



# Hunter Valley Operations EPL Monitoring Data

Published 11 January 2017  
FOR THE MONTH ENDING 31 December 2017

<b>Name of Operation</b>	<b>Hunter Valley Operations</b>
Environment Protection Licence	640
Licensee	HV Operations Pty Ltd
Premises	Hunter Valley Operations Lemington Road, Singleton NSW 2330 Australia
EPL Link	<a href="http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=121534&amp;SYNSUID=1&amp;LICID=640">http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=121534&amp;SYNSUID=1&amp;LICID=640</a>

## 1 INTRODUCTION

This report has been compiled to provide a summary of environmental monitoring results for Hunter Valley Operations in accordance with Environment Protection Licence 640. This report includes all monitoring data collected in accordance with the aforementioned licence for the period 1<sup>st</sup> December – 31<sup>st</sup> December 2017.

Monitoring in this report includes:

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

Monitoring locations are shown in Figure 1.

## 2 AIR QUALITY

In accordance with the requirements of Condition M2.2 (EPL 640), Hunter Valley Operations maintains a network of five PM<sub>10</sub> monitors. The following monitoring locations (EPA Monitoring Points 13, 14, 15, 16 and 17) are listed on the licences for the purpose of monitoring:

- EPA Identification Number 13 – Howick
- EPA Identification Number 14 – HC1
- EPA Identification Number 15 – Wandewoi
- EPA Identification Number 16 – Knodlers
- EPA Identification Number 17 – Golden Highway

Results of Particulates (PM<sub>10</sub>) monitoring (EPA Monitoring Points 13, 14, 15, 16 and 17) are shown in Table 1. Results reported represent the 24hr average PM<sub>10</sub>, derived from 10 minute average 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<sup>st</sup> December 2017; the data was obtained on the 2<sup>nd</sup> January 2017.

**TABLE 1: PARTICULATE MATTER <10µM MONITORING**

Date	Unit of Measure	Monitoring Frequency & Capture	Monitoring Point				
			Howick	HC1	Wandewoi	Knodlers	Golden Highway
1/12/2017	µg/m <sup>3</sup>	Continuous	18.2	38.8	22.1	17.7	#
2/12/2017	µg/m <sup>3</sup>		20.2	60.1	13.9	18.0	29.3
3/12/2017	µg/m <sup>3</sup>		4.5	19.3	1.5	12.7	6.9
4/12/2017	µg/m <sup>3</sup>		26.6	31.6	8.4	20.2	35.6
5/12/2017	µg/m <sup>3</sup>		14.3	14.5	6.7	13.2	23.6
6/12/2017	µg/m <sup>3</sup>		8.7	30.6	3.9	16.7	9.2
7/12/2017	µg/m <sup>3</sup>		#	#	9.3	22.8	16.3
8/12/2017	µg/m <sup>3</sup>		45.4	103.2	30.2	22.3	65.6
9/12/2017	µg/m <sup>3</sup>		22.4	20.1	16.3	7.9	24.1
10/12/2017	µg/m <sup>3</sup>		#	16.1	17.0	6.9	16.7
11/12/2017	µg/m <sup>3</sup>		#	17.3	24.4	9.0	19.7
12/12/2017	µg/m <sup>3</sup>		37.1	#	20.5	9.7	#
13/12/2017	µg/m <sup>3</sup>		35.0	#	18.6	15.8	33.2
14/12/2017	µg/m <sup>3</sup>		#	167.2	21.8	27.5	53.2
15/12/2017	µg/m <sup>3</sup>		77.0	101.6	47.9	31.3	75.0
16/12/2017	µg/m <sup>3</sup>		43.1	60.9	27.9	18.9	26.9
17/12/2017	µg/m <sup>3</sup>		46.9	30.3	29.0	19.2	44.1
18/12/2017	µg/m <sup>3</sup>		48.6	47.9	25.0	21.4	43.6
19/12/2017	µg/m <sup>3</sup>		30.3	123.5	16.9	25.6	41.5
20/12/2017	µg/m <sup>3</sup>		66.2	191.9	25.3	47.7	63.4
21/12/2017	µg/m <sup>3</sup>		35.2	20.1	17.9	10.6	18.4

22/12/2017	µg/m <sup>3</sup>		19.2	15.4	13.5	7.7	21.3
23/12/2017	µg/m <sup>3</sup>		26.5	45.0	20.8	15.5	25.1
24/12/2017	µg/m <sup>3</sup>		34.2	#	18.7	20.4	38.6
25/12/2017	µg/m <sup>3</sup>		13.0	#	8.2	7.5	14.0
26/12/2017	µg/m <sup>3</sup>		11.3	#	8.7	6.5	13.3
27/12/2017	µg/m <sup>3</sup>		20.6	8.8	18.4	9.9	15.8
28/12/2017	µg/m <sup>3</sup>		38.1	38.1	25.0	13.6	22.9
29/12/2017	µg/m <sup>3</sup>		26.5	75.1	18.0	18.2	18.4
30/12/2017	µg/m <sup>3</sup>		16.8	154.9	13.8	30.3	20.5
31/12/2017	µg/m <sup>3</sup>		33.8	19.9	18.1	16.5	22.0
Monthly Meaningful Data							
<b>December</b>	<b>µg/m<sup>3</sup></b>	<b>Minimum*</b>	4.5	8.8	1.5	6.5	6.9
<b>December</b>	<b>µg/m<sup>3</sup></b>	<b>Mean*</b>	30.4	58.1	18.3	17.5	29.6
<b>December</b>	<b>µg/m<sup>3</sup></b>	<b>Maximum*</b>	77.0	191.9	47.9	47.7	75.0
<b>December</b>	<b>µg/m<sup>3</sup></b>	<b>Median*</b>	26.6	38.1	18.1	16.7	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 values due to equipment or communication issue

### 3 SURFACE WATER

#### 3.1 Mine Water Discharge Monitoring

HVO participates in the Hunter River Salinity Trading Scheme (HRSTS), and maintains six monitoring locations associated with this scheme (EPA Monitoring Points 3, 4, 5, 6, 7 and 8, Condition M2.3) as follows:

- EPA Identification Number 3 – Discharge Pipe from Dam 11N
- EPA Identification Number 4 – Discharge end of outlet pipe on Parnell’s Dam
- EPA Identification Number 5 – At the discharge end of the alluvial lands discharge pipeline
- EPA Identification Number 6 – In Farrell’s Creek within 100m, and upstream of the confluence of flow from POINT 3
- EPA Identification Number 7 – In Farrell’s Creek within 100m, and downstream of the confluence of flow from POINT 3
- EPA Identification Number 8 – Outlet of discharge pipe from Lake James storage dam

The location of these sampling points can be viewed in Appendix A: HVO Monitoring Location Plan

Hunter Valley Operations did not receive any discharge opportunities in the reporting period and no water was discharged. As such, no samples were collected at Monitoring Points 3, 4, 5, 6, 7 and 8 during the reporting period (shown in Table 2 below).

**TABLE 2: MINE WATER DISCHARGE MONITORING**

Discharge Point	Date	Pollutant	unit of measure	Licence Limits	No. of samples required by licence	No. of samples you collected and analysed
Dam 11N Discharge / EPL Point 3	N/A	Electrical Conductivity	microsiemens per centimetre	-	0	0
		pH	pH	6.5 - 9.5	0	0
		Total Suspended Solids	milligrams per litre	120	0	0
Parnell’s Dam Discharge / EPL Point 4	N/A	Electrical Conductivity	microsiemens per centimetre	-	0	0
		pH	pH	6.5 - 9.5	0	0
		Total Suspended Solids	milligrams per litre	120	0	0
Alluvial Lands Discharge / EPL Point 5	N/A	Electrical Conductivity	microsiemens per centimetre	400	0	0
		pH	pH	-	0	0

		Total Suspended Solids	milligrams per litre	-	0	0
Farrell's Creek Upstream / EPL Point 6	N/A	Electrical Conductivity	microsiemens per centimetre	-	0	0
		pH	pH	-	0	0
		Total Suspended Solids	milligrams per litre	-	0	0
Farrell's Creek Downstream / EPL Point 7	N/A	Electrical Conductivity	microsiemens per centimetre	-	0	0
		pH	pH	-	0	0
		Total Suspended Solids	milligrams per litre	-	0	0
Lake James Discharge / EPL Point 8	N/A	Electrical Conductivity	microsiemens per centimetre	-	0	0
		pH	pH	6.5 - 9.5	0	0
		Total Suspended Solids	milligrams per litre	120	0	0

#### 4 BLAST MONITORING

In accordance with the requirements of Condition M8.1, Hunter Valley Operations maintains a network of blast monitors to measure airblast overpressure and ground vibration for all blasts carried out at HVO. The following monitoring locations (EPA Monitoring Points 9, 10, 11 and 12) are listed on the licence for the purpose of assessing compliance with the airblast overpressure and ground vibration criteria as follows:

- EPA Identification Number 9 – Jerry’s Plains
- EPA Identification Number 10 – Moses Crossing
- EPA Identification Number 11 – Warkworth
- EPA Identification Number 12 – Maison Dieu

The location of these monitors can be found in Figure 1 – Hunter Valley Operations Monitoring Locations. The last date sampled was the 30<sup>th</sup> December 2017. The data was obtained on the 3<sup>rd</sup> January 2018.

During the reporting period one blast exceeded the 115dB(L) threshold for airblast overpressure at the Maison Dieu Blast monitor on the 30<sup>th</sup> December 2017 and no blasts exceeded the 5mm/s threshold for ground vibration.

Blast monitoring results are detailed in Table 3 (Airblast Overpressure) and Table 4 (Ground Vibration).

**TABLE 3: 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	Moses Crossing	Jerrys Plains	Maison Dieu	Warkworth
P202R0401B	2/12/2017 13:37	dB(L)	All Blasts 100%	115	120	96.0	97.4	110.4	96.3
WN43LEC05A	4/12/2017 11:55	dB(L)		115	120	102.7	106.1	92.8	95.2
P205M0105A	5/12/2017 11:07	dB(L)		115	120	101.1	95.6	104.7	99.5
WN45UPG01A	6/12/2017 8:12	dB(L)		115	120	97.7	96.7	106.9	95.0
P204M0801A	7/12/2017 15:14	dB(L)		115	120	97.1	92.3	105.6	94.2
RW25WHP01A	8/12/2017 14:20	dB(L)		115	120	93.9	89.8	95.3	101.1
RW23BFA01A	8/12/2017 14:21	dB(L)		115	120	93.9	92.0	95.3	101.1
RW24BF101B	8/12/2017 14:26	dB(L)		115	120	90.8	108.4	101.3	97.5
WS45BAY04A	11/12/2017 13:55	dB(L)		115	120	91.0	99.4	92.8	97.2
RW30PRE04A	13/12/2017 13:09	dB(L)		115	120	101.7	99.2	97.3	100.0
P204M8C01A	15/12/2017 16:41	dB(L)		115	120	105.2	106.7	105.5	87.3
WW27BAP03A	16/12/2017 13:17	dB(L)		115	120	84.9	91.3	90.9	94.9
P202R0402A	19/12/2017 11:28	dB(L)		115	120	92.4	100.4	106.2	102.2
WN43LPP01A	19/12/2017 13:13	dB(L)		115	120	104.0	113.5	108.7	96.4
RW32WHA01A	21/12/2017 13:15	dB(L)		115	120	108.3	109.6	105.9	90.7
RW23BFA01B	21/12/2017 13:16	dB(L)		115	120	98.8	107.8	104.9	90.7



WN43LED02A	22/12/2017 16:42	dB(L)		115	120	94.2	112.0	104.6	92.9
WN43LPP01B	23/12/2017 10:56	dB(L)		115	120	87.7	100.2	103.7	89.5
WN43LPP03A	27/12/2017 13:09	dB(L)		115	120	103.7	104.0	99.3	99.8
WN43LPP02A	29/12/2017 13:08	dB(L)		115	120	93.1	105.3	92.7	100.2
WN43LPP04A	29/12/2017 13:08	dB(L)		115	120	93.1	99.4	95.7	97.1
P120RLM60A	30/12/2017 14:27	dB(L)		115	120	92.6	91.5	115.4	102.8
Monthly Meaningful Data									
<b>Minimum</b>	<b>December</b>	<b>dB(L)</b>		115	120	84.9	89.8	90.9	87.3
<b>Mean</b>	<b>December</b>	<b>dB(L)</b>		115	120	96.5	100.8	101.6	96.4
<b>Maximum</b>	<b>December</b>	<b>dB(L)</b>		115	120	108.3	113.5	115.4	102.8
<b>Median</b>	<b>December</b>	<b>dB(L)</b>		115	120	95.1	99.8	104.2	96.8

**TABLE 4: 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	Moses Crossing	Jerrys Plains	Maison Dieu	Warkworth
P202R0401B	2/12/2017 13:37	mm/s	All Blasts 100%	5	10	0.10	0.04	1.41	0.56
WN43LEC05A	4/12/2017 11:55	mm/s		5	10	0.04	0.05	0.03	0.07
P205M0105A	5/12/2017 11:07	mm/s		5	10	0.21	0.15	0.92	1.47
WN45UPG01A	6/12/2017 8:12	mm/s		5	10	0.04	0.06	0.05	0.28
P204M0801A	7/12/2017 15:14	mm/s		5	10	0.03	0.04	0.14	0.17
RW25WHP01A	8/12/2017 14:20	mm/s		5	10	0.37	0.10	0.08	0.21
RW23BFA01A	8/12/2017 14:21	mm/s		5	10	0.37	0.10	0.08	0.28
RW24BF101B	8/12/2017 14:26	mm/s		5	10	0.03	0.04	0.03	0.10
WS45BAY04A	11/12/2017 13:55	mm/s		5	10	0.15	0.09	0.10	0.16
RW30PRE04A	13/12/2017 13:09	mm/s		5	10	0.29	0.09	0.12	0.23
P204M8C01A	15/12/2017 16:41	mm/s		5	10	0.09	0.02	0.10	0.07
WW27BAP03A	16/12/2017 13:17	mm/s		5	10	0.03	0.03	0.02	0.07
P202R0402A	19/12/2017 11:28	mm/s		5	10	0.11	0.06	1.26	0.70
WN43LPP01A	19/12/2017 13:13	mm/s		5	10	0.17	0.19	0.10	0.09
RW32WHA01A	21/12/2017 13:15	mm/s		5	10	0.32	0.08	0.11	0.27
RW23BFA01B	21/12/2017 13:16	mm/s		5	10	0.16	0.06	0.06	0.09

WN43LED02A	22/12/2017 16:42	mm/s		5	10	0.16	0.16	0.17	0.10
WN43LPP01B	23/12/2017 10:56	mm/s		5	10	0.18	0.20	0.13	0.13
WN43LPP03A	27/12/2017 13:09	mm/s		5	10	0.21	0.15	0.12	0.14
WN43LPP02A	29/12/2017 13:08	mm/s		5	10	0.09	0.14	0.09	0.09
WN43LPP04A	29/12/2017 13:08	mm/s		5	10	0.09	0.14	0.09	0.08
P120RLM60A	30/12/2017 14:27	mm/s		5	10	0.07	0.04	0.10	0.19
Monthly Meaningful Data									
<b>Minimum</b>	<b>December</b>	<b>mm/s</b>		5	10	0.03	0.02	0.02	0.07
<b>Mean</b>	<b>December</b>	<b>mm/s</b>		5	10	0.15	0.09	0.24	0.25
<b>Maximum</b>	<b>December</b>	<b>mm/s</b>		5	10	0.37	0.20	1.41	1.47
<b>Median</b>	<b>December</b>	<b>mm/s</b>		5	10	0.13	0.09	0.10	0.15



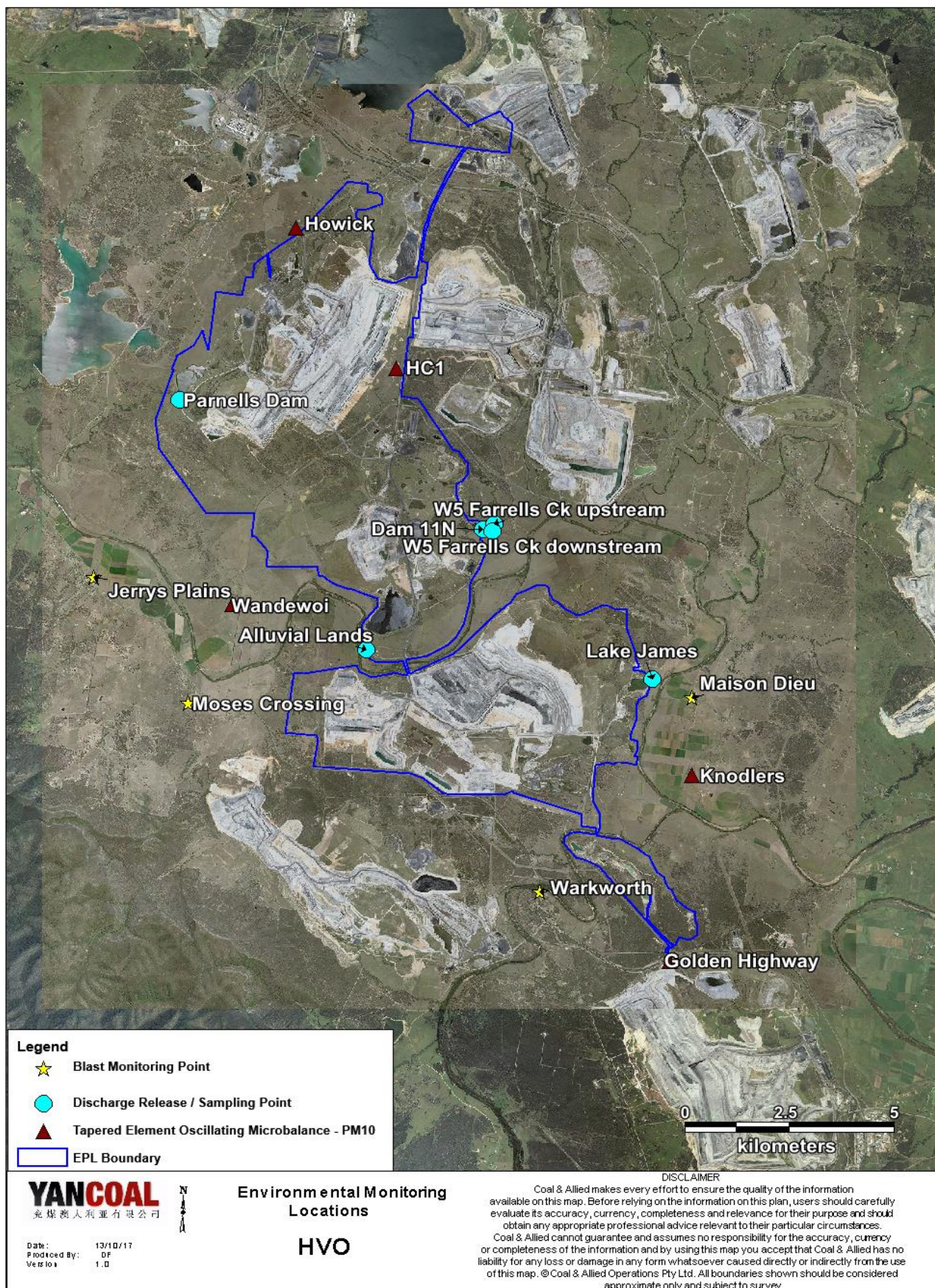


Figure 1 : Hunter Valley Operations Environmental Monitoring Locations