

Agenda Item 6 - Overview of Operations (Mar - Apr 2014)

- No land was rehabilitated during the months of March and April.
- The total number of people employed at Mt Arthur Coal (employees and contractors) was 1,907 at the end of April 2014.
- Overview of operations to be provided by Michael White.

Agenda Item 7 - Overview of Environment (Mar - Apr 2014)

- Between approximately 5 pm and 6 pm on Friday 28 March 2014, a rainfall event resulted in surface water run-off leaving the Mt Arthur Coal boundary at two low lying points along Denman Road. Water passed across Denman Road eventually dispersing onto Mt Arthur Coal-owned property adjacent to the mine. Denman Road remained passable with traffic movement slowed during the event for approximately one hour. The likely pollutant discharged during this incident was suspended solids from soils. On the day prior to the incident significant rainfall had occurred, which had saturated the ground and catchment area. A significant amount of rain also fell immediately prior to and during the incident, generating the large volume of surface water runoff. The culverts on Denman Road, which are external to the site and are not required to be maintained by Mt Arthur Coal, were blocked at the time of the incident causing water to travel over the road surface rather than through the culverts as designed. In accordance with the *Protection of the Environment Operations (POEO) Act 1997* Mt Arthur Coal immediately initiated the site's Pollution Incident Response Management Plan (PIRMP) and notified the relevant authorities of the incident. Muswellbrook Shire Council was notified in order to implement traffic control measures along Denman Road for safety reasons.
- At approximately 10 am on 4 April 2014 after a further rainfall event, surface water runoff left the Mt Arthur Coal boundary at three low lying points along Denman Road. Water passed underneath (via culverts) and shallowly across Denman Road for a short period of time (approximately 15 minutes) dispersing onto Mt Arthur Coal-owned property adjacent to the mine. In accordance with the POEO Act 1997 Mt Arthur Coal immediately initiated the site's PIRMP. Investigations determined that the erosion and sediment controls in place at the time of these incidents had not adequately considered design capacities as per the mine's approved Erosion and Sediment Control Plan (ESCP), specifically that two sediment dams identified in the ESCP had not been constructed prior to disturbance within the two catchments. Controls in place at the time of the incidents included sediment fencing along the boundary fence, hay bales in low lying areas, three rock-lined outlets installed along the visual bund, two small sediment dams installed along the flow paths, use of an existing farm dam as a sediment dam and vegetation established along the visual bund. Since the incidents, additional controls and enhancements to existing controls have been put in place to reduce the level of suspended solids and minimise surface water runoff leaving the site boundary, including regular inspections of the Denman Road culverts, installation of new sediment fencing and hay bales, installation of rock check dams to reduce water velocity along flow paths, installation of pumps on sediment dams to maintain capacity, seeding of exposed soil to reduce erosion risk, review of sediment control designs for the area and completion of the construction of the sediment dams in accordance with the approved ESCP. Mt Arthur Coal also proposes to make some amendments to their internal ground disturbance permit process, risk assessment processes around land management and the current topsoil stripping and rehabilitation schedule, to include adequate consideration and time for the installation of erosion and sediment controls.

- As a result of the above incidents, on 24 April 2014 the Department of Planning and Infrastructure (DP&I) issued Mt Arthur Coal with a penalty notice for not complying with the mine's approved ESCP.
- Hunter Valley Energy Coal submitted its *U3 Particulate Matter Control Best Practice Implementation – Trial of Best Practice Measures for Disturbing and Handling Overburden* report to the Environment Protection Authority on 14 April 2014.
- The DP&I approved Mt Arthur Coal's revised Surface Water Monitoring Program on 16 April 2014. Minor amendments were made to some monitoring locations.
- The following incidents related to monitoring results occurred at Mt Arthur Coal during March and April and Mt Arthur Coal notified the relevant authorities accordingly:
 - An elevated annual average HVAS result was recorded at the Sheppard Avenue monitor. Investigations revealed Mt Arthur Coal's contribution to this elevated annual average result was below statutory limits,
 - One elevated TEOM result was recorded at the Sheppard Avenue monitor in April 2014. Investigations revealed Mt Arthur Coal's potential contribution to this elevated result was still above statutory limits. However a race meet was also held at Muswellbrook Racecourse, where the Sheppard Avenue monitor is located, on this day. When compared to other TEOM monitors, this result is inconsistent and can be attributed to a localised source, and
 - Elevated EC was recorded at groundwater sites OD1049-WH and GW40A during routine sampling in December 2013 and February and April 2014. Investigations are currently being undertaken for these elevated results.

Agenda Item 8 - Environmental Monitoring Data (Mar - Apr 2014)

This monitoring data is provided for your reference prior to the meeting. Exceedances or elevated results since the last meeting will be discussed by exception only.

Monitoring locations are shown in Appendix 1.

1. Blasting Data (Mar - Apr 2014)

Blasting Criteria:

Blast Impact Assessment Criteria

10. The Proponent shall ensure that blasts on site do not cause exceedances of the criteria in Table 8.

Table 8: Blasting impact assessment criteria

Location	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance
Residence on privately owned land	120	10	0%
	115	5	5% of the total number of blasts over a period of 12 months
Heritage sites, including Edinglassie and Rous Lench	133	10	0%

Blasting Summary:

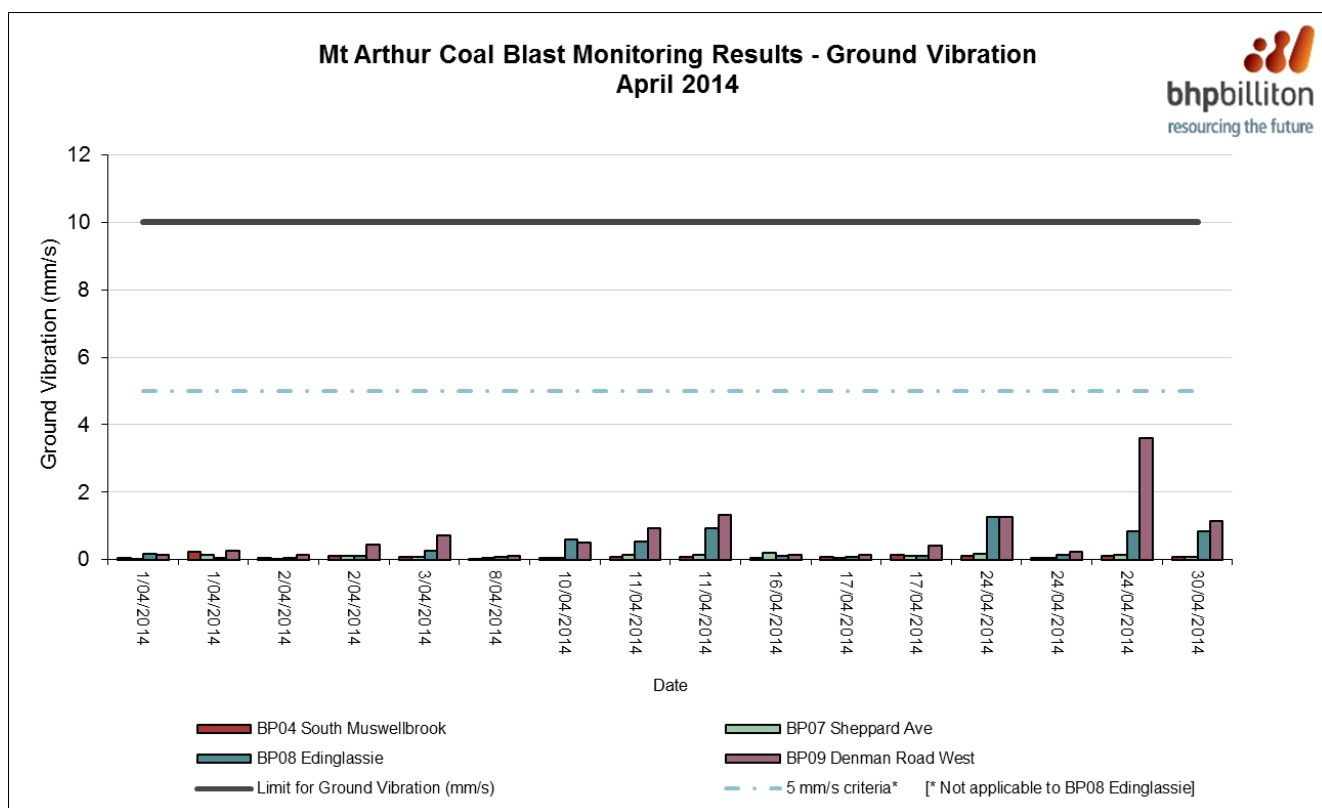
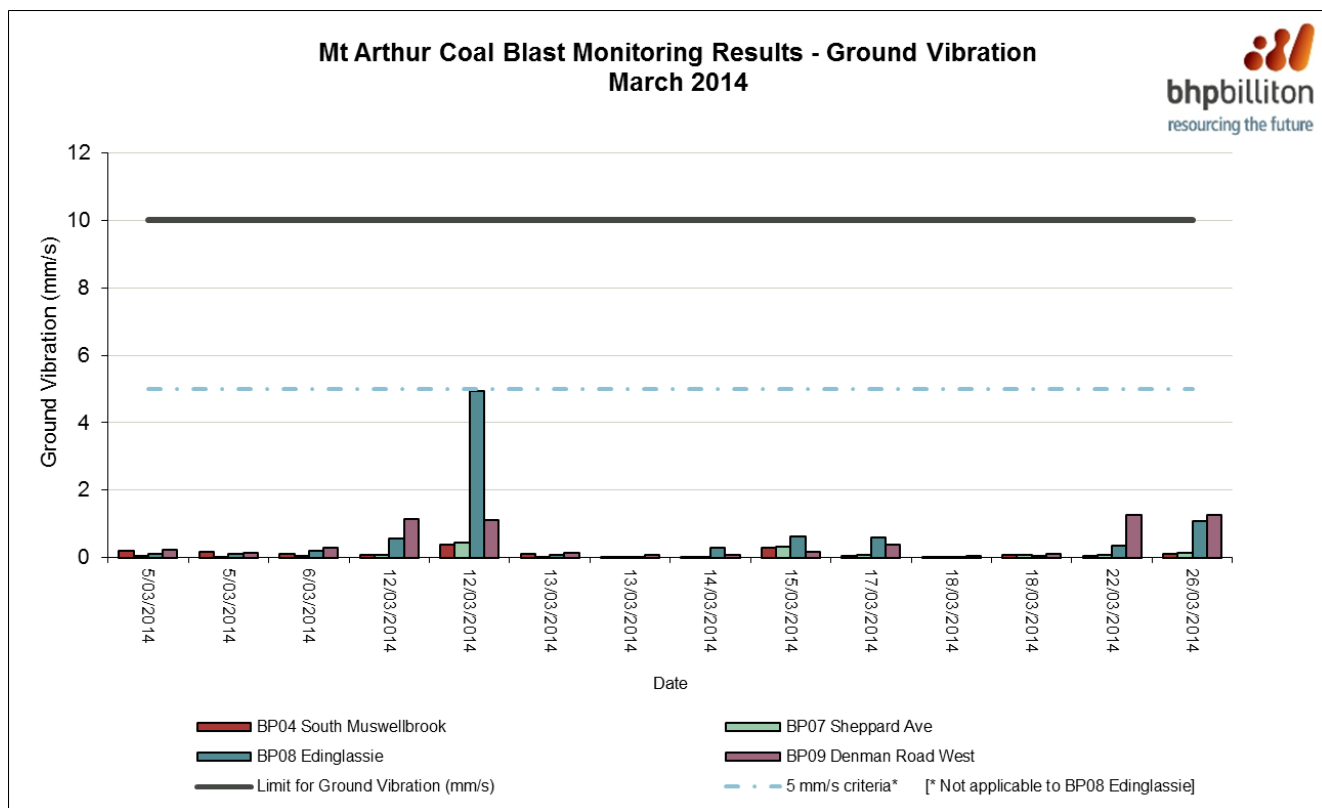
- There were no road closures in March or April.
- There were 30 blast events in March and April.
- 8 blasts were delayed in March and April due to unfavourable weather conditions.
- There were no reportable blast fume events in March or April.
- There were no elevated blast vibration or blast overpressure noise results recorded during March or April.

