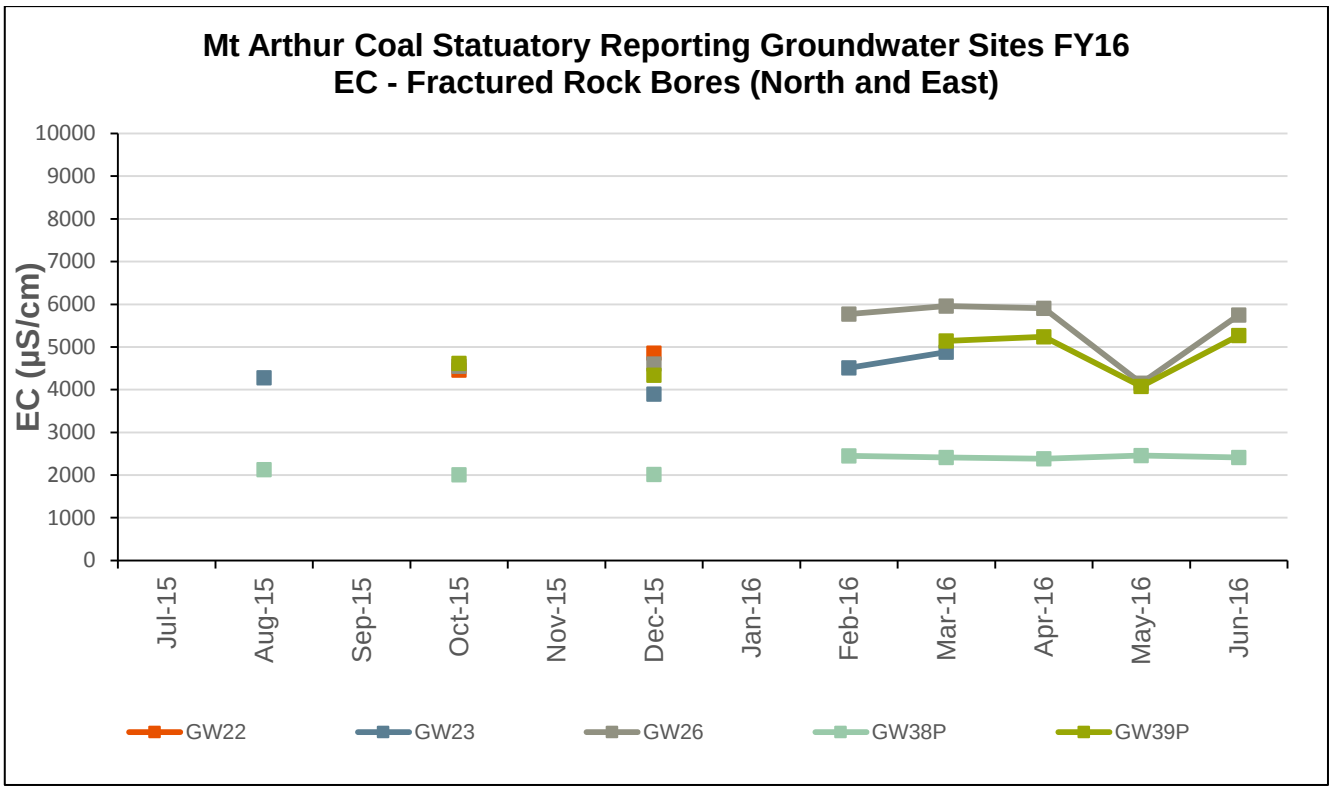


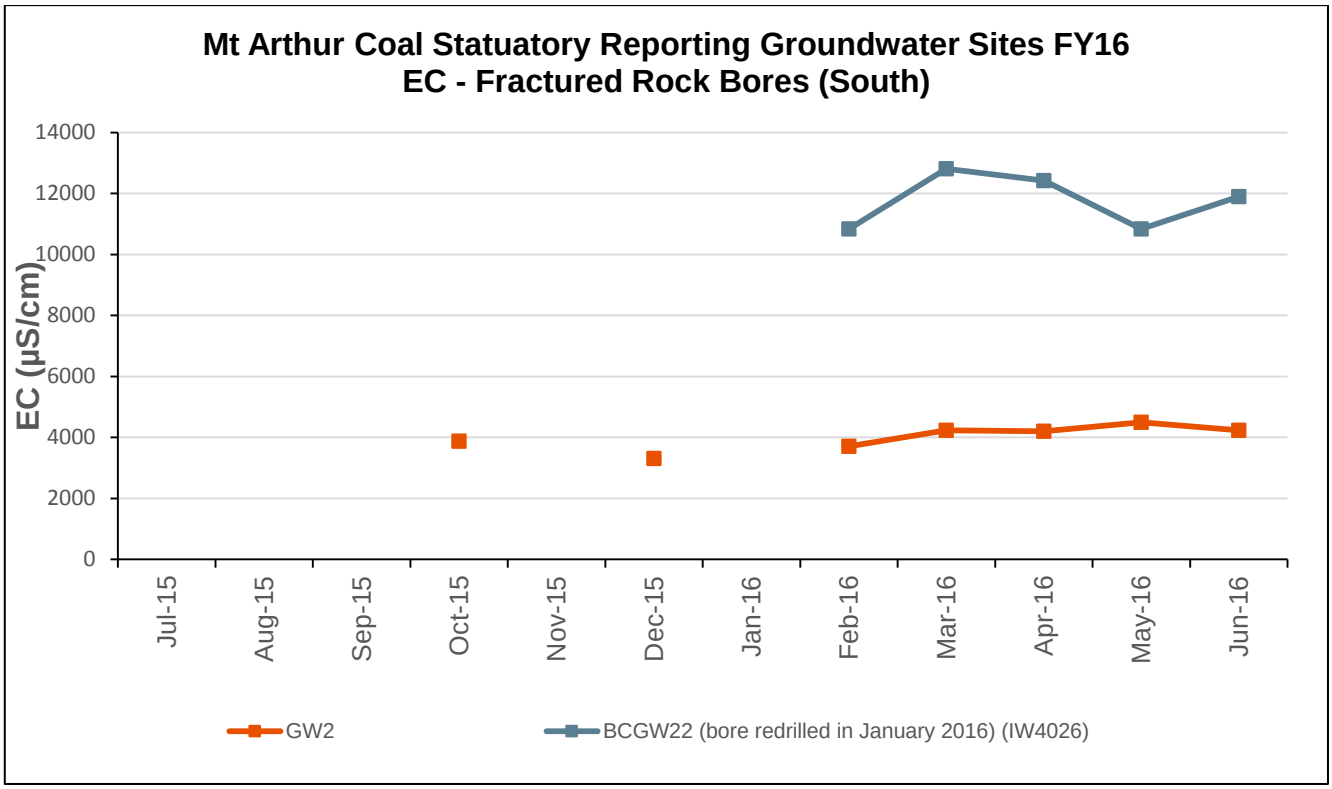


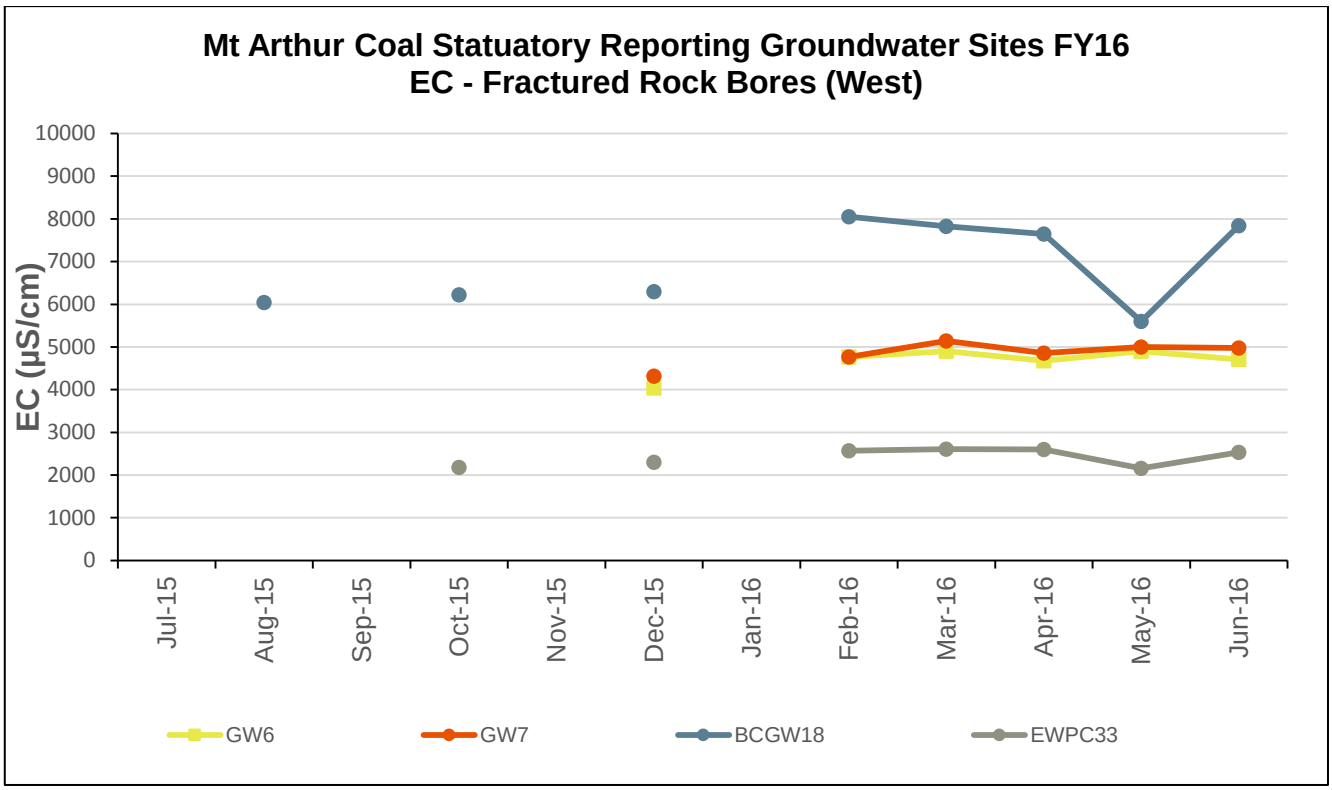

Mt Arthur Coal Statuatory Reporting Groundwater Sites FY16
pH - Fractured Rock Bores (South)
pH
13
12
11
10
9
8
7
6
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
GW2
BCGW22 (bore redrilled in January 2016) (IW4026)


Mt Arthur Coal Statuatory Reporting Groundwater Sites FY16
pH - Fractured Rock Bores (West)
pH
9.5
9
8.5
8
7.5
7
6.5
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
GW6
GW7
BCGW18
EWPC33


Mt Arthur Coal Statuatory Reporting Groundwater Sites FY16
EC - Alluvial Bores
EC (µS/cm)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
GW16
GW21
GW25
GW38A (second bore drilled in January 2016) (IW4030)
GW39A
GW40A
GW41A (second bore drilled in January 2016) (IW4029)


Mt Arthur Coal Statuatory Reporting Groundwater Sites FY16
EC - Fractured Rock Bores (North and East)
EC (µS/cm)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
GW22
GW23
GW26
GW38P
GW39P


Mt Arthur Coal Statuatory Reporting Groundwater Sites FY16
EC - Fractured Rock Bores (South)
EC (µS/cm)
14000
12000
10000
8000
6000
4000
2000
0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
GW2
BCGW22 (bore redrilled in January 2016) (IW4026)


Mt Arthur Coal Statuatory Reporting Groundwater Sites FY16
EC - Fractured Rock Bores (West)
EC (µS/cm)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
GW6
GW7
BCGW18
EWPC33

