

# HUNTER VALLEY OPERATIONS

## Environment Protection Licence 640 Monitoring Data - November 2019

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<b>Name of Operation</b>	<b>Hunter Valley Operations</b>
<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>	<a href="https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=168611&amp;SYSUID=1&amp;LICID=640">https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=168611&amp;SYSUID=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 November – 30 November 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 PM<sub>10</sub> 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 (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 30 November 2019; the data was obtained on the 3 December 2019.

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

Date	Unit of Measure	Monitoring Frequency & Capture	Monitoring Point				
			Howick	HC1	Wandewoi	Knodlers	Golden Highway
1/11/2019	µg/m³	Continuous	84.2	91.8	73.1	73.5	68.7
2/11/2019	µg/m³		54.9	108.9	47.9	39.4	62.9
3/11/2019	µg/m³		39.6	193.5	12.4	45.6	39.0
4/11/2019	µg/m³		4.4	26.3	#	6.3	#
5/11/2019	µg/m³		0.7	6.3*	#	7.0	#
6/11/2019	µg/m³		14.6	78.0*	#	32.7	30.2
7/11/2019	µg/m³		85.3	338.6	#	117.0	76.7
8/11/2019	µg/m³		89.7	330.8	#	91.5	79.1
9/11/2019	µg/m³		23.6	198.0	#	22.9	19.7
10/11/2019	µg/m³		33.0	145.1	#	38.5	31.0
11/11/2019	µg/m³		38.6	73.0	#	21.6	45.3
12/11/2019	µg/m³		122.8	588.8	#	146.3	132.0
13/11/2019	µg/m³		35.7	151.2	18.7	33.7*	37.7
14/11/2019	µg/m³		36.7	156.6	23.4	48.5	34.7
15/11/2019	µg/m³		39.9*	286.0	24.3*	84.2	40.4
16/11/2019	µg/m³		78.5	136.5	63.5*	65.2	52.0
17/11/2019	µg/m³		89.1	99.3	76.8	76.5	76.0
18/11/2019	µg/m³		51.3	301.5	41.1	47.5	46.6
19/11/2019	µg/m³		56.4	152.3	45.7*	52.0	63.0
20/11/2019	µg/m³		79.6	62.0	63.0*	51.9	62.3
21/11/2019	µg/m³		128.5	164.9	110.2	102.3	138.4

22/11/2019	µg/m <sup>3</sup>		137.3	386.6	108.2	119.1	140.0
23/11/2019	µg/m <sup>3</sup>		78.5	66.8	60.6*	37.9	47.7
24/11/2019	µg/m <sup>3</sup>		38.7	28.5	22.7*	14.5	28.4
25/11/2019	µg/m <sup>3</sup>		47.6	130.6	32.2	34.2	49.5
26/11/2019	µg/m <sup>3</sup>		214.7	1081.9	185.8*	317.7	220.1
27/11/2019	µg/m <sup>3</sup>		82.5	110.0	62.7	53.8	58.6
28/11/2019	µg/m <sup>3</sup>		125.1	128.4	121.3	95.3	133.2
29/11/2019	µg/m <sup>3</sup>		132.0	201.4	109.0	128.2	126.2
30/11/2019	µg/m <sup>3</sup>		83.0	272.0	78.6	125.9	90.2
<b>Monthly Meaningful Data</b>							
<b>November</b>	<b>µg/m<sup>3</sup></b>	<b>Minimum</b>	0.7	6.3	12.4	6.3	19.7
<b>November</b>	<b>µg/m<sup>3</sup></b>	<b>Mean</b>	72.0	214.7*	65.4*	72.3*	72.5
<b>November</b>	<b>µg/m<sup>3</sup></b>	<b>Maximum</b>	214.7	1081.9	121.3	317.7	220.1
<b>November</b>	<b>µg/m<sup>3</sup></b>	<b>Median</b>	78.5	151.8*	67.9*	52.0*	60.4

# 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 30 November 2019. The data was obtained on the 3 December 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
WS45MPG03A	1/11/2019 16:57	dB(L)	All Blasts 100%	115	120	101.0	98.2	106.8	86.5
WN43LLP01A_ WN43ULP01A	1/11/2019 16:58	dB(L)		115	120	99.9	102.2	107.4	84.9
P206M0803A	2/11/2019 13:21	dB(L)		115	120	88.1	99.0	102.3	93.8
P123R4P01A	4/11/2019 13:13	dB(L)		115	120	79.9	94.4	94.6	86.9
RW28BFA02A	6/11/2019 13:22	dB(L)		115	120	108.3	103.3	111.6	104.8
P122R0102A	11/11/2019 15:17	dB(L)		115	120	93.6	111.8	97.0	98.9
P203BAC01A	13/11/2019 13:02	dB(L)		115	120	100.0	110.5	110.3	97.4
WN43ULD01A_ WN43ULP02A	15/11/2019 13:33	dB(L)		115	120	96.9	108.6	111.9	92.1
P206M0804A	16/11/2019 13:04	dB(L)		115	120	94.0	91.9	94.4	96.6
RW29AFA04A	19/11/2019 14:08	dB(L)		115	120	91.2	101.6	104.7	97.9
MC01HZP01	20/11/2019 9:04	dB(L)		115	120	98.4	106.3	98.5	89.1
RW30WHG01A	20/11/2019 13:38	dB(L)		115	120	107.3	105.5	95.0	107.4
P205R0102A	21/11/2019 13:09	dB(L)		115	120	90.5	89.7	95.2	100.0
WN43ULP02B_ WS41LLD02B	22/11/2019 11:33	dB(L)		115	120	106.2	114.4	110.6	108.2



MC01HOZ01A	25/11/2019 12:54	dB(L)		115	120	100.4	105.9	109.5	98.5
WN43ULD02A	28/11/2019 13:01	dB(L)		115	120	90.0	90.5	89.2	102.2
RW30WHG01B	29/11/2019 13:15	dB(L)		115	120	96.7	92.5	109.1	107.4
P208WKP01A_P 20805004A	29/11/2019 15:57	dB(L)		115	120	105.0	95.0	113.7	107.0
<b>Monthly Meaningful Data</b>									
<b>Minimum</b>	<b>November</b>	<b>dB(L)</b>		115	120	79.9	89.7	89.2	84.9
<b>Mean</b>	<b>November</b>	<b>dB(L)</b>		115	120	97.1	101.2	103.4	97.8
<b>Maximum</b>	<b>November</b>	<b>dB(L)</b>		115	120	108.3	114.4	113.7	108.2
<b>Median</b>	<b>November</b>	<b>dB(L)</b>		115	120	97.7	101.9	105.8	98.2
* 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
WS45MPG03A	1/11/2019 16:57	mm/s	All Blasts 100%	5	10	0.20	0.04	0.13	0.14
WN43LLP01A_W N43ULP01A	1/11/2019 16:58	mm/s		5	10	0.20	0.24	0.13	0.14
P206M0803A	2/11/2019 13:21	mm/s		5	10	0.07	0.03	0.07	0.08
P123R4P01A	4/11/2019 13:13	mm/s		5	10	0.25	0.12	0.29	0.30
RW28BFA02A	6/11/2019 13:22	mm/s		5	10	0.21	0.05	0.08	0.11
P122R0102A	11/11/2019 15:17	mm/s		5	10	0.18	0.07	0.19	0.42
P203BAC01A	13/11/2019 13:02	mm/s		5	10	0.11	0.06	0.39	0.25
WN43ULD01A_W N43ULP02A	15/11/2019 13:33	mm/s		5	10	0.46	0.42	0.17	0.18
P206M0804A	16/11/2019 13:04	mm/s		5	10	0.08	0.03	0.08	0.05
RW29AFA04A	19/11/2019 14:08	mm/s		5	10	0.53	0.19	0.17	0.45
MC01HZP01	20/11/2019 9:04	mm/s		5	10	0.18	0.17	0.09	0.04
RW30WHG01A	20/11/2019 13:38	mm/s		5	10	0.41	0.16	0.56	1.19
P205R0102A	21/11/2019 13:09	mm/s		5	10	0.13	0.07	0.83	0.62
WN43ULP02B_W S41LLD02B	22/11/2019 11:33	mm/s		5	10	0.43	0.48	0.15	0.12
MC01HOZ01A	25/11/2019 12:54	mm/s		5	10	0.19	0.27	0.10	0.09

WN43ULD02A	28/11/2019 13:01	mm/s		5	10	0.12	0.15	0.09	0.19
RW30WHG01B	29/11/2019 13:15	mm/s		5	10	0.63	0.28	0.23	0.72
P208WKP01A_P 20805004A	29/11/2019 15:57	mm/s		5	10	0.16	0.07	0.22	0.29
<b>Monthly Meaningful Data</b>									
<b>Minimum</b>	<b>November</b>	<b>mm/s</b>		5	10	0.07	0.03	0.07	0.04
<b>Mean</b>	<b>November</b>	<b>mm/s</b>		5	10	0.25	0.16	0.22	0.30
<b>Maximum</b>	<b>November</b>	<b>mm/s</b>		5	10	0.63	0.48	0.83	1.19
<b>Median</b>	<b>November</b>	<b>mm/s</b>		5	10	0.20	0.14	0.16	0.19

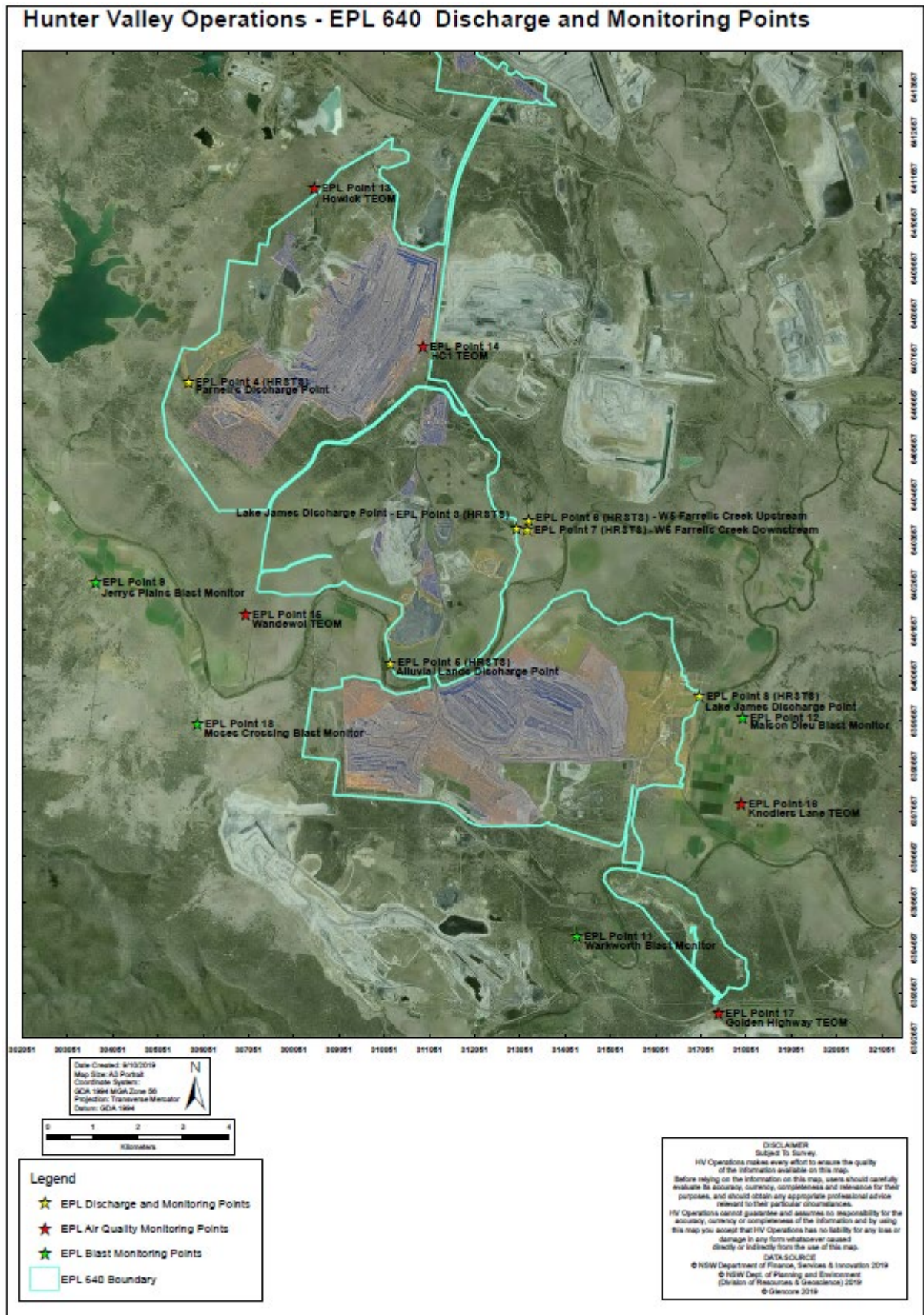


Figure 1 : Hunter Valley Operations Environmental Monitoring Locations

## 5 CORRECTION LOG

**EPL number:** 640

**Instrument:** ID 17 – Golden Highway TEOM

**Pollutant:** Particulate Matter

**Correction made:** Corrected 24 hour average value for 4-5 November 2019 and subsequent monthly meaningful data.

Sample data and time	Monitoring Location	Parameter	Original Data	Corrected Data	Date Corrected	Date originally published
4 November 2019	Golden Highway TEOM	24 Hour Average ( $\mu\text{g}/\text{m}^3$ )	1.5	-	22 May 2020	13 December 2019
5 November 2019	Golden Highway TEOM	24 Hour Average ( $\mu\text{g}/\text{m}^3$ )	11.6	-	22 May 2020	13 December 2019
November 2019	Golden Highway TEOM	Monthly Minimum ( $\mu\text{g}/\text{m}^3$ )	1.5	19.7	22 May 2020	13 December 2019
November 2019	Golden Highway TEOM	Monthly Mean ( $\mu\text{g}/\text{m}^3$ )	68.1	72.5	22 May 2020	13 December 2019
November 2019	Golden Highway TEOM	Monthly Median ( $\mu\text{g}/\text{m}^3$ )	55.3	60.4	22 May 2020	13 December 2019

**Reason for Correction:** Incorrectly reported 24 hour Average value on 4-5 November 2019. Insufficient data was collected on these days to calculate a 24 hour average due to annual maintenance and calibration.