



# Mount Thorley Warkworth EPL Monitoring Data

Published 25 February 2019  
FOR THE MONTH ENDING 31 JANUARY 2019

<b>Name of Operation</b>	<b>Mount Thorley Coal Loader</b>
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	<a href="http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=89660&amp;SYSUID=1&amp;LICID=24">http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=89660&amp;SYSUID=1&amp;LICID=24</a>
<b>Name of Operation</b>	<b>Mount Thorley Operations</b>
Environment Protection Licence	1976
Licensee	Mount Thorley Operations Pty Limited
Premises	Mount Thorley Operations Mount Thorley Road Mount Thorley NSW 2330
EPL Link	<a href="https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=147438&amp;SYSUID=1&amp;LICID=1976">https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=147438&amp;SYSUID=1&amp;LICID=1976</a>
<b>Name of Operation</b>	<b>Warkworth Coal Mine</b>
Environment Protection Licence	1376
Licensee	Warkworth Mining Ltd
Premises	Warkworth Coal Mine Putty Road Mount Thorley NSW 2330
EPL Link	<a href="http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=121545&amp;SYSUID=1&amp;LICID=1376">http://app.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=121545&amp;SYSUID=1&amp;LICID=1376</a>

## 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 January 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 PM<sub>10</sub> monitors.

Results of Particulates (PM<sub>10</sub>) monitoring are shown in **Table 1**. Results reported represent the 24hr average PM<sub>10</sub>, derived from 10 minute PM<sub>10</sub> values for the period midnight to midnight, for each calendar date during the reporting period. The last sampling date was 31 January 2019 and the data was obtained on 1 February 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)
1/01/2019	µg/m <sup>3</sup>	Continuous	22.6	14.3	18.6	21.8	21.6
2/01/2019	µg/m <sup>3</sup>		40.1	34.3	38.6	43.4	44.2
3/01/2019	µg/m <sup>3</sup>		30.8	19.0	25.1	32.8	28.0
4/01/2019	µg/m <sup>3</sup>		18.6	12.6	18.3	19.9	18.3
5/01/2019	µg/m <sup>3</sup>		14.4	10.2	27.3	13.1	16.3
6/01/2019	µg/m <sup>3</sup>		9.1	3.3	3.9	5.0	6.2
7/01/2019	µg/m <sup>3</sup>		9.9	4.7	4.8	7.9	8.0
8/01/2019	µg/m <sup>3</sup>		18.1	13.8	16.8	19.3	20.9
9/01/2019	µg/m <sup>3</sup>		13.4	10.6	18.6	15.1	17.3
10/01/2019	µg/m <sup>3</sup>		27.6	17.8	21.6	27.0	30.9
11/01/2019	µg/m <sup>3</sup>		20.7	13.3	16.0	22.8	23.3
12/01/2019	µg/m <sup>3</sup>		17.1	16.1	22.2	23.4	25.0
13/01/2019	µg/m <sup>3</sup>		28.3	16.7	20.9	27.9	26.2
14/01/2019	µg/m <sup>3</sup>		12.6	8.7	11.7	18.5	16.0
15/01/2019	µg/m <sup>3</sup>		15.9	10.7	19.1	19.3	16.1
16/01/2019	µg/m <sup>3</sup>		25.4	19.3	26.3	33.1	27.7
17/01/2019	µg/m <sup>3</sup>		30.6	19.8	25.2	27.5	25.7
18/01/2019	µg/m <sup>3</sup>		17.9	12.8	21.3	18.7	21.7
19/01/2019	µg/m <sup>3</sup>		28.5	17.9	25.1	24.3	27.7
20/01/2019	µg/m <sup>3</sup>		14.6	9.8	10.8	18.6	16.8
21/01/2019	µg/m <sup>3</sup>		10.8	6.3	11.1	11.3	11.8

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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)
22/01/2019	µg/m <sup>3</sup>		23.0	14.3	24.2	20.1	23.6
23/01/2019	µg/m <sup>3</sup>		16.3	14.3	27.0	21.3	24.5
24/01/2019	µg/m <sup>3</sup>		24.3	15.6	19.3	27.3	29.7
25/01/2019	µg/m <sup>3</sup>		38.0	28.3	40.6	36.8	45.6
26/01/2019	µg/m <sup>3</sup>		24.8	19.8	34.7	28.9	29.2
27/01/2019	µg/m <sup>3</sup>		29.9	22.9	32.3	30.0	39.2
28/01/2019	µg/m <sup>3</sup>		27.8	21.0	24.5	28.5	37.6
29/01/2019	µg/m <sup>3</sup>		27.6	21.4	30.5	27.7	32.1
30/01/2019	µg/m <sup>3</sup>		20.4	15.4	27.0	19.0	23.0
31/01/2019	µg/m <sup>3</sup>		13.2	12.1	34.7	16.6	18.0
<b>Monthly Meaningful Data</b>							
January	µg/m <sup>3</sup>	Minimum*	9.1	3.3	3.9	5.0	6.2
January	µg/m <sup>3</sup>	Mean*	21.7	15.4	22.5	22.8	24.3
January	µg/m <sup>3</sup>	Maximum*	40.1	34.3	40.6	43.4	45.6
January	µg/m <sup>3</sup>	Median*	20.7	14.3	22.2	21.8	23.6

# 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 9 January 2019 and the data was obtained 11 February 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	1694
	pH	pH units	Once a month (min. of 4 weeks)	1	7.7
	Total Suspended Solids	milligrams per litre	Once a month (min. of 4 weeks)	1	142

### 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 January 2019. The next sampling event will be in March 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	-	-
	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 31 January 2019. The data was obtained on 1 February 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)
n45-rca-pr2	2/01/2019 12:41	dB(L)	All Blasts 100%	115	120	99.9	106.2	98.1	108.3	98.4
w27-wwe-k-co2	2/01/2019 13:27	dB(L)		115	120	98.8	97.5	93.8	90.1	99.2
n41-wnd-ptg4	4/01/2019 12:12	dB(L)		115	120	97.9	98.9	101.7	87.7	100.5
w29-bfa-ps2	7/01/2019 12:58	dB(L)		115	120	93.8	99.1	97.3	84.0	100.7
w28-wwe-md2	7/01/2019 12:59	dB(L)		115	120	106.4	101.8	100.2	86.3	108.2
w34-wba-pr5	8/01/2019 11:55	dB(L)		115	120	101.1	96.3	103.1	86.4	100.0
n35-whf-ptg2	8/01/2019 12:36	dB(L)		115	120	93.2	86.7	109.9	85.6	87.6
n34-bfa-ps2 & n32-bfb-h-co1	9/01/2019 14:53	dB(L)		115	120	94.2	94.1	91.2	88.2	95.7
w29-bfa-md1& w29-bfa-ps3	10/01/2019 15:16	dB(L)		115	120	87.8	96.8	93.3	101.5	86.7
n41-wnd-ptg5	14/01/2019 12:21	dB(L)		115	120	87.7	89.6	96.1	94.5	101.0
n41-ble-pr1	15/01/2019 12:02	dB(L)		115	120	96.5	97.3	98.6	98.0	92.7



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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)
n41-ble-pr11	15/01/2019 14:19	dB(L)		115	120	87.6	89.7	99.1	97.7	90.4
n41-ble-pr12	15/01/2019 15:32	dB(L)		115	120	97.2	92.2	91.3	106.0	94.6
n41-bla-ptg12	17/01/2019 13:19	dB(L)		115	120	89.8	93.1	88.5	102.6	89.8
w29-bfa-md2	17/01/2019 13:19	dB(L)		115	120	101.8	99.9	98.0	99.0	107.0
w27-ww-e-k-co3	18/01/2019 11:55	dB(L)		115	120	91.4	92.1	93.0	106.2	109.0
n45-rca-pr3	18/01/2019 11:55	dB(L)		115	120	101.5	105.8	100.1	106.2	103.3
w33-wnb-ps1	21/01/2019 14:09	dB(L)		115	120	100.4	98.9	101.0	89.8	96.4
n41-ble-pr2	22/01/2019 16:07	dB(L)		115	120	96.9	99.2	92.5	106.6	92.3
w27-ww-e-k-co4	23/01/2019 12:44	dB(L)		115	120	92.5	90.1	110.2	94.6	91.8
n37-whf-pr1	24/01/2019 13:13	dB(L)		115	120	93.6	100.0	95.1	103.0	98.7
n41-bla-ptg13	24/01/2019 13:16	dB(L)		115	120	91.4	99.3	87.3	102.6	94.5
w30-gmb-whc-co1	25/01/2019 12:16	dB(L)		115	120	99.7	100.9	100.5	97.9	95.7

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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)
n41-bla-ptg14	30/01/2019 13:07	dB(L)		115	120	94.5	95.3	97.4	90.7	99.4
w36-rcd-pr5	31/01/2019 13:40	dB(L)		115	120	105.0	97.3	111.7	96.1	106.6
<b>Monthly Meaningful Data</b>										
<b>Minimum</b>	<b>January</b>	<b>dB(L)</b>		115	120	87.6	86.7	87.3	84.0	86.7
<b>Mean</b>	<b>January</b>	<b>dB(L)</b>		115	120	96.0	96.7	98.0	96.4	97.6
<b>Maximum</b>	<b>January</b>	<b>dB(L)</b>		115	120	106.4	106.2	111.7	108.3	109.0
<b>Median</b>	<b>January</b>	<b>dB(L)</b>		115	120	96.5	97.3	98.0	97.7	98.4

**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)
n45-rca-pr2	2/01/2019 12:41	mm/s	All Blasts 100%	5	10	0.6	1.2	0.1	0.7	0.4
w27-wwe-k-co2	2/01/2019 13:27	mm/s		5	10	0.2	0.1	0.1	0.1	0.1
n41-wnd-ptg4	4/01/2019 12:12	mm/s		5	10	0.1	0.1	0.0	0.1	0.0
w29-bfa-ps2	7/01/2019 12:58	mm/s		5	10	1.2	0.4	0.1	0.0	0.9
w28-wwe-md2	7/01/2019 12:59	mm/s		5	10	1.9	1.7	0.5	0.1	2.5
w34-wba-pr5	8/01/2019 11:55	mm/s		5	10	0.6	0.4	0.0	0.0	0.5
n35-whf-ptg2	8/01/2019 12:36	mm/s		5	10	0.1	0.1	0.0	0.1	0.1
n34-bfa-ps2 & n32-bfb-h-co1	9/01/2019 14:53	mm/s		5	10	1.0	0.9	0.0	0.1	0.7
w29-bfa-md1& w29-bfa-ps3	10/01/2019 15:16	mm/s		5	10	1.6	1.0	0.3	1.1	1.4
n41-wnd-ptg5	14/01/2019 12:21	mm/s		5	10	0.0	0.1	0.1	0.1	0.0
n41-ble-pr1	15/01/2019 12:02	mm/s		5	10	0.4	0.4	0.1	0.4	0.2

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)
n41-ble-pr11	15/01/2019 14:19	mm/s		5	10	0.1	0.1	0.1	0.2	0.0
n41-ble-pr12	15/01/2019 15:32	mm/s		5	10	0.0	0.1	0.1	0.1	0.0
n41-bla-ptg12	17/01/2019 13:19	mm/s		5	10	0.1	0.8	0.2	0.6	1.0
w29-bfa-md2	17/01/2019 13:19	mm/s		5	10	1.4	0.8	0.2	0.6	1.0
w27-wwe-k-co3	18/01/2019 11:55	mm/s		5	10	0.1	1.1	0.1	0.4	0.1
n45-rca-pr3	18/01/2019 11:55	mm/s		5	10	0.5	1.1	0.1	0.4	0.2
w33-wnb-ps1	21/01/2019 14:09	mm/s		5	10	0.5	0.7	0.2	0.3	0.8
n41-ble-pr2	22/01/2019 16:07	mm/s		5	10	0.5	0.5	0.2	1.2	0.4
w27-wwe-k-co4	23/01/2019 12:44	mm/s		5	10	0.1	0.1	0.1	0.5	0.1
n37-whf-pr1	24/01/2019 13:13	mm/s		5	10	0.2	0.3	0.1	0.2	0.2
n41-bla-ptg13	24/01/2019 13:16	mm/s		5	10	0.0	0.1	0.1	0.2	0.0
w30-gmb-whc-co1	25/01/2019 12:16	mm/s		5	10	0.1	0.1	0.1	0.1	0.1

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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)
n41-bla-ptg14	30/01/2019 13:07	mm/s		5	10	0.1	0.1	0.1	0.1	0.1
w36-rcd-pr5	31/01/2019 13:40	mm/s		5	10	2.6	1.3	0.2	0.7	1.6
<b>Monthly Meaningful Data</b>										
<b>Minimum</b>	<b>January</b>	<b>mm/s</b>		5	10	0.02	0.05	0.03	0.01	0.01
<b>Mean</b>	<b>January</b>	<b>mm/s</b>		5	10	0.56	0.53	0.14	0.34	0.49
<b>Maximum</b>	<b>January</b>	<b>mm/s</b>		5	10	2.57	1.66	0.52	1.23	2.45
<b>Median</b>	<b>January</b>	<b>mm/s</b>		5	10	0.24	0.38	0.11	0.21	0.17

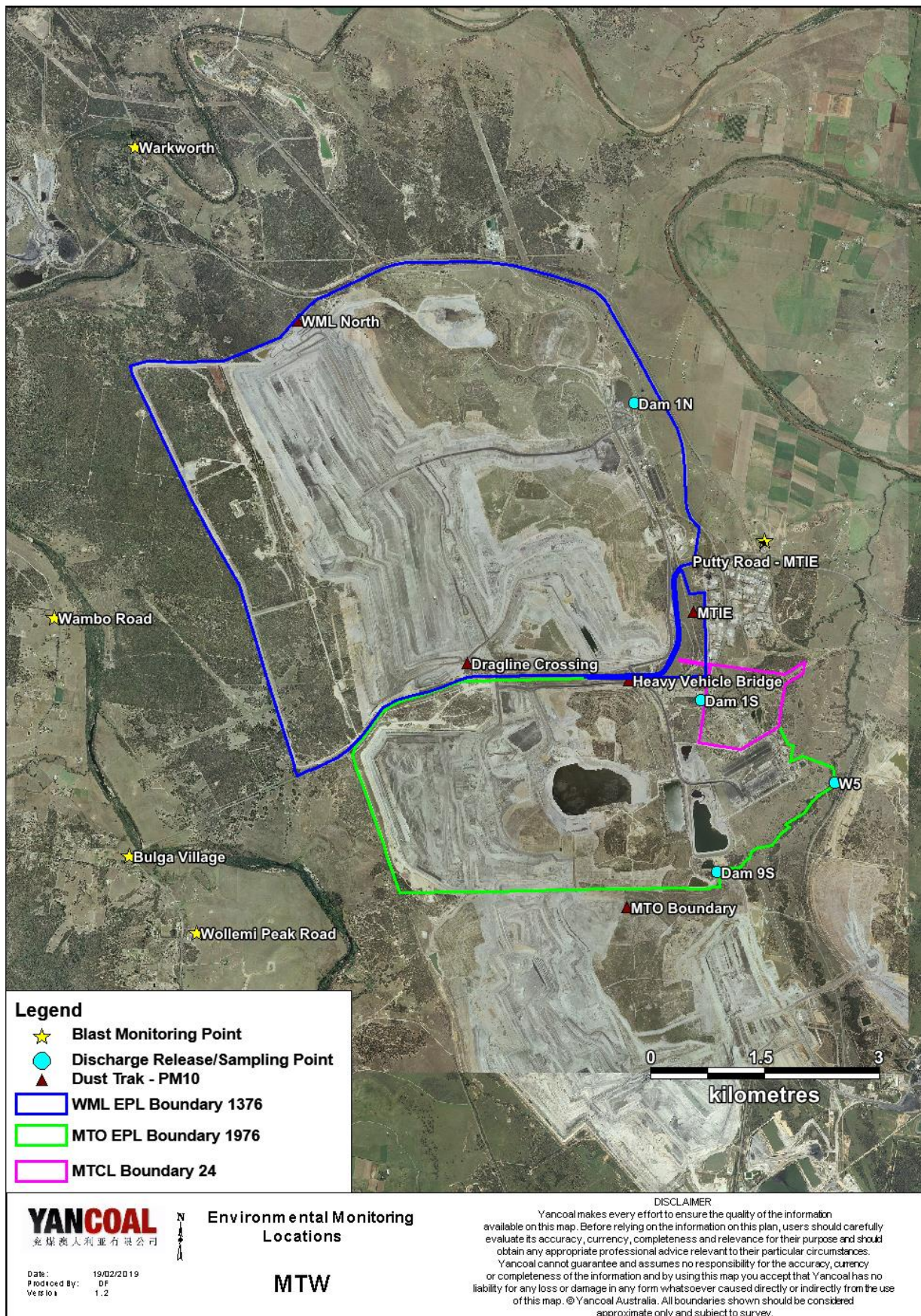


Figure 1 : Mount Thorley Warkworth Environmental Monitoring Locations