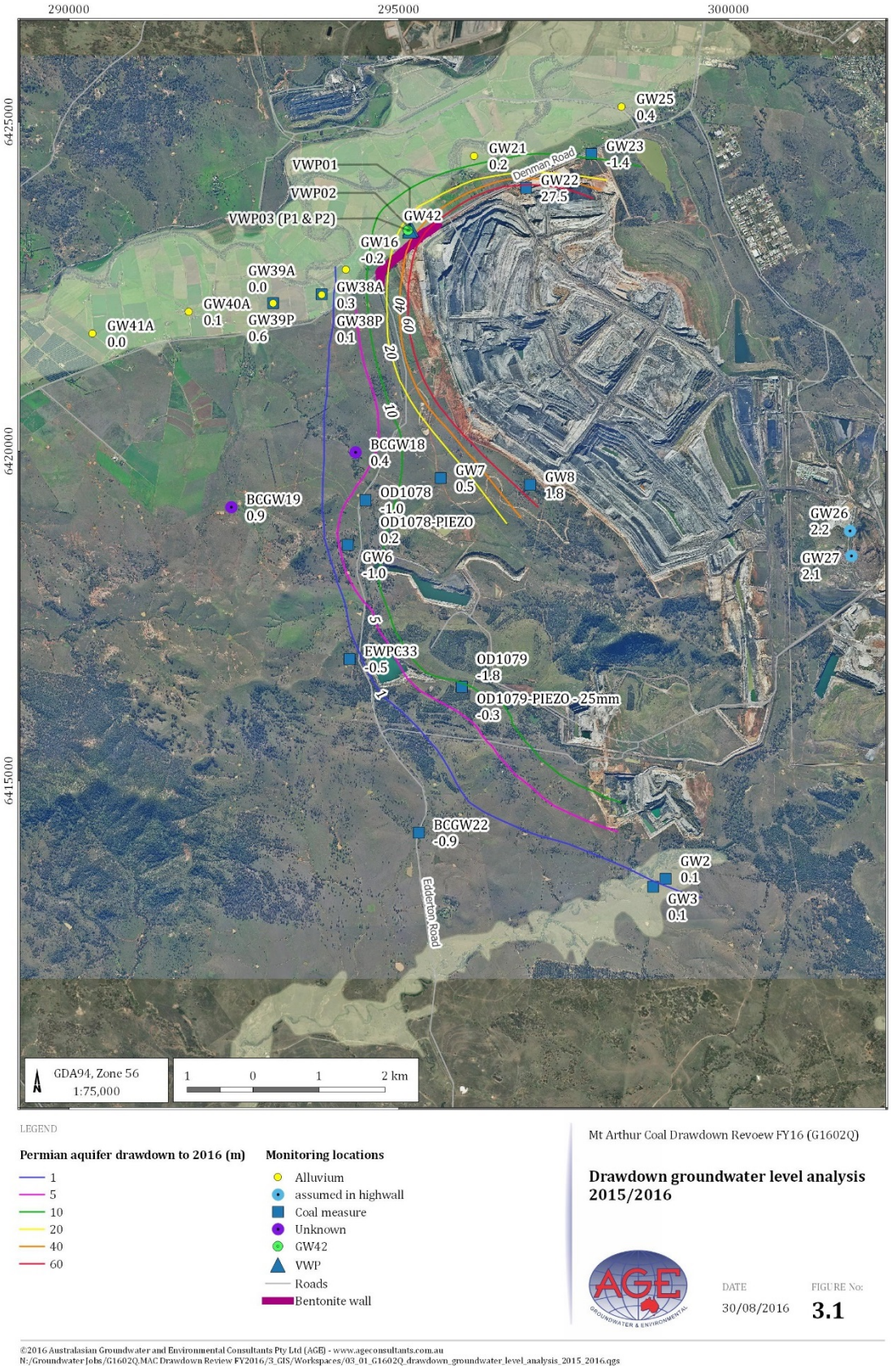


Figure 4A: Total measured ground water drawdown contours and ground water drawdown data points for the reporting period

