

HUNTER VALLEY OPERATIONS

Environment Protection Licence 640 Monitoring Data - October 2019

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Name of Operation	Hunter Valley Operations
<i>Environment Protection Licence</i>	640
<i>Licensee</i>	<i>HV Operations Pty Ltd</i>
<i>Premises</i>	<i>Hunter Valley Operations Lemington Road, Singleton NSW 2330 Australia</i>
<i>EPL Link</i>	https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=168611&SYSUID=1&LICID=640

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 October – 31 October 2019.

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 PM₁₀ monitors. The following monitoring locations (EPA Monitoring Points 13, 14, 15, 16 and 17) are listed on the licence 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 (PM₁₀) monitoring (EPA Monitoring Points 13, 14, 15, 16 and 17) are shown in Table 1. Results reported represent the 24hr average PM₁₀, derived from 10 minute average PM₁₀ values for the period midnight to midnight, for each calendar date during the reporting period. The last sampling date was 31 October 2019; the data was obtained on the 11 November 2019.

Table 1: Particulate Matter <10µm Monitoring

Date	Unit of Measure	Monitoring Frequency & Capture	Monitoring Point				
			Howick	HC1	Wandewoi	Knodlers	Golden Highway
1/10/2019	µg/m ³	Continuous	29.3*	23.2*	23.0*	18.3*	21.0*
2/10/2019	µg/m ³		43.6	68.0	20.8	29.2	54.1
3/10/2019	µg/m ³		48.3	135.8	38.0	51.1	74.7
4/10/2019	µg/m ³		51.2	209.0	39.0	75.4*	57.3*
5/10/2019	µg/m ³		19.7	18.4	23.2	18.0	16.7
6/10/2019	µg/m ³		28.0	47.9	25.4	28.9	35.1
7/10/2019	µg/m ³		67.1	160.2	52.1	68.7	68.9
8/10/2019	µg/m ³		33.1	147.4	31.3	50.6	30.3
9/10/2019	µg/m ³		29.5	44.0	19.1	25.7	20.5
10/10/2019	µg/m ³		34.1	42.0	23.6	18.1	26.0
11/10/2019	µg/m ³		30.1	21.0	19.7	16.4	28.5
12/10/2019	µg/m ³		13.3	10.6	11.8	7.9	17.1
13/10/2019	µg/m ³		18.7	17.3	14.9	10.3	17.4
14/10/2019	µg/m ³		27.8	50.4	23.1	15.7	22.3
15/10/2019	µg/m ³		41.8	53.4	32.8	23.3	33.6
16/10/2019	µg/m ³		41.9	130.4	33.0	41.7	45.1
17/10/2019	µg/m ³		34.7	290.1*	28.7	70.0	52.5
18/10/2019	µg/m ³		28.5	106.8	16.6	60.8	24.6
19/10/2019	µg/m ³		36.6	209.8	29.9	60.8	55.7*
20/10/2019	µg/m ³		66.7	46.2	30.1	30.6	50.7
21/10/2019	µg/m ³		47.3	35.8	36.4	31.1	33.2
22/10/2019	µg/m ³		35.7	56.0	38.0	23.5	28.8

23/10/2019	µg/m ³		28.0	81.7*	29.9	35.4	46.5
24/10/2019	µg/m ³		36.7	116.4	56.2	56.2	53.2*
25/10/2019	µg/m ³		58.9*	304.2*	29.8*	64.0*	92.8*
26/10/2019	µg/m ³		100.7	1150.1	61.3	169.2	99.2
27/10/2019	µg/m ³		64.2	117.3	60.0	58.0	77.7*
28/10/2019	µg/m ³		67.5	104.5	54.2	59.7	70.5
29/10/2019	µg/m ³		57.5	76.7	52.6	48.4	64.2
30/10/2019	µg/m ³		99.2	172.0	82.8	86.8	99.5
31/10/2019	µg/m ³		81.0	123.9	78.3	106.1	97.7
Monthly Meaningful Data							
October	µg/m³	Minimum	13.3	10.6	11.8	7.9	16.7
October	µg/m³	Mean	44.0*	128.7*	35.2*	44.3*	44.2*
October	µg/m³	Maximum	100.7	1150.1	82.8	169.2	99.5
October	µg/m³	Median	36.7*	72.4*	30.7*	35.4*	34.4*

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 Figure 1.

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, 11, 12 and 18) 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 – Jerrys Plains
- EPA Identification Number 18 – Moses Crossing
- EPA Identification Number 11 – Warkworth
- EPA Identification Number 12 – Maison Dieu

The location of these monitors can be found in Figure 1. The last date sampled was the 31 October 2019. The data was obtained on the 11 November 2019.

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
P206FCL07B	1/10/2019 13:11	dB(L)	All Blasts 100%	115	120	91.9	92.9	107.3	108.2
P208WK302B	2/10/2019 13:36	dB(L)		115	120	94.9	96.4	102.7	103.3
P207M0102A	5/10/2019 9:35	dB(L)		115	120	89.8	94.4	91.6	94.9
RW32WHA03A	9/10/2019 9:21	dB(L)		115	120	98.9	111.3	104.2	92.6
WN47HZ101A	9/10/2019 13:12	dB(L)		115	120	100.1	95.9	105.0	99.4
P121BAC04A	9/10/2019 14:05	dB(L)		115	120	97.4	93.0	98.1	95.7
WG01PRE01	9/10/2019 14:57	dB(L)		115	120	96.3	106.7	80.8	92.7
WS41BAP01A	11/10/2019 13:14	dB(L)		115	120	102.3	97.1	107.8	104.3
WS45MPG01A	11/10/2019 13:15	dB(L)		115	120	94.7	110.4	108.2	111.8
P206M0801A	12/10/2019 14:11	dB(L)		115	120	95.3	101.7	104.6	87.3
P20805002A	14/10/2019 13:30	dB(L)		115	120	92.9	93.1	102.6	102.0
P121BAC05A	14/10/2019 16:42	dB(L)		115	120	98.2	92.0	97.4	97.5
P122R0101A	17/10/2019 10:03	dB(L)		115	120	92.7	115.9	103.7	97.4
WS45MPG04A	19/10/2019 10:11	dB(L)		115	120	98.5	101.6	111.5	107.5
P121BAC05B	21/10/2019 16:09	dB(L)		115	120	99.4	94.8	108.5	88.3

P206M0802A	21/10/2019 16:10	dB(L)		115	120	100.6	96.2	102.6	93.8
P121BAC05C	22/10/2019 12:36	dB(L)		115	120	91.6	91.1	100.1	92.1
P205R0101A_P 204BYP02A_P2 05R6P01B	28/10/2019 14:18	dB(L)		115	120	100.6	101.4	112.8	104.3
WS47LEB03A	29/10/2019 13:55	dB(L)		115	120	92.5	91.5	89.6	100.7
WS41LLD01A_ WS41LLD02A	29/10/2019 13:56	dB(L)		115	120	95.7	90.1	91.4	103.3
P207WK901A	30/10/2019 16:38	dB(L)		115	120	85.6	83.2	97.1	98.1
P20805003A	30/10/2019 16:39			115	120	89.3	89.3	106.5	100.1
WG01PRE02A	31/10/2019 13:03			115	120	93.5	97.6	95.3	92.4
Monthly Meaningful Data									
Minimum	October	dB(L)		115	120	85.6	83.2	80.8	87.3
Mean	October	dB(L)		115	120	95.3	97.3	101.3	98.6
Maximum	October	dB(L)		115	120	102.3	115.9	112.8	111.8
Median	October	dB(L)		115	120	95.3	95.9	102.7	98.1
* Result is under investigation.									

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
P206FCL07B	1/10/2019 13:11	mm/s	All Blasts 100%	5	10	0.08	0.04	0.09	0.06
P208WK302B	2/10/2019 13:36	mm/s		5	10	0.07	0.04	0.08	0.08
P207M0102A	5/10/2019 9:35	mm/s		5	10	0.10	0.02	0.16	0.14
RW32WHA03A	9/10/2019 9:21	mm/s		5	10	0.33	0.07	0.12	0.20
WN47HZ101A	9/10/2019 13:12	mm/s		5	10	0.15	0.12	0.10	0.27
P121BAC04A	9/10/2019 14:05	mm/s		5	10	0.11	0.06	0.12	0.14
WG01PRE01	9/10/2019 14:57	mm/s		5	10	0.11	0.08	0.07	0.12
WS41BAP01A	11/10/2019 13:14	mm/s		5	10	0.29	0.23	0.12	0.10
WS45MPG01A	11/10/2019 13:15	mm/s		5	10	0.09	0.03	0.07	0.11
P206M0801A	12/10/2019 14:11	mm/s		5	10	0.09	0.02	0.13	0.09
P20805002A	14/10/2019 13:30	mm/s		5	10	0.13	0.06	0.33	0.58
P121BAC05A	14/10/2019 16:42	mm/s		5	10	0.12	0.08	0.13	0.17
P122R0101A	17/10/2019 10:03	mm/s		5	10	0.23	0.09	0.15	0.47
WS45MPG04A	19/10/2019 10:11	mm/s		5	10	0.10	0.04	0.07	0.10
P121BAC05B	21/10/2019 16:09	mm/s		5	10	0.09	0.04	0.09	0.09
P206M0802A	21/10/2019 16:10	mm/s		5	10	0.08	0.03	0.15	0.09
P121BAC05C	22/10/2019 12:36	mm/s	5	10	0.09	0.05	0.10	0.24	

P205R0101A_P2 04BYP02A_P205 R6P01B	28/10/2019 14:18	mm/s		5	10	0.15	0.08	0.69	0.79
WS47LEB03A	29/10/2019 13:55	mm/s		5	10	0.14	0.06	0.09	0.20
WS41LLD01A_W S41LLD02A	29/10/2019 13:56	mm/s		5	10	0.16	0.11	0.09	0.09
P207WK901A	30/10/2019 16:38	mm/s		5	10	0.15	0.06	0.48	0.66
P20805003A	30/10/2019 16:39	mm/s		5	10	0.13	0.04	0.33	0.48
WG01PRE02A	31/10/2019 13:03	mm/s		5	10	0.09	0.06	0.07	0.14
Monthly Meaningful Data									
Minimum	October	mm/s		5	10	0.07	0.02	0.07	0.06
Mean	October	mm/s		5	10	0.13	0.07	0.17	0.24
Maximum	October	mm/s		5	10	0.33	0.23	0.69	0.79
Median	October	mm/s		5	10	0.11	0.06	0.12	0.14

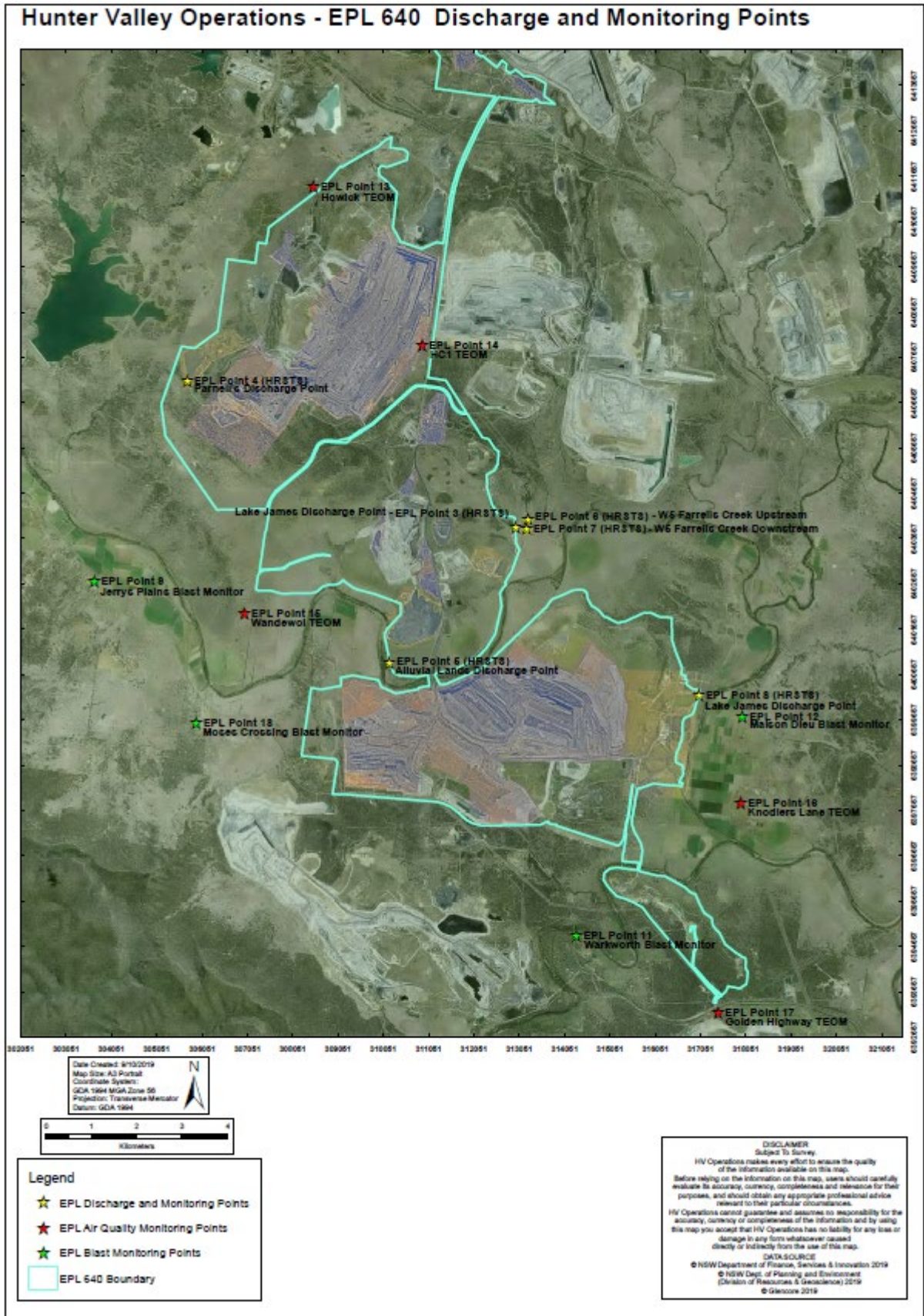


Figure 1 : Hunter Valley Operations Environmental Monitoring Locations