Mt Thorley Warkworth EPL Monitoring Data

Published 11 January 2018
FOR THE MONTH ENDING 31 December 2017

Name of Operation	**Mount Thorley Coal Loader**
Environment Protection Licence	24
Licensee	Mount Thorley Coal Loading Ltd
Premises	Mount Thorley Coal Loading Ltd Mount Thorley Road, Mount Thorley Via Singleton NSW 2330
EPL Link	http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=89660&SYSUID=1&LICID=24
Name of Operation	**Mount Thorley Operations**
Environment Protection Licence	1976
Licensee	Mount Thorley Operation Pty Limited
Premises	Mount Thorley Operations Mount Thorley Road Mount Thorley NSW 2330
EPL Link	http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=123990&SYSUID=1&LICID=1976
Name of Operation	**Warkworth Coal Mine**
Environment Protection Licence	1376
Licensee	Warkworth Mining Ltd
Premises	Warkworth Coal Mine Putty Road Mount Thorley NSW 2330
EPL Link	http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=121545&SYSUID=1&LICID=1376

1 INTRODUCTION

This report has been compiled to provide a summary of environmental monitoring results for Mt Thorley Warkworth in accordance with Environment Protection Licences 24, 1376 and 1976. This report includes all monitoring data collected in accordance with the aforementioned licences for the period 1st December – 31st December 2017.

Monitoring in this report includes:

- Air quality monitoring;
- Surface water monitoring including mine water discharge and effluent quality; and
- Blast monitoring.

Monitoring locations are shown in Figure 1.

2 AIR QUALITY

In accordance with the requirements of Condition M2.2 (WML 1376 and MTO 1976), Mount Thorley Warkworth maintains a network of five PM_{10} monitors. The following monitoring locations (EPA Monitoring Points 9, 10, 11, 12 and 13) are listed on the licences for the purpose of monitoring:

- EPA Identification Number 9 (WML 1376) – Warkworth North
- EPA Identification Number 10 (WML 1376 & MTO 1976) – Dragline Crossing
- EPA Identification Number 11 (WML 1376 & MTO 1976) – Heavy Vehicle Bridge
- EPA Identification Number 12 (WML 1376 & MTO 1976) – MTIE
- EPA Identification Number 13 (MTO 1976) – MTO Boundary

Results of Particulates (PM_{10}) monitoring (EPA Monitoring Points 9, 10, 11, 12 and 13) are shown in Table 1. Results reported represent the 24hr average PM_{10}, derived from 10 minute PM_{10} values for the period midnight to midnight, for each calendar date during the reporting period. The last sampling date was 31st December 2017; the data was obtained on the 2nd January 2018.

TABLE 1: PARTICULATE MATTER <10µM MONITORING

Date	Unit of Measure	Monitoring Frequency & Capture	Monitoring Point				
			Warkworth North	MTO Boundary	Dragline Crossing	Heavy Vehicle Bridge	MTIE
1/12/2017	µg/m³	Continuous	11.3	9.7	19.9	12.0	6.5
2/12/2017	µg/m³		7.4	10.8	27.5	10.3	7.9
3/12/2017	µg/m³		3.0	5.5	29.2	7.4	4.5
4/12/2017	µg/m³		17.2	10.5	13.4	10.8	8.9
5/12/2017	µg/m³		12.9	8.8	10.7	11.4	7.2
6/12/2017	µg/m³		7.5	8.6	19.6	12.2	8.3
7/12/2017	µg/m³		4.1	10.2	20.1	13.1	8.4
8/12/2017	µg/m³		6.3	11.9	23.7	#	10.5
9/12/2017	µg/m³		5.3	11.2	13.5	#	7.5
10/12/2017	µg/m³		5.9	9.2	11.6	#	5.5
11/12/2017	µg/m³		6.4	8.1	9.0	#	5.5
12/12/2017	µg/m³		6.3	9.3	12.1	14.4	7.1
13/12/2017	µg/m³		9.4	15.4	32.8	17.6	11.1
14/12/2017	µg/m³		9.5	20.3	36.2	19.4	16.9
15/12/2017	µg/m³		16.6	25.8	29.9	26.3	21.0
16/12/2017	µg/m³		16.9	25.0	31.4	24.2	18.6
17/12/2017	µg/m³		21.7	27.8	29.5	28.9	23.3
18/12/2017	µg/m³		24.0	31.9	41.3	32.0	25.9
19/12/2017	µg/m³		11.6	25.8	43.4	24.2	16.6
20/12/2017	µg/m³		11.5	25.0	47.8	24.0	18.0
21/12/2017	µg/m³		16.5	18.9	21.0	19.3	14.3