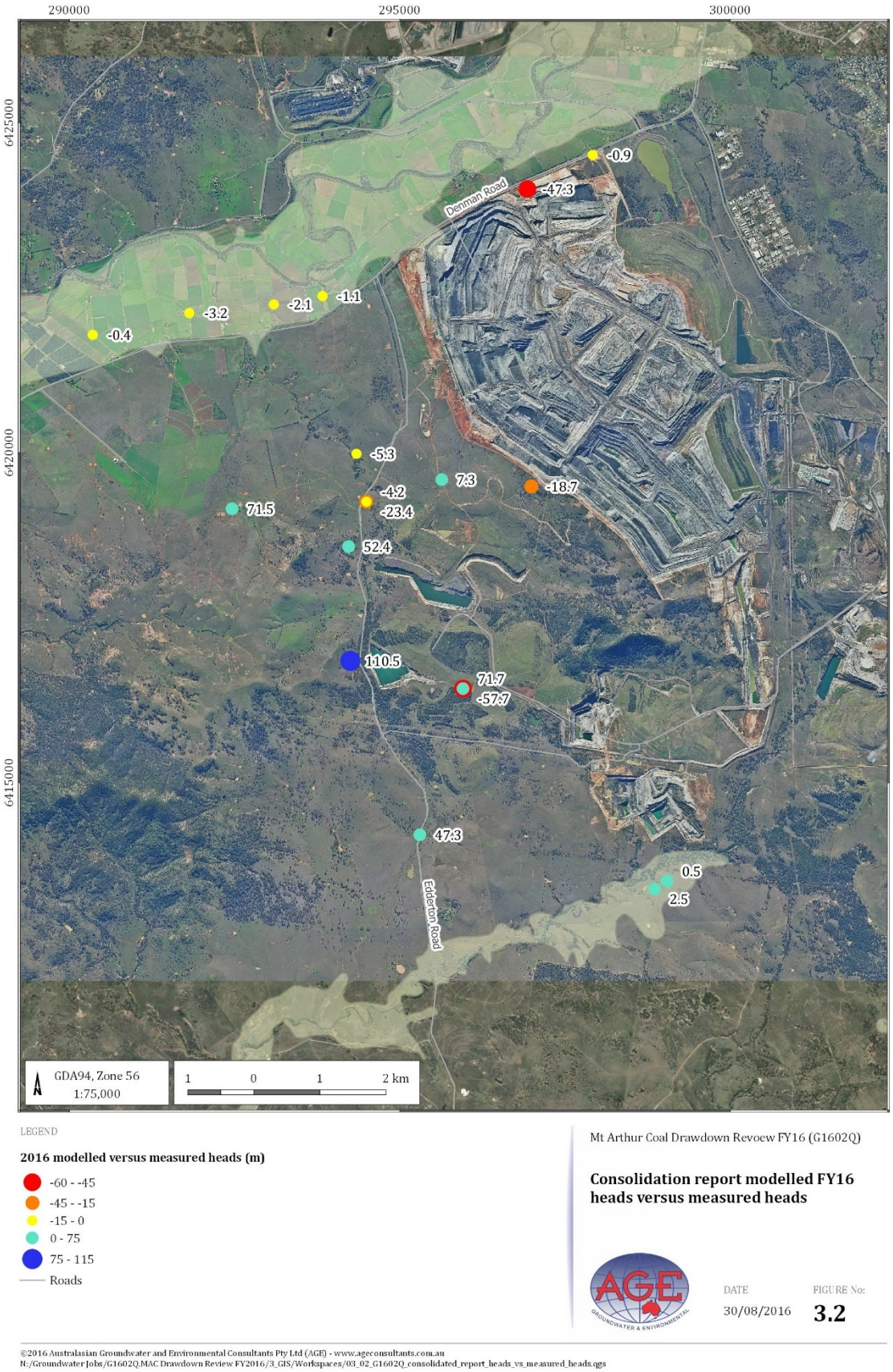
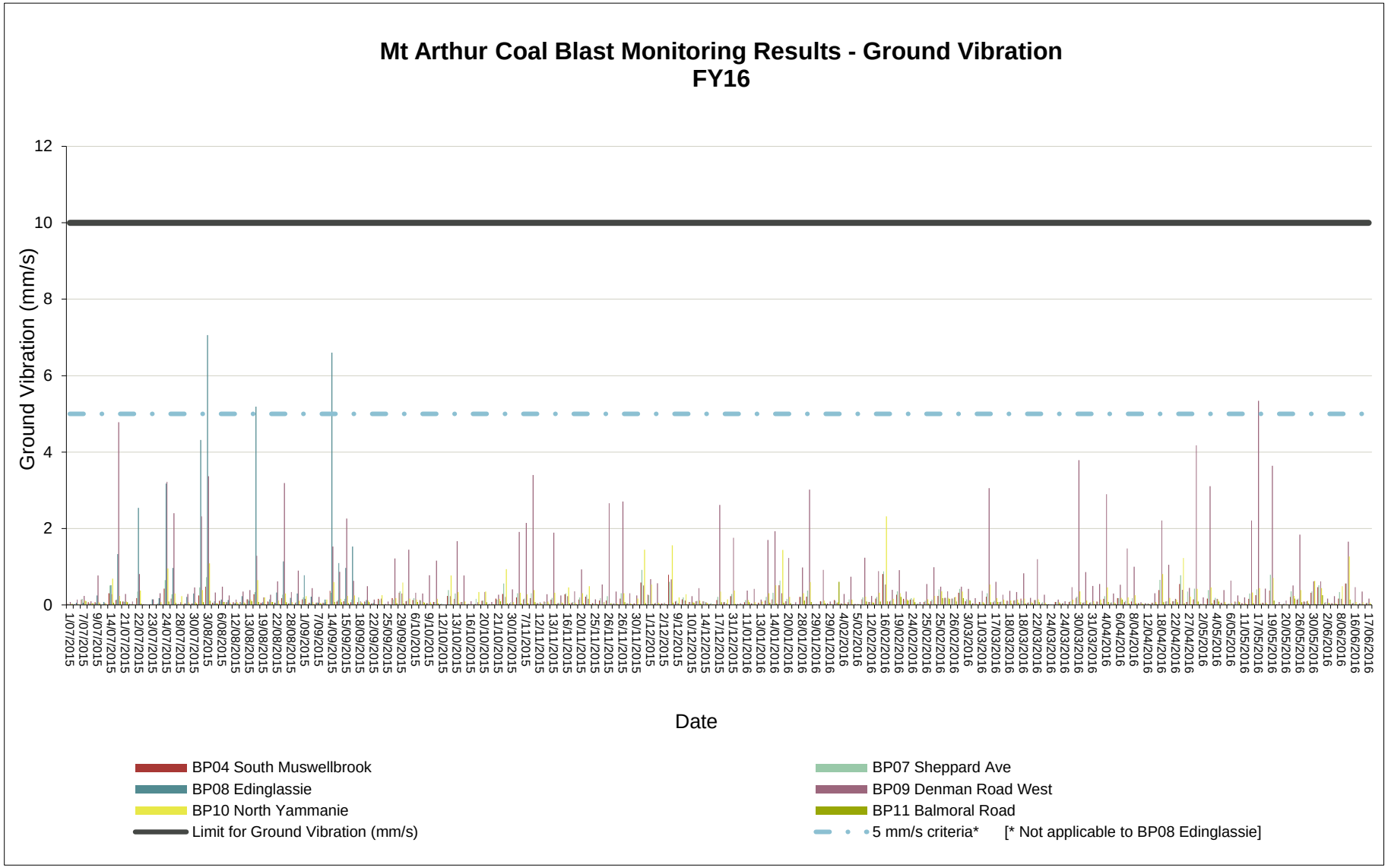
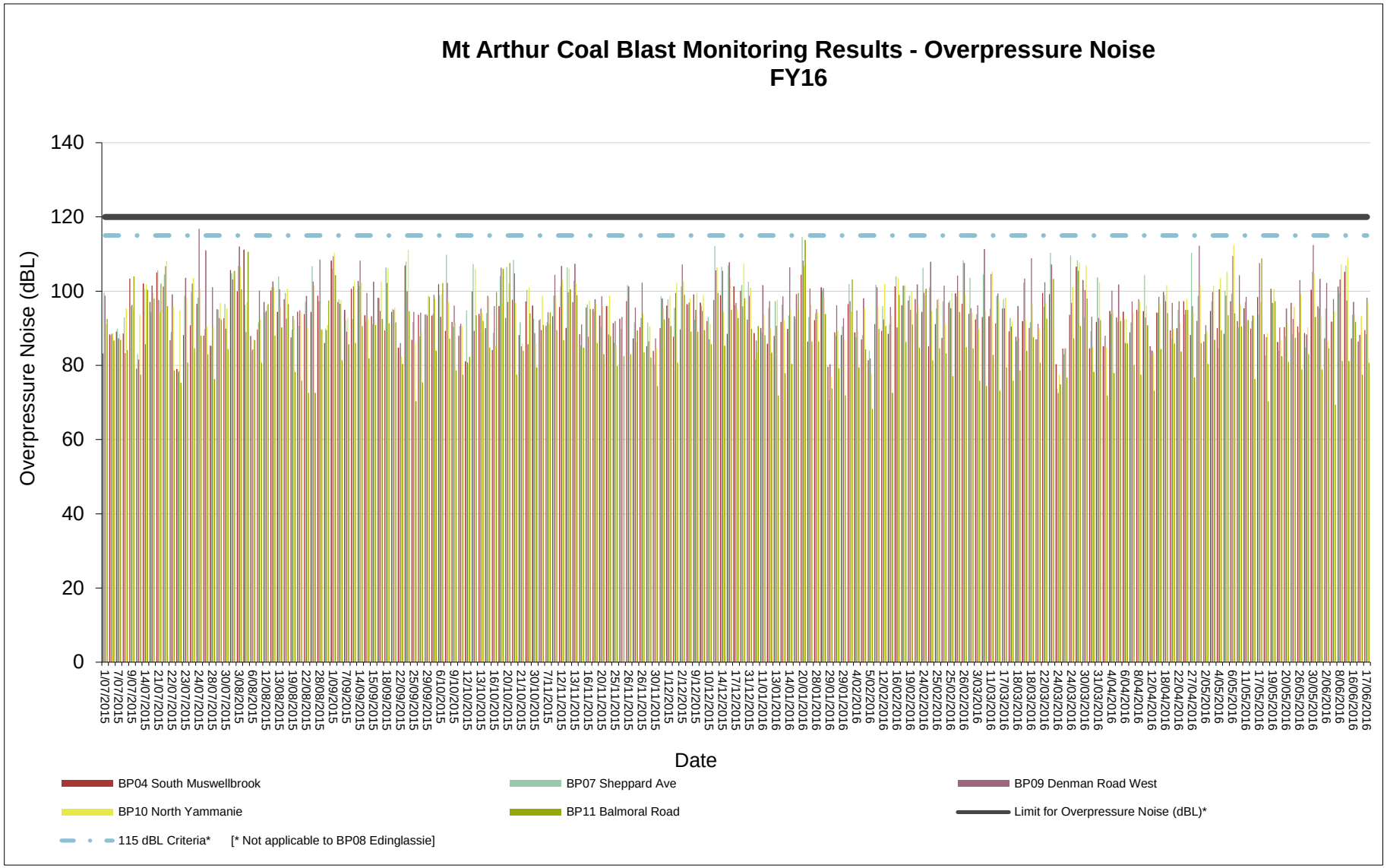


