

HUNTER VALLEY OPERATIONS

Environment Protection Licence 640 Monitoring Data – August 2020

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Name of Operation	Hunter Valley Operations
<i>Environment Protection Licence</i>	<i>640</i>
<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 1st August – 31st August 2020.

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 31st August 2020; the data was obtained on 4th September 2020.

From 30 May 2020, the existing HC1 monitoring location was disconnected from its permanent power supply due to mine progression which placed the monitor and substation within blasting exclusion zones. In consultation with the EPA, HVO has temporarily relocated this monitoring location as shown on Figure 1. Monitoring at this location is also using an alternate method (PM₁₀ ESampler) as an interim measure, with a similar monitor installation at the upwind Howick monitoring location for comparative purposes.

Table 1: Particulate Matter <10µm M Monitoring

Date	Unit of Measure	Monitoring Frequency & Capture	Monitoring Point				
			Howick	HC1*	Wandewoi	Knodlers	Golden Highway
1/08/2020	µg/m ³	Continuous	19.8	33.3	13.0	15.8	28.5
2/08/2020	µg/m ³		22.0	28.7	23.5	20.4	27.2
3/08/2020	µg/m ³		19.2	19.4	10.5	23.8	19.8
4/08/2020	µg/m ³		18.1	12.6	8.0	43.2	12.9
5/08/2020	µg/m ³		18.8	10.4	4.3	19.4	14.4
6/08/2020	µg/m ³		31.6	17.4	13.7	17.1	17.2
7/08/2020	µg/m ³		24.9	16.9	13.9	11.1	21.1
8/08/2020	µg/m ³		6.3	20.3	4.1	11.3	7.9
9/08/2020	µg/m ³		5.1	3.1	2.3	8.3	3.5
10/08/2020	µg/m ³		11.9	16.1	8.9	12.2	15.0
11/08/2020	µg/m ³		18.4	23	11.6	13.0	16.9
12/08/2020	µg/m ³		24.5	25.2	14.2	19.5	28.3
13/08/2020	µg/m ³		11.7	16.9	8.3	18.1	23.1
14/08/2020	µg/m ³		22.6	20.2	7.7	22.1	29.2
15/08/2020	µg/m ³		6.9	6.3	4.2	10.7	8.5
16/08/2020	µg/m ³		8.4	6	2.2	12.7	5.9
17/08/2020	µg/m ³		13.2	7.1	3.4	12.2	6.6
18/08/2020	µg/m ³		10.7	11.5	5.1	19.9	9.0
19/08/2020	µg/m ³		58.7	30.6	30.8	70.1	49.9
20/08/2020	µg/m ³		20.8	12.1	15.5	35.6	20.8

Date	Unit of Measure	Monitoring Frequency & Capture	Monitoring Point				
			Howick	HC1*	Wandewoi	Knodlers	Golden Highway
21/08/2020	µg/m ³		14.3	10.1	5.0	21.0	7.4
22/08/2020	µg/m ³		10.3	5.7	6.1	12.4	5.1
23/08/2020	µg/m ³		9.1	9.6	4.5	12.7	7.8
24/08/2020	µg/m ³		13.0	10.7	6.0	15.6	8.4
25/08/2020	µg/m ³		11.9	13.4	17.3	22.1	14.2
26/08/2020	µg/m ³		21.6	33.2	13.0	24.1	25.3
27/08/2020	µg/m ³		24.3	20.9	6.1	31.4	20.1
28/08/2020	µg/m ³		25.1	15.4	14.6	27.9	21.6
29/08/2020	µg/m ³		39.1	46.2	47.7	33.2	57.6
30/08/2020	µg/m ³		33.6	32.6	21.2	43.5	39.2
31/08/2020	µg/m ³		34.4	34.0	23.6	61.2	25
Monthly Meaningful Data							
August	µg/m ³	Minimum	5.1	3.1	2.2	8.3	3.5
	µg/m ³	Mean	19.7	18.4	11.9	23.3	19.3
	µg/m ³	Maximum	58.7	46.2	47.7	70.1	57.6
	µg/m ³	Median	18.8	16.9	8.9	19.5	17.2

24 hour data unavailable due to equipment or communications issue causing one or more missing 10 minute values

* Data from 30 May 2020 at HC1 was recorded using an ESampler at the "HVS" monitoring location shown on Figure 1.

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 29th August. The data was obtained on the 29th August 2020.

