



Mount Thorley Warkworth EPL Monitoring Data

Published 17 April 2019
FOR THE MONTH ENDING 31 MARCH 2019

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	https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=147438&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 March 2019.

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 PM₁₀ monitors.

Results of Particulates (PM₁₀) monitoring are shown in **Table 1**. Results reported represent the 24hr average PM₁₀, derived from 10 minute PM₁₀ values for the period midnight to midnight, for each calendar date during the reporting period. The last sampling date was 31 March 2019 and the data was obtained on 1 April 2019.

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 & EPA ID #19 - MTO EPL 1976)
1/03/2019	µg/m ³	Continuous	7.0	3.2	3.3	13.0	5.2
2/03/2019	µg/m ³		8.2	3.5	2.7	8.3	5.2
3/03/2019	µg/m ³		10.0	3.0	5.5	5.5	5.0
4/03/2019	µg/m ³		9.9	5.8	10.7	10.0	11.1
5/03/2019	µg/m ³		16.1	9.0	20.0	14.6	16.7
6/03/2019	µg/m ³		16.1	15.0	62.6	21.8	24.5
7/03/2019	µg/m ³		25.9	17.7	45.1	22.3	29.0
8/03/2019	µg/m ³		11.3	6.0	18.1	10.5	10.2
9/03/2019	µg/m ³		19.8	17.0	61.6	22.8	28.2
10/03/2019	µg/m ³		30.4	24.3	78.8	32.3	42.9
11/03/2019	µg/m ³		29.9	14.9	50.0	24.5	27.8
12/03/2019	µg/m ³		24.1	19.9	62.2	27.7	33.7
13/03/2019	µg/m ³		18.0	12.5	31.7	19.2	23.2
14/03/2019	µg/m ³		18.0	12.9	#	18.8	34.8
15/03/2019	µg/m ³		15.2	8.7	8.1	13.2	28.7
16/03/2019	µg/m ³		10.3	5.0	5.2	8.9	19.8
17/03/2019	µg/m ³		3.0	2.0	5.1	5.7	10.0
18/03/2019	µg/m ³		6.7	5.7	7.0	6.8	8.9
19/03/2019	µg/m ³		13.0	8.9	9.7	12.1	16.5
20/03/2019	µg/m ³		15.3	10.2	9.9	19.5	21.4
21/03/2019	µg/m ³		11.0	3.5	5.2	8.9	8.7

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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 & EPA ID #19 - MTO EPL 1976)
22/03/2019	µg/m ³		10.0	4.9	5.3	10.0	9.9
23/03/2019	µg/m ³		9.5	6.4	9.1	9.3	12.8
24/03/2019	µg/m ³		11.0	9.4	13.7	13.3	17.4
25/03/2019	µg/m ³		9.6	7.9	12.2	10.6	#
26/03/2019	µg/m ³		9.0	6.5	12.7	9.5	#
27/03/2019	µg/m ³		14.6	6.1	5.2	8.6	#
28/03/2019	µg/m ³		13.7	5.7	5.7	11.0	#
29/03/2019	µg/m ³		11.5	5.8	9.4	8.6	#
30/03/2019	µg/m ³		5.2	3.3	6.6	6.0	#
31/03/2019	µg/m ³		7.9	6.6	11.7	11.4	#
Monthly Meaningful Data							
March	µg/m³	Minimum*	3.0	2.0	2.7	5.5	5.0
March	µg/m³	Mean*	13.6	8.7	19.9	13.7	18.8
March	µg/m³	Maximum*	30.4	24.3	78.8	32.3	42.9
March	µg/m³	Median*	11.3	6.5	9.9	11.0	17.1

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 8 March 2019 and the data was obtained 11 April 2019.

TABLE 4: HUNTER WATER TRIBUTARIES MONITORING

Monitoring Location	Pollutant	unit of measure	Monitoring frequency required by licence	No. of samples 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)	1	1890
	pH	pH units	Once a month (min. of 4 weeks)	1	7.9
	Total Suspended Solids	milligrams per litre	Once a month (min. of 4 weeks)	1	23770

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**. Monthly sampling occurred 19 March 2019 and the data was obtained 11 April 2019.

TABLE 5: EFFLUENT QUALITY MONITORING

Monitoring Location	Pollutant	unit of measure	Monitoring frequency required by licence	No. of samples collected and analysed	Value
Dam 1S / EPL Point 18 (MTO EPL 1976)	Faecal Coliforms	Colony forming units per 100 millilitres	Once a quarter	1	~1700
	pH	pH units	Once a quarter	1	8.4

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 one blast exceeded the 115dB(L) threshold for airblast overpressure at the Wollemi Peak Road blast monitor on 6 March 2019 and no blasts exceeded the 5mm/s threshold for ground vibration.

Blast monitoring results are detailed in **Table 6** (Airblast Overpressure) and **Table 7** (Ground Vibration). The last date sampled was on 29 March 2019. The data was obtained on 1 April 2019.

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)
w30-gmd-ptg6	1/03/2019 11:51	dB(L)	All Blasts 100%	115	120	102.8	95.1	105.3	93.6	92.9
I54-rcd-md1 & I54-wba-ps2	5/03/2019 13:01	dB(L)		115	120	104.2	104.4	97.3	104.1	105.5
w30-wha-c-co2	5/03/2019 13:45	dB(L)		115	120	99.7	103.4	93.4	107.3	97.6
n37-whf-pr7 & n43-wba-ps9 & n43-wba-pr7	6/03/2019 13:28	dB(L)		115	120	107.0	100.8	113.5	105.0	115.3
w30-whe-pr1	7/03/2019 13:32	dB(L)		115	120	98.9	96.2	103.6	90.3	98.4
w33-wnb-ps3 & w40-wyc-ps1	7/03/2019 13:33	dB(L)		115	120	94.2	102.8	106.1	94.7	101.6
n41-bla-ptg16	9/03/2019 11:50	dB(L)		115	120	105.8	103.9	107.1	100.0	102.1
I54-rcd-md2 & I54-wba-ps3	12/03/2019 12:32	dB(L)		115	120	104.0	98.5	110.4	97.9	105.2
n43-ble-ptg5	13/03/2019 12:39	dB(L)		115	120	97.8	97.0	98.7	97.6	99.2
n43-wba-ps10 & n43-wba-pr8	13/03/2019 13:03	dB(L)		115	120	102.5	104.3	103.2	102.7	103.7
w30-whe-pr2 & w30-gmd-whc-co3	14/03/2019 12:53	dB(L)		115	120	98.6	95.6	97.1	95.8	98.2

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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)
w40-wyc-pr1	15/03/2019 11:44	dB(L)		115	120	106.8	106.7	110.0	103.3	101.6
w30-gmd-ptg7	16/03/2019 11:47	dB(L)		115	120	100.7	103.0	100.1	102.5	100.7
n45-rca-ps2	20/03/2019 13:19	dB(L)		115	120	104.0	96.6	96.0	90.9	98.5
n41-wnd-ptg6	22/03/2019 12:17	dB(L)		115	120	93.6	107.0	96.3	107.6	87.5
n45-rca-pr4 & n45-rca-ps3	22/03/2019 12:17	dB(L)		115	120	107.1	107.0	96.3	107.6	99.5
l55-rcd-md1	25/03/2019 12:41	dB(L)		115	120	104.6	98.6	103.9	104.3	103.5
n34-bfa-ps4	26/03/2019 12:32	dB(L)		115	120	88.3	81.0	93.4	91.0	79.2
n41-ble-ptg6	27/03/2019 13:07	dB(L)		115	120	106.0	106.8	93.4	102.6	100.0
n45-rca-pr5	28/03/2019 12:43	dB(L)		115	120	99.7	111.3	105.6	109.4	99.8
n34-bfa-ps5	28/03/2019 13:41	dB(L)		115	120	100.6	93.4	102.2	104.3	91.3
w29-bfc-j-co1	29/03/2019 11:07	dB(L)		115	120	98.1	94.9	105.0	97.3	95.9
w33-wnb-ps4	29/03/2019 12:28	dB(L)		115	120	91.4	94.8	93.8	90.6	88.6

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)
Monthly Meaningful Data										
Minimum	March	dB(L)		115	120	88.3	81.0	93.4	90.3	79.2
Mean	March	dB(L)		115	120	100.7	100.1	101.4	100.0	98.5
Maximum	March	dB(L)		115	120	107.1	111.3	113.5	109.4	115.3
Median	March	dB(L)		115	120	100.7	100.8	102.2	102.5	99.5

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)
w30-gmd-ptg6	1/03/2019 11:51	mm/s	All Blasts 100%	5	10	0.1	0.1	0.1	0.1	0.1
I54-rcd-md1 & I54-wba-ps2	5/03/2019 13:01	mm/s		5	10	0.9	0.5	0.2	0.2	1.3
w30-wha-c-co2	5/03/2019 13:45	mm/s		5	10	0.1	0.1	0.1	0.1	0.0
n37-whf-pr7 & n43-wba-ps9 & n43-wba-pr7	6/03/2019 13:28	mm/s		5	10	0.7	0.7	0.2	0.6	0.4
w30-whe-pr1	7/03/2019 13:32	mm/s		5	10	1.4	0.8	0.2	0.4	0.9
w33-wnb-ps3 & w40-wyc-ps1	7/03/2019 13:33	mm/s		5	10	0.2	0.2	0.1	0.2	0.1
n41-bla-ptg16	9/03/2019 11:50	mm/s		5	10	0.1	0.1	0.0	0.3	0.1
I54-rcd-md2 & I54-wba-ps3	12/03/2019 12:32	mm/s		5	10	0.6	0.7	0.1	0.3	1.0
n43-ble-ptg5	13/03/2019 12:39	mm/s		5	10	0.1	0.1	0.0	0.3	0.0
n43-wba-ps10 & n43-wba-pr8	13/03/2019 13:03	mm/s		5	10	0.6	0.6	0.1	0.6	0.3
w30-whe-pr2 & w30-gmd-whc-co3	14/03/2019 12:53	mm/s		5	10	0.9	0.7	0.2	0.4	0.6

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)
w40-wyc-pr1	15/03/2019 11:44	mm/s		5	10	1.4	0.5	0.1	0.1	0.4
w30-gmd-ptg7	16/03/2019 11:47	mm/s		5	10	0.2	0.1	0.0	0.1	0.1
n45-rca-ps2	20/03/2019 13:19	mm/s		5	10	0.2	0.5	0.0	0.2	0.2
n41-wnd-ptg6	22/03/2019 12:17	mm/s		5	10	0.8	1.2	0.1	0.5	0.3
n45-rca-pr4 & n45-rca-ps3	22/03/2019 12:17	mm/s		5	10	0.8	1.2	0.1	0.5	0.3
l55-rcd-md1	25/03/2019 12:41	mm/s		5	10	0.8	0.2	0.1	0.1	0.8
n34-bfa-ps4	26/03/2019 12:32	mm/s		5	10	1.1	1.1	0.1	1.1	1.2
n41-ble-ptg6	27/03/2019 13:07	mm/s		5	10	0.1	0.1	0.0	0.1	0.0
n45-rca-pr5	28/03/2019 12:43	mm/s		5	10	0.8	1.5	0.1	1.0	0.4
n34-bfa-ps5	28/03/2019 13:41	mm/s		5	10	0.6	0.8	0.2	0.7	0.6
w29-bfc-j-co1	29/03/2019 11:07	mm/s		5	10	0.1	0.1	0.0	0.4	0.1
w33-wnb-ps4	29/03/2019 12:28	mm/s		5	10	0.4	0.6	0.1	0.2	0.3

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)
Monthly Meaningful Data										
Minimum	March	mm/s		5	10	0.06	0.07	0.02	0.06	0.03
Mean	March	mm/s		5	10	0.54	0.54	0.09	0.36	0.42
Maximum	March	mm/s		5	10	1.39	1.49	0.22	1.14	1.30
Median	March	mm/s		5	10	0.56	0.53	0.08	0.27	0.31

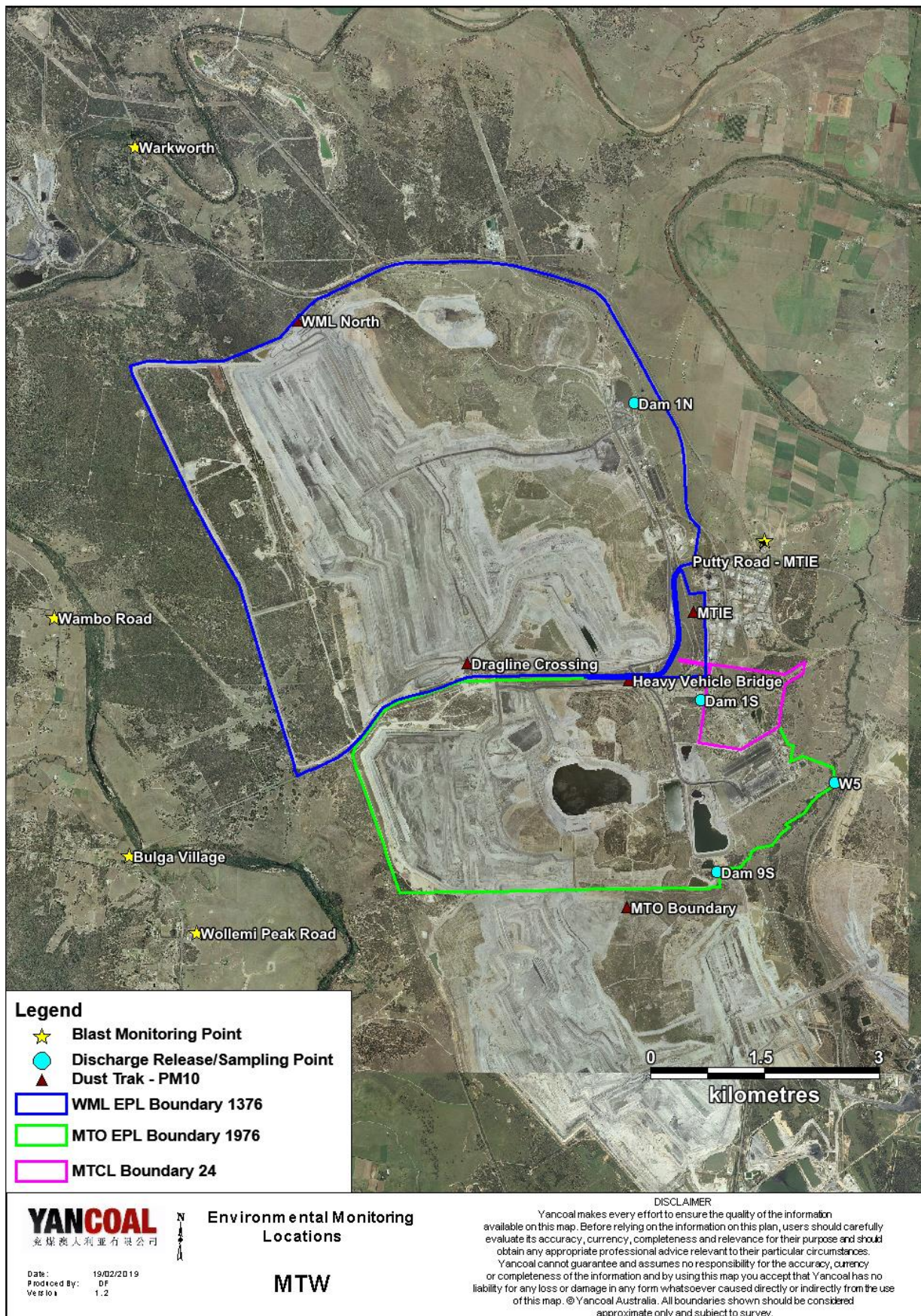


Figure 1 : Mount Thorley Warkworth Environmental Monitoring Locations