Figure 4B: Modelled versus measured ground water drawdown comparison

Appendix 5 - Blast Monitoring Results




Mt Arthur Coal Blast Monitoring Results - Overpressure Noise
FY16
Overpressure Noise (dBL)
140
120
100
80
60
40
20
0
Date
BP04 South Muswellbrook
BP07 Sheppard Ave
BP09 Denman Road West
BP10 North Yammanie
BP11 Balmoral Road
Limit for Overpressure Noise (dBL)*
115 dBL Criteria*
[* Not applicable to BP08 Edinglassie]

Appendix 6 - Meteorological Data

WS09	Temperature 2m (C)			Temperature 10m (C)			Humidity (%)			Windspeed (m/s)			Sigma Theta			Solar Radiation (W/m2)			Rainfall mm	No. of days
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max		rain >1mm
July 15	0.7	9.6	18.7	1.5	10.2	18.2	33.2	68.3	93.3	0.0	3.5	11.7	3.6	16.6	99.5	0.0	184.9	1188.3	27.8	6
August 15	1.2	11.6	24.6	2.1	12.1	24.3	28.1	61.9	92.4	0.0	3.5	12.3	3.2	15.5	96.2	0.0	249.7	1296.2	65.6	2
September 15	4.5	14.0	26.8	5.5	14.4	26.3	16.3	62.2	92.7	0.0	3.0	9.9	5.1	18.2	93.9	0.0	300.9	1465.3	12.8	2
October 15	9.5	19.7	34.6	10.4	20.2	34.3	9.9	58.2	92.3	0.0	3.1	13.8	4.0	19.4	96.0	0.0	365.1	1634.9	36.0	7
November 15	9.9	21.0	38.0	10.5	21.4	38.4	8.1	63.2	91.8	0.0	3.8	13.5	3.8	17.8	95.7	0.0	357.9	1703.9	80.8	8
December 15	11.7	22.0	36.1	12.4	22.3	35.7	11.6	59.0	90.7	0.0	3.8	13.7	4.9	19.1	102.0	0.0	355.4	1751.2	74.2	7
January 16	11.8	22.1	37.9	12.6	22.6	37.4	20.1	65.8	91.5	0.0	3.5	10.6	5.2	17.6	92.9	0.0	337.9	1649.6	126.2	10
February 16	13.9	23.2	38.5	14.9	23.6	38.0	15.0	61.8	90.0	0.0	3.4	9.5	4.6	19.5	97.2	0.0	372.5	1687.7	5.4	2
March 16	11.4	21.8	34.2	12.7	22.3	33.8	23.5	64.7	91.2	0.0	2.9	9.4	4.4	20.1	96.8	0.0	322.1	1536.6	21.0	4
April 16	9.8	19.2	33.0	10.7	19.8	32.6	12.0	65.0	92.2	0.0	2.7	8.4	5.1	19.2	91.9	0.0	252.7	1297.0	12.4	3
May 16	1.6	15.3	25.9	2.9	16.0	25.9	23.3	59.2	91.8	0.0	3.7	11.8	4.5	14.8	93.4	0.0	208.4	1172.3	25.4	3
June 16	-0.7	11.4	19.3	1.4	12.1	19.5	38.8	70.7	93.1	0.0	4.0	14.7	0.0	15.9	96.9	0.0	139.8	1011.3	90.8	8

