

HUNTER VALLEY OPERATIONS



Environment Protection Licence 640 Monitoring Data – October 2021

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1 Overview

Environmental Protection Licence Number:	640
Licence Holder:	HV Operations Pty Ltd (HVO)
Address of Premises:	Hunter Valley Operations, Lemington Road, Singleton, NSW, 2330
Licence Holder Postal Address:	PO Box 315, Singleton, NSW, 2330
EPA Public Register Link:	https://apps.epa.nsw.gov.au/prpoeoapp/Detail.aspx?instid=640&id=640&option=licence&searchrange=licence&range=POEO%20licence&prp=no&status=Issued

The locations of each sampling or monitoring point number identified in EPL 640 are displayed in **Figure 1**.

2 Definitions

Abbreviation	Explanation
DNR	Data Not Received
mm/s	Millimetres per Second
dB	Decibels
g/m ² /month	Grams per Metre Square per Month
µg/m ³	Micrograms per Cubic Meter of Air
µS/cm	Microsiemens per Centimetre
pH	A measure of the acidity or alkalinity of a solution
mg/L	Milligrams per Litre
NTU	Nephelometric Turbidity Units
ML/day	Megalitres per Day (1ML = 1,000,000L)
KL/day	Kilolitres per Day
PM10	Particulate Matter of 10 Microns in diameter or smaller
HVAS	High Volume Air Sampler
TEOM	Tapered Element Oscillating Microbalance
TSP	Total Suspended Particles
TSS	Total Suspended Solids
t	tonnes
YTD	Year To Date - rolling 12 month average

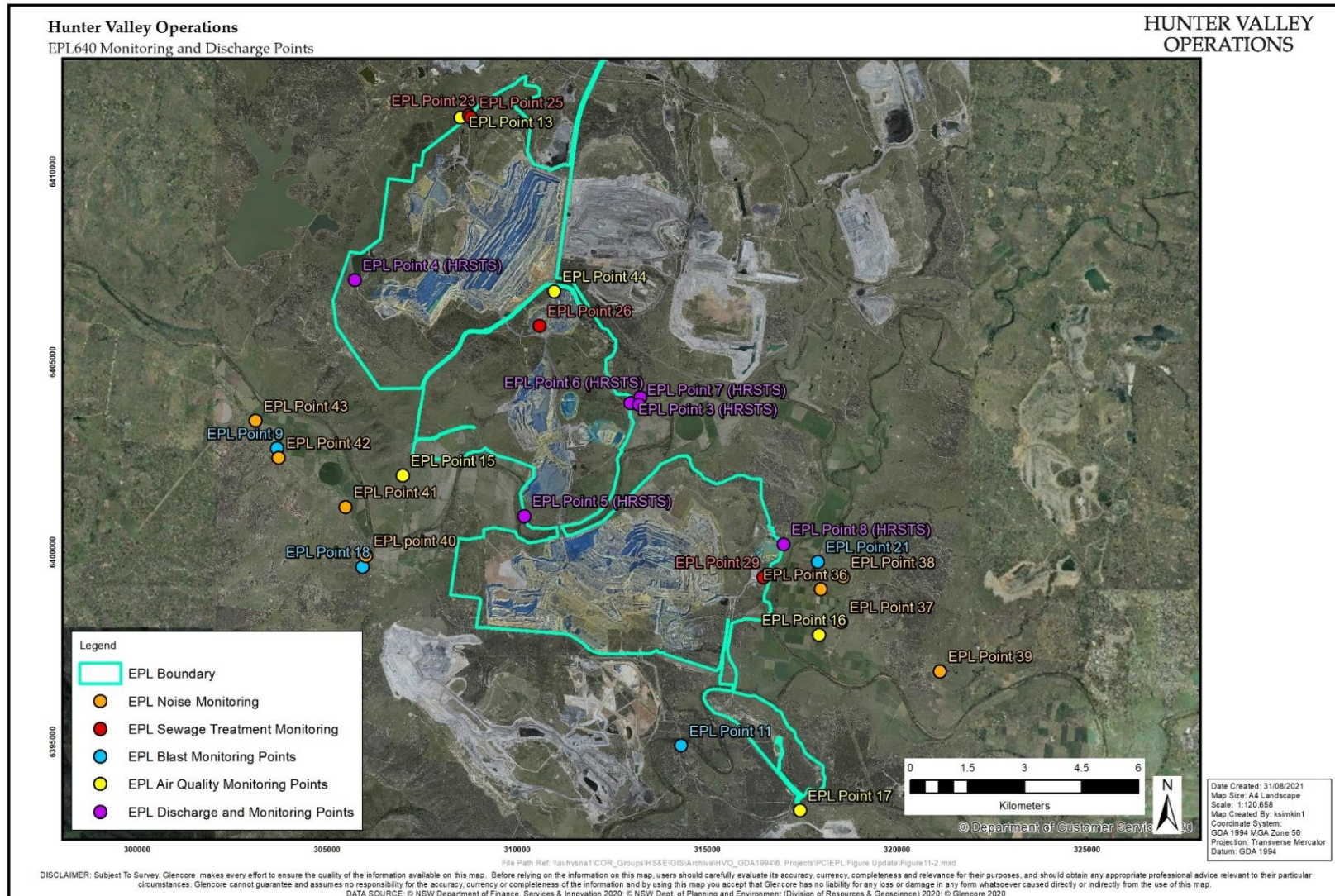


Figure 1 - EPL 640 Monitoring, Sampling and