



*Managed by Rio Tinto Coal Australia*

## Mount Thorley Warkworth

### Monthly Obtained Data Summary

**Environment Protection Licence 1376**

**Environment Protection Licence 1976**

**Environment Protection Licence 24**

January 2017

**Date Published: February 2017**

EPL	Licensee		Premises
1376	<b>Warkworth Mining Limited</b> PO Box 315 Singleton NSW 2330 Australia		<b>Warkworth Coal Mine</b> Putty Road, Mount Thorley NSW 2330 Australia
24	<b>Mount Thorley Coal Loading Ltd</b> PO Box 403 Singleton NSW 2330 Australia		<b>Mount Thorley Coal Loading Ltd</b> Mount Thorley Road, Mount Thorley VIA Singleton NSW 2330 Australia
1976	<b>Coal &amp; Allied Operations Pty Ltd</b> PO BOX 315 Singleton NSW 2330		<b>Mount Thorley Operations</b> Mount Thorley Road, Mount Thorley NSW 2330 Australia

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## 1.0 INTRODUCTION

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

The Environmental Protection Licence 1376 may be found here:

<http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=32988&SYSUID=1&LICID=1376>

The Environmental Protection Licence 1976 may be found here:

<http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=33198&SYSUID=1&LICID=1976>

The Environmental Protection Licence 24 may be found here:

<http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=32017&SYSUID=1&LICID=24>

Monitoring in this report includes:

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

## 2.0 AIR QUALITY

To monitor regional air quality, MTW operates and maintains a network of 5 Particulate Matter <10µm (PM10) Monitors (DustTrak II) on mine owned land surrounding the mining operations. The location of these monitors can be found in Appendix A – MTW Monitoring Location Plan.

### 2.1 Particulate Matter <10µm (PM10) Monitoring

#### 2.1.1 PM<sub>10</sub> Results

In accordance with the requirements of Condition M2.2 (WML 1376 and MTO 1976), Mount Thorley Warkworth maintains a network of five PM<sub>10</sub> 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<sub>10</sub>) monitoring (EPA Monitoring Points 9, 10, 11, 12 and 13) 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<sup>st</sup> January 2017; the data was obtained on the 1<sup>st</sup> February 2017.

**Table 1: Particulate Matter <10µm Monitoring**

Date	Unit of Measure	Monitoring Frequency	Monitoring Point				
		Continuous	Warkworth North	MTO Boundary	Dragline Crossing	Heavy Vehicle Bridge	MTIE
1/01/2017	µg/m <sup>3</sup>		31.2	#	30.7	31.4	25.5
2/01/2017	µg/m <sup>3</sup>		21.7	#	24.2	23.2	17.3
3/01/2017	µg/m <sup>3</sup>		14.9	#	13.8	15.2	10.6

4/01/2017	µg/m <sup>3</sup>	8.0	#	7.7	10.4	4.8
5/01/2017	µg/m <sup>3</sup>	10.1	#	8.9	11.3	5.7
6/01/2017	µg/m <sup>3</sup>	12.5	#	9.2	16.4	5.4
7/01/2017	µg/m <sup>3</sup>	10.4	#	6.9	14.2	4.7
8/01/2017	µg/m <sup>3</sup>	12.8	#	14.4	12.0	7.9
9/01/2017	µg/m <sup>3</sup>	17.4	#	28.5	21.6	14.9
10/01/2017	µg/m <sup>3</sup>	17.8	#	24.8	17.6	14.3
11/01/2017	µg/m <sup>3</sup>	16.6	#	40.2	26.5	7.9
12/01/2017	µg/m <sup>3</sup>	25.9	#	27.7	29.7	9.5*
13/01/2017	µg/m <sup>3</sup>	15.9	#	31.6	20.6	5.4
14/01/2017	µg/m <sup>3</sup>	15.1	#	30.8	20.8	4.1
15/01/2017	µg/m <sup>3</sup>	26.5	#	28.6	27.0	4.3
16/01/2017	µg/m <sup>3</sup>	22.2	#	21.9	21.8	3.8
17/01/2017	µg/m <sup>3</sup>	14.3	#	34.3	18.7	4.5
18/01/2017	µg/m <sup>3</sup>	12.9	#	28.1	15.9	3.3
19/01/2017	µg/m <sup>3</sup>	19.3	#	18.0	16.0	2.4
20/01/2017	µg/m <sup>3</sup>	13.0	#	23.6	14.9	4.5
21/01/2017	µg/m <sup>3</sup>	16.4	#	17.6	16.0	5.5
22/01/2017	µg/m <sup>3</sup>	17.0	#	16.4	13.2	3.4
23/01/2017	µg/m <sup>3</sup>	17.0	#	26.5	13.3	4.5
24/01/2017	µg/m <sup>3</sup>	13.4	#	39.8	17.9	6.0
25/01/2017	µg/m <sup>3</sup>	17.2	#	16.5	14.2	3.4
26/01/2017	µg/m <sup>3</sup>	32.6	#	32.5	28.5	10.9
27/01/2017	µg/m <sup>3</sup>	18.5	#	16.5	16.4	4.8
28/01/2017	µg/m <sup>3</sup>	14.6	#	19.5	15.2	4.3
29/01/2017	µg/m <sup>3</sup>	20.7	#	27.9	26.0	10.3
30/01/2017	µg/m <sup>3</sup>	24.5*	#	47.3*	27.4*	11.5*
31/01/2017	µg/m <sup>3</sup>	15.7	#	37.7	20.5	7.5

\*24hr average has been calculated with the exclusion of 1 or more 10 minute average values due to equipment or communications issues

# Data unavailable due to equipment or communications issue

### 3.0 SURFACE WATER

#### 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**

Mount Thorley Warkworth did not receive any discharge opportunities in the reporting period.

#### 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**

The location of these sampling points can be found in Appendix A – MTW Monitoring Locations Plan

Result of monitoring undertaken from W5 – Loders Creek is detailed in Table 2. Monthly sampling occurred on 23<sup>rd</sup> January 2017, the data was obtained on 9<sup>th</sup> February 2017.

**Table 2: Hunter Water Tributaries Monitoring**

	<b>Pollutant</b>	<b>unit of measure</b>	<b>Monitoring frequency required by licence</b>	<b>No. of samples you collected and analysed</b>	<b>Value</b>
Loders Creek / EPL Point 3	Electrical Conductivity	microsiemens per centimetre	Once a month (min. of 4 weeks)	1	11750
	pH	pH units	Once a month (min. of 4 weeks)	1	7.6
	Total Suspended Solids	milligrams per litre	Once a month (min. of 4 weeks)	1	26

## 4.0 BLAST MONITORING

### 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 location of these monitors can be found in Appendix A – Mount Thorley Warkworth Environmental Monitoring Locations.

The last date sampled was on 31<sup>st</sup> January 2017.

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 3 (Airblast Overpressure) and 4 (Ground Vibration).

**Table 3: Blast Monitoring (Airblast Overpressure)**

Blast ID	Date and Time	Unit of Measure	Monitoring Frequency	EPL Limits		Monitoring Point				
			All blasts carried out in or on premises	Only 5% of blasts can exceed 115dB(L) during the reporting period	Blasts cannot exceed 120 dB(L)	Bulga Village	Wambo Road	Putty Rd MTIE	Warkworth	Wollemi Peak Road
s22-bff-ps3	3/01/2017 13:20	dB(L)		115	120	88.7	99.6	96.0	93.8	104.5



n33-wha-ptg15	4/01/2017 11:55	dB(L)	115	120	91.9	99.2	110.5	93.2	94.2
n41-wba-ps2	4/01/2017 12:53	dB(L)	115	120	102.3	101.0	107.8	95.7	92.7
n33-whf-ps1	5/01/2017 12:13	dB(L)	115	120	99.3	89.3	112.4	90.3	103.7
w28-gmd-ptg1	5/01/2017 13:20	dB(L)	115	120	101.0	99.4	100.3	91.7	98.3
s22-bff-md2 and s22-bff-ps4	6/01/2017 12:16	dB(L)	115	120	91.7	100.3	105.7	94.2	94.7
n37-bla-ptg4	6/01/2017 13:16	dB(L)	115	120	107.2	106.6	100.1	98.8	114.0
n33-whac-co13 and n28-wwa-ptg9	9/01/2017 13:23	dB(L)	115	120	88.0	97.0	87.1	96.3	100.8
l48-wnb-ps3 and l48-bla-ps1	10/01/2017 12:06	dB(L)	115	120	95.9	100.9	96.6	101.6	105.7
n33-whf-pr1	11/01/2017 11:40	dB(L)	115	120	103.6	98.0	104.4	95.1	101.4
n41-wba-ps3	11/01/2017 13:13	dB(L)	115	120	101.4	94.7	110.9	112.9	109.6
n37-bla-ps2	11/01/2017 13:14	dB(L)	115	120	98.4	105.0	111.1	112.9	112.9
s22-bff-md3	12/01/2017 10:31	dB(L)	115	120	89.9	92.7	100.5	94.1	95.7
w25-macj-co5	13/01/2017 11:11	dB(L)	115	120	105.5	96.3	100.6	88.9	99.1
l48-bla-pr1 and l48-wnb-pr3	13/01/2017 12:29	dB(L)	115	120	104.0	98.4	103.6	95.3	108.8
n29-wwa-ptg5	14/01/2017 11:08	dB(L)	115	120	89.4	84.4	101.8	90.8	84.8
n33-whf-ps2	16/01/2017 13:07	dB(L)	115	120	83.6	94.7	93.1	85.0	95.8
l48-bla-pr2	17/01/2017 10:16	dB(L)	115	120	92.7	90.0	93.1	93.5	95.1
w28-gmd-ptg2	17/01/2017 13:14	dB(L)	115	120	98.5	108.0	111.1	108.7	98.1
n37-bla-ptg5 and n33-whf-ps3	18/01/2017 13:05	dB(L)	115	120	103.3	108.4	113.9	102.7	112.6

s22-bff-md4	19/01/2017 10:01	dB(L)		115	120	89.5	91.9	102.9	82.3	88.7
w28-whac-co7	19/01/2017 11:41	dB(L)		115	120	92.1	96.3	100.5	97.4	104.1
w32-rcd-dam and w32-rcd-trim	20/01/2017 9:34	dB(L)		115	120	96.7	95.9	92.9	96.5	96.4
n41-rcc-ptg7 and n41-wba-pr2	20/01/2017 11:45	dB(L)		115	120	101.9	99.2	112.2	93.4	104.2
n33-whf-ps4	21/01/2017 13:35	dB(L)		115	120	100.8	99.9	104.3	97.7	98.6
l46-gma-ps3	23/01/2017 11:08	dB(L)		115	120	91.7	95.1	94.7	89.5	99.0
n29-wwa-ptg6	24/01/2017 11:44	dB(L)		115	120	102.9	98.1	111.9	109.3	103.5
l48-wnbblf-co1	24/01/2017 13:35	dB(L)		115	120	100.6	110.9	105.0	98.4	113.9
n30-bfa-ps1	25/01/2017 12:03	dB(L)		115	120	90.7	92.0	89.7	89.2	93.0
n37-bla-ptg6	25/01/2017 12:50	dB(L)		115	120	86.0	94.7	104.8	97.1	85.5
n37-bla-ptg7	27/01/2017 12:49	dB(L)		115	120	83.8	99.6	99.9	98.5	98.5
l48-wnbblf-co2	27/01/2017 14:04	dB(L)		115	120	92.1	101.7	106.6	95.9	103.7
n33-whf-pr2	28/01/2017 11:35	dB(L)		115	120	90.4	97.6	95.1	81.7	99.7
n37-bla-ptg8	30/01/2017 12:31	dB(L)		115	120	100.1	110.9	109.5	105.4	104.3
l45-wba-pr1	31/01/2017 12:01	dB(L)		115	120	96.0	111.3	110.1	101.5	106.6
n41-wba-pr3 and n41-rcc-ptg8	31/01/2017 13:15	dB(L)		115	120	103.9	107.7	102.9	89.0	111.3

**Table 4: Blast Monitoring (Ground Vibration)**

Blast ID	Date and Time	Unit of Measure	Monitoring Frequency	EPL Limits		Monitoring Point				
			All blasts carried out in or on premises	Only 5% of blasts can exceed 115dB(L) during the reporting period	Blasts cannot exceed 120 dB(L)	Bulga Village	Wambo Road	Putty Rd MTIE	Warkworth	Wollemi Peak Road
s22-bff-ps3	3/01/2017 13:20	mm/s		5	10	0.17	0.14	0.16	0.13	0.15
n33-wha-ptg15	4/01/2017 11:55	mm/s		5	10	0.03	0.03	0.03	0.11	0.03
n41-wba-ps2	4/01/2017 12:53	mm/s		5	10	0.29	0.41	0.11	0.49	0.28
n33-whf-ps1	5/01/2017 12:13	mm/s		5	10	0.03	0.04	0.04	0.39	0.03
w28-gmd-ptg1	5/01/2017 13:20	mm/s		5	10	0.11	0.09	0.05	0.10	0.09
s22-bff-md2 and s22-bff-ps4	6/01/2017 12:16	mm/s		5	10	0.51	0.23	0.41	0.24	0.50
n37-bla-ptg4	6/01/2017 13:16	mm/s		5	10	0.04	0.04	0.05	0.09	0.04
n33-whac-co13 and n28-wwa-ptg9	9/01/2017 13:23	mm/s		5	10	0.06	0.09	0.07	0.17	0.07
l48-wnb-ps3 and l48-bla-ps1	10/01/2017 12:06	mm/s		5	10	0.48	0.33	0.11	0.27	0.59
n33-whf-pr1	11/01/2017 11:40	mm/s		5	10	0.22	0.52	0.13	0.21	0.15
n41-wba-ps3	11/01/2017 13:13	mm/s		5	10	0.29	0.32	0.09	0.21	0.25

n37-bla-ps2	11/01/2017 13:14	mm/s	5	10	0.12	0.18	0.07	0.21	0.17
s22-bff-md3	12/01/2017 10:31	mm/s	5	10	0.39	0.14	0.24	0.10	0.25
w25-macj-co5	13/01/2017 11:11	mm/s	5	10	0.02	0.02	0.04	0.07	0.03
l48-bla-pr1 and l48-wnb-pr3	13/01/2017 12:29	mm/s	5	10	2.66	1.05	0.35	0.51	2.15
n29-wwa-ptg5	14/01/2017 11:08	mm/s	5	10	0.07	0.13	0.04	0.12	0.09
n33-whf-ps2	16/01/2017 13:07	mm/s	5	10	0.21	0.18	0.08	0.22	0.14
l48-bla-pr2	17/01/2017 10:16	mm/s	5	10	2.00	0.76	0.23	0.31	1.47
w28-gmd-ptg2	17/01/2017 13:14	mm/s	5	10	0.04	0.05	0.06	0.10	0.05
n37-bla-ptg5 and n33-whf-ps3	18/01/2017 13:05	mm/s	5	10	0.15	0.14	0.07	0.13	0.17
s22-bff-md4	19/01/2017 10:01	mm/s	5	10	0.63	0.29	0.58	0.21	0.54
w28-whac-co7	19/01/2017 11:41	mm/s	5	10	0.05	0.03	0.03	0.26	0.03
w32-rcd-dam and w32-rcd-trim	20/01/2017 9:34	mm/s	5	10	0.18	0.08	0.05	0.20	0.21
n41-rcd-ptg7 and n41-wba-pr2	20/01/2017 11:45	mm/s	5	10	1.40	1.83	0.26	1.04	0.72
n33-whf-ps4	21/01/2017 13:35	mm/s	5	10	0.17	0.22	0.08	0.24	0.16
l46-gma-ps3	23/01/2017 11:08	mm/s	5	10	0.54	0.36	0.09	0.22	0.78
n29-wwa-ptg6	24/01/2017 11:44	mm/s	5	10	0.04	0.09	0.06	0.08	0.06
l48-wnbblf-co1	24/01/2017 13:35	mm/s	5	10	0.23	0.16	0.06	0.30	0.27
n30-bfa-ps1	25/01/2017 12:03	mm/s	5	10	0.56	0.57	0.17	0.67	1.20
n37-bla-ptg6	25/01/2017 12:50	mm/s	5	10	0.04	0.03	0.03	0.09	0.03

n37-bla-ptg7	27/01/2017 12:49	mm/s		5	10	0.03	0.02	0.04	0.05	0.03
l48-wnbblf-co2	27/01/2017 14:04	mm/s		5	10	0.09	0.11	0.08	0.30	0.08
n33-whf-pr2	28/01/2017 11:35	mm/s		5	10	0.95	1.14	0.30	1.77	0.51
n37-bla-ptg8	30/01/2017 12:31	mm/s		5	10	0.45	0.10	0.07	0.15	1.00
l45-wha-pr1	31/01/2017 12:01	mm/s		5	10	0.57	0.37	0.07	0.10	1.02
n41-wba-pr3 and n41-rcc-ptg8	31/01/2017 13:15	mm/s		5	10	0.98	1.38	0.12	0.64	0.79

## **Appendix A: Mount Thorley Warkworth Monitoring Location Plans**

# Mount Thorley Warkworth

## Environmental Monitoring Locations

Date: 161116  
Plan By: DF  
Version: 3.0

### Legend

- ★ Blast Monitoring Point
- Discharge Release/Sampling Point
- ▲ Dust Trak - PM10
- ▭ EPL Boundary



RTCA - NSW Environmental Services

Figure 1 : Mount Thorley Warkworth Environmental Monitoring Locations