WS10	Temperature 2m (C)			Temperature 10m (C)			Humidity (%)			Windspeed (m/s)			Sigma Theta			Solar Radiation (W/m2)			Rainfall mm	No. of days
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Average	Max	Min	Avg	Max	Min	Avg	Max		rain >1mm
July 15	-3.3	8.3	19.7	-1.9	9.4	19.4	31.0	79.3	100.4	0.0	1.2					1.2	116.2	1025.2	27.2	7
August 15	-3.8	10.1	25.3	-1.4	11.2	25.1	0.0	74.0	100.1	0.0	1.2					0.0	160.3	1133.2	66.0	2
September 15	-0.4	12.9	27.7	0.0	13.8	27.3	0.0	73.1	100.0	0.0	1.1					0.0	197.7	1409.0	8.6	2
October 15	5.9	18.8	35.7	7.2	19.7	35.5	11.8	70.1	102.5	0.0	1.3					0.6	238.8	1549.3	31.6	6
November 15	7.0	21.3	40.7	7.6	21.8	39.8	8.1	69.7	99.0	0.0	1.6					0.7	268.0	1548.9	49.2	6
December 15	8.6	22.8	39.0	11.0	23.0	37.8	9.7	63.3	98.7	0.0	1.8					0.6	282.3	1698.7	78.2	5
January 16	10.0	22.0	39.0	11.3	22.5	38.7	23.6	74.4	99.0	0.0	1.5					0.8	266.8	1742.3	93.4	7
February 16	11.7	24.1	42.4	13.5	24.0	39.6	9.7	68.2	99.5										2.4	1
March 16	6.5	22.8	39.6	8.8	22.6	35.5	18.5	69.7	98.9										13.2	2
April 16	6.4	19.4	36.2	8.7	19.7	34.7	11.0	72.2	99.4	0*	0.7*								17.2	3
May 16	-3.8	14.4	29.0	-1.4	15.2	26.8	22.1	71.1	99.5	0.0	1.4					-19.9	159.4	1007.3	31.4	3
June 16	-4.1	11.0	21.4	-3.2	11.9	20.8	0.0	78.8	99.4	0.0	1.7					-21.4	413.3	2715.0	88.6	9

Note: Power outage at WS10 between 23 January 2016 and 4 February 2016 caused by a lighting strike. Monitor was partially repaired on 4 February 2016. No wind data at WS10 for the month of February 2016 until wind sensor was replaced. Wind sensor was damaged by lightning strike in January 2016 No solar radiation or sigma theta data at WS10 captured between 4 February 2016 and 1 May 2016. Sensors were damaged by lightning strike in January 2016. Availability of replacement parts by supplier caused delay for repair. No data available from WS10 between 23 April 2016 and 26 April 2016 due to a system failure of the data logger which required replacement.

Appendix 7 - Community Complaints Register

Date and time	From	Issue	Lodgement type	Investigation and response to caller
02/07/2015 18:41	Denman 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. Caller advised they were satisfied that the issue had been resolved
02/07/2015 12:00	Other	Blast Vibration	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.
09/07/2015 11:06	Denman Road	Blast Overpressure Noise	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.
09/07/2015 11:14	Denman Road	Blast Overpressure Noise	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.
09/07/2015 15:19	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 regulatory criteria. Caller was advised of investigation and monitoring results.
09/07/2016 15:19	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 regulatory criteria. Caller was advised of investigation and monitoring results.
15/07/2015 18:24	Other	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of investigation results and action taken. Caller advised they were satisfied that the issue had been resolved
21/07/2015 15:30	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 regulatory criteria. Caller was advised of investigation and monitoring results.
22/07/2015 8:35	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 regulatory criteria. Caller was advised of investigation and monitoring results.
24/07/2015 14:58	Racecourse Road	Blast Overpressure Noise	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.
26/07/2015 12:02	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 did not request to be called back regarding investigation and monitoring results.
26/07/2015 17:02	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 did not request to be called back regarding investigation and monitoring results.
30/07/2015 15:59	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 did not request to be called back regarding investigation and monitoring results.
02/08/2015 12:28	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 did not request to be called back regarding investigation and monitoring results.
03/08/2015 14:55	Regulator	Other	Lodged with Third Party	As part of its blasting procedures, Mt Arthur Coal places reduced speed signs along a public road approximately one hour before the anticipated time of the blast event. These signs are put in place for the safety of both the general public and company personnel who are located along the roadway in preparation for a blast. Investigation revealed that speed limit signs were erected within the timeframe set out in Mt Arthur Coal's blasting procedures, which aim to ensure the safety of Mt Arthur Coal personnel and community members.
06/08/2015 19:42	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 did not request to be called back regarding investigation and monitoring results.
08/08/2015 13:33	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 did not request to be called back regarding investigation and monitoring results.

08/08/2015 19:05	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 did not request to be called back regarding investigation and monitoring results.
13/08/2015 22:10	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 did not request to be called back regarding investigation and monitoring results.
14/08/2015 11:00	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 did not request to be called back regarding investigation and monitoring results.
16/08/2015 17:08	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 did not request to be called back regarding investigation and monitoring results.
17/08/2015 16:23	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 did not request to be called back regarding investigation and monitoring results.
19/08/2015 22:54	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 did not request to be called back regarding investigation and monitoring results.
20/08/2015 8:29	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 did not request to be called back regarding investigation and monitoring results.
20/08/2015 19:45	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 did not request to be called back regarding investigation and monitoring results.
21/08/2015 18:33	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 did not request to be called back regarding investigation and monitoring results.

21/08/2015 9:45	Regulator	Other	Lodged with Third Party	As part of its blasting procedures, Mt Arthur Coal places reduced speed signs along a public road approximately one hour before the anticipated time of the blast event. These signs are put in place for the safety of both the general public and company personnel who are located along the roadway in preparation for a blast. Investigation revealed that speed limit signs were erected within the timeframe set out in Mt Arthur Coal's blasting procedures, which aim to ensure the safety of Mt Arthur Coal personnel and community members.
23/08/2015 11:36	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 did not request to be called back regarding investigation and monitoring results.
23/08/2015 18:35	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 did not request to be called back regarding investigation and monitoring results.
25/08/2015 17:50	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 did not request to be called back regarding investigation and monitoring results.
25/08/2015 17:45	Muswellbrook	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of investigation results and action taken. Caller advised they were satisfied that the issue had been resolved
26/08/2015 8:22	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 did not request to be called back regarding investigation and monitoring results.
26/08/2015 17:27	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 did not request to be called back regarding investigation and monitoring results.
28/08/2015 16:25	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 did not request to be called back regarding investigation and monitoring results.
29/08/2015 17:40	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 did not

				request to be called back regarding investigation and monitoring results.
30/08/2015 23:33	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 did not request to be called back regarding investigation and monitoring results.
31/08/2015 11:30	Racecourse Road	Blast Overpressure	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.
31/08/2015 20:01	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. Caller advised they were satisfied that the issue had been resolved
31/08/2015 15:48	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 did not request to be called back regarding investigation and monitoring results.
01/09/2015 10:47	Muswellbrook	Operational Noise	Operational Noise	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.
01/09/2015 17:45	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 did not request to be called back regarding investigation and monitoring results.
03/09/2015 21:03	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 did not request to be called back regarding investigation and monitoring results.
03/09/2015 17:42	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 did not request to be called back regarding investigation and monitoring results.
04/09/2015 7:27	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 did not request to be called back regarding investigation and monitoring results.

