

**WAMBO COAL PTY LIMITED**

**MONTHLY ENVIRONMENTAL MONITORING  
REPORT**

**May 2014**

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## 1.0 Introduction

This report presents environmental monitoring results for the reporting period **Thursday 1 to Saturday 30 May 2014**. Monitoring during this period includes meteorological measurement, surface and ground water sampling, depositional dust sampling, High Volume Air Sampling, blasting events and PM10 real time air monitoring results. Real time noise monitoring results are reported in a quarterly format and can be found on the Peabody Wambo website at <http://www.peabodyenergy.com/content/404/Australia-Mining-New/New-South-Wales/Wambo-Mine>

## 2.0 Meteorological Data

Results for reporting period are available in **Appendix A**.

## 3.0 Surface Water Sampling

Surface water samples are collected in accordance with **AS/NZS 5667.4:1998 – *Guidance on sampling from lakes, natural and man-made*** and **AS/NZS 5667.6:1998 – *Guidance on sampling of rivers and streams***. All samples collected were analysed in the field for **pH**, electrical conductivity (**EC**) and temperature. Selected sites were analysed in a **NATA\*** accredited laboratory for total suspended solids (**TSS**) and total dissolved solids (**TDS**).

\*National Association of Testing Authorities - NATA is the authority that provides independent assurance of technical competence.

Surface water reporting for the period recorded TSS results for SW45 were outside trigger levels. SW44 and SW46 recorded EC results outside trigger levels.

**Table 1: Monthly Surface Water Results – May 2014**

Sample Location	pH	EC (µS/cm)	TSS (mg/L)	TDS (mg/L)	Oil & Grease (mg/L)	Temp (°C)	Comments	
<b>WOLLOMBI BROOK</b>								
Wollombi Brook								
SW01 - Wollombi Brook Up	8.40	621	3	378		15.7	-	
SW03 - North Wambo Creek Down	9.10	605	7	323	<2	15.5	-	
SW02 - Wollombi Brook Down	8.10	655	6	387	<2	15.9	-	
SW40 - Confluence with SWC	8.10	519	4	470		15.8	-	
<b>NORTH WAMBO CREEK</b>								
North Wambo Creek								
SW04 - North Wambo Creek Up	-	-	-	-	-		Sample site dry	
SW27a - North Wambo Creek Middle Lower	-	-	-	-	-		Sample site dry	
SW32a - North Wambo Creek Pump	-	-	-	-	-		Sample site dry	
SW05 - Wollombi Brook Pump Out	8.50	892	30	597	-	14	-	
<b>SOUTH WAMBO/STONY CREEK</b>								
South Wambo/Stony Creek								
SW06 - South Wambo Creek	8.30	423	2	258	-	16.3		
SW07 - South Wambo/Stony Creek	8.20	572	20	309	-	13.8	-	
SW08 - Stony Creek	-	-	-	-	-		No Access	
<b>LONGFORD/DOCTOR'S CREEKS</b>								
SW43 - Longford Creek Up	8.30	369	87	532	<2	15.6	-	
SW44 – Longford Creek Down	7.90	<b>748</b>	41	547	<2	15.4	-	
SW46 - Doctors Creek Up	8.40	<b>3,900</b>	4	2,460	<2	16.2	-	
SW45 – Doctors Creek Down	8.60	1,549	<b>7</b>	977	<2	16.8	-	
<b>WATERFALL CREEK</b>								
SW39 – Waterfall Creek Midstream	-	-	-	-	-		Sample site dry	
<b>MINE WATER DAMS</b>								
SW11 - West Cut Dam Pipe	Not Pumping							
SW12 - West Cut Dam	8.60	5,590	-	-	-	19.4	-	
SW14 - Box Cut Dam (Admin)	8.50	800				19.2	-	
SW15 - Eagles Nest Dam	8.80	6,780	26.00	4,230	<2	20.1	-	
SW20 - Dam Adjacent to West Cut Dam	8.50	3,200	-	-	-	15.6	-	
SW29 - SCB Dam	8.20	1,210	-	-	-	15.7	-	
SW30 - Turkeys Nest	9.20	7,260	-	-	-	19.6	-	
SW31 - Gordon Below Franklin	9.10	5,700				18.9	-	
SW37 - Wollemi Sump	-	-	-	-	-		No longer exists	
SW38 - Homestead Open Cut	8.60	7,250	-	-	-	16.9	-	
SW47 - NWU Pumpout Water	-	-	-	-	-		Sample site dry	
SW48 - Inpit sample	8.00	3,350	-	-	-	19	-	
SW49 - Bates Pit Pumpout	8.00	6,330	-	-	-	21.3	-	
SW51 – South Dam	8.80	7,620	-	-	-	18.4	-	
SW50 - Hunter River Water	Not Pumping							-

**Note:** Figures in bold fall outside trigger levels.

## 4.0 Groundwater Sampling

Groundwater results collected on a bi-monthly basis.

**Table 2: Ground Water Results – May 2014**

Sample Location	pH	EC ( $\mu\text{S}/\text{cm}$ )	Depth to Water (m)	Temp ( $^{\circ}\text{C}$ )	Comments
GW02	-	-	-	-	-
GW11	-	-	-	-	-
P106	-	-	-	-	-
P109	-	-	-	-	-
P110	-	-	-	-	-
P111	-	-	-	-	-
P114	-	-	-	-	-
P116	-	-	-	-	-
P202	-	-	-	-	-
P206	-	-	-	-	-
P301	-	-	-	-	-
P315	-	-	-	-	-
GW12	-	-	-	-	-
GW13	-	-	-	-	-
GW14	-	-	-	-	-
GW15	-	-	-	-	-
GW16	-	-	-	-	-
GW17	-	-	-	-	-
GW18	-	-	-	-	-
GW19	-	-	-	-	-
GW20	GW20 is a vibration wire multi-piezometer installation				
GW21	-	-	-	-	-
GW22	-	-	-	-	-
P1	-	-	-	-	-
P3	-	-	-	-	-
P5	-	-	-	-	-
P6	-	-	-	-	-
P11	-	-	-	-	-
P12	-	-	-	-	-
P13	-	-	-	-	-
P15	-	-	-	-	-
P16	-	-	-	-	-
P17	-	-	-	-	-
P18	-	-	-	-	-
P20	-	-	-	-	-

**Note:** All depths measured to top of casing, except United bores which are to ground. Figures in bold are outside trigger levels listed in Table 5 of the Ground Water Monitoring Programme (GWMP), which is part of the Site Water Management Plan.

\* Represents data that is provided on a quarterly basis. The results are to be updated once available.

## 5.0 Depositional Dust Sampling

Fifteen depositional dust gauges were collected for the reporting period (Table 3). Sampling and analysis is conducted in accordance with AS 3580.10.1 – 1991 – *Determination of particulates – Deposited matter – Gravimetric method*. All gauges were analysed for insoluble solids (IS) and ash residue (AS). Field observations include water quantity and quality, and any visible contaminants in the sample.

**Table 3: Dust Deposition Results – May 2014**

Site	Insoluble Solids (IS) (g/m <sup>2</sup> .month)	Ash Residue (AR) (g/m <sup>2</sup> .month)	IS:AR Ratio	IS YTD Average (g/m <sup>2</sup> .month)	AR YTD Average (g/m <sup>2</sup> .month)
D01*	6.2	3.0	48	2.9	2.0
D03	2.3	1.3	57	3.2	2.3
D07*	4.6	2.9	63	<b>6.0</b>	3.4
D09*	9.9	4.4	44	2.0	1.6
# D11	2.4	1.4	58	2.2	1.5
# D12	2.3	1.2	52	3.4	2.3
# D17	2.8	1.3	46	2.1	1.3
D19	2.2	1.1	50	3.5	2.2
D20	1.9	1.3	68	1.5	1.1
# D21	0.40	0.40	100	1.8	1.4
# D22	0.8	0.7	88	2.0	1.4
D23	3.4	2.1	62	2.0	1.3
# D24	0.6	0.3	50	0.7	0.4
# D25*	2.10	0.9	43	3.1	2.2
D26*	3.1	0.9	29	2.2	1.4

**Note:**

Results in **bold** are YTD average above 4g/m<sup>2</sup>/month

Results # are dust gauges not on WCPL owned land. DD gauges on Wambo Coal land and above criteria level are not considered non-compliance.

\* Contaminated sample

Insoluble solid results are reported on the **annual average** of 4g/m<sup>2</sup>/month of all **uncontaminated results** which are not located on Wambo Coal owned land. No depositional dust gauge locations were outside the prescribed criteria level for the reporting period.

## 6.0 High Volume Air Sampling

Four high volume air sampler (HVAS) operated at locations surrounding Wambo during the reporting period (Table 4). All units sampled Total Suspended Particulates (TSP) over a 24-hour period on a six day cycle, in accordance with AS 2724.3 – 1984 – *Determination of total suspended particulates (TSP) – High volume sampler gravimetric method*.

**Table 4: HVAS Results – May 2014**

Date of Run	HV01 - Coralie TSP ( $\mu\text{g}/\text{m}^3$ )	HV02 - Caban TSP ( $\mu\text{g}/\text{m}^3$ )	HV03 - Thelander TSP ( $\mu\text{g}/\text{m}^3$ )	HV04 - Muller TSP ( $\mu\text{g}/\text{m}^3$ )
4/05/2014	22.9	54	15.5	16.3
10/05/2014	35	96.9	16.8	21.7
16/05/2014	37.8	48.3	23.6	40
22/05/2014	38.6	84.3	23	18.7
28/05/2014	62.3	104	16.4	16.2
<b>Monthly Mean</b>	39.3	77.5	19.1	22.6
<b>Yearly Mean</b>	69.9	67.6	54.2	65.5

Reported yearly means for locations are within the reporting criteria of  $90\mu\text{g}/\text{m}^3$ .

## 7.0 Blast Events

Four monitoring sites measure ground vibration and air blast overpressure for blasts conducted at Wambo. Six blasts were conducted during the reporting period. Monitoring at all four sites is conducted under the blast monitoring requirements set out in the **Wambo EPA licence (EPL 529) and DA 305-7-2003**.

All measured blast events for May 2014 were within the prescribed criteria limits.

**Table 5: Blast Results – May 2014**

Date	Time	Location	Kelly Residence – A0728			Wambo Homestead – A0722			Harris Site – A6006			Muller Residence – A6005		
			Over Pressure (dB(L))	Vibration (mm/s)	Wave-form	Over Pressure (dB(L))	Vibration (mm/s)	Wave-form	Over Pressure (dB(L))	Vibration (mm/s)	Wave-form	Over Pressure (dB(L))	Vibration (mm/s)	Wave-form
1/05/2014	14:07:28	BS4WWA2	104.4	0.08	YES	<115.0	<0.16	No	112.3	0.06	YES	100.3	0.07	YES
8/05/2014	11:03:56	M14WMA2	100.6	0.18	YES	97.1	0.17	YES	98.4	0.12	YES	107.6	0.59	YES
14/05/2014	15:31:37	M20WWA3	94.4	0.16	YES	94	0.28	YES	96.4	0.22	YES	109.1	1.47	YES
21/05/2014	11:05:00	B55WRA1	100.2	0.27	YES	105.2	0.75	YES	99.7	0.29	YES	97	0.13	YES
28/05/2014	15:30:00	M18WRA2	105.8	0.08	YES	104	0.09	YES	103.5	0.06	YES	103	0.39	YES
29/05/2014	15:29:00	BS5WW5a	105.5	0.11	YES	121	0.61	YES	112.7	0.13	YES	<115.0	<0.16	No

## 8.0 Real-Time Air Quality Monitoring

Four real time Tapered Element Oscillating Microbalance (**TEOM**) units were in operation during the reporting period. The sites are located at Coralie (**PM01**), the Caban residence (**PM02**), Thelander residence (**PM03**) and the Muller residence (**PM04**). These units measure particulate matter less than 10 microns in diameter (**PM<sub>10</sub>**) on a continuous basis and provide a 24 hour average result. These units operated and sampled in accordance with **AS 3580.9.8 - 2002, *Method for Sampling and Analysis of Ambient Air - Determination of Suspended Particulate Matter - PM<sub>10</sub> Continuous Direct Mass Method using a Tapered Element Oscillating Microbalance Analyser.***

All **PM<sub>10</sub>** sites were within the yearly average criteria limits of **30ug/m<sup>3</sup>**, no sites were outside of 24hr average criteria of **50ug/m<sup>3</sup>** for a single day during this reporting period.



**Table 6**  
**PM<sub>10</sub> Results – May 2014**

Date of Run	AQ01 (Coralie)		AQ02 (Wambo Road)		AQ03 (Thelander)		AQ04 (Muller)	
	PM10 24 Hour Result (ug/m <sup>3</sup> )	YTD Average	PM10 24 Hour Result (ug/m <sup>3</sup> )	YTD Average	PM10 24 Hour Result (ug/m <sup>3</sup> )	YTD Average	PM10 24 Hour Result (ug/m <sup>3</sup> )	YTD Average
1/05/2014	14.9	19.5	13.7	18.8	13.5	18.3	15.7	20.4
2/05/2014	10.2	19.5	20.3	18.9	8.8	18.2	9.7	20.3
3/05/2014	8.9	19.4	13.2	18.8	7.7	18.1	7.7	20.2
4/05/2014	8.3	19.3	13.1	18.8	7.7	18.0	7.7	20.1
5/05/2014	7.3	19.2	21.8	18.8	6.6	17.9	6.5	20.0
6/05/2014	9.0	19.1	22.9	18.8	6.9	17.8	6.9	19.9
7/05/2014	24.2	19.1	<b>35.0</b>	18.9	13.2	17.8	19.0	19.8
8/05/2014	15.9	19.1	20.7	19.0	16.8	17.8	20.5	19.9
9/05/2014	14.4	19.1	29.6	19.0	15.2	17.8	17.4	19.8
10/05/2014	11.6	19.0	29.9	19.1	8.9	17.7	9.8	19.8
11/05/2014	10.0	18.9	10.9	19.1	8.6	17.6	10.5	19.7
12/05/2014	20.9	19.0	9.9	19.0	12.1	17.6	16.1	19.7
13/05/2014	8.5	18.9	7.8	18.9	12.1	17.6	15.4	19.6
14/05/2014	12.5	18.8	10.1	18.8	10.8	17.5	16.2	19.6
15/05/2014	15.1	18.8	12.6	18.8	8.1	17.4	10.2	19.5
16/05/2014	12.0	18.8	14.5	18.8	10.4	17.4	14.1	19.5
17/05/2014	10.9	18.7	17.6	18.8	8.5	17.3	8.9	19.4
18/05/2014	11.1	18.6	26.2	18.8	9.2	17.3	9.3	19.3
19/05/2014	13.2	18.6	22.9	18.8	10.0	17.2	9.9	19.3
20/05/2014	14.2	18.6	<b>31.6</b>	18.9	11.1	17.2	10.6	19.2
21/05/2014	20.7	18.6	26.9	19.0	15.7	17.1	18.8	19.2
22/05/2014	13.5	18.5	27.9	19.0	11.1	17.1	10.2	19.1
23/05/2014	15.2	18.5	26.1	19.1	12.1	17.1	11.0	19.1
24/05/2014	17.3	18.5	<b>49.3</b>	19.3	13.0	17.0	11.6	19.0
25/05/2014	19.7	18.5	21.3	19.3	12.3	17.0	11.0	19.0
26/05/2014	14.5	18.5	21.6	19.3	12.4	17.0	17.8	19.0
27/05/2014	26.2	18.5	<b>32.9</b>	19.4	15.9	17.0	15.9	19.0
28/05/2014	*	*	25.8	19.5	8.1	16.9	7.5	18.9
29/05/2014	16.9	18.5	25.2	19.5	18.1	16.9	17.0	18.9
30/05/2014	10.5	18.5	8.6	19.4	11.2	16.9	21.0	18.9
31/05/2014	15.0	18.5	10.2	19.4	11.9	16.8	21.4	18.9

**Note:**

Results in **red** are greater than the 24hr period guidelines of 50ug/m<sup>3</sup>

Results in **bold** are between 30ug/m<sup>3</sup> and 50ug/m<sup>3</sup>

\* Equipment failure – blown fuse

**Appendix A**  
**Wambo Weather Station**  
**Meteorological Data**

## Meteorological Data May 2014

Date	Temp (2m)			Temp (10m)			Temp Inversion			Humidity			Solar Radiation			Rain	Wind Speed		
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	mm	Min	Avg	Max
01/05/14	6.9	13.7	21.3	8.0	14.8	21.4	-4.0	12.9	45.6	51.5	79.4	97.3	-2.2	172.7	653.6	0.2	0.2	1.3	2.3
02/05/14	10.4	15.9	22.2	11.9	16.6	21.9	-4.8	8.7	27.5	39.8	67.4	97.0	-2.0	139.5	715.6	0.0	0.2	2.0	3.1
03/05/14	10.8	12.8	15.3	11.2	13.2	15.8	-4.5	5.4	24.5	52.3	63.6	77.8	-2.1	125.0	733.2	0.0	0.8	3.0	4.3
04/05/14	10.6	13.7	19.3	11.2	14.1	19.1	-3.8	4.4	9.7	40.2	60.1	80.6	-2.1	136.3	749.9	0.0	1.9	3.1	4.1
05/05/14	6.0	11.7	18.3	7.8	12.2	18.0	-7.4	6.2	37.0	44.0	63.5	90.7	-2.2	177.5	665.1	0.0	0.5	2.5	3.6
06/05/14	1.1	9.9	19.9	2.1	10.8	19.8	-9.3	11.6	34.3	44.4	77.8	97.5	-2.1	171.3	643.5	0.0	0.1	1.5	2.9
07/05/14	8.7	13.3	19.7	9.6	14.3	19.6	-4.6	12.5	49.2	46.9	74.2	94.2	-2.1	124.4	661.8	0.0	0.1	1.5	2.7
08/05/14	8.1	13.1	19.2	9.4	14.1	19.1	-5.9	11.7	49.5	57.1	77.4	91.9	-2.1	108.8	811.6	0.0	0.1	1.5	2.9
09/05/14	10.9	14.7	20.5	12.2	15.5	20.6	-4.1	10.2	29.9	50.8	80.6	95.3	-2.1	138.0	737.5	0.0	0.1	1.3	2.3
10/05/14	5.7	13.0	19.7	6.8	14.0	19.5	-9.4	11.8	36.1	55.0	83.0	97.5	-2.1	84.0	556.6	0.0	0.1	1.4	2.9
11/05/14	12.1	15.6	22.7	13.4	16.3	22.4	-5.5	8.6	21.0	55.1	87.9	96.7	-1.7	112.0	776.7	5.8	0.0	1.7	3.3
12/05/14	8.8	14.4	22.2	9.9	15.3	21.9	-6.0	11.3	29.4	55.3	86.0	98.0	-2.2	108.8	698.9	0.4	0.2	1.3	2.8
13/05/14	11.2	15.4	21.9	12.6	16.3	21.6	-5.6	10.5	29.5	53.0	86.1	96.2	-2.0	126.2	768.5	0.4	0.1	1.1	2.0
14/05/14	7.9	13.3	20.9	9.0	14.2	21.0	-7.6	11.5	29.1	56.7	87.1	98.0	-2.4	150.1	655.6	0.0	0.0	1.2	2.2
15/05/14	5.5	12.4	22.5	6.4	13.5	22.3	-6.1	13.1	36.4	42.4	82.1	98.0	-2.2	154.7	605.5	0.2	0.1	1.2	2.5
16/05/14	4.3	12.4	24.2	5.3	13.4	24.3	-8.5	13.5	36.1	32.7	79.0	98.0	-2.2	155.3	603.4	0.0	0.1	1.3	2.4
17/05/14	4.4	12.6	23.8	5.8	13.8	23.6	-8.7	15.4	39.7	41.3	78.8	97.3	-2.0	151.4	596.1	0.0	0.1	1.5	2.9
18/05/14	6.8	13.1	23.5	8.0	14.2	23.5	-6.1	13.8	33.2	47.4	83.2	97.2	-2.1	88.4	670.5	0.0	0.2	1.2	2.5
19/05/14	10.0	15.6	24.1	11.2	16.5	24.1	-5.1	11.6	35.4	41.4	77.8	96.7	-1.7	133.4	658.5	0.0	0.1	1.6	3.3
20/05/14	6.4	13.9	22.4	7.8	15.2	22.6	-5.2	16.0	35.5	51.2	81.2	97.4	-2.2	100.5	467.6	0.0	0.1	1.4	3.1
21/05/14	7.7	15.1	24.4	9.3	16.2	24.4	-4.5	13.8	34.7	40.5	78.2	97.2	-2.1	143.8	555.7	0.0	0.2	1.1	1.9
22/05/14	5.8	13.8	24.6	7.0	15.0	24.5	-10.9	14.8	43.0	38.6	79.3	97.7	-2.1	141.0	557.2	0.0	0.0	1.5	3.0
23/05/14	6.0	14.5	25.1	7.4	15.7	25.3	-11.4	15.7	39.4	42.7	78.0	97.5	-2.1	134.3	687.5	0.0	0.1	1.6	3.4
24/05/14	8.9	17.6	26.3	10.5	18.7	26.0	-7.3	14.8	41.3	40.7	70.2	96.8	-2.2	124.4	532.0	0.0	0.1	1.9	3.5
25/05/14	12.3	18.2	26.6	14.3	19.2	26.9	-4.9	12.5	41.8	39.4	73.1	94.4	-1.7	117.8	546.0	0.0	0.1	1.5	3.3
26/05/14	7.2	16.8	26.9	8.6	17.6	26.8	-9.4	11.1	39.9	33.4	72.7	97.2	-2.1	203.3	579.8	0.0	0.2	1.5	2.6
27/05/14	8.7	16.1	25.2	9.9	17.4	25.4	-4.2	16.3	57.4	42.6	76.6	97.2	-1.8	92.7	542.9	0.0	0.1	1.8	3.8
28/05/14	13.9	18.9	23.8	15.4	19.9	23.8	-4.7	12.8	74.0	36.9	60.8	89.5	-1.7	141.2	621.4	0.0	0.1	2.2	3.8
29/05/14	4.4	12.8	21.5	6.2	14.3	21.5	-5.6	17.8	57.7	44.4	75.6	96.7	-2.2	143.1	568.7	0.0	0.2	1.2	2.1
30/05/14	13.2	15.3	18.2	14.2	15.8	18.1	-4.4	5.6	16.9	78.4	91.1	97.2	-1.7	47.8	347.8	3.4	0.2	1.4	2.5
31/05/14	9.2	14.9	19.8	10.7	15.7	20.0	-0.6	10.3	25.2	70.2	87.8	97.9	-2.1	45.9	270.0	0.0	0.1	1.4	2.8
<b>MONTH</b>	1.1	14.3	26.9	2.1	15.3	26.9	-11.4	11.8	74.0	32.7	77.4	98.0	-2.4	128.8	19,238.7	10.2	0.0	1.6	4.3