



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

March 2017

Date Published: April 2017

EPL	Licensee		Premises
1376	Warkworth Mining Limited PO Box 315 Singleton NSW 2330 Australia		Warkworth Coal Mine Putty Road, Mount Thorley NSW 2330 Australia
24	Mount Thorley Coal Loading Ltd PO Box 403 Singleton NSW 2330 Australia		Mount Thorley Coal Loading Ltd Mount Thorley Road, Mount Thorley VIA Singleton NSW 2330 Australia
1976	Coal & Allied Operations Pty Ltd PO BOX 315 Singleton NSW 2330		Mount Thorley Operations 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 1st March – 31st March 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 PM₁₀ Results

In accordance with the requirements of Condition M2.2 (WML 1376 and MTO 1976), Mount Thorley Warkworth maintains a network of five PM₁₀ 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 (PM₁₀) 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 31st March 2017; the data was obtained on the 1st April 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
1/03/2017	µg/m ³		#	7.1	8.0	5.7	1.8
2/03/2017	µg/m ³		#	12.3	16.0	10.7	4.9
3/03/2017	µg/m ³		#	9.7	12.6	8.5	3.8

4/03/2017	µg/m ³	#	4.1	8.3	5.6	1.7
5/03/2017	µg/m ³	#	6.8	17.3	9.4	2.6
6/03/2017	µg/m ³	#	8.5	13.2	8.7	2.8
7/03/2017	µg/m ³	#	8.3	12.8	7.9	2.1
8/03/2017	µg/m ³	#	8.1	10.9	6.9	1.8
9/03/2017	µg/m ³	#	7.3	9.8	6.9	2.0
10/03/2017	µg/m ³	#	9.5	13.5	8.5	2.4
11/03/2017	µg/m ³	#	9.6	16.1	10.7	4.1
12/03/2017	µg/m ³	#	14.1	21.7	11.8	5.7
13/03/2017	µg/m ³	#	15.8	20.6	15.1	6.7
14/03/2017	µg/m ³	#	8.5	9.3	9.1	2.8
15/03/2017	µg/m ³	#	9.7	9.7	7.7	1.8
16/03/2017	µg/m ³	#	8.0	#	7.0	2.5
17/03/2017	µg/m ³	#	9.3	12.5	7.6	3.2
18/03/2017	µg/m ³	#	#	#	#	#
19/03/2017	µg/m ³	#	#	#	#	#
20/03/2017	µg/m ³	#	#	#	#	#
21/03/2017	µg/m ³	#	9.5	15.9	9.1	2.9
22/03/2017	µg/m ³	7.8	8.7	15.8	9.0	4.0
23/03/2017	µg/m ³	18.2	10.6	12.0	7.8	4.9
24/03/2017	µg/m ³	11.4	5.7	6.2	4.5	1.6
25/03/2017	µg/m ³	17.5	10.3	16.9	9.7	3.2
26/03/2017	µg/m ³	18.1	16.9	23.7	15.1	7.4
27/03/2017	µg/m ³	22.7	21.4	30.1	17.9	10.6
28/03/2017	µg/m ³	41.2	41.0	43.0	35.5	#
29/03/2017	µg/m ³	36.3	35.4	41.4	30.6	#
30/03/2017	µg/m ³	11.2	13.1	20.2	12.7	#
31/03/2017	µg/m ³	13.4	7.8	10.6	6.9	2.1

Data unavailable due to equipment or communications issue

Note: Warkworth North Particulate Matter <10µm (PM10) Monitor out for calibration and repair 9/02/2017 – 21/03/2017

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 28th March 2017, the data was obtained on 13th April 2017.

Table 2: Hunter Water Tributaries Monitoring

	Pollutant	unit of measure	Monitoring frequency required by licence	No. of samples you collected and analysed	Value
Loders Creek / EPL Point 3	Electrical Conductivity	microsiemens per centimetre	Once a month (min. of 4 weeks)	1	5660
	pH	pH units	Once a month (min. of 4 weeks)	1	8.2
	Total Suspended Solids	milligrams per litre	Once a month (min. of 4 weeks)	1	39

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 30th March 2017. The data was obtained on the 4th April.

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

w28-whac-co9	1/03/2017	dB(L)	115	120	90.9	93.2	110.3	83.8	91.0
w28-gmd-ptg6	2/03/2017	dB(L)	115	120	89.2	85.8	89.2	91.0	88.6
s22-wwe-ps1	2/03/2017	dB(L)	115	120	93.2	95.8	91.4	89.0	92.3
l48-bla-pr3 and l46-gma-md3	3/03/2017	dB(L)	115	120	94.3	97.0	103.7	92.0	95.9
n43-rcc-pr1	3/03/2017	dB(L)	115	120	96.4	103.1	95.4	97.6	95.3
w28-whac-co10 and w28-gmd-co1	6/03/2017	dB(L)	115	120	94.5	95.2	102.3	89.0	103.3
n30-bfa-md3 and n30-bfa-ps5	7/03/2017	dB(L)	115	120	95.3	99.7	112.9	110.9	98.0
w28-whac-co11	7/03/2017	dB(L)	115	120	88.0	105.4	110.8	89.4	108.8
w28-whac-co12 and w30-whac-co1	8/03/2017	dB(L)	115	120	97.0	106.5	89.2	89.5	100.2
l44-gma-ptg1	9/03/2017	dB(L)	115	120	95.9	94.4	109.4	97.0	103.5
l50-rcf-pr2	10/03/2017	dB(L)	115	120	92.0	105.2	107.4	95.0	92.1
s22-wwe-md1 and s22-wwe-ps2	10/03/2017	dB(L)	115	120	87.5	105.9	106.6	92.8	103.2
w30-whac-co2	10/03/2017	dB(L)	115	120	88.2	101.1	113.7	95.5	105.8
w28-wwa-ptg1	11/03/2017	dB(L)	115	120	83.3	96.2	101.1	87.2	85.4
n37-bla-ptg12	13/03/2017	dB(L)	115	120	91.6	94.9	93.7	90.8	88.3
w28-whac-co13	13/03/2017	dB(L)	115	120	91.1	103.9	98.2	85.3	89.1
w32-wba-ps1 and w28-gmd-co2	14/03/2017	dB(L)	115	120	95.0	106.0	109.4	79.6	105.7
s22-wwe-md2	15/03/2017	dB(L)	115	120	99.8	98.3	112.0	99.1	102.1
w28-whac-co14 and w32-wba-ps2	15/03/2017	dB(L)	115	120	96.5	99.9	106.9	73.8	96.3

s22-wwe-md3	17/03/2017	dB(L)		115	120	88.0	110.3	109.1	97.3	107.7
w28-gmd-co3	17/03/2017	dB(L)		115	120	93.3	103.8	99.7	95.5	90.7
w32-wba-ps3 and l50-wba-ps1	20/03/2017	dB(L)		115	120	101.4	97.6	91.4	91.3	93.2
w32-wba-ps4 and w28-whac-co15	21/03/2017	dB(L)		115	120	89.0	96.8	90.1	87.1	91.3
l45-whe-ptg1	22/03/2017	dB(L)		115	120	90.4	100.3	97.7	89.1	90.5
n30-bfa-md4	22/03/2017	dB(L)		115	120	95.9	103.1	102.5	98.8	100.6
s22-bff-co2	28/03/2017	dB(L)		115	120	87.6	93.2	97.9	96.2	85.5
n37-ble-pr1	29/03/2017	dB(L)		115	120	97.4	108.6	97.9	98.7	102.6
l46-gma-md4 and l46-gma-ps6	30/03/2017	dB(L)		115	120	98.7	93.2	102.2	94.4	100.9
l50-rcf-pr3	30/03/2017	dB(L)		115	120	97.6	93.1	98.8	87.8	98.6

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
w28-whac-co9	1/03/2017	mm/s		5	10	0.03	0.03	0.04	0.03	0.04
w28-gmd-ptg6	2/03/2017	mm/s		5	10	0.06	0.04	0.03	0.15	0.06
s22-wwe-ps1	2/03/2017	mm/s		5	10	0.49	0.35	0.27	0.21	0.37
l48-bla-pr3 and l46-gma-md3	3/03/2017	mm/s		5	10	1.30	0.95	0.11	0.20	1.54
n43-rcc-pr1	3/03/2017	mm/s		5	10	0.42	0.49	0.10	0.35	0.46
w28-whac-co10 and w28-gmd-co1	6/03/2017	mm/s		5	10	0.03	0.02	0.03	0.06	0.03
n30-bfa-md3 and n30-bfa-ps5	7/03/2017	mm/s		5	10	2.35	1.58	0.31	1.76	2.10
w28-whac-co11	7/03/2017	mm/s		5	10	0.03	0.02	0.04	0.16	0.11
w28-whac-co12 and w30-whac-co1	8/03/2017	mm/s		5	10	0.05	0.03	0.03	0.04	0.05
l44-gma-ptg1	9/03/2017	mm/s		5	10	0.08	0.03	0.03	0.05	0.05
l50-rcf-pr2	10/03/2017	mm/s		5	10	1.60	0.49	0.08	0.14	1.34

s22-wwe-md1 and s22-wwe-ps2	10/03/2017	mm/s		5	10	0.52	0.42	0.51	0.21	0.54
w30-whac-co2	10/03/2017	mm/s		5	10	0.18	0.20	0.11	0.27	0.16
w28-wwa-ptg1	11/03/2017	mm/s		5	10	0.03	0.03	0.04	0.05	0.04
n37-bla-ptg12	13/03/2017	mm/s		5	10	0.05	0.07	0.03	0.16	0.05
w28-whac-co13	13/03/2017	mm/s		5	10	0.10	0.07	0.05	0.07	0.10
w32-wba-ps1 and w28-gmd-co2	14/03/2017	mm/s		5	10	0.39	0.70	0.12	0.37	0.40
s22-wwe-md2	15/03/2017	mm/s		5	10	0.76	0.38	0.89	0.27	0.53
w28-whac-co14 and w32-wba-ps2	15/03/2017	mm/s		5	10	0.30	0.44	0.09	0.55	0.26
s22-wwe-md3	17/03/2017	mm/s		5	10	0.49	0.48	0.79	0.21	0.49
w28-gmd-co3	17/03/2017	mm/s		5	10	0.07	0.04	0.03	0.05	0.05
w32-wba-ps3 and l50-wba-ps1	20/03/2017	mm/s		5	10	0.66	0.42	0.09	0.42	1.05
w32-wba-ps4 and w28-whac-co15	21/03/2017	mm/s		5	10	0.36	0.52	0.08	0.67	0.34
l45-whe-ptg1	22/03/2017	mm/s		5	10	0.12	0.05	0.03	0.08	0.15
n30-bfa-md4	22/03/2017	mm/s		5	10	1.19	1.26	0.21	1.66	1.14
s22-bff-co2	28/03/2017	mm/s		5	10	0.05	0.03	0.09	0.21	0.06
n37-ble-pr1	29/03/2017	mm/s		5	10	0.40	0.31	0.11	0.75	0.25
l46-gma-md4 and l46-gma-ps6	30/03/2017	mm/s		5	10	1.62	1.17	0.15	0.23	1.97
l50-rcf-pr3	30/03/2017	mm/s		5	10	1.75	0.73	0.12	0.25	1.47

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



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Figure 1 : Mount Thorley Warkworth Environmental Monitoring Locations