04/09/2015 17:30	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 did not request to be called back regarding investigation and monitoring results.
05/09/2015 18:27	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 did not request to be called back regarding investigation and monitoring results.
06/09/2015 16:52	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 did not request to be called back regarding investigation and monitoring results.
07/09/2015 7:45	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 did not request to be called back regarding investigation and monitoring results.
07/09/2015 16:18	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 did not request to be called back regarding investigation and monitoring results.
07/09/2015 19:49	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. Caller advised they were satisfied that the issue had been resolved
08/09/2015 18:58	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. Caller advised they were satisfied that the issue had been resolved
08/09/2015 7:46	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 did not request to be called back regarding investigation and monitoring results.
08/09/2015 19:26	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 did not request to be called back regarding investigation and monitoring results.
09/09/2015 22:00	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 did not

				request to be called back regarding investigation and monitoring results.
09/09/2015 18:28	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 did not request to be called back regarding investigation and monitoring results.
10/09/2015 7:49	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 did not request to be called back regarding investigation and monitoring results.
10/09/2015 21:33	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 did not request to be called back regarding investigation and monitoring results.
11/09/2015 18:37	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 did not request to be called back regarding investigation and monitoring results.
12/09/2015 16:34	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 did not request to be called back regarding investigation and monitoring results.
15/09/2015 18:58	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 did not request to be called back regarding investigation and monitoring results.
16/09/2015 15:19	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 did not request to be called back regarding investigation and monitoring results.
17/09/2015 17:18	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 did not request to be called back regarding investigation and monitoring results.
17/09/2015 19:32	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. Caller advised they were satisfied that the issue had been resolved

20/09/2015 18:17	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 did not request to be called back regarding investigation and monitoring results.
21/09/2015 17:23	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 did not request to be called back regarding investigation and monitoring results.
22/09/2015 14:20	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. Caller advised they were satisfied that the issue had been resolved
22/09/2015 16:10	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 did not request to be called back regarding investigation and monitoring results.
22/09/2015 18:57	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 did not request to be called back regarding investigation and monitoring results.
25/09/2015 18:21	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 did not request to be called back regarding investigation and monitoring results.
26/09/2015 18:58	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 did not request to be called back regarding investigation and monitoring results.
27/09/2015 23:36	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 did not request to be called back regarding investigation and monitoring results.
28/09/2015 19:01	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 did not request to be called back regarding investigation and monitoring results.
29/09/2015 15:29	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 did not request to be called back regarding investigation and monitoring results.
30/09/2015 18:57	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 did not request to be called back regarding investigation and monitoring results.
01/10/2015 9:52	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 did not request to be called back regarding investigation and monitoring results.
05/10/2015 18:55	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 did not request to be called back regarding investigation and monitoring results.
06/10/2015 15:14	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 did not request to be called back regarding investigation and monitoring results.
06/10/2015 17:16	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 did not request to be called back regarding investigation and monitoring results.
07/10/2015 10:19	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 did not request to be called back regarding investigation and monitoring results.
07/10/2015 10:26	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 did not request to be called back regarding investigation and monitoring results.
07/10/2015 15:15	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 did not request to be called back regarding investigation and monitoring results.
08/10/2015 14:07	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 did not request to be

				called back regarding investigation and monitoring results.
12/10/2015 11:03	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 did not request to be called back regarding investigation and monitoring results.
12/10/2015 22:02	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 did not request to be called back regarding investigation and monitoring results.
14/10/2015 17:43	Other	General 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.
15/10/2015 6:42	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 did not request to be called back regarding investigation and monitoring results.
15/10/2015 6:42	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 did not request to be called back regarding investigation and monitoring results.
16/10/2015 11:11	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 did not request to be called back regarding investigation and monitoring results.
17/10/2015 18:40	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.
17/10/2015 19:03	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.

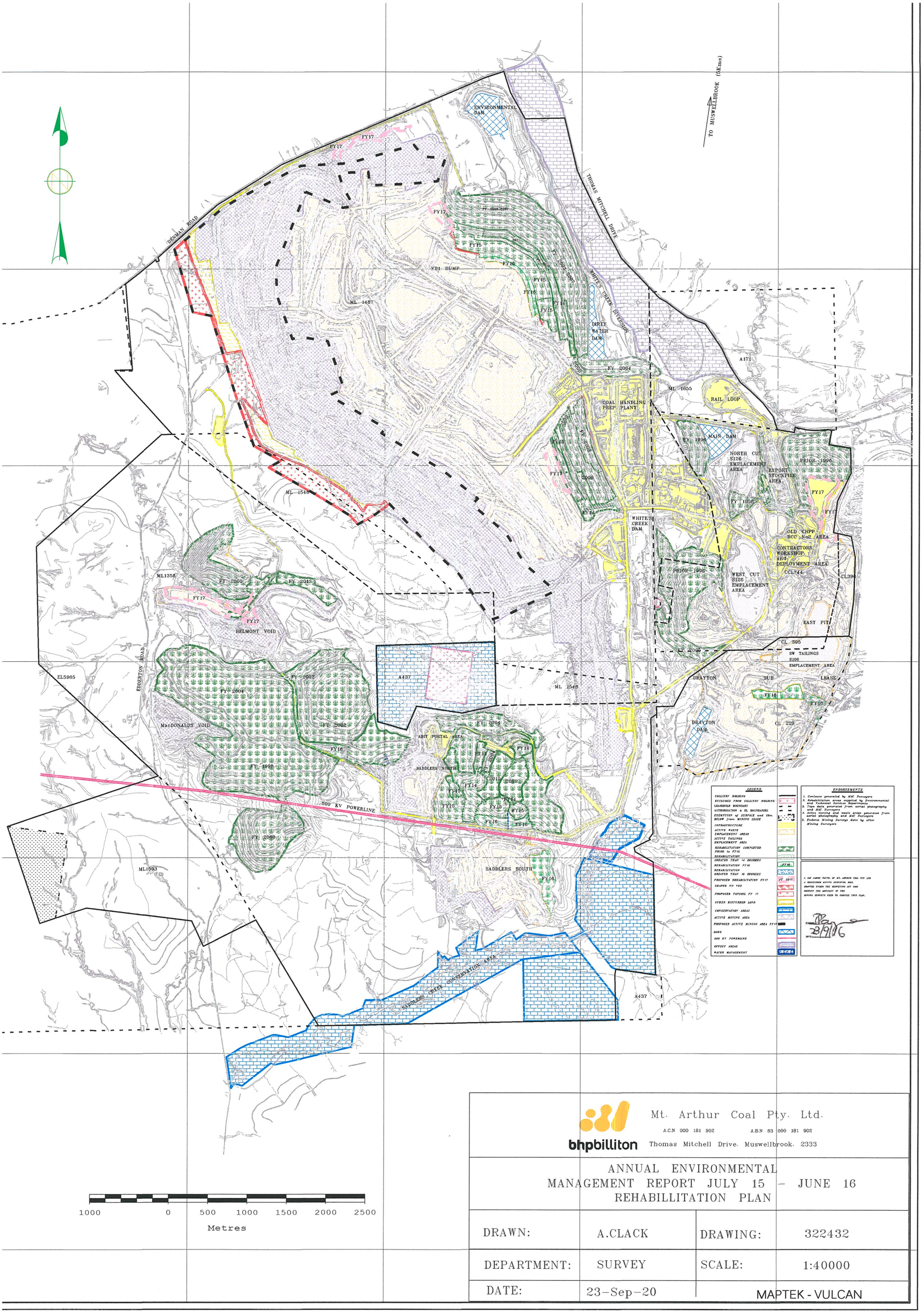
22/10/2015 3:18	Muswellbrook	Operational Noise	Community Response Line	Investigation revealed no unusual mining operations were occurring at the time. Results at the nearest real-time monitor indicated noise levels were within internal benchmarks. Caller did not request to be called back regarding investigation and monitoring results.
24/10/2015 15:40	Other	General Dust	Community Response Line	Investigation revealed 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.
29/10/2015 17:40	Muswellbrook	General Dust	Community Response Line	Investigation revealed 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.
11/11/2015 18:22	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 did not request to be called back regarding investigation and monitoring results.
1/12/2015 16:10	Antiene	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.
05/12/2015 10:10	Denman Road	General Dust	Community Response Line	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.
10/12/2015 20:40	Muswellbrook	Lighting	Community Response Line	Investigation revealed location of lights, which were redirected or turned off. Caller was advised of investigation results and action taken. Caller advised they were satisfied that the issue had been resolved
11/12/2015 10:34	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.
14/12/2015 19:48	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.
16/12/2015 21:46	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were turned off or redirected. Caller did not request to be called back regarding investigation results.
17/12/2015 13:25	Muswellbrook	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 did not request to be

				called back regarding investigation and monitoring results.
21/12/2015 16:51	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.
10/01/2016 20:29	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.
11/01/2016 12:30	Racecourse Road	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.
29/01/2016 11:37	Racecourse Road	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.
29/01/2016 11:37	Antiene	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.
29/01/2016 11:37	Racecourse Road	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.
10/02/2016 23:02	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.
08/03/2016 17:38	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.
11/03/2016 20:41	Denman 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.
16/03/2016 20:31	Other	General Dust	Community Response Line	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.

20/03/2016 9:48	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.
30/03/2016 13:19	Denman Road	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.
31/03/2016 8:00	Denman Road	General Dust	Community Response Line	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.
01/04/2016 16:47	Denman Road	General Dust	Community Response Line	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.
03/04/2016 13:05	Denman Road	General Dust	Community Response Line	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.
07/04/2016 5:21	Denman Road	Lighting	Community Response Line	Investigation revealed location of lights, which were turned off or redirected. Caller did not request to be called back regarding investigation results.
06/04/2016 20:32	Denman Road	Lighting	Community Response Line	Investigation revealed location of lights, which were turned off or redirected. Caller did not request to be called back regarding investigation results.
06/04/2016 20:26	Denman Road	Lighting	Community Response Line	Investigation revealed location of lights, which were turned off or redirected. Caller did not request to be called back regarding investigation results.
26/04/2016 19:01	Denman Road	Lighting	Community Response Line	Investigation revealed location of lights, which were turned off or redirected. Caller did not request to be called back regarding investigation results.
11/05/2016 20:19	Other	Lighting	Community Response Line	Investigation revealed location of lights, which were turned off or redirected. Caller did not request to be called back regarding investigation results.
17/05/2016 11:39	Roxburgh Road	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.
16/05/2016 10:15	Roxburgh Road	General Dust	Community Response Line	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.
17/05/2016 13:19	Muswellbrook	General Dust	Community Response Line	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.

18/05/2016 5:13	Muswellbrook	Lighting	Community Response Line	Investigation revealed location of lights, which were turned off or redirected. Caller did not request to be called back regarding investigation results.
22/05/2016 15:00	Muswellbrook	General Dust	Community Response Line	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.
02/06/2016 9:27	Muswellbrook	General Dust	Community Response Line	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.
24/06/2016 20:38	Denman Road	Lighting	Community Response Line	Investigation revealed location of lights, which were turned off or redirected. Caller did not request to be called back regarding investigation results.
25/06/2016 11:15	Denman Road	General Dust	Community Response Line	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.
29/06/2016 N/A	Roxburgh Road	Lighting	Community Response Line	Investigation revealed location of lights, which were turned off or redirected. Caller did not request to be called back regarding investigation results.

Appendix 8 - Rehabilitation Plan



Mt. Arthur Coal Pty. Ltd.

A.C.N 000 181 902 A.B.N 83 000 181 902

Thomas Mitchell Drive, Muswellbrook. 2333

ANNUAL ENVIRONMENTAL MANAGEMENT REPORT JULY 15 – JUNE 16 REHABILLITATION PLAN

DRAWN:	A.CLACK	DRAWING:	322432
DEPARTMENT:	SURVEY	SCALE:	1:40000
DATE:	23-Sep-20	MAPTEK - VULCAN