Blast Monitor Data Capture Rates:

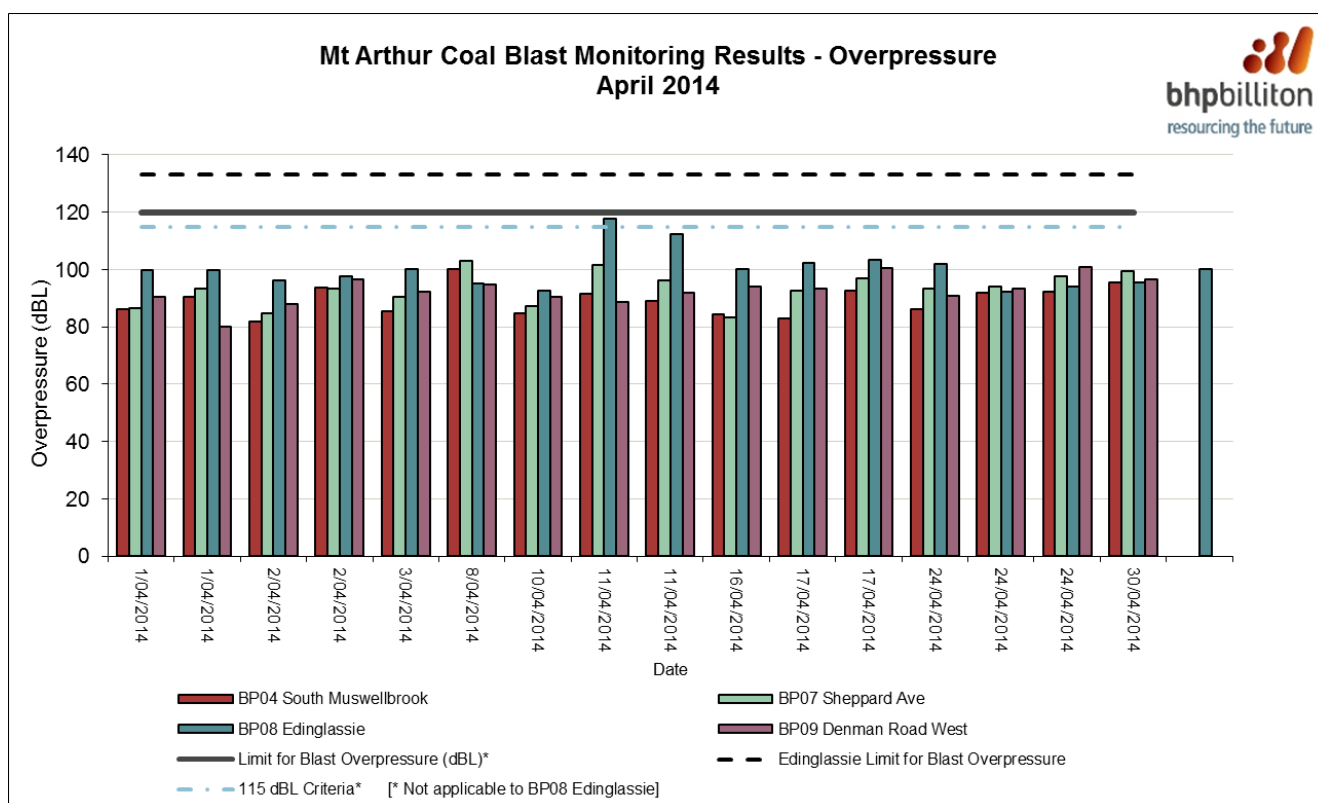
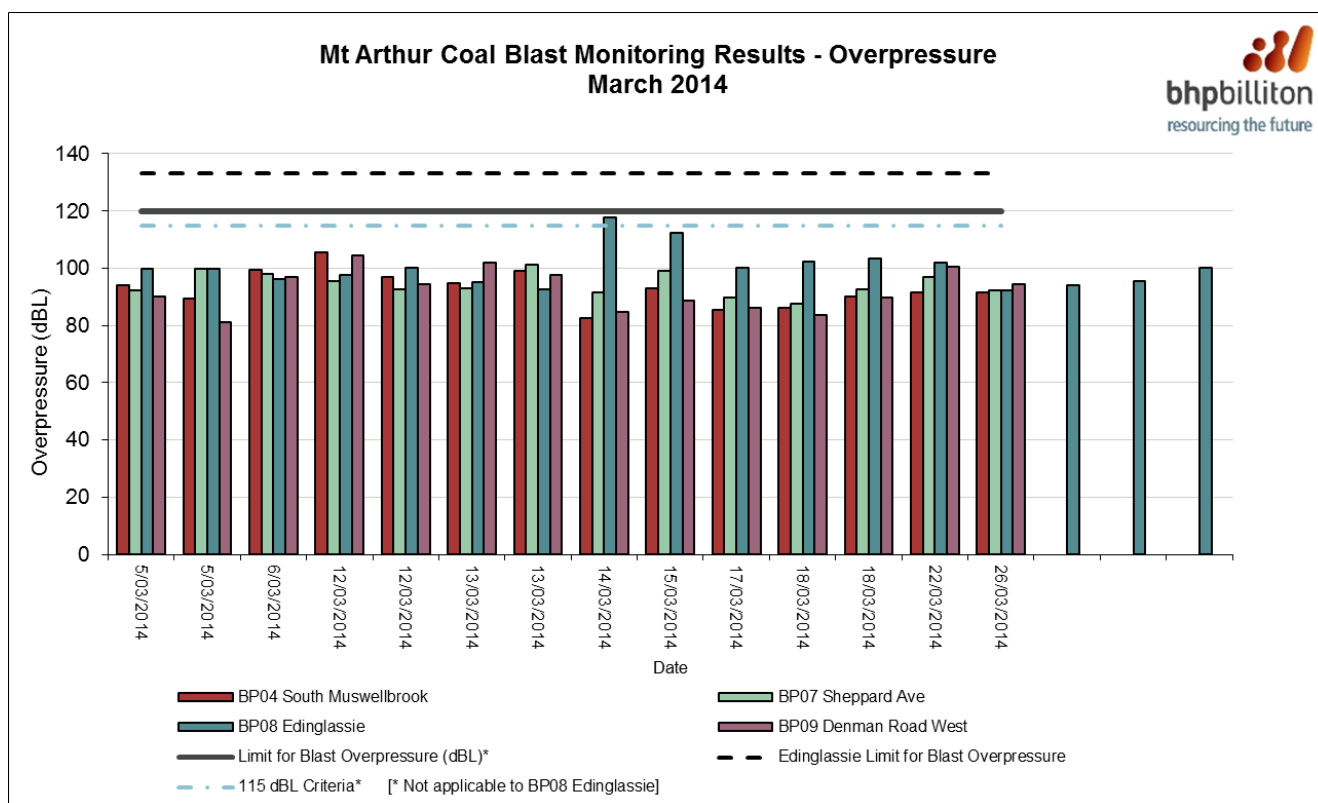
	South Muswellbrook	Sheppard Avenue	Edinglassie	Denman Road West
Site ID	BP04	BP07	BP08	BP09
Mar-14	100%	100%	100%	100%
Apr-14	100%	100%	100%	100%

Note: The data capture rate is the percentage of the total number of blasts for which blast monitoring results were obtained.

Ground Vibration:



Airblast Overpressure:



2. High Volume Air Sampling (HVAS) Data (Mar - Apr 2014)

HVAS Criteria:

Impact Assessment Criteria			
20.	The Proponent shall ensure that the dust emissions generated by the Mt Arthur mine complex do not cause additional exceedances of the air quality impact assessment criteria listed in Tables 9, 10 and 11 at any residence on privately owned land, or on more than 25 percent of any privately owned land, except where such exceedance is predicted in the EA. For these properties, the Proponent shall comply with the air quality predictions in the EA.		
<i>Table 9: Long term impact assessment criteria for particulate matter</i>			
Pollutant	Averaging period	Criterion	Basis
Total suspended particulate (TSP) matter	Annual	90 µg/m ³	Total ¹
Particulate matter < 10 µm (PM ₁₀)	Annual	30 µg/m ³	Total ¹
<i>Table 10: Short term impact assessment criterion for particulate matter</i>			
Pollutant	Averaging period	Criterion	Basis
Particulate matter < 10 µm (PM ₁₀)	24 hour	50 µg/m ³	Total ¹

HVAS Summary:

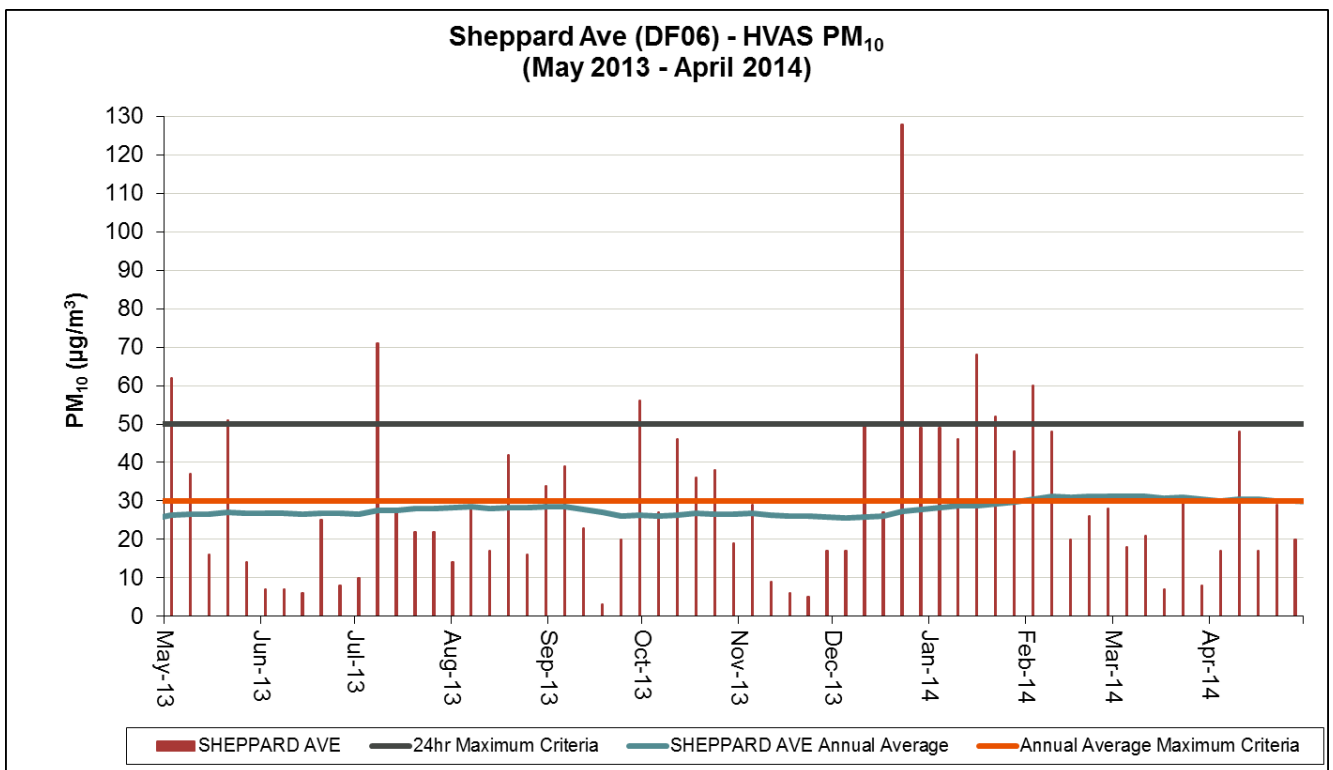
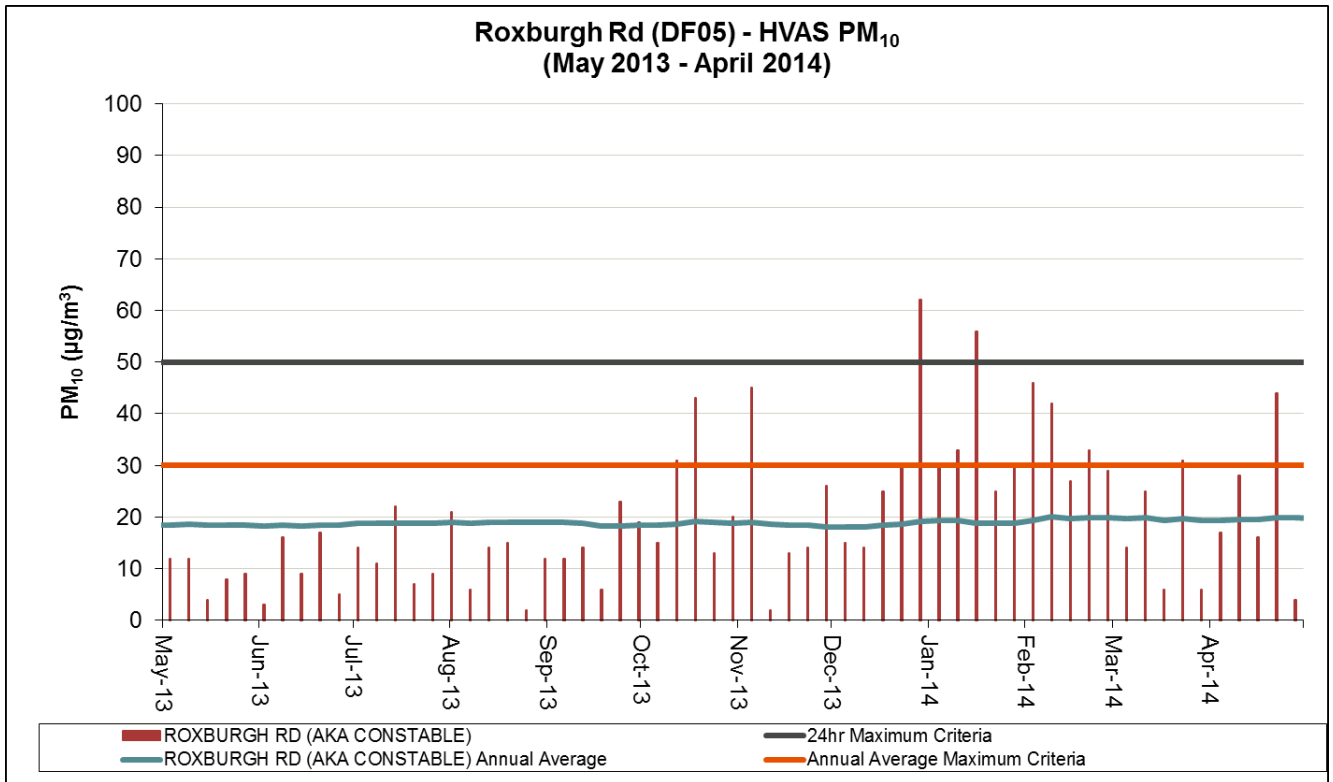
- Mt Arthur Coal has three statutory HVAS monitors.
- All statutory HVAS monitoring locations currently have annual averages below relevant regulatory criteria, except for DF06 (Sheppard Avenue), as detailed in the elevated results table below.
- There were no elevated results recorded during March and April.

