



# Mount Thorley Warkworth EPL Monitoring Data

Published 24 November 2020  
FOR THE MONTH ENDING 31 October 2020

<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=161559&amp;SYSUID=1&amp;LICID=1976">https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=161559&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="https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=160262&amp;SYSUID=1&amp;LICID=1376">https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=160262&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 October 2020.

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 October 2020 and the data was obtained on 1 November 2020.

**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)
1/10/2020	µg/m <sup>3</sup>	Continuous	5.2	5.4	19.2	11.4	6.4
2/10/2020	µg/m <sup>3</sup>		7.6	10.3	17.2	16.9	10.6
3/10/2020	µg/m <sup>3</sup>		14.7	13.6	22.5	21.5	13.7
4/10/2020	µg/m <sup>3</sup>		12.4	15.7	27.6	20.0	13.9
5/10/2020	µg/m <sup>3</sup>		12.9	17.8	43.0	30.2	15.3
6/10/2020	µg/m <sup>3</sup>		14.8	12.0	15.2	20.4	12.2
7/10/2020	µg/m <sup>3</sup>		18.5	15.1	17.2	23.0	15.1
8/10/2020	µg/m <sup>3</sup>		13.0	12.7	23.0	17.8	12.5
9/10/2020	µg/m <sup>3</sup>		2.1	3.1	24.9	8.8	2.9
10/10/2020	µg/m <sup>3</sup>		5.0	6.1	20.2	10.9	2.4
11/10/2020	µg/m <sup>3</sup>		5.5	5.5	23.0	13.0	3.3
12/10/2020	µg/m <sup>3</sup>		12.8	8.9	11.5	14.6	7.4
13/10/2020	µg/m <sup>3</sup>		11.9	10.3	16.2	16.1	8.2
14/10/2020	µg/m <sup>3</sup>		18.4	15.1	17.3	21.3	16.1
15/10/2020	µg/m <sup>3</sup>		15.3	16.8	32.8	21.6	17.4
16/10/2020	µg/m <sup>3</sup>		14.6	15.8	25.6	23.2	13.3
17/10/2020	µg/m <sup>3</sup>		11.6	11.4	25.8	14.0	11.6
18/10/2020	µg/m <sup>3</sup>		4.6	4.3	13.9	6.5	3.4
19/10/2020	µg/m <sup>3</sup>		8.6	5.4	5.9	9.2	7.1
20/10/2020	µg/m <sup>3</sup>		11.0	5.0	6.7	7.9	5.5
21/10/2020	µg/m <sup>3</sup>		10.6	5.0	8.5	7.4	5.9
22/10/2020	µg/m <sup>3</sup>		8.6	7.6	14.5	10.9	6.7
23/10/2020	µg/m <sup>3</sup>		10.8	7.3	16.3	13.1	7.6

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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)
24/10/2020	µg/m <sup>3</sup>		7.4	7.9	12.7	10.4	6.8
25/10/2020	µg/m <sup>3</sup>		2.6	1.7	3.5	3.4	1.7
26/10/2020	µg/m <sup>3</sup>		1.8	0.2	0.5	1.4	0.8
27/10/2020	µg/m <sup>3</sup>		3.0	1.6	2.4	3.7	2.0
28/10/2020	µg/m <sup>3</sup>		6.8	4.2	5.8	8.5	5.6
29/10/2020	µg/m <sup>3</sup>		8.3	5.7	6.5	9.6	6.9
30/10/2020	µg/m <sup>3</sup>		8.9	6.1	12.5	13.2	8.5
31/10/2020	µg/m <sup>3</sup>		7.1	3.8	11.6	6.3	2.4
Monthly Meaningful Data							
October	µg/m <sup>3</sup>	Minimum	1.8	0.2	0.5	1.4	0.8
October	µg/m <sup>3</sup>	Mean	9.6	8.4	16.2	13.4	8.2
October	µg/m <sup>3</sup>	Maximum	18.5	17.8	43.0	30.2	17.4
October	µg/m <sup>3</sup>	Median	8.9	7.3	16.2	13.0	7.1

# 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 1N Discharge / Point 1 (WML EPL 1376) Dam 1N Discharge Point	Megalitres per day	100	-
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 1N Discharge Turbidity Monitoring / Point 25 (WML EPL 1376) Continuous turbidity monitor	N/A	Turbidity	nephelometric turbidity units	-	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 Water Quality Monitoring

MTW undertakes monitoring in accordance with Condition M2.3 of WML EPL 1376 and MTO EPL 1976 as detailed in Table 4. Monthly sampling occurred at MTO on 16 October 2020 and the data was obtained 10 November 2020. Sampling is undertaken on a quarterly basis at WML (typically in March, June, September and December), and as such no sampling was required in October 2020.

**TABLE 4: WATER QUALITY MONITORING**

Monitoring Location	Pollutant	unit of measure	Monitoring frequency required by licence	No. of samples 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	1	6500
	pH	pH units	Once a month (min. of 4 weeks)	1	1	7.9
	Total Suspended Solids	milligrams per litre	Once a month (min. of 4 weeks)	1	1	4
W1 – Hunter River / EPL Point 26 (WML EPL 1376)	Electrical Conductivity	microsiemens per centimetre	Once a quarter	0	0	-
	pH	pH units	Once a quarter	0	0	-
	Total Suspended Solids	milligrams per litre	Once a quarter	0	0	-
W2 – Hunter River / EPL Point 27 (WML EPL 1376)	Electrical Conductivity	microsiemens per centimetre	Once a quarter	0	0	-
	pH	pH units	Once a quarter	0	0	-
	Total Suspended Solids	milligrams per litre	Once a quarter	0	0	-
W3 – Hunter River / EPL Point 28 (WML EPL 1376)	Electrical Conductivity	microsiemens per centimetre	Once a quarter	0	0	-
	pH	pH units	Once a quarter	0	0	-
	Total Suspended Solids	milligrams per litre	Once a quarter	0	0	-
W5 – Loders Creek / EPL Point 29 (WML EPL 1376)	Electrical Conductivity	microsiemens per centimetre	Once a quarter	0	0	-
	pH	pH units	Once a quarter	0	0	-
	Total Suspended Solids	milligrams per litre	Once a quarter	0	0	-
WW5 – Dights Creek / EPL Point 30 (WML EPL 1376)	Electrical Conductivity	microsiemens per centimetre	Once a quarter	0	0	-

Monitoring Location	Pollutant	unit of measure	Monitoring frequency required by licence	No. of samples required by licence	No. of samples collected and analysed	Value
	pH	pH units	Once a quarter	0	0	-
	Total Suspended Solids	milligrams per litre	Once a quarter	0	0	-
SW40 – Wollombi Brook Downstream / EPL Point 31 (WML EPL 1376)	Electrical Conductivity	microsiemens per centimetre	Once a quarter	0	0	-
	pH	pH units	Once a quarter	0	0	-
	Total Suspended Solids	milligrams per litre	Once a quarter	0	0	-
Wollombi Brook / EPL Point 32 (WML EPL 1376)	Electrical Conductivity	microsiemens per centimetre	Once a quarter	0	0	-
	pH	pH units	Once a quarter	0	0	-
	Total Suspended Solids	milligrams per litre	Once a quarter	0	0	-
Wollombi Brook Upstream / EPL Point 33 (WML EPL 1376)	Electrical Conductivity	microsiemens per centimetre	Once a quarter	0	0	-
	pH	pH units	Once a quarter	0	0	-
	Total Suspended Solids	milligrams per litre	Once a quarter	0	0	-

# - Sample unable to be collected due to insufficient water or unsafe access



### 3.3 Effluent Quality Monitoring

Monitoring is undertaken in accordance with Condition M2.3 of WML EPL 1376 and MTO EPL 1976 as detailed in **Table 5**. Sampling is undertaken on a quarterly basis which was completed in September 2020. Additional sampling was undertaken on 28 October 2020 following maintenance activities in response to the September sampling results and the data was obtained 2 November 2020.

**TABLE 5: EFFLUENT QUALITY MONITORING**

Monitoring Location	Pollutant	unit of measure	Monitoring frequency required by licence	No. of samples required by licence	No. of samples collected and analysed	Value
North Pit North Crib Hut Envirocycle / EPL Point 14 (WML EPL 1376)	Faecal Coliforms	Colony forming units per 100 millilitres	Once a quarter	0	1	400
	pH	pH units	Once a quarter	0	1	7.4
Main Warkworth Staging Pond / EPL Point 15 (WML EPL 1376)	Faecal Coliforms	Colony forming units per 100 millilitres	Once a quarter	0	1	45,000
	pH	pH units	Once a quarter	0	1	7.8
Warkworth Admin Envirocycle / EPL Point 16 (WML EPL 1376)	Faecal Coliforms	Colony forming units per 100 millilitres	Once a quarter	0	1	37,000
	pH	pH units	Once a quarter	0	1	7.9
West Pit South Crib Hut Envirocycle / EPL Point 17 (WML EPL 1376)	Faecal Coliforms	Colony forming units per 100 millilitres	Once a quarter	0	1	~900
	pH	pH units	Once a quarter	0	1	8.1
Warkworth Medical Centre Envirocycle / EPL Point 18 (WML EPL 1376)	Faecal Coliforms	Colony forming units per 100 millilitres	Once a quarter	0	1	~700
	pH	pH units	Once a quarter	0	1	7.2
Dam 1S / EPL Point 18 (MTO EPL 1976)	Faecal Coliforms	Colony forming units per 100 millilitres	Once a quarter	0	1	~270
	pH	pH units	Once a quarter	0	1	9.3

#### 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. Blast monitoring results are detailed in **Table 6** (Airblast Overpressure) and **Table 7** (Ground Vibration). The last date sampled was on 31 October 2020. The data was obtained on 1 November 2020.

**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)
n36-bfbh-co1	2/10/2020 11:21	dB(L)	All Blasts 100%	115	120	92.8	97.63	99.6	101.3	98.2
n43-wna-ps7	3/10/2020 11:17	dB(L)		115	120	93.5	98.21	89.4	90.7	85.6
w32-whe-pr7 & w32-whe-ps4	6/10/2020 11:50	dB(L)		115	120	98.2	99.43	100.3	105.0	96.3
n43-wna-ps8 & n47-rca-pr5	7/10/2020 12:37	dB(L)		115	120	100.0	105.6	90.1	109.6	91.8
n43-ble-ptg2	8/10/2020 12:11	dB(L)		115	120	96.0	108.3	100.8	94.9	108.2
n43-wnd-pr1	9/10/2020 10:29	dB(L)		115	120	98.0	93.64	106.0	105.4	95.4
w32-gmb-ptg1	13/10/2020 12:30	dB(L)		115	120	95.5	86.24	94.8	94.4	96.7
w38-rcd-ptg1 & w40-rcd-ps1	13/10/2020 12:30	dB(L)		115	120	105.5	99.1	96.9	94.4	103.1
n43-wnd-pr2	14/10/2020 11:39	dB(L)		115	120	100.9	101.59	99.0	100.6	95.8

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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)
n43-ble-ptg3	15/10/2020 12:02	dB(L)		115	120	98.3	98.39	102.5	105.8	93.1
w40-rcc-pr1	16/10/2020 11:36	dB(L)		115	120	105.1	101.08	99.3	103.9	96.1
w32-gmd-ptg7	21/10/2020 11:42	dB(L)		115	120	94.9	91.85	95.6	94.7	86.9
w32-bfa-ps3	22/10/2020 12:38	dB(L)		115	120	89.5	106.88	96.8	107.6	92.3
n36-wwa-ptg4	23/10/2020 11:42	dB(L)		115	120	90.2	89.08	94.6	99.3	95.3
w40-rcc-pr2	23/10/2020 11:48	dB(L)		115	120	105.6	99.43	100.5	104.6	101.5
w32-bfa-pr4	30/10/2020 10:22	dB(L)		115	120	95.0	97.05	91.7	103.3	95.0
n45-wna-ps1	31/10/2020 10:37	dB(L)		115	120	100.7	106.43	103.5	101.2	106.8
<b>Monthly Meaningful Data</b>										
<b>Minimum</b>	<b>October</b>	<b>dB(L)</b>		115	120	89.5	86.2	89.4	90.7	85.6
<b>Mean</b>	<b>October</b>	<b>dB(L)</b>		115	120	97.6	98.8	97.7	101.0	96.3
<b>Maximum</b>	<b>October</b>	<b>dB(L)</b>		115	120	105.6	108.3	106.0	109.6	108.2
<b>Median</b>	<b>October</b>	<b>dB(L)</b>		115	120	98.0	99.1	99.0	101.3	95.8

**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)
n36-bfbh-co1	2/10/2020 11:21	mm/s	All Blasts 100%	5	10	0.07	0.11	0.03	0.21	0.05
n43-wna-ps7	3/10/2020 11:17	mm/s		5	10	0.23	0.32	0.05	0.66	0.18
w32-whe-pr7 & w32-whe-ps4	6/10/2020 11:50	mm/s		5	10	0.72	0.82	0.17	0.65	0.57
n43-wna-ps8 & n47-rca-pr5	7/10/2020 12:37	mm/s		5	10	0.34	0.72	0.07	0.73	0.48
n43-ble-ptg2	8/10/2020 12:11	mm/s		5	10	0.11	0.29	0.04	0.23	0.07
n43-wnd-pr1	9/10/2020 10:29	mm/s		5	10	1.39	0.96	0.15	0.72	0.89
w32-gmb-ptg1	13/10/2020 12:30	mm/s		5	10	0.63	0.44	0.09	0.84	0.51
w38-rcd-ptg1 & w40-rcd-ps1	13/10/2020 12:30	mm/s		5	10	0.63	0.62	0.09	0.84	0.71
n43-wnd-pr2	14/10/2020 11:39	mm/s		5	10	1.00	0.93	0.12	0.68	0.96
n43-ble-ptg3	15/10/2020 12:02	mm/s		5	10	0.12	0.16	0.03	0.22	0.07
w40-rcc-pr1	16/10/2020 11:36	mm/s		5	10	1.92	0.97	0.09	0.52	1.24
w32-gmd-ptg7	21/10/2020 11:42	mm/s		5	10	0.19	0.09	0.02	0.18	0.10
w32-bfa-ps3	22/10/2020 12:38	mm/s		5	10	0.67	0.52	0.12	0.47	0.34

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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)
n36-wwa-ptg4	23/10/2020 11:42	mm/s		5	10	0.09	0.19	0.02	0.35	0.07
w40-rcc-pr2	23/10/2020 11:48	mm/s		5	10	1.34	1.05	0.12	0.51	1.03
w32-bfa-pr4	30/10/2020 10:22	mm/s		5	10	2.66	1.36	0.28	0.58	1.59
n45-wna-ps1	31/10/2020 10:37	mm/s		5	10	0.43	0.43	0.22	0.59	0.46
<b>Monthly Meaningful Data</b>										
<b>Minimum</b>	<b>October</b>	<b>mm/s</b>		5	10	0.07	0.09	0.02	0.18	0.05
<b>Mean</b>	<b>October</b>	<b>mm/s</b>		5	10	0.74	0.59	0.10	0.53	0.55
<b>Maximum</b>	<b>October</b>	<b>mm/s</b>		5	10	2.66	1.36	0.28	0.84	1.59
<b>Median</b>	<b>October</b>	<b>mm/s</b>		5	10	0.63	0.52	0.09	0.58	0.48

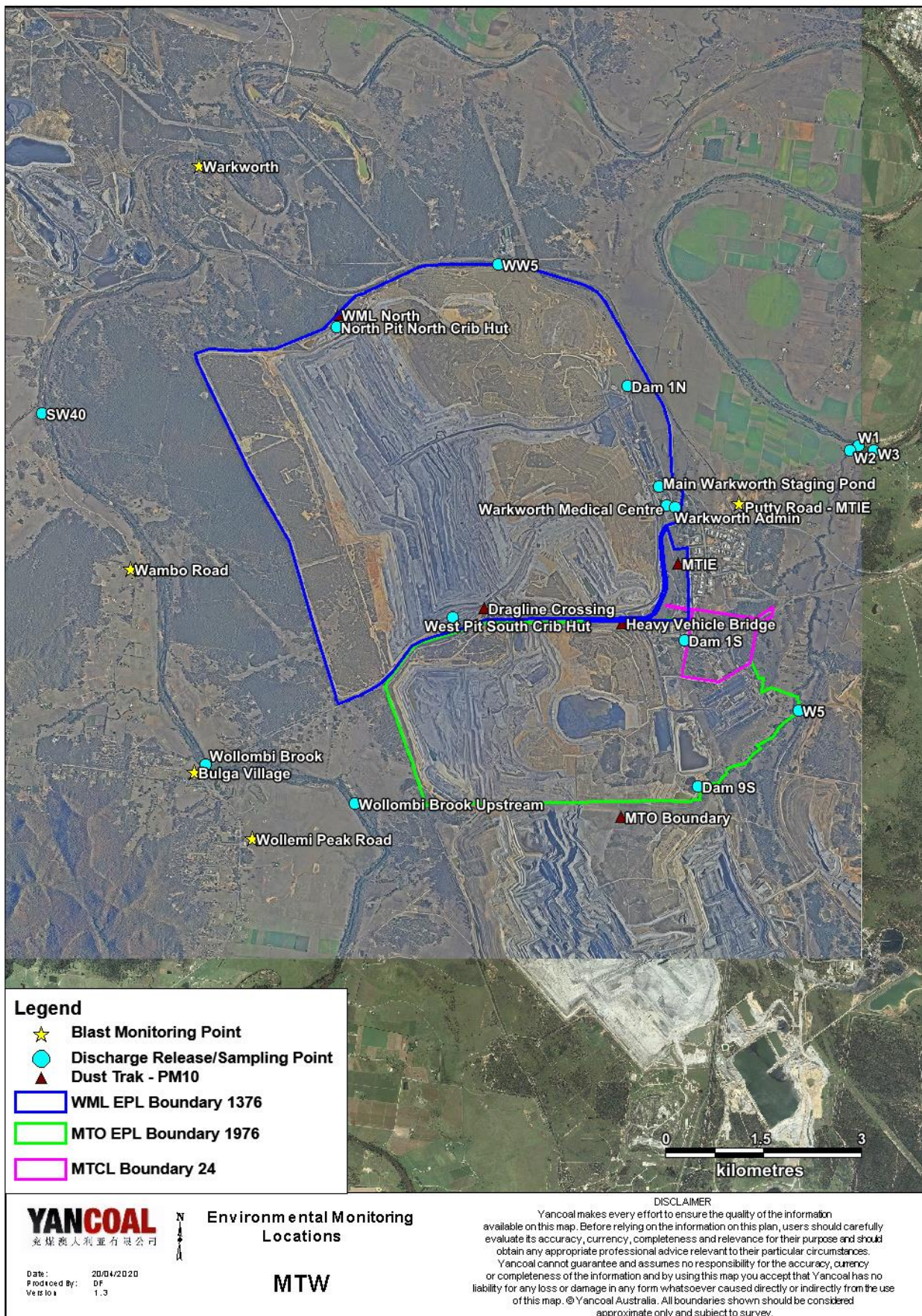


Figure 1 : Mount Thorley Warkworth Environmental Monitoring Locations