22/12/2017	µg/m³		17.8	21.8	21.6	20.7	15.1
23/12/2017	µg/m³		19.6	27.4	37.1	26.7	20.1
24/12/2017	µg/m³		11.1	23.4	36.3	20.6	15.4
25/12/2017	µg/m³		5.3	10.2	12.2	9.9	6.8
26/12/2017	µg/m³		5.0	10.2	10.6	9.3	5.4
27/12/2017	µg/m³		8.1	10.7	12.1	12.3	5.5
28/12/2017	µg/m³		8.2	9.8	11.1	11.2	5.6
29/12/2017	µg/m³		6.8	14.0	40.4	14.8	7.7
30/12/2017	µg/m³		7.3	11.1	32.3	14.8	11.1
31/12/2017	µg/m³		14.1	18.6	22.3	22.7	13.0
Monthly Meaningful Data							
December	**µg/m³**	**Minimum***	3.0	5.5	9.0	7.4	4.5
December	**µg/m³**	**Mean***	10.7	15.6	24.6	17.2	11.5
December	**µg/m³**	**Maximum***	24.0	31.9	47.8	32.0	25.9
December	**µg/m³**	**Median***	8.8	11.2	22.7	14.8	8.7

24 hour data unavailable due to equipment or communications issue causing one or more missing 10 minute values

*Data calculated with missing 10 minute values due to equipment or communication issue

3 SURFACE WATER

3.1 Mine Water Discharge Monitoring

MTW participates in the Hunter River Salinity Trading Scheme (HRSTS), and maintains two monitoring locations associated with this scheme as follows:

- EPA Monitoring Point 1 (WML EPL 1376) – Dam 1N Discharge Point
- EPA Monitoring Point 4 (MTO EPL 1976) – The end of the discharge pipe from Dam 9

Mt Thorley Warkworth did not receive any discharge opportunities in the reporting period and no water was discharged. As such, no samples were collected at Monitoring Points 1 and 4 during the reporting period (shown in Table 2 below).

TABLE 2: MINE WATER DISCHARGE MONITORING

Discharge Point	Date	Pollutant	unit of measure	Licence Limits	No. of samples required by licence	No. of samples you collected and analysed
Dam 1N Discharge / EPL Point 1	N/A	Electrical Conductivity	microsiemens per centimetre	-	0	0
		pH	pH	6.5 - 9.0	0	0
		Total Suspended Solids	milligrams per litre	120	0	0
Dam 9S Discharge / EPL Point 4	N/A	Electrical Conductivity	microsiemens per centimetre	-	0	0
		pH	pH	6.5 - 9.0	0	0
		Total Suspended Solids	milligrams per litre	120	0	0

3.2 Hunter River Tributaries Monitoring

MTW undertakes routine monitoring in Loders Creek, in accordance with Condition M2.3, at the following location:

- EPA Monitoring Point 3 (MTO EPL 1976) – In Loders Creek, at the coal preparation plant access road bridge

Result of monitoring undertaken from W5 – Loders Creek is detailed in Table 3. Monthly sampling occurred on 8th December 2017, the data was obtained on 10th January 2018.

TABLE 3: HUNTER WATER TRIBUTARIES MONITORING

Monitoring Location	Pollutant	unit of measure	Monitoring frequency required by licence	No. of samples you collected and analysed	Value
Loders Creek / EPL Point 3	Electrical Conductivity	microsiemens per centimetre	Once a month (min. of 4 weeks)	1	8510
	pH	pH units	Once a month (min. of 4 weeks)	1	8
	Total Suspended Solids	milligrams per litre	Once a month (min. of 4 weeks)	1	15

3.3 Effluent Quality Monitoring

MTO undertakes routine monitoring in the MTO receiving lagoon (Dam 1S), in accordance with Condition M2.3, at the following location:

- EPA Monitoring Point 18 (MTO EPL 1976) – Dam 1S

Results of monitoring undertaken from Dam 1S are detailed in Table 4. Sampling is undertaken on a quarterly basis and was undertaken on the 6th December 2018.

TABLE 4: EFFLUENT QUALITY MONITORING

Monitoring Location	Pollutant	unit of measure	Monitoring frequency required by licence	No. of samples you collected and analysed	Value
Dam 1S / EPL Point 18	Faecal Coliforms	Colony forming units per 100 millilitres	Once a quarter	1	Est. 600
	pH	pH units	Once a quarter	1	6.9

4 BLAST MONITORING

In accordance with the requirements of Conditions M7.1 (WML 1376) and M8.1 (MTO 1976), Mount Thorley Warkworth maintains a network of blast monitors to measure airblast overpressure and ground vibration for all blasts carried out at MTW. The following monitoring locations (EPA Monitoring Points 4/5, 5/6, 6/7, 7/8 and 8/9) are listed on the licences for the purpose of assessing compliance with the airblast overpressure and ground vibration criteria:

- EPA Identification Number 4 (WML 1376) and Number 5 (MTO 1976) respectively – Warkworth
- EPA Identification Number 5 (WML 1376) and Number 6 (MTO 1976) respectively – Wambo Road
- EPA Identification Number 6 (WML 1376) and Number 7 (MTO 1976) respectively – Bulga Village
- EPA Identification Number 7 (WML 1376) and Number 8 (MTO 1976) respectively – Wollemi Peak Road
- EPA Identification Number 8 (WML 1376) and Number 9 (MTO 1976) respectively – Putty Road MTIE

The last date sampled was on 29th December 2017. The data was obtained on the 10th January 2018.

During the reporting period no blasts exceeded the 115 dB(L) or the 5mm/s threshold for airblast overpressure and ground vibration respectively.

Blast monitoring results are detailed in Tables 5 (Airblast Overpressure) and 6 (Ground Vibration).

TABLE 5: BLAST MONITORING (AIRBLAST OVERPRESSURE)

Blast ID	Date and Time	Unit of Measure	Monitoring Frequency & Capture	EPL Limits		Monitoring Point				
				95% of Blasts	100% of Blasts	Bulga Village	Wambo Road	Putty Rd MTIE	Warkworth	Wollemi Peak Road
n31-bfa-md3	1/12/2017 10:17	dB(L)	All Blasts 100%	115	120	97.1	99.3	103.2	99.4	91.0
n43-rca-pr3	5/12/2017 13:13	dB(L)		115	120	94.4	101.1	96.6	107.1	106.1
w30-wnd-ptg1	6/12/2017 13:09	dB(L)		115	120	87.2	101.4	109.7	102.0	89.0
l47-whe-ptg2	6/12/2017 13:09	dB(L)		115	120	87.2	101.4	109.7	102.0	100.3
w34-rcd-pr7	6/12/2017 13:10	dB(L)		115	120	100.5	97.8	109.9	87.9	98.7
w30-wnd-ptg2	7/12/2017 12:53	dB(L)		115	120	89.0	86.3	104.2	92.3	93.6
n31-bfa-md4	8/12/2017 11:35	dB(L)		115	120	96.2	96.3	97.8	98.5	90.4
n43-rca-pr4	8/12/2017 11:36	dB(L)		115	120	97.7	107.9	91.5	91.2	92.9
w27-wwe-ptg1	9/12/2017 10:39	dB(L)		115	120	91.1	92.3	98.1	87.2	94.5
l48-gma-ps5	12/12/2017 12:20	dB(L)		115	120	97.5	88.0	92.0	82.4	99.5
w31-wnd-ptg1	12/12/2017 13:17	dB(L)		115	120	98.1	99.5	99.7	93.6	95.6