Date	Site	Elevated PM ₁₀ result (µg/m ³)	Mt Arthur Coal's contribution (µg/m ³)	Exceedance investigation results
Mar-14 / Apr-14	Sheppard Avenue	Annual Average: 30.1	Annual Average: 21.9	This monitor is located near Muswellbrook Racecourse and monitors PM ₁₀ levels to the north-north-east of the operation. This monitor recorded elevated annual average PM ₁₀ results over 30 µg/m ³ in March and April 2014. Further investigation has revealed that if only Mt Arthur Coal's calculated contribution was used on the occasions when the 24-hour result recorded at DF06 exceeded the 24-hour limit of 50 µg/m ³ , then the annual average is calculated to be less than the impact assessment criteria of 30 µg/m ³ .

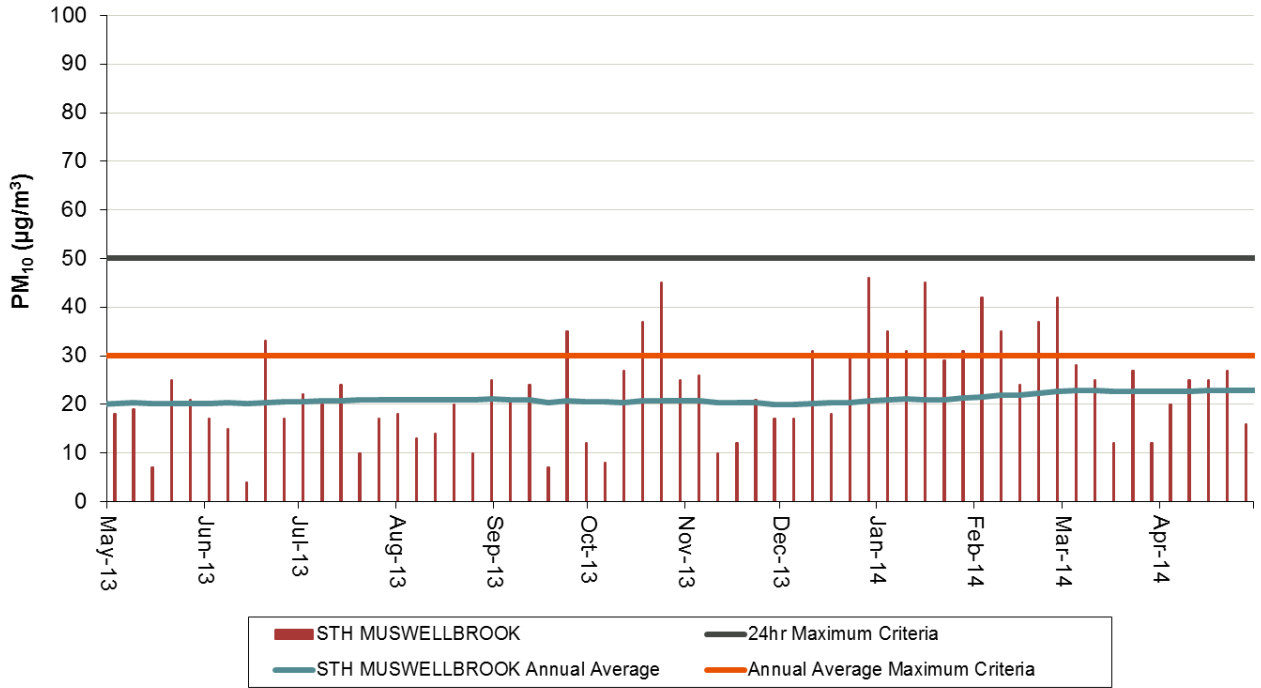
HVAS Data Capture Rates:

	Roxburgh Road (Constable)	Sheppard Avenue	South Muswellbrook
Site ID	DF05	DF06	DF07
Mar-14	100%	100%	100%
Apr-14	100%	100%	100%

HVAS PM₁₀:



South Muswellbrook (DF07) - HVAS PM₁₀
(May 2013 - April 2014)



3. Real-time Air Quality Monitoring Data (Mar - Apr 2014)

Real-time Air Quality Monitoring Criteria:

Impact Assessment Criteria			
20.	The Proponent shall ensure that the dust emissions generated by the Mt Arthur mine complex do not cause additional exceedances of the air quality impact assessment criteria listed in Tables 9, 10 and 11 at any residence on privately owned land, or on more than 25 percent of any privately owned land, except where such exceedance is predicted in the EA. For these properties, the Proponent shall comply with the air quality predictions in the EA.		
<i>Table 9: Long term impact assessment criteria for particulate matter</i>			
Pollutant	Averaging period	Criterion	Basis
Total suspended particulate (TSP) matter	Annual	90 µg/m ³	Total ¹
Particulate matter < 10 µm (PM ₁₀)	Annual	30 µg/m ³	Total ¹
<i>Table 10: Short term impact assessment criterion for particulate matter</i>			
Pollutant	Averaging period	Criterion	Basis
Particulate matter < 10 µm (PM ₁₀)	24 hour	50 µg/m ³	Total ¹

Real-time Air Quality Monitoring Summary:

- The real-time air quality monitors used by Mt Arthur Coal are called Tapered Element Oscillating Microbalances (TEOMs).
- Mt Arthur Coal has six statutory TEOMs.
- All statutory real-time air quality monitors currently have annual averages below regulatory criteria.
- There were no elevated results recorded during March and one elevated result during April, as follows:

Date	Site	Elevated PM₁₀ result (µg/m³)	Mt Arthur Coal's contribution (µg/m³)	Exceedance investigation results
21/4/14	Sheppard Avenue	157.3	107.5	This monitor is located near Muswellbrook Racecourse and monitors PM ₁₀ levels to the north-north-east of the operation. Further investigation of meteorological conditions indicates that the wind direction was predominately from the north west. During approximately 9.38 per cent of the day this monitor was located downwind of Mt Arthur Coal's operations. Further investigation into this result revealed that there was a race meet held at Muswellbrook racecourse, where DC02 is located, on this day. Instantaneous PM ₁₀ data at DC02 showed a spike in levels between 5-7 pm. Following discussions with Muswellbrook Race Club it was confirmed that the last race was held at approximately 4.45 pm. All other real-time monitors recorded results below the 24-hour impact assessment criteria and Mt Arthur Coal did not receive any complaints on this day. It is considered that the elevated result was caused by a localised source and not influenced by operations at Mt Arthur Coal.

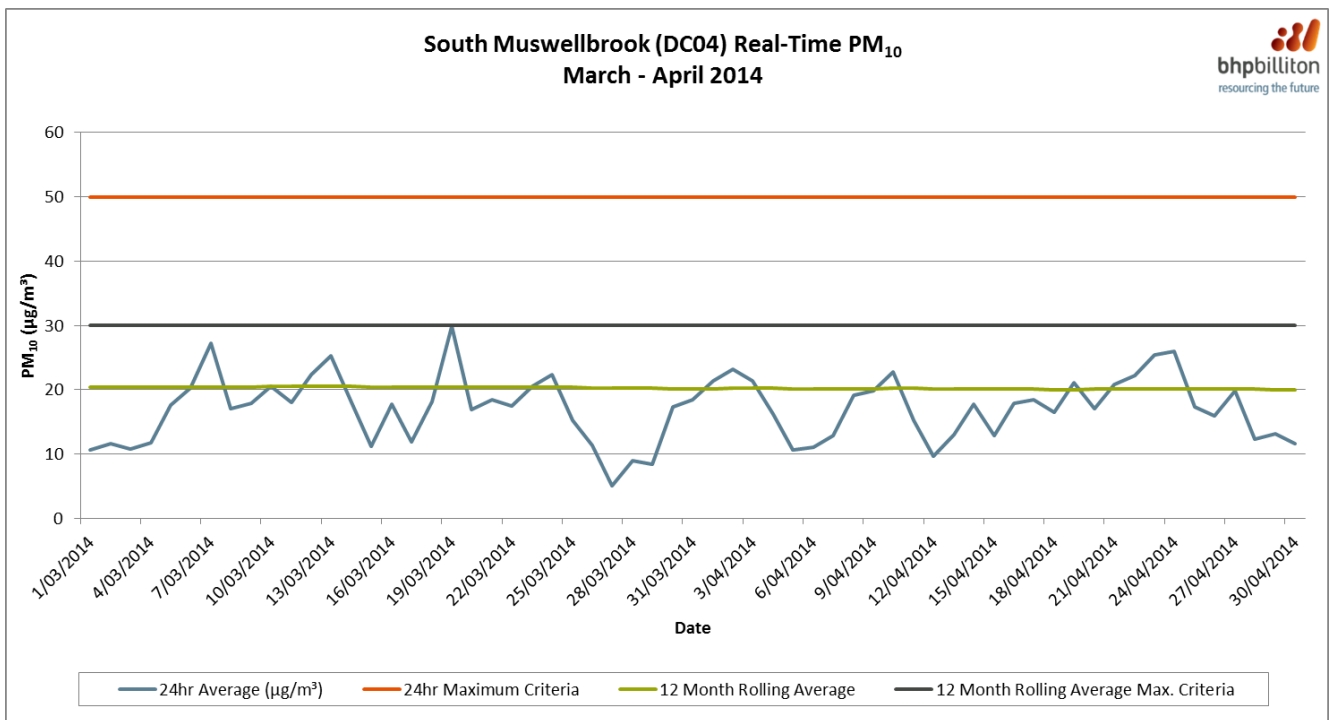
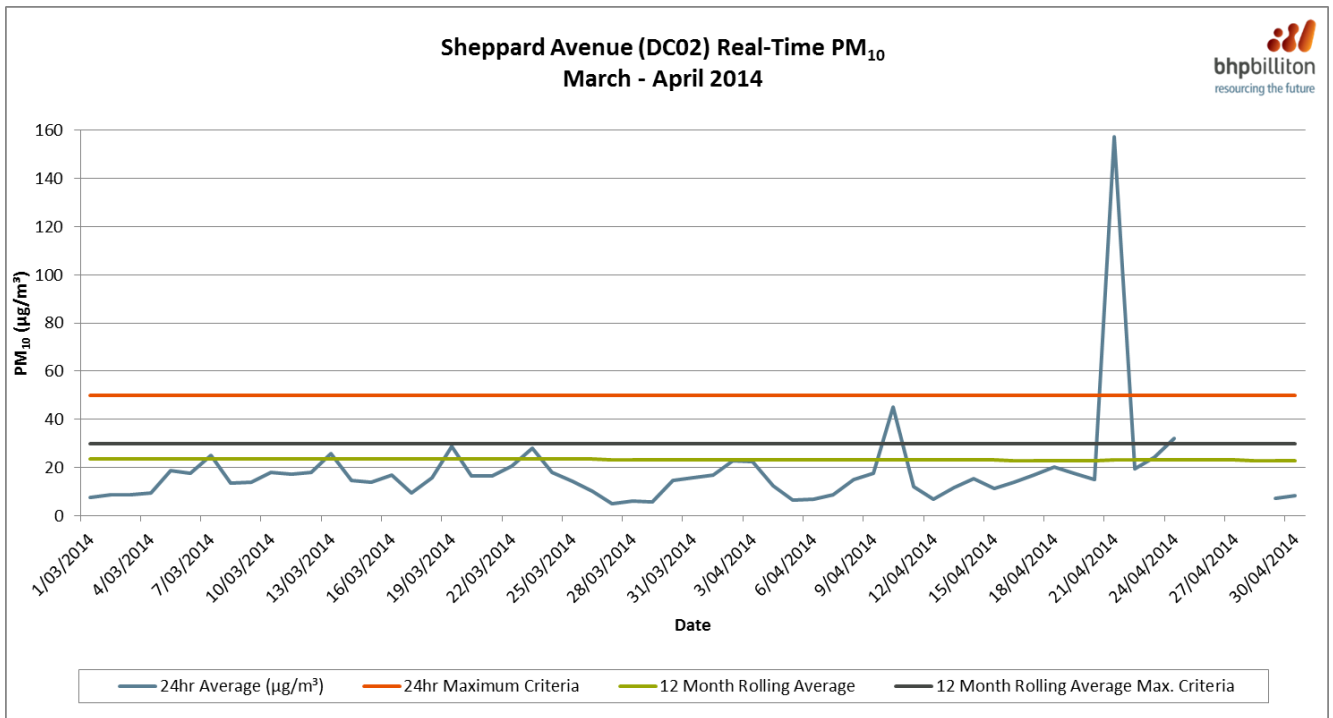
Real-time Air Quality Monitoring Data Capture Rates:

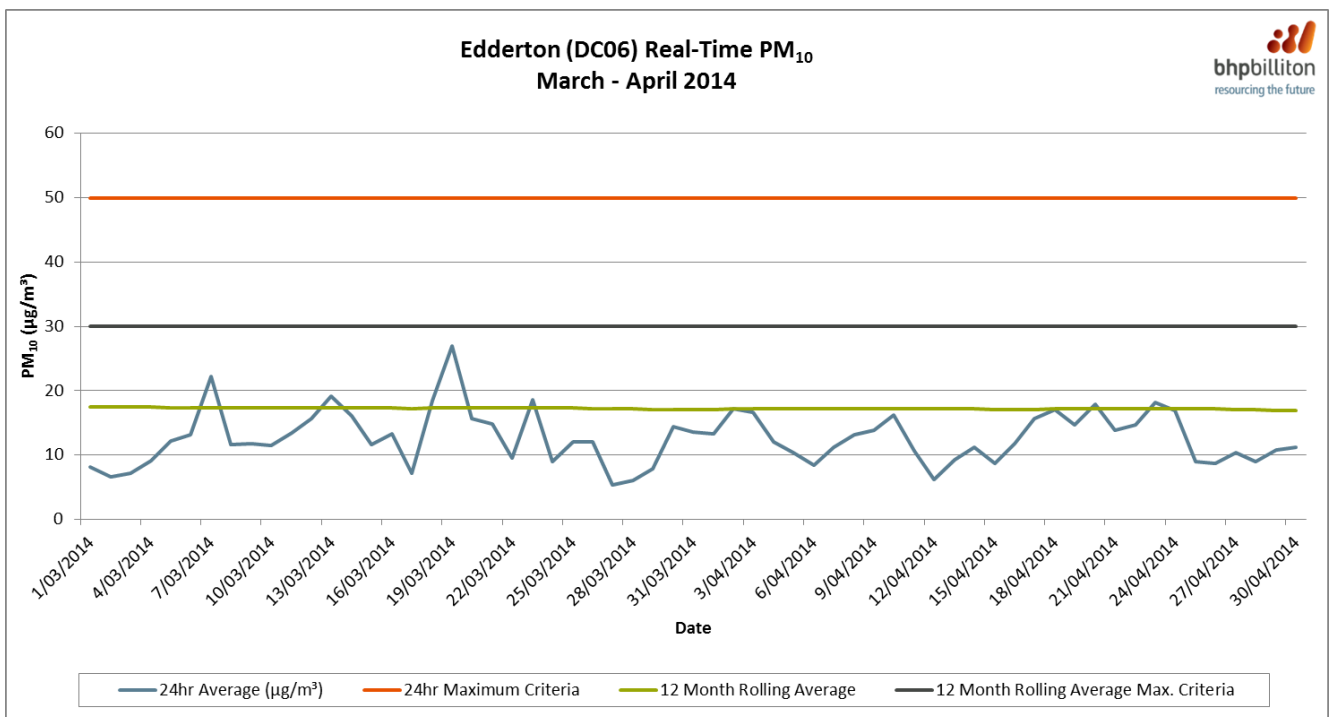
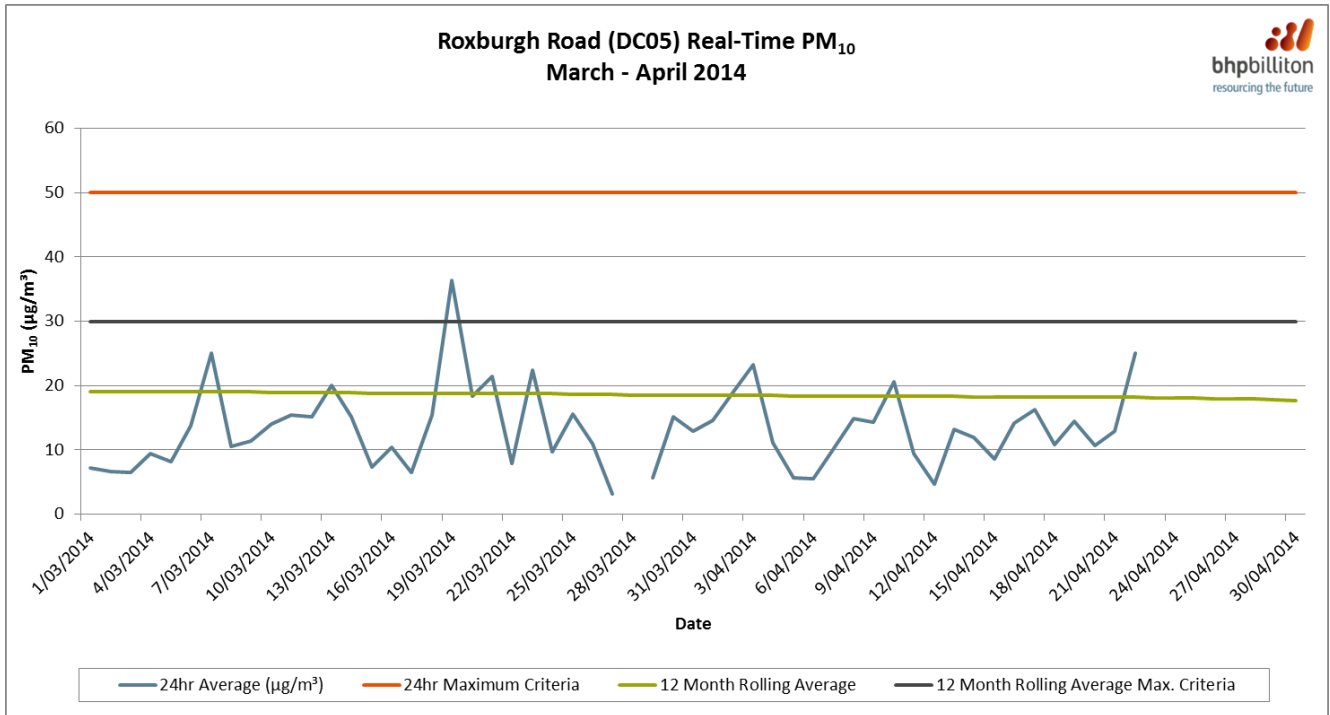
	Sheppard Avenue	South Muswellbrook	Roxburgh Road	Edderton Homestead	Antiene	Wellbrook
Site ID	DC02	DC04	DC05	DC06	DC07	DC09
Mar-14	100%	100%	97%*	100%	42%*	100%
Apr-14	87%*	100%	77%*	100%	100%	100%

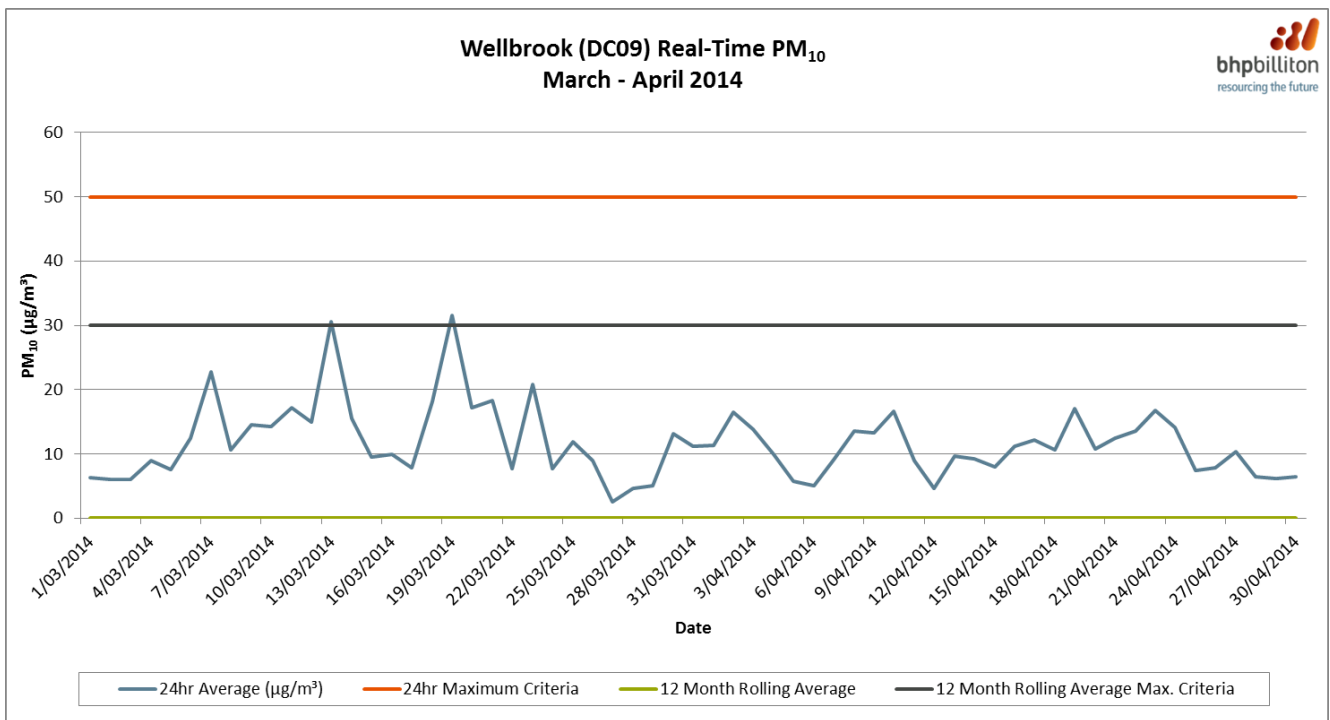
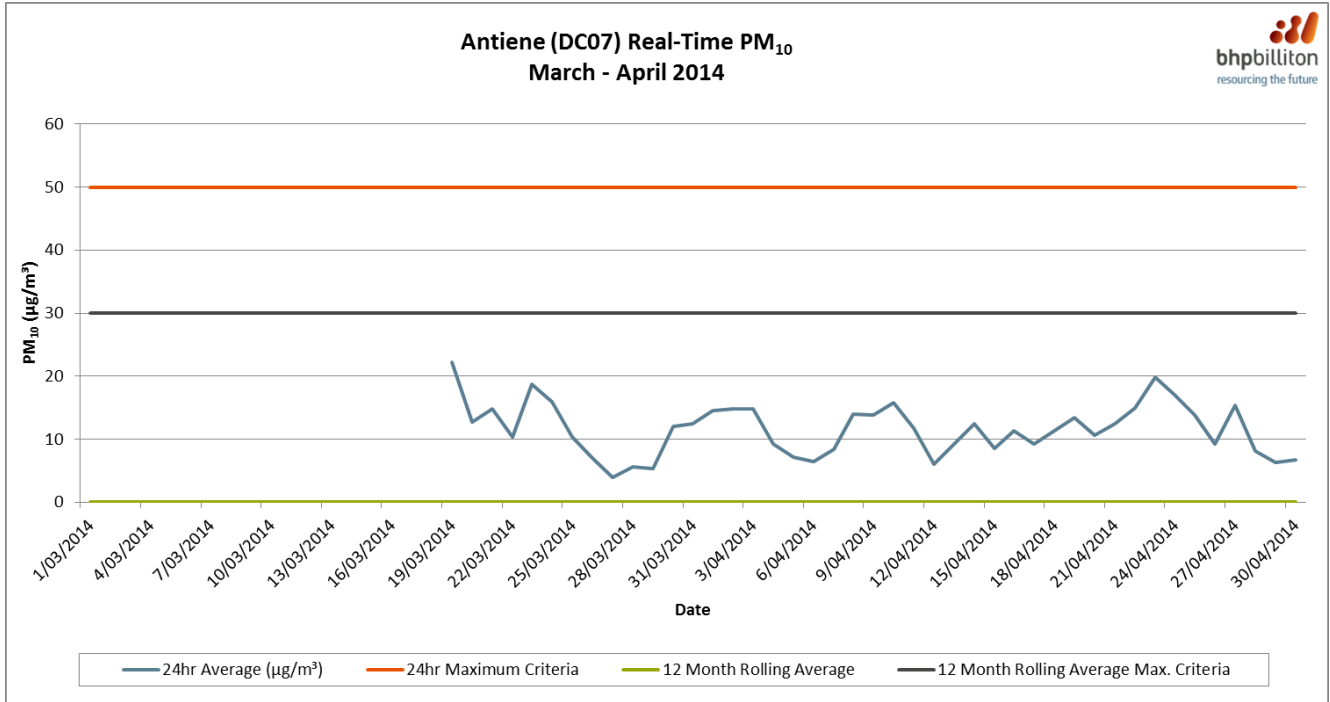
* Data capture rates below 100% are as follows:

- DC02:
 - Insufficient data from 25 to 28 April 2014 due to a power outage
- DC05:
 - Data deemed invalid for 28 March due to temperature/relative humidity sensor failure
 - Insufficient data from 23 to 29 April 2014 due to a power outage
- DC07:
 - Data deemed invalid from 1 to 14 March due to temperature/relative humidity sensor failure. Data deemed invalid from 15 to 18 March due to temperature sensor problem.

TEOM PM₁₀:







4. Depositional Dust Data (Mar - Apr 2014)

Depositional Dust Criteria:

Table 11: Long term impact assessment criteria for deposited dust

Pollutant	Averaging period	Maximum increase² in deposited dust level	Maximum total¹ deposited dust level
Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month

¹ Background concentrations due to all other sources plus the incremental increase in concentrations due to the mine complex alone.
² Incremental increase in concentrations due to the mine complex alone.

Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.

Depositional Dust Summary:

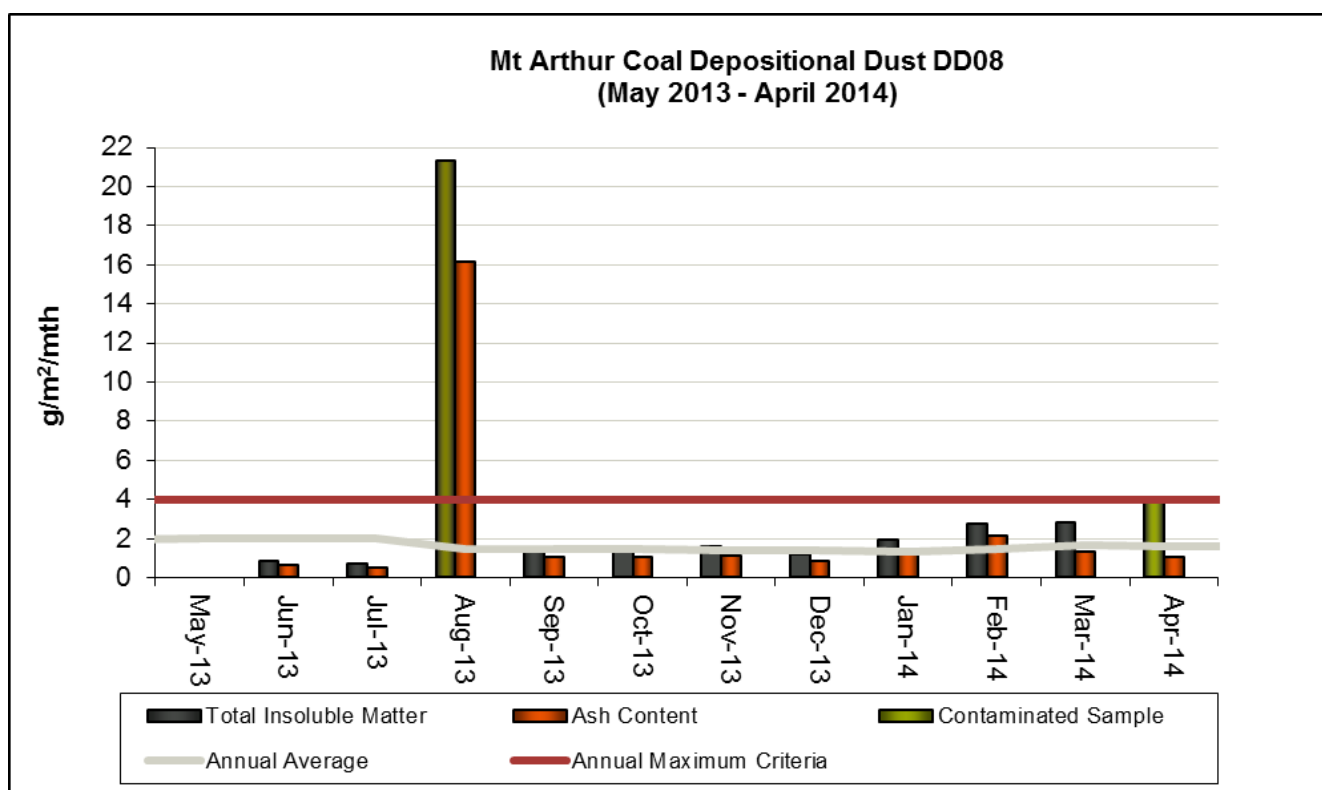
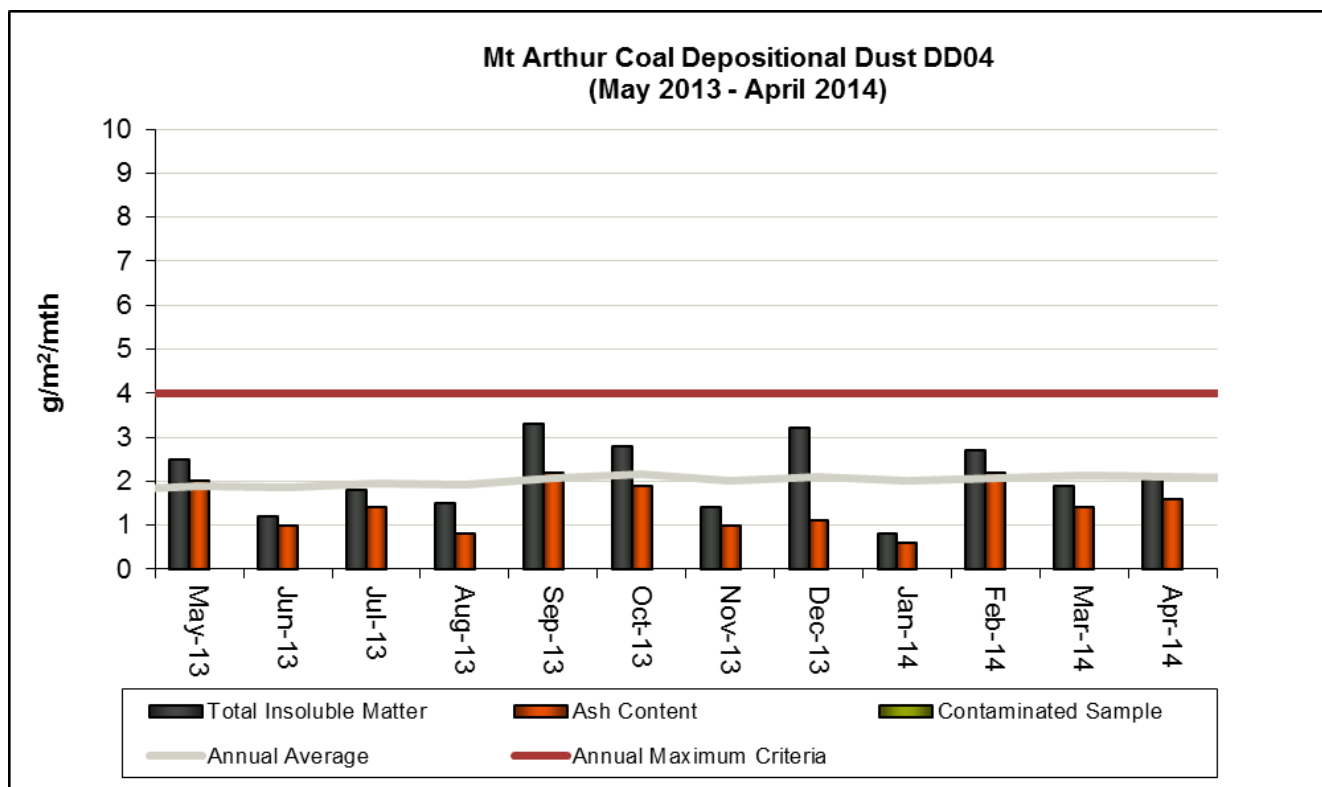
- Mt Arthur Coal's air quality monitoring network contains 13 depositional dust gauges, which includes six statutory monitors, as listed in the table below and discussed in this section.
- All annual rolling averages were below relevant regulatory criteria at the statutory gauges.
- There was only one contaminated depositional dust result in April 2014 at DD08.

Depositional Dust Data Capture Rates:

	Antiene	Edderton Homestead	Roxburgh Road	Denman Road West	Sheppard Avenue	South Muswellbrook
Site ID	DD04	DD08	DD14	DD15	DD19	DD21
Mar-14	100%	100%	100%	100%	100%	100%
Apr-14	100%	100%*	100%	100%	100%	100%

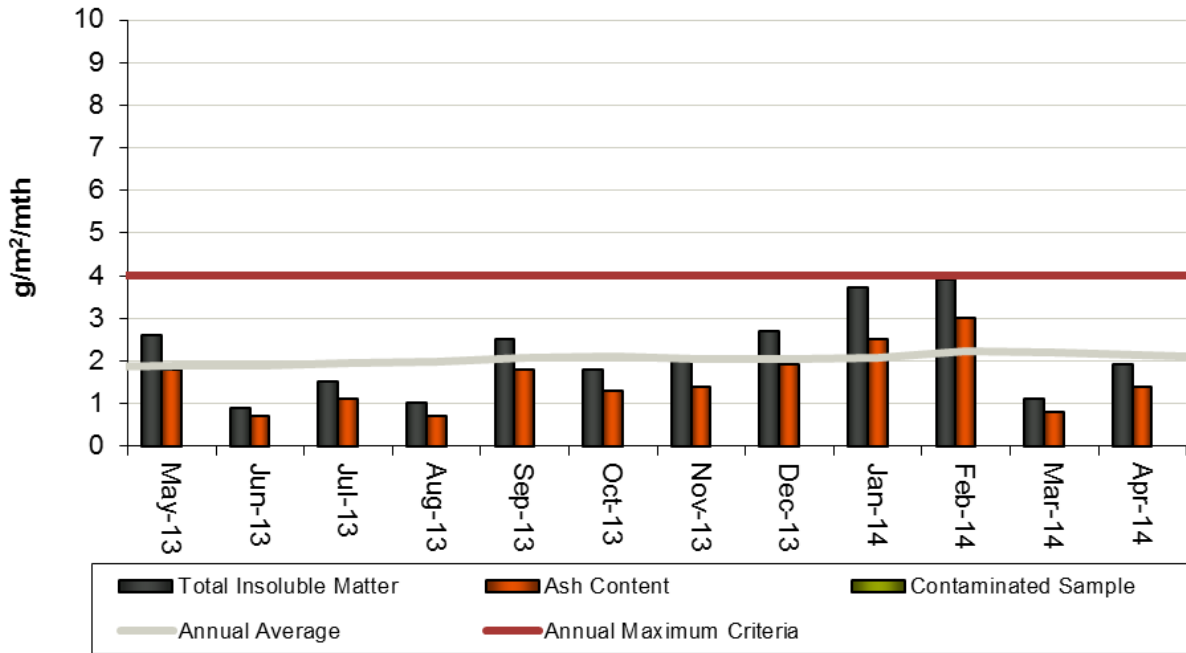
* Contaminated result

Depositional Dust:

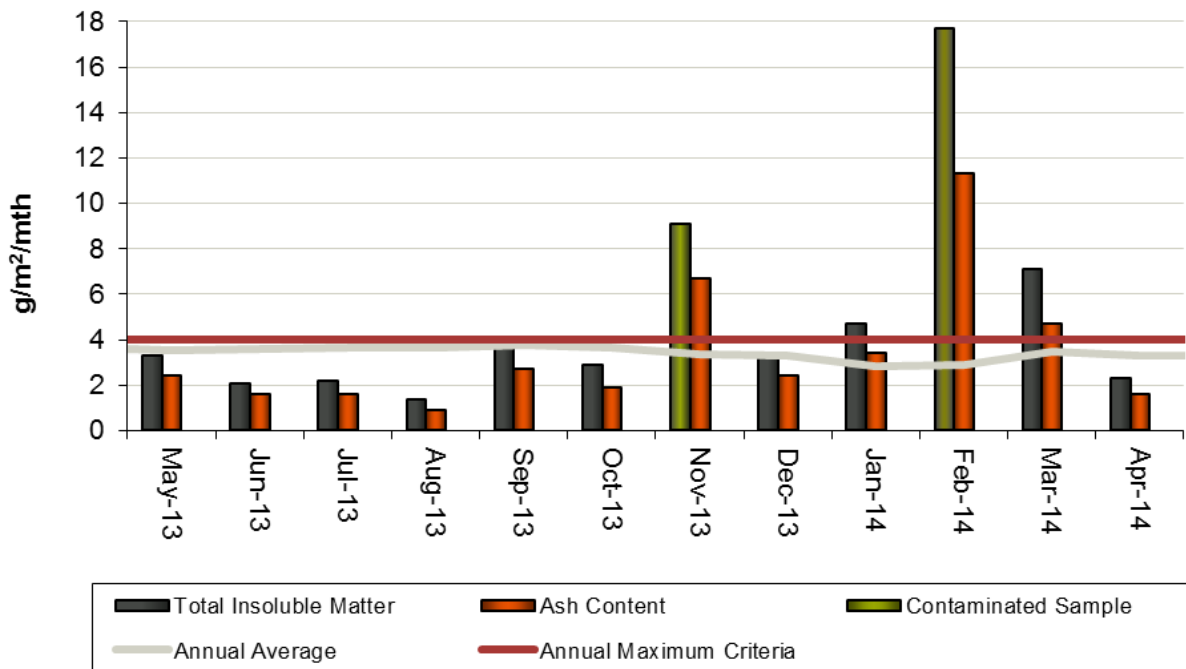


* The result for May 2013 was <math><0.1 \text{ g/m}^2/\text{mth}</math>

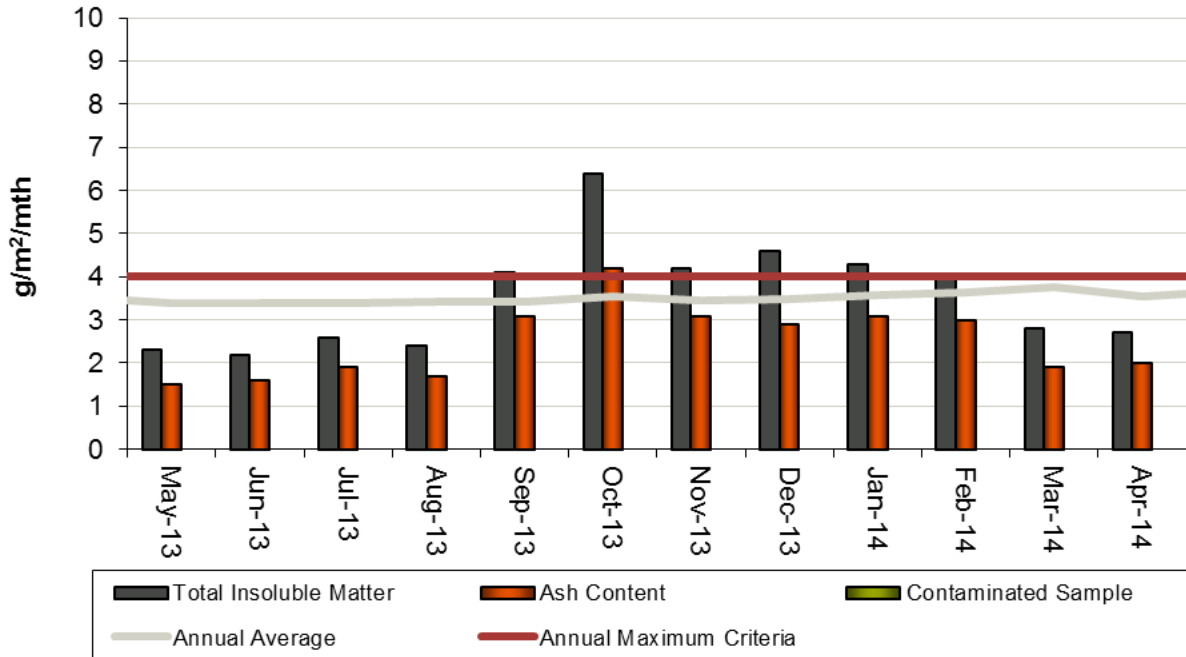
**Mt Arthur Coal Depositional Dust DD14
(May 2013 - April 2014)**



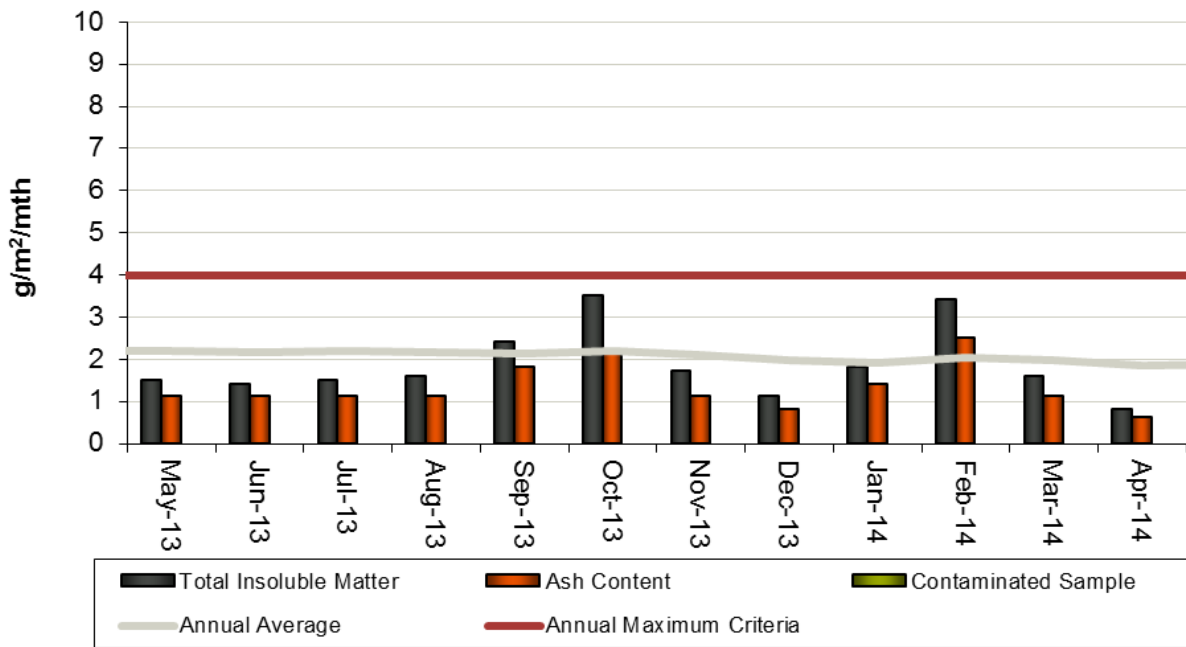
**Mt Arthur Coal Depositional Dust DD15
(May 2013 - April 2014)**



**Mt Arthur Coal Depositional Dust DD19
(May 2013 - April 2014)**



**Mt Arthur Coal Depositional Dust DD21
(May 2013 - April 2014)**



5. Surface Water Data (Mar - Apr 2014)

Surface Water Criteria:

Table 5: Surface water impact assessment criteria

Focus Area	Parameter	Trigger Value	Monitoring Site
Surface water quality	pH	If recorded value at a monitoring site is outside the range 6.5 – 9.0 for 3 consecutive readings	SW01, SW02, SW03, SW04, SW12, SW13, SW15, SW18
	EC	If recorded value at a monitoring site is greater than the 90 th percentile of baseline data for 3 consecutive readings	
	TSS		

Table 6: Surface water impact assessment trigger values

Site ID	pH		EC (µc/cm)		TSS (mg/L)	
	Low Trigger	High Trigger	90 th Percentile Trigger	Number of data points	90 th Percentile Trigger	Number of data points ₁
SW01	6.5	9.0	9,638	168	55	162
SW02			9,200	132	31	132
SW03			8,394	182	11	173
SW04			12,000	186	29	178
SW09			6,755	46	174	43
SW10			8,440	97	185	96
SW12			5,807	124	89	114
SW13			760	31	1,144	30
SW15			4,739	82	37	73
SW18			3,984	65	15	64

Notes: 1. based on a baseline data up to the 1st of September 2010

Surface Water Summary:

- The Surface Water Monitoring Program was reviewed and approved by DP&I in April 2014. The following changes were made to the Program:
 - SW09 and SW10 at Ramrod Creek no longer have trigger values associated with them and are sampling sites for internal use only, hence are no longer required to be reported externally
 - SW13 at Fairford Creek has been removed from the program due to the construction of the alluvial cut-off wall along Denman Road

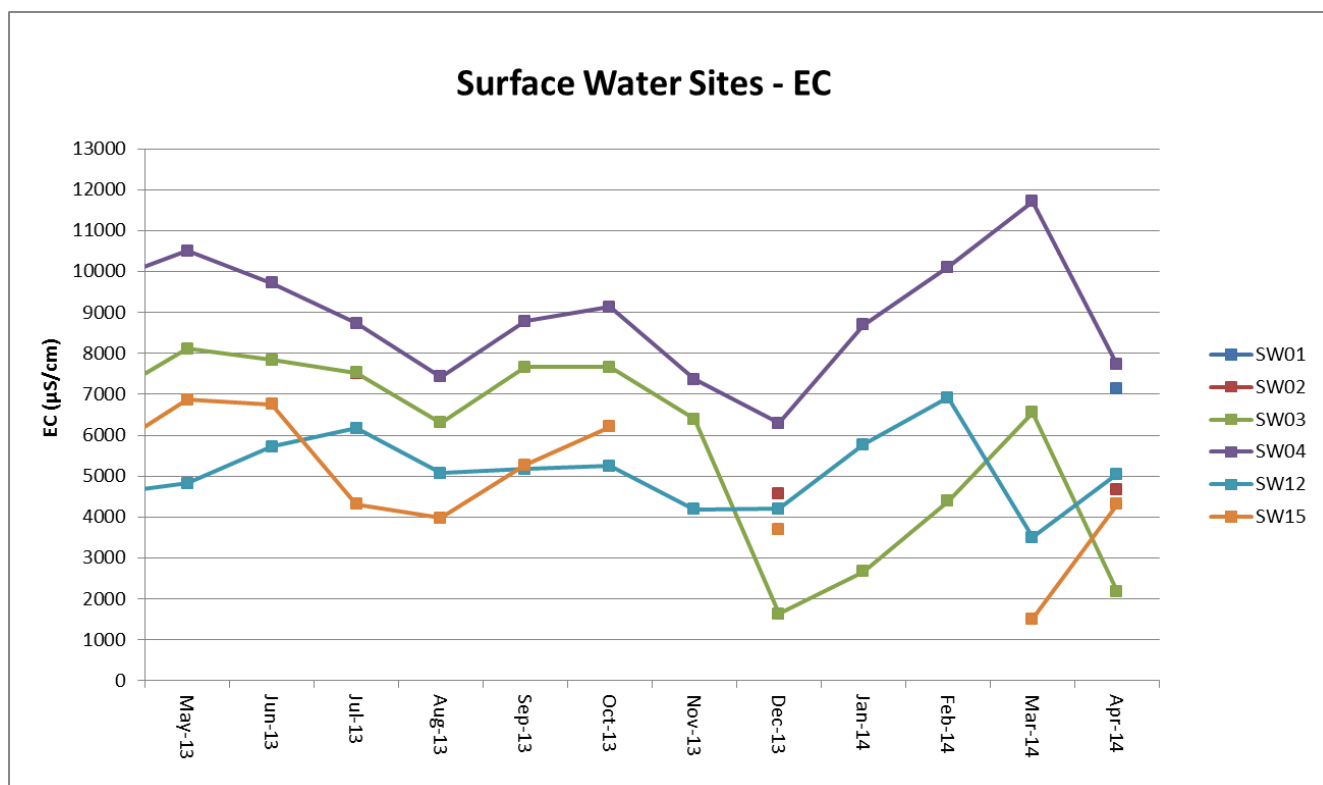
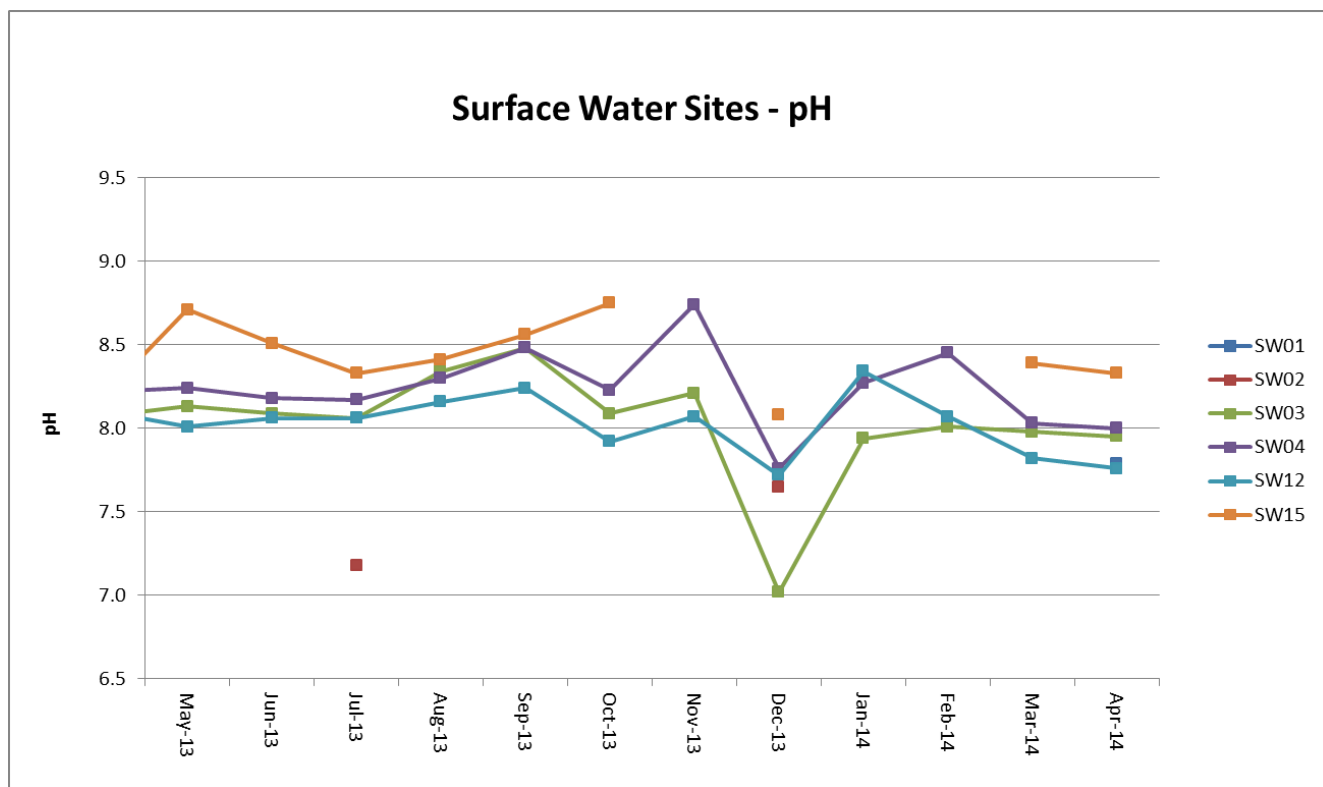
- SW18 at Whites Creek Upstream has been removed from the program and replaced with a more representative site SW36 (Whites Creek Dam upstream of diversion). However, as this new site is a dam, it does not have trigger values and hence does not need to be reported externally
- No reportable elevated results were recorded during March or April.