Blast monitoring results are detailed in Table 3 (Airblast Overpressure) and Table 4 (Ground Vibration). On the 27th August, Blast ID P205BAC01A exceeded the 95% EPL limit criteria at two monitoring sites: Maison Dieu and Warkworth. These exceedances have been reported and an investigation has commenced.

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
WN45UAA04A	3/08/2020 13:31	dB(L)	All Blasts 100%	115	120	99.1	105.7	106.6	100.6
P207VA102A	6/08/2020 12:01	dB(L)		115	120	95.6	103.5	106.7	104.2
WN45LAP01C, WN45UAP02A	7/08/2020 14:29	dB(L)		115	120	104.0	105.8	90.0	91.6
P123BR601A	7/08/2020 16:15	dB(L)		115	120	106.7	105.4	106.6	95.3
WS42BAR01A	13/08/2020 13:17	dB(L)		115	120	95.8	99.0	111.0	111.3
P123BR602A, P123BR505A	18/08/2020 08:56	dB(L)		115	120	89.6	98.7	101.9	106.7
P206VA103A	19/08/2020 09:11	dB(L)		115	120	81.8	91.2	100.8	111.3
WS45LPG05A	21/08/2020 09:22	dB(L)		115	120	103.5	110.7	113.4	107.8
P123BR506A	22/08/2020 07:26	dB(L)		115	120	90.9	97.0	103.9	108.1
WN45UAA03A	24/08/2020 13:21	dB(L)		115	120	93.4	99.7	114.5	105.2
P123BAC01A	25/08/2020 13:35	dB(L)		115	120	98.1	90.6	94.2	99.4
P205BR502A	25/08/2020 15:46	dB(L)		115	120	89.6	92.7	95.8	92.3
WS42BAR02A	26/08/2020 13:39	dB(L)		115	120	85.2	89.7	82.1	95.5
P205BAC01A	27/08/2020 09:12	dB(L)		115	120	93.1	91.1	117.8	115.8
P123BAC01B	27/08/2020 16:56	dB(L)		115	120	91.8	92.8	103.6	101.8

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
RW31AFA01A, RW31BFA01A	28/08/2020 14:41	dB(L)		115	120	91.7	86.8	90.2	96.3
P205BAC01B	29/08/2020 12:30	dB(L)		115	120	92.5	88.8	99.7	95.1
Monthly Meaningful Data									
	August	dB(L)	Minimum			81.84	86.83	82.11	91.55
		dB(L)	Mean			94.27	97.01	102.27	102.25
		dB(L)	Maximum			106.67	110.66	117.75	115.79
		dB(L)	Median			93.06	97.00	103.56	101.80

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
WN45UAA04A	3/08/2020 13:31	mm/s	All Blasts 100%	5	10	0.24	0.21	0.19	0.27
P207VA102A	6/08/2020 12:01	mm/s		5	10	0.11	0.09	0.15	0.20
WN45LAP01C, WN45UAP02A	7/08/2020 14:29	mm/s		5	10	0.12	0.05	0.08	0.58
P123BR601A	7/08/2020 16:15	mm/s		5	10	0.28	0.12	0.21	0.45
WS42BAR01A	13/08/2020 13:17	mm/s		5	10	0.18	0.1	0.08	0.16
P123BR602A, P123BR505A	18/08/2020 08:56	mm/s		5	10	0.22	0.08	0.32	0.61
P206VA103A	19/08/2020 09:11	mm/s		5	10	0.11	0.04	0.07	0.13
WS45LPG05A	21/08/2020 09:22	mm/s		5	10	0.11	0.05	0.06	0.22
P123BR506A	22/08/2020 07:26	mm/s		5	10	0.28	0.09	0.19	0.46
WN45UAA03A	24/08/2020 13:21	mm/s		5	10	0.19	0.16	0.1	0.16
P123BAC01A	25/08/2020 13:35	mm/s		5	10	0.13	0.06	0.08	0.08
P205BR502A	25/08/2020 15:46	mm/s		5	10	0.11	0.05	0.13	0.16
WS42BAR02A	26/08/2020 13:39	mm/s		5	10	0.16	0.10	0.07	1.01
P205BAC01A	27/08/2020 09:12	mm/s		5	10	0.14	0.06	0.28	0.25
P123BAC01B	27/08/2020 16:56	mm/s		5	10	0.12	0.06	0.07	0.24

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
RW31AFA01A, RW31BFA01A	28/08/2020 14:41	mm/s		5	10	0.17	0.07	0.07	0.15
P205BAC01B	29/08/2020 12:30	mm/s		5	10	0.13	0.06	0.14	0.22
Monthly Meaningful Data									
	August	mm/s	Minimum			0.11	0.04	0.06	0.08
		mm/s	Mean			0.16	0.09	0.13	0.31
		mm/s	Maximum			0.28	0.21	0.32	1.01
		mm/s	Median			0.14	0.07	0.10	0.22

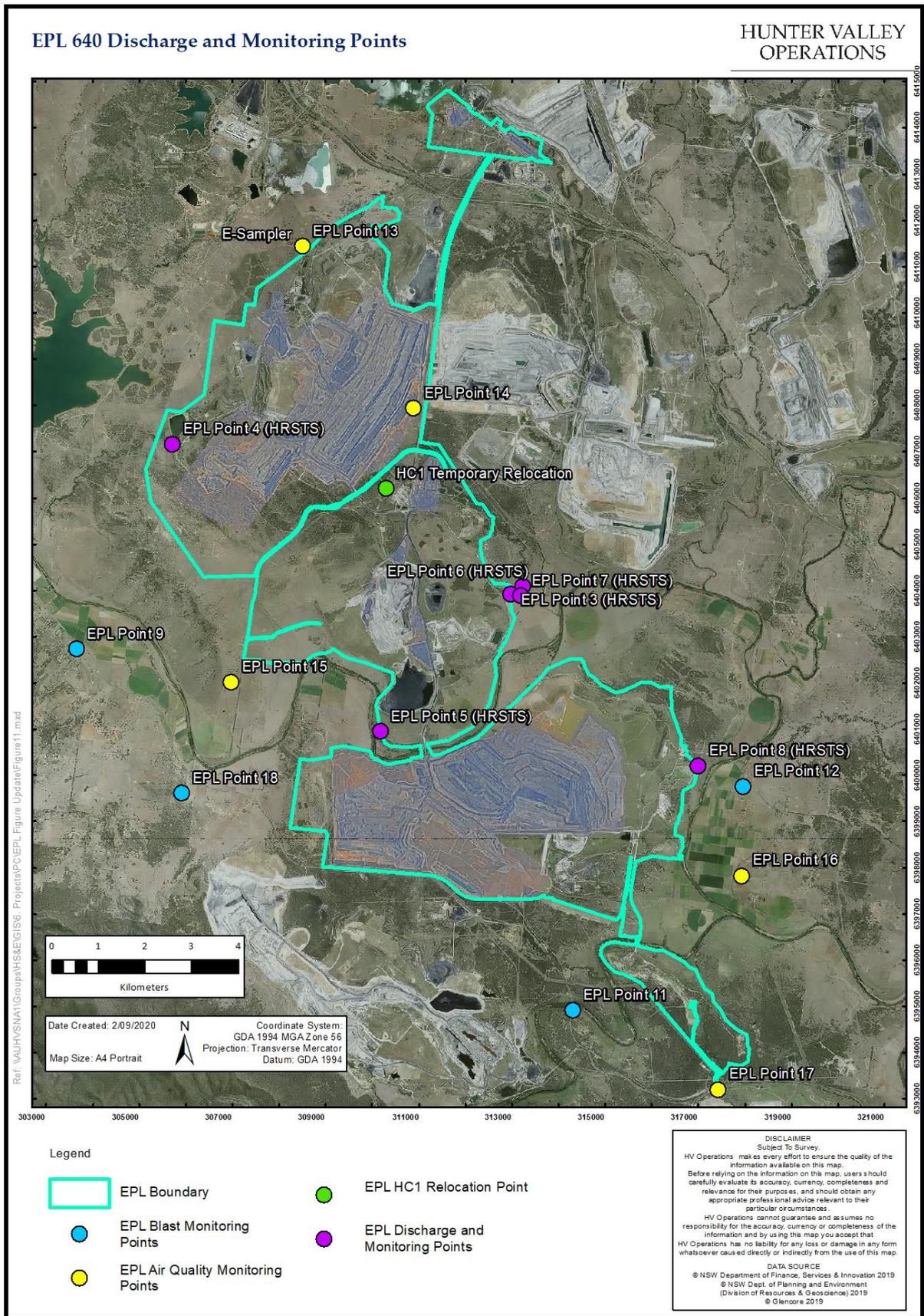


Figure 1 : Hunter Valley Operations Environmental Monitoring Locations