l47-whe-ptg3	13/12/2017 13:24	dB(L)		115	120	108.3	95.3	103.5	94.8	97.3
w31-wnd-ptg2	14/12/2017 13:29	dB(L)		115	120	96.7	99.8	103.8	98.0	109.7
n31-bfa-md5	14/12/2017 14:51	dB(L)		115	120	95.9	108.5	109.8	101.3	106.0
n43-rca-pr5	18/12/2017 11:49	dB(L)		115	120	101.2	101.5	96.5	102.3	98.4
w31-wnd-ptg3 & w26-wwek-co1	19/12/2017 13:03	dB(L)		115	120	88.4	106.8	101.6	91.1	110.1
l48-gma-md3	20/12/2017 15:58	dB(L)		115	120	102.0	91.0	113.7	94.3	103.7
w34-rcd-pr8 & w31-wnd-ptg4	22/12/2017 10:13	dB(L)		115	120	94.0	103.9	96.0	96.8	100.6
w27-wwa-ptg2	23/12/2017 13:58	dB(L)		115	120	97.7	103.5	95.2	103.5	93.5
w31-wnd-ptg5	28/12/2017 13:23	dB(L)		115	120	94.9	89.8	92.9	92.3	91.2
n43-rca-pr6	29/12/2017 11:44	dB(L)		115	120	100.4	104.4	95.7	94.2	98.7
l48-gma-co1	29/12/2017 12:34	dB(L)		115	120	91.6	102.4	107.0	100.7	103.7
Monthly Meaningful Data										
Minimum	**December**	**dB(L)**		115	120	87.2	86.3	91.5	82.4	89.0
Mean	**December**	**dB(L)**		115	120	95.8	99.0	101.3	96.0	98.4
Maximum	**December**	**dB(L)**		115	120	108.3	108.5	113.7	107.1	110.1
Median	**December**	**dB(L)**		115	120	96.5	100.4	100.7	95.8	98.6

TABLE 6: BLAST MONITORING (GROUND VIBRATION)

Blast ID	Date and Time	Unit of Measure	Monitoring Frequency & Capture	EPL Limits		Monitoring Point				
				95% of Blasts	100% of Blasts	Bulga Village	Wambo Road	Putty Rd MTIE	Warkworth	Wollemi Peak Road
n31-bfa-md3	1/12/2017 10:17	mm/s	All Blasts 100%	5	10	1.49	1.30	0.36	1.62	0.08
n43-rca-pr3	5/12/2017 13:13	mm/s		5	10	1.08	1.96	0.11	0.65	0.73
w30-wnd-ptg1	6/12/2017 13:09	mm/s		5	10	0.08	0.05	0.03	0.15	0.53
l47-whe-ptg2	6/12/2017 13:09	mm/s		5	10	0.08	0.05	0.03	0.15	0.08
w34-rcd-pr7	6/12/2017 13:10	mm/s		5	10	0.56	0.23	0.07	0.15	0.36
w30-wnd-ptg2	7/12/2017 12:53	mm/s		5	10	0.18	0.06	0.05	0.08	0.14
n31-bfa-md4	8/12/2017 11:35	mm/s		5	10	0.98	0.83	0.19	1.36	0.63
n43-rca-pr4	8/12/2017 11:36	mm/s		5	10	0.61	0.83	0.08	0.56	0.21
w27-wwe-ptg1	9/12/2017 10:39	mm/s		5	10	0.03	0.02	0.03	0.14	0.03
l48-gma-ps5	12/12/2017 12:20	mm/s		5	10	0.62	0.52	0.09	0.18	0.77
w31-wnd-ptg1	12/12/2017 13:17	mm/s		5	10	0.20	0.10	0.06	0.38	0.21
l47-whe-ptg3	13/12/2017 13:24	mm/s		5	10	0.02	0.03	0.04	0.11	0.05

w31-wnd-ptg2	14/12/2017 13:29	mm/s		5	10	0.03	0.03	0.05	0.15	0.05
n31-bfa-md5	14/12/2017 14:51	mm/s		5	10	0.88	1.32	0.24	2.55	0.54
n43-rca-pr5	18/12/2017 11:49	mm/s		5	10	0.53	0.82	0.12	1.47	0.39
w31-wnd-ptg3 & w26-wwek-co1	19/12/2017 13:03	mm/s		5	10	0.24	0.12	0.05	0.17	0.12
l48-gma-md3	20/12/2017 15:58	mm/s		5	10	2.18	0.94	0.26	0.40	2.24
w34-rcd-pr8 & w31-wnd-ptg4	22/12/2017 10:13	mm/s		5	10	1.55	0.83	0.15	0.44	1.04
w27-wwa-ptg2	23/12/2017 13:58	mm/s		5	10	0.06	0.05	0.04	0.18	0.07
w31-wnd-ptg5	28/12/2017 13:23	mm/s		5	10	0.48	0.16	0.07	0.13	0.24
n43-rca-pr6	29/12/2017 11:44	mm/s		5	10	0.56	0.86	0.11	0.73	0.38
l48-gma-co1	29/12/2017 12:34	mm/s		5	10	0.12	0.06	0.04	0.09	0.12
Monthly Meaningful Data										
Minimum	**December**	**mm/s**		5	10	0.02	0.02	0.03	0.08	0.03
Mean	**December**	**mm/s**		5	10	0.57	0.51	0.10	0.54	0.41
Maximum	**December**	**mm/s**		5	10	2.18	1.96	0.36	2.55	2.24
Median	**December**	**mm/s**		5	10	0.51	0.20	0.07	0.18	0.23

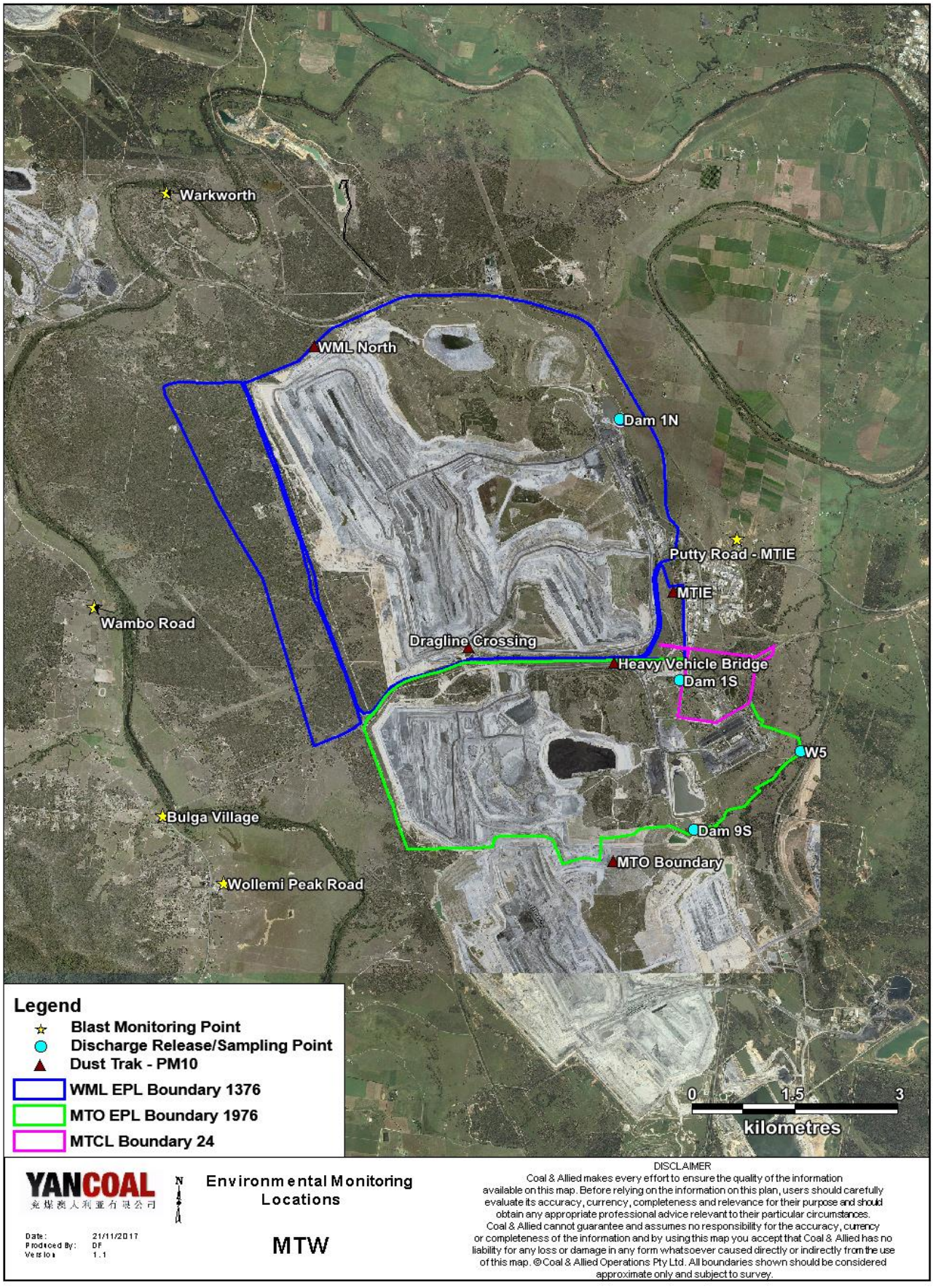

Figure 1 : Mount Thorley Warkworth Environmental Monitoring Locations