Surface Water Data Capture Rates:

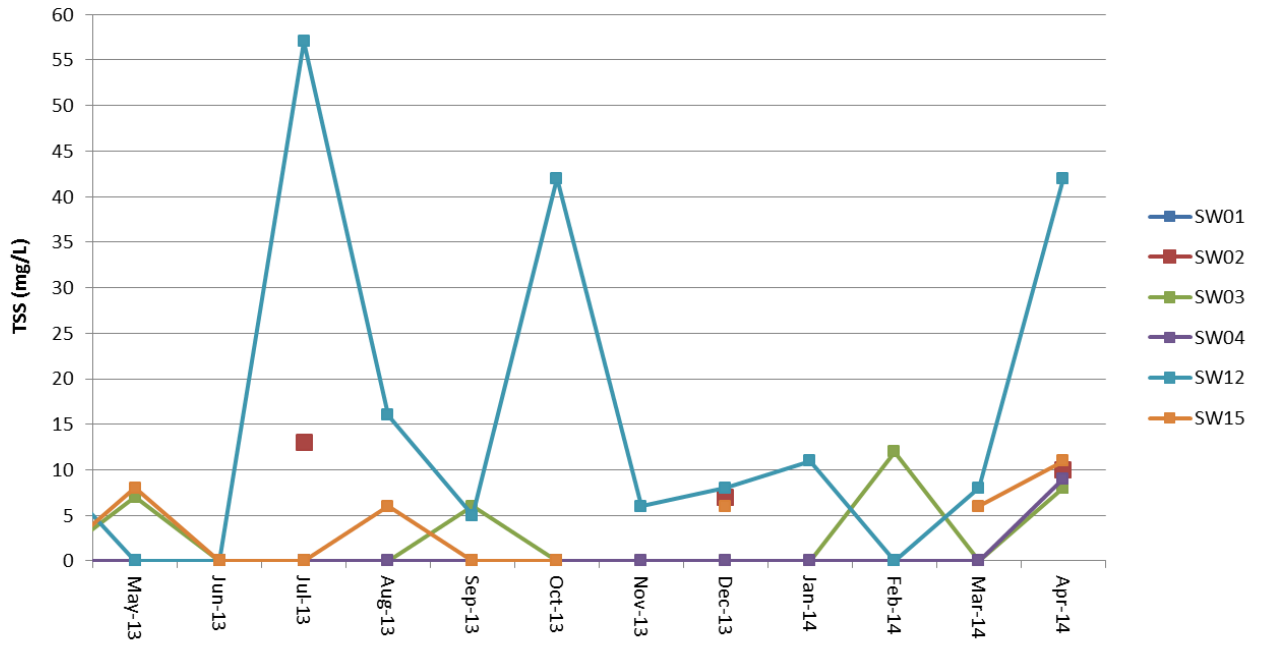
	Saddlers Creek			Quarry Creek	Ramrod Creek	Whites Creek
Site ID	SW01	SW02	SW03	SW04	SW12	SW15
Mar-14	0% ⁺	0% ⁺	100%	100%	100%	100%
Apr-14	100%	100%	100%	100%	100%	100%

+ Watercourse was dry

Surface Water Parameters:



Surface Water Sites - TSS



6. Noise Data (Mar - Apr 2014)

Noise Criteria:

Impact Assessment Criteria

- The Proponent shall ensure that the noise generated by the Mt Arthur mine complex does not exceed the noise impact assessment criteria in Table 2 at any residence on privately-owned land or on more than 25 per cent of any privately-owned land, except where such exceedance is predicted in the EA. For these properties, the Proponent shall comply with the noise level predictions in the EA.

However, these noise limits do not apply if the Proponent has an agreement with the relevant owner/s of these residences/land to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

Table 2: Noise Impact Assessment Criteria dB(A)

Location	Day ($L_{Aeq(15min)}$)	Evening ($L_{Aeq(15min)}$)	Night ($L_{Aeq(15min)}$)	Night ($L_{A1(1min)}$)
A – Antiene Estate	37	40	38	45
B – Skelletar Stock Route, Thomas Mitchell Drive, Denman Road East	39	38	37	45
C – Racecourse Road	41	40	39	45
D – Denman Road North-west, Roxburgh Vineyard (north-east), Roxburgh Road	37	36	35	45
E – South Muswellbrook	39	39	39	45
F – Denman Road West, Roxburgh Vineyard (west)	37	36	35	45
G – East Antiene	41	40	39	45

Land Acquisition Criteria

- If the noise generated by the Mt Arthur mine complex exceeds the criteria in Table 3 at any residence on privately-owned land or on more than 25 per cent of any privately-owned land, the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 7-8 of schedule 4.

Table 3: Land acquisition criteria dB(A) $L_{Aeq(15min)}$

Location	Day	Evening	Night
A – Antiene Estate	42	45	43
B – Skelletar Stock Route, Thomas Mitchell Drive, Denman Road East	44	43	42
C – Racecourse Road	46	45	44
D – Denman Road North-west, Roxburgh Vineyard (north-east), Roxburgh Road	42	41	40
E – South Muswellbrook	44	44	44
F – Denman Road West, Roxburgh Vineyard (west)	42	41	40
G – East Antiene	46	45	44

Definitions:

$L_{Aeq(15min)}$ – The average noise energy during a 15 minute period.

$L_{A1(1min)}$ – The noise level exceeded for 1% of 1 minute. This measurement is generally regarded as the maximum noise level during a monitoring period.

Noise Summary:

- Mt Arthur Coal has eight statutory attended noise monitoring locations.
- There were no reportable exceedances recorded in March or April.
- Statutory attended noise monitoring results for March and April for $L_{Aeq(15min)}$ and $L_{A1(1min)}$ are shown below.

Noise Data Capture Rates:

	NP04	NP07	NP10	NP12	NP13	NP14	NP15	NP16
Mar-14	100%	100%	100%	100%	100%	100%	100%	100%
Apr-14	100%	100%	100%	100%	100%	100%	100%	100%

$L_{Aeq(15min)}$	NP04	NP07	NP10	NP12	NP13	NP14	NP15	NP16
Representative residential assessment zone	A	C	E	G	N/A	D	D & F	B
Noise impact assessment criteria (intrusive criteria) ($L_{Aeq(15min)}$)	38	39	39	39	N/A	35	35	37
Land acquisition criteria ($L_{Aeq(15min)}$)	43	44	44	44	N/A	40	40	42
Predicted noise level for 2016 for each monitoring location [^]	38	37	38	39	N/A	34	35	38
31 March - 1 April 2014	IA	31	25	IA	26*	IA*	IA*	31
15-16 April 2014	NM*	32	NM*	IA	IA	24	NM*	33
$L_{A1(1min)}$	NP04	NP07	NP10	NP12	NP13	NP14	NP15	NP16
Representative residential assessment zone	A	C	E	G	N/A	D	D & F	B
Noise impact assessment criteria ($L_{A1(1min)}$)	45	45	45	45	N/A	45	45	45
31 March - 1 April 2014	IA	35	30	IA	<30*	IA*	IA*	37
15-16 April 2014	NM*	34	NM*	IA	IA	31	NM*	39

[^] Modelling for 2016 is considered to be representative for FY14.

NM – Mt Arthur Coal's operations were audible but not measurable.

IA – Mt Arthur Coal's operations were inaudible.

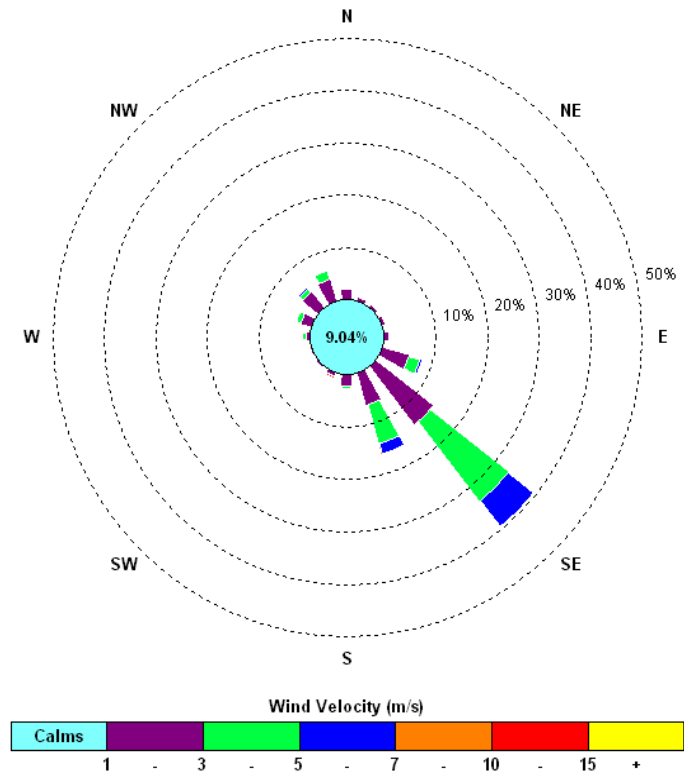
N/A – Predicted noise levels were not applicable as monitored on land owned by Mt Arthur Coal.

* Noise emission limits do not apply for winds greater than 3m/s (at a height of 10m), or temperature inversion conditions greater than or equal to 4°C/100m.

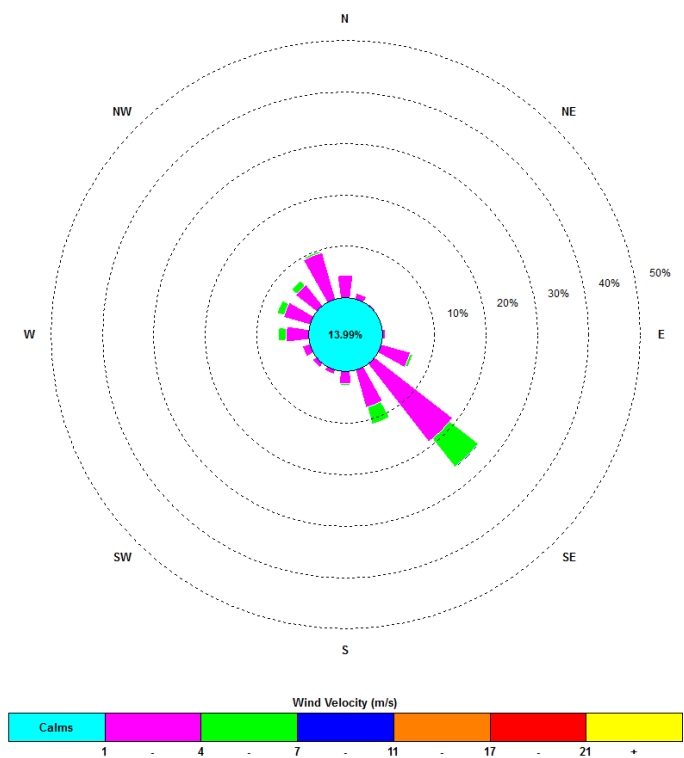
7. Weather Data (Mar - Apr 2014)

Monthly Windroses for Mt Arthur Coal Industrial Area Meteorological Station:

March 2014



April 2014

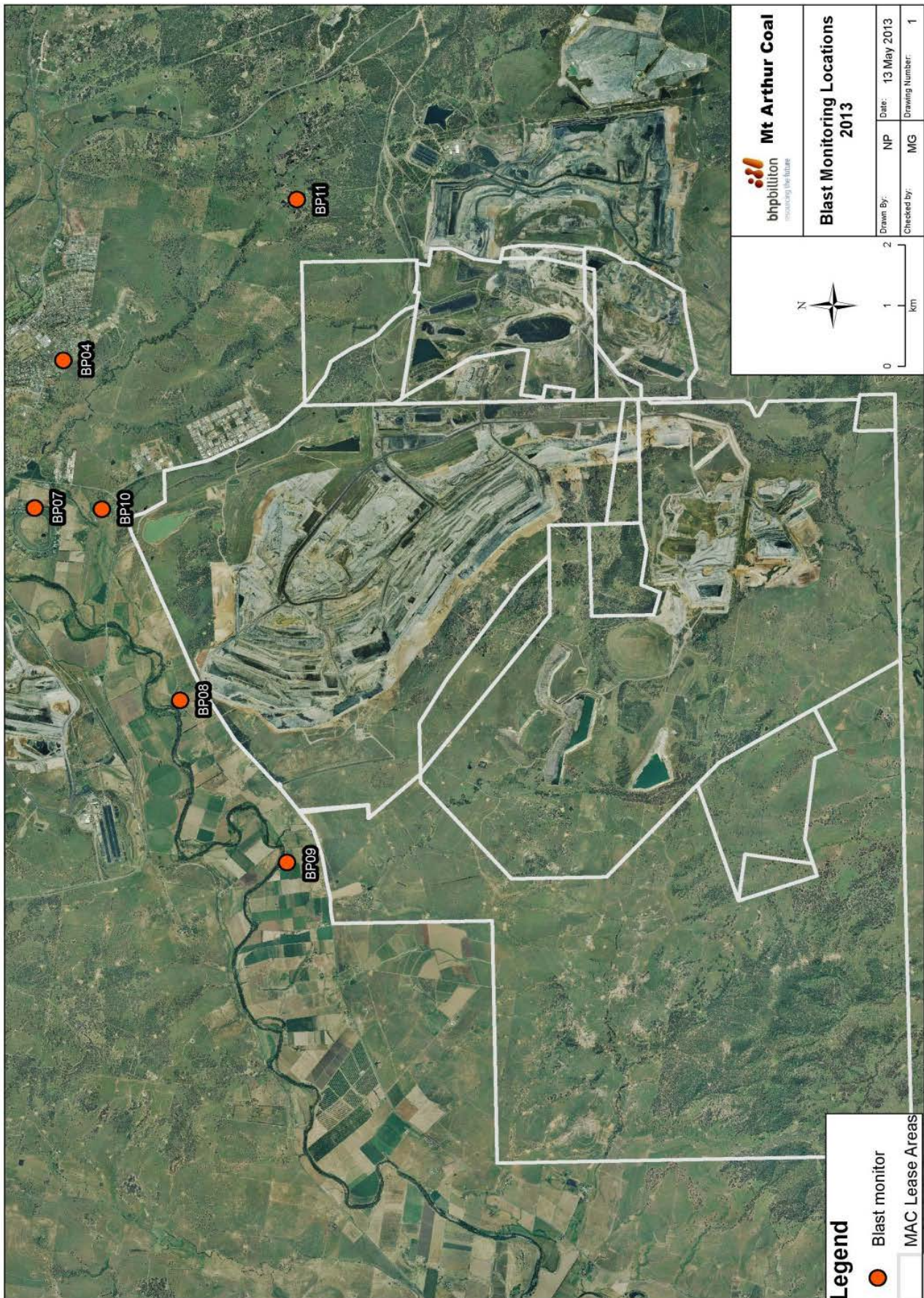


2014	Temperature 10m (°C)			Windspeed (m/s)			Sigma Theta			Solar Radiation (W/m ²)			Rainfall (mm)	No. of days rain >1mm
	Min	Average	Max	Min	Average	Max	Min	Average	Max	Min	Average	Max		
January	15.2	24.0	36.7	0.0	4.1	10.9	5.8	19.6	93.4	0.0	408.6	1687.1	8.4	1
February	13.6	22.6	36.3	0.0	3.7	13.0	5.9	17.8	95.0	0.0	339.1	1693.2	96.0	7
March	12.2	20.7	29.7	0.0	3.0	12.0	3.3	17.6	100.8	0.0	289.1	1543.8	129.0	8
April	6.8 [^]	18.1 [^]	32.9 [^]	0.0	2.5	8.6	0.0	17.4	94.8	0.0	246.8	1585.9	92.8	7

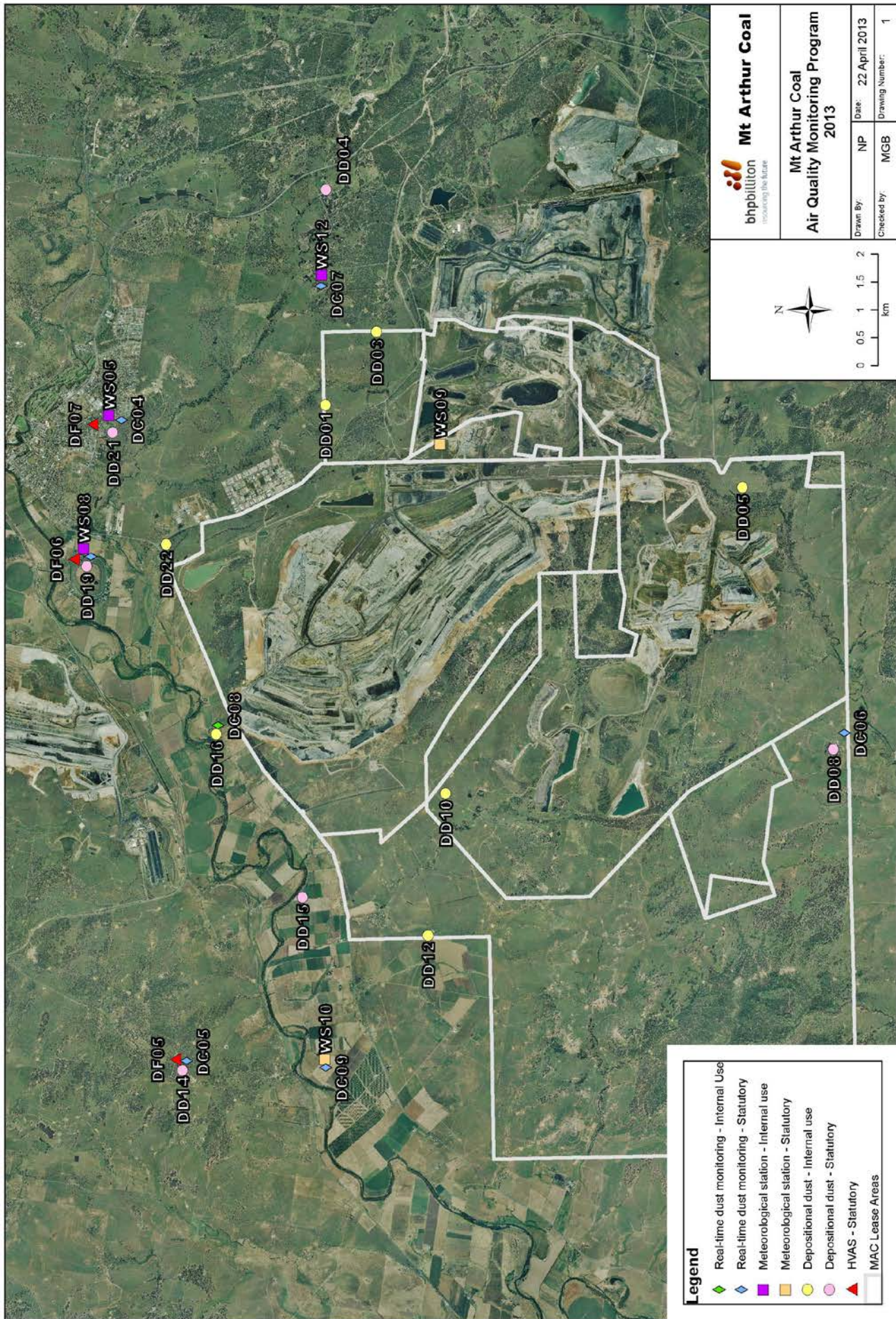
[^] 10m temperature data was not available for April 2014 due to issues with the monitoring instruments and has been substituted with 2m temperature data.

Appendix 1: Monitoring Locations

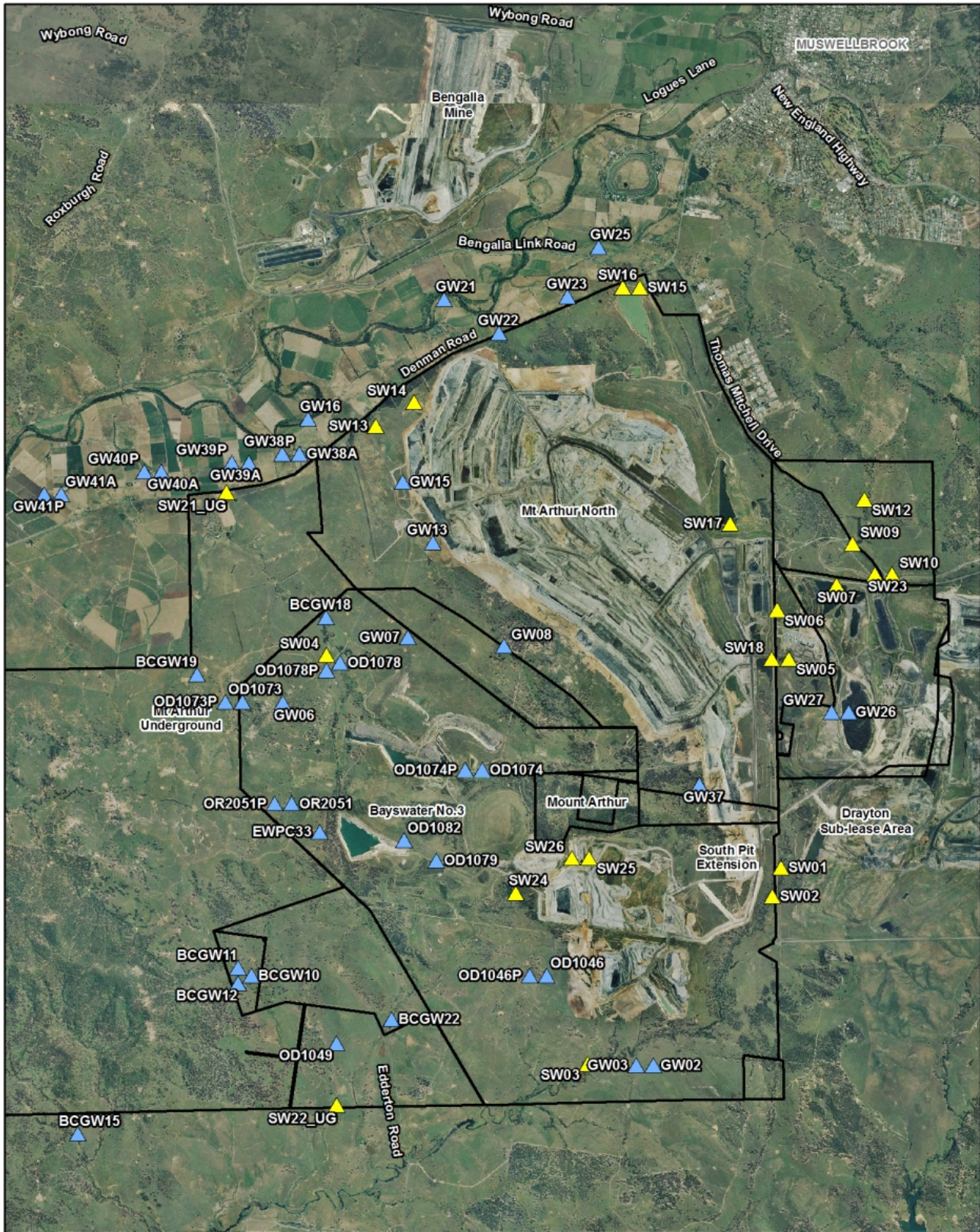
Blast Monitoring:



Air Quality Monitoring:



Water Monitoring:



<p>LEGEND</p> <ul style="list-style-type: none"> ▲ Ground Water Monitoring Site ▲ Surface Water Monitoring Site Mt Arthur Coal Mining and Exploration Leases 	<p>Map Projection: Transverse Mercator Horizontal Datum: Geocentric Datum of Australia Grid: Map Grid of Australia 1994, Zone 56</p>	<p>Mt Arthur Coal</p> <p>Surface and Groundwater Monitoring Locations</p>
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Noise Monitoring:

