Mount Thorley Warkworth EPL Monitoring Data

Published 24 August 2018
FOR THE MONTH ENDING 31 July 2018

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 Operations 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 provides a summary of environmental monitoring results for Mount Thorley Warkworth (MTW) in accordance with the requirements of the following Environment Protection Licences (EPL):

- EPL24 – Mount Thorley Coal Loader (MTCL);
- EPL1376 – Warkworth Mining Limited (WML); and
- EPL1976 – Mount Thorley Operations (MTO).

This report includes all monitoring data collected in accordance with the above licences for the period 1 to 31 July 2018.

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 of WML EPL 1376 and MTO EPL 1976, MTW maintains a network of five PM_{10} monitors.

Results of Particulates (PM_{10}) monitoring 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 31 July 2018 and the data was obtained on 1 August 2018.

TABLE 1: PARTICULATE MATTER <10µM MONITORING

Date	Unit of Measure	Monitoring Frequency & Capture	Monitoring Point				
			Warkworth North (EPA ID # 9 - WML EPL 1376)	MTO Boundary (EPA ID # 13 - MTO EPL 1976)	Dragline Crossing (EPA ID # 10 - WML EPL 1376 & MTO EPL 1976)	Heavy Vehicle Bridge (EPA ID # 11 - WML EPL 1376 & MTO EPL 1976)	MTIE (EPA ID # 12 - WML EPL 1376 & MTO EPL 1976)
1/07/2018	µg/m³	Continuous	6.7	7.2	17.8	14.0	17.8
2/07/2018	µg/m³		7.1	8.0	9.6	10.1	9.9
3/07/2018	µg/m³		6.6	10.1	9.0	8.4	11.8
4/07/2018	µg/m³		8.4	13.6	23.9	20.3	20.6
5/07/2018	µg/m³		2.4	15.1	32.9	24.4	21.2
6/07/2018	µg/m³		3.2	6.7	23.2	10.5	9.7
7/07/2018	µg/m³		1.3	6.4	21.7	11.4	#
8/07/2018	µg/m³		1.7	6.9	22.8	9.8	6.6
9/07/2018	µg/m³		2.8	5.0	17.6	10.3	9.8
10/07/2018	µg/m³		4.6	10.3	22.7	16.6	18.8
11/07/2018	µg/m³		5.8	13.9	30.7	21.3	25.7
12/07/2018	µg/m³		3.7	8.3	26.2	19.7	21.8
13/07/2018	µg/m³		1.3	7.1	23.0	14.1	12.6
14/07/2018	µg/m³		2.4	12.5	36.2	18.9	16.4
15/07/2018	µg/m³		2.5	10.7	38.8	23.3	22.3
16/07/2018	µg/m³		2.1	10.9	53.2	15.6	8.9
17/07/2018	µg/m³		2.5	10.0	33.8	12.1	7.7
18/07/2018	µg/m³		4.3	10.5	34.4	18.5	20.3
19/07/2018	µg/m³		3.9	13.1	52.0	33.0	24.8
20/07/2018	µg/m³		3.3	8.3	35.9	21.1	15.4
21/07/2018	µg/m³		1.5	7.8	21.2	11.1	6.1

Date	Unit of Measure	Monitoring Frequency & Capture	Monitoring Point				
			Warkworth North (EPA ID # 9 - WML EPL 1376)	MTO Boundary (EPA ID # 13 - MTO EPL 1976)	Dragline Crossing (EPA ID # 10 - WML EPL 1376 & MTO EPL 1976)	Heavy Vehicle Bridge (EPA ID # 11 - WML EPL 1376 & MTO EPL 1976)	MTIE (EPA ID # 12 - WML EPL 1376 & MTO EPL 1976)
22/07/2018	µg/m³		5.1	11.5	30.4	21.0	19.4
23/07/2018	µg/m³		6.7	13.1	45.3	20.7	21.1
24/07/2018	µg/m³		4.2	9.6	37.8	15.3	10.9
25/07/2018	µg/m³		3.8	8.0	33.8	19.4	12.2
26/07/2018	µg/m³		4.8	11.4	41.8	26.0	18.1
27/07/2018	µg/m³		11.8	10.7	27.0	20.2	20.6
28/07/2018	µg/m³		9.6	19.3	42.9	29.4	28.3
29/07/2018	µg/m³		7.7	13.7	34.6	21.7	20.2
30/07/2018	µg/m³		2.0	8.0	26.9	9.0	5.0
31/07/2018	µg/m³		3.1	8.3	33.5	8.7	6.5
Monthly Meaningful Data							
July	**µg/m³**	**Minimum***	1.3	5.0	9.0	8.4	5.0
July	**µg/m³**	**Mean***	4.4	10.2	30.3	17.3	15.4
July	**µg/m³**	**Maximum***	11.8	19.3	53.2	33.0	28.3
July	**µg/m³**	**Median***	3.8	10.1	30.7	18.5	16.4

 # 24 hour data unavailable due to equipment or communications issue causing one or more missing 10 minute values
**Data calculated with missing 10 minute value(s) due to equipment or communication issue*
MTIE denotes Mount Thorley Industrial Estate

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.

MTW did not receive any discharge opportunities in the reporting period and no water was discharged as shown in **Table 2**. As such, no samples were collected during the reporting period as shown in **Table 3**.

TABLE 2: MINE WATER DISCHARGE MONITORING - VOLUME AND MASS LIMITS

Monitoring Location	Unit of measure	Volume/mass Limit	Volume/mass Discharged
Dam 9S Discharge / EPL Point 4 (MTO EPL 1976) Discharge pipe from Dam 9	Megalitres per day	100	-

TABLE 3: MINE WATER DISCHARGE MONITORING- CONCENTRATION LIMITS

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 / Point 1 (WML EPL 1376) Dam 1N Discharge Point	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 (MTO EPL 1976) Discharge pipe from Dam 9	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 monitoring in Loders Creek, in accordance with Condition M2.3 of MTO EPL 1976 as detailed in **Table 4**.
Monthly sampling occurred 17 July 2018 and the data was obtained 10 August 2018.

TABLE 4: HUNTER WATER TRIBUTARIES MONITORING

Monitoring Location	Pollutant	unit of measure	Monitoring frequency required by licence	No. of samples you collected and analysed	Value
W5 – Loders Creek / EPL Point 3 (MTO EPL 1976) Coal preparation plant access road bridge	Electrical Conductivity	microsiemens per centimetre	Once a month (min. of 4 weeks)	0	#
	pH	pH units	Once a month (min. of 4 weeks)	0	#
	Total Suspended Solids	milligrams per litre	Once a month (min. of 4 weeks)	0	#

- Sample unable to be collected due to insufficient water

3.3 Effluent Quality Monitoring

MTO undertakes monitoring in the MTO receiving lagoon (Dam 1S), in accordance with Condition M2.3 of MTO EPL 1976 as detailed in **Table 5**.
Sampling is undertaken on a quarterly basis and as such no sampling was conducted in July 2018. The next sampling event will be in September 2018.

TABLE 5: 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 (MTO EPL 1976)	Faecal Coliforms	Colony forming units per 100 millilitres	Once a quarter	-	-
	pH	pH units	Once a quarter	-	-

4 BLAST MONITORING

In accordance with the requirements of Conditions M7.1 (WML EPL 1376) and M8.1 (MTO EPL 1976), MTW maintains a network of blast monitors to measure airblast overpressure and ground vibration for all blasts carried out at MTW.

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 **Table 6** (Airblast Overpressure) and **Table 7** (Ground Vibration). The last date sampled was on 27 July 2018. The data was obtained on 23 August 2018.

TABLE 6: 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 EPA ID # 6 (EPL 1376) & EPA ID # 7 (EPL 1976)	Wambo Road EPA ID # 5 (EPL 1376) & EPA ID # 6 (EPL 1976)	Putty Rd MTIE EPA ID # 8 (EPL 1376) & EPA ID # 9 (EPL 1976)	Warkworth EPA ID # 4 (EPL 1376) & EPA ID # 5 (EPL 1976)	Wollemi Peak Road EPA ID # 7 (EPL 1376) & EPA ID # 8 (EPL 1976)
w27-wwe-ps4	2/07/2018 12:42	dB(L)	All Blasts 94%	115	120	94.2	89.5	94.0	87.3	89.9
l51-gma-md1	5/07/2018 10:08	dB(L)		115	120	99.9	89.3	98.2	86.1	101.7
w28-bfe-ptg1	5/07/2018 12:58	dB(L)		115	120	#	#	#	#	#
w27-wwe-md2 & w28-bfe-ptg2	6/07/2018 9:33	dB(L)		115	120	102.9	100.3	113.2	95.3	108.7
w34-wba-ps4	9/07/2018 13:23	dB(L)		115	120	87.5	91.9	92.3	87.3	83.4
w28-bff-ptg1	11/07/2018 11:49	dB(L)		115	120	91.7	88.2	91.4	91.6	88.6
w28-bfa-md6	11/07/2018 11:49	dB(L)		115	120	97.6	96.1	99.7	91.6	97.9
w28-bff-co1	13/07/2018 11:14	dB(L)		115	120	99.4	102.8	106.2	102.6	101.6
n32-bfa-md1	13/07/2018 12:25	dB(L)		115	120	99.3	99.8	104.6	99.0	102.8
w28-bff-co2	17/07/2018 13:10	dB(L)		115	120	99.2	104.8	111.0	107.6	107.9
n32-bfa-md2	19/07/2018 11:21	dB(L)		115	120	100.1	103.1	110.1	98.3	108.1

Blast ID	Date and Time	Unit of Measure	Monitoring Frequency & Capture	EPL Limits		Monitoring Point				
				95% of Blasts	100% of Blasts	Bulga Village EPA ID # 6 (EPL 1376) & EPA ID # 7 (EPL 1976)	Wambo Road EPA ID # 5 (EPL 1376) & EPA ID # 6 (EPL 1976)	Putty Rd MTIE EPA ID # 8 (EPL 1376) & EPA ID # 9 (EPL 1976)	Warkworth EPA ID # 4 (EPL 1376) & EPA ID # 5 (EPL 1976)	Wollemi Peak Road EPA ID # 7 (EPL 1376) & EPA ID # 8 (EPL 1976)
w28-bff-ptg2	20/07/2018 10:11	dB(L)		115	120	103.4	106.8	112.6	109.2	111.9
w34-wba-pr2	20/07/2018 10:11	dB(L)		115	120	105.6	110.4	108.2	103.6	110.2
w28-bfa-md7 & n41-wnd-ptg1	26/07/2018 10:38	dB(L)		115	120	95.2	97.0	101.0	102.0	93.9
l51-gma-md2	26/07/2018 12:10	dB(L)		115	120	99.5	93.3	93.2	92.0	99.2
w34-wba-pr3 & w28-bff-co3	27/07/2018 11:52	dB(L)		115	120	103.4	100.4	99.8	89.8	100.0
Monthly Meaningful Data										
Minimum	**July**	**dB(L)**		115	120	87.5	88.2	91.4	86.1	83.4
Mean	**July**	**dB(L)**		115	120	98.6	98.2	102.4	96.2	100.4
Maximum	**July**	**dB(L)**		115	120	105.6	110.4	113.2	109.2	111.9
Median	**July**	**dB(L)**		115	120	99.4	99.8	101.0	95.3	101.6

 # - Data unavailable as peak blast vibration level below trigger threshold of 0.2mm/sec which triggers the automated capture of blast results. Blast results were not manually captured within 20 days of the blast event, which is the storage limit of the blast monitors. Details regarding the miss capture will be outlined in the Annual Return, to be provided to the EPA.

TABLE 7: 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 EPA ID # 6 (EPL 1376) & EPA ID # 7 (EPL 1976)	Wambo Road EPA ID # 5 (EPL 1376) & EPA ID # 6 (EPL 1976)	Putty Rd MTIE EPA ID # 8 (EPL 1376) & EPA ID # 9 (EPL 1976)	Warkworth EPA ID # 4 (EPL 1376) & EPA ID # 5 (EPL 1976)	Wollemi Peak Road EPA ID # 7 (EPL 1376) & EPA ID # 8 (EPL 1976)
w27-wwe-ps4	2/07/2018 12:42	mm/s	All Blasts 94%	5	10	1.0	0.5	0.2	0.4	0.7
l51-gma-md1	5/07/2018 10:08	mm/s		5	10	1.4	0.7	0.2	0.3	1.3
w28-bfe-ptg1	5/07/2018 12:58	mm/s		5	10	#	#	#	#	#
w27-wwe-md2 & w28-bfe-ptg2	6/07/2018 9:33	mm/s		5	10	2.3	1.6	0.3	2.0	1.2
w34-wba-ps4	9/07/2018 13:23	mm/s		5	10	0.3	0.2	0.1	0.2	0.3
w28-bff-ptg1	11/07/2018 11:49	mm/s		5	10	0.2	0.9	0.2	0.7	0.2
w28-bfa-md6	11/07/2018 11:49	mm/s		5	10	1.0	0.9	0.2	0.7	0.7
w28-bff-co1	13/07/2018 11:14	mm/s		5	10	0.0	0.0	0.0	0.2	0.0
n32-bfa-md1	13/07/2018 12:25	mm/s		5	10	2.7	2.4	0.3	1.2	1.3
w28-bff-co2	17/07/2018 13:10	mm/s		5	10	0.1	0.1	0.0	0.1	0.1
n32-bfa-md2	19/07/2018 11:21	mm/s		5	10	1.9	1.5	0.2	1.5	1.2

Blast ID	Date and Time	Unit of Measure	Monitoring Frequency & Capture	EPL Limits		Monitoring Point				
				95% of Blasts	100% of Blasts	Bulga Village EPA ID # 6 (EPL 1376) & EPA ID # 7 (EPL 1976)	Wambo Road EPA ID # 5 (EPL 1376) & EPA ID # 6 (EPL 1976)	Putty Rd MTIE EPA ID # 8 (EPL 1376) & EPA ID # 9 (EPL 1976)	Warkworth EPA ID # 4 (EPL 1376) & EPA ID # 5 (EPL 1976)	Wollemi Peak Road EPA ID # 7 (EPL 1376) & EPA ID # 8 (EPL 1976)
w28-bff-ptg2	20/07/2018 10:11	mm/s		5	10	0.5	0.3	0.1	0.4	0.5
w34-wba-pr2	20/07/2018 10:11	mm/s		5	10	1.4	1.2	0.2	0.4	1.3
w28-bfa-md7 & n41-wnd-ptg1	26/07/2018 10:38	mm/s		5	10	1.2	0.7	0.2	0.8	1.0
l51-gma-md2	26/07/2018 12:10	mm/s		5	10	0.9	0.6	0.1	0.4	0.9
w34-wba-pr3 & w28-bff-co3	27/07/2018 11:52	mm/s		5	10	3.1	0.9	0.2	0.5	1.4
Monthly Meaningful Data										
Minimum	**July**	**mm/s**		5	10	0.03	0.03	0.03	0.14	0.03
Mean	**July**	**mm/s**		5	10	1.19	0.81	0.18	0.64	0.80
Maximum	**July**	**mm/s**		5	10	3.10	2.37	0.33	1.98	1.39
Median	**July**	**mm/s**		5	10	1.00	0.70	0.19	0.41	0.87

 # - Data unavailable as peak blast vibration level below trigger threshold of 0.2mm/sec which triggers the automated capture of blast results. Blast results were not manually captured within 20 days of the blast event, which is the storage limit of the blast monitor(s). Details regarding the miss capture will be outlined in the Annual Return, to be provided to the EPA.

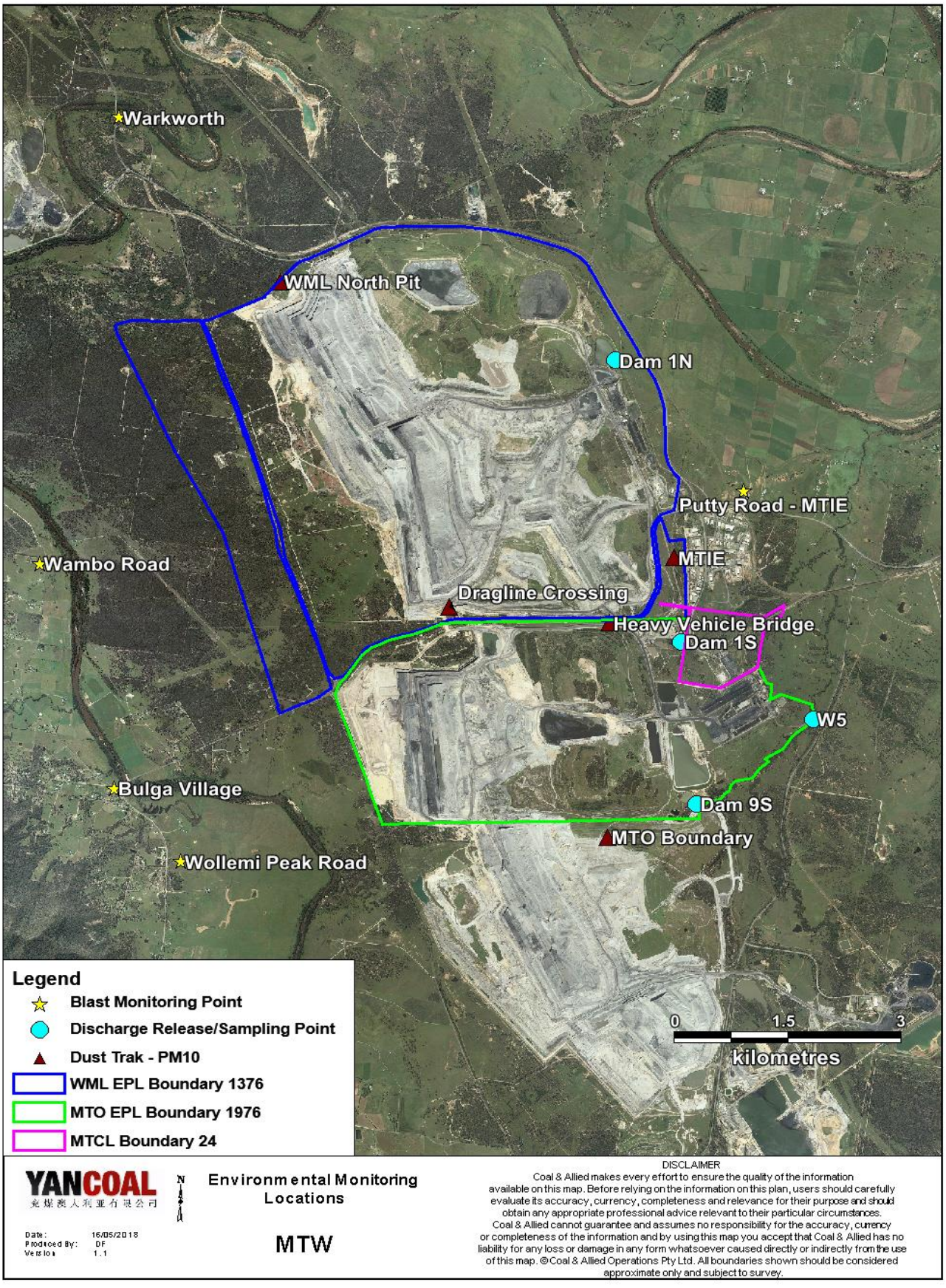

Figure 1 : Mount Thorley Warkworth Environmental Monitoring Locations

Correction Log

EPA Point ID	Pollutant	Sample Date	Original Data	Corrected Data	Date Corrected	Date Originally Published	Reason
Warkworth EPA ID # 4 (EPL 1376) & EPA ID # 5 (EPL 1976)	Blast Overpressure (dB(L)) & Vibration (mm/s)	5/07/2018	6/07/2018 0:58	5/07/2018 12:58	04/09/2018	24/08/2018	For blast ID w28-bfe-ptg1, there was an error in transcribing date and time from the monthly blast spreadsheet into Tables 6 and 7.
Wambo Road EPA ID # 5 (EPL 1376) & EPA ID # 6 (EPL 1976)	Blast Overpressure (dB(L)) & Vibration (mm/s)	5/07/2018	6/07/2018 0:58	5/07/2018 12:58	04/09/2018	24/08/2018	For blast ID w28-bfe-ptg1, there was an error in transcribing date and time from the monthly blast spreadsheet into Tables 6 and 7.
Bulga Village EPA ID # 6 (EPL 1376) & EPA ID # 7 (EPL 1976)	Blast Overpressure (dB(L)) & Vibration (mm/s)	5/07/2018	6/07/2018 0:58	5/07/2018 12:58	04/09/2018	24/08/2018	For blast ID w28-bfe-ptg1, there was an error in transcribing date and time from the monthly blast spreadsheet into Tables 6 and 7.
Wollemi Peak Road EPA ID # 7 (EPL 1376) & EPA ID # 8 (EPL 1976)	Blast Overpressure (dB(L)) & Vibration (mm/s)	5/07/2018	6/07/2018 0:58	5/07/2018 12:58	04/09/2018	24/08/2018	For blast ID w28-bfe-ptg1, there was an error in transcribing date and time from the monthly

							blast spreadsheet into Tables 6 and 7.
Putty Rd MTIE EPA ID # 8 (EPL 1376) & EPA ID # 9 (EPL 1976)	Blast Overpressure (dB(L)) & Vibration (mm/s)	5/07/2018	6/07/2018 0:58	5/07/2018 12:58	04/09/2018	24/08/2018	For blast ID w28-bfe-ptg1, there was an error in transcribing date and time from the monthly blast spreadsheet into Tables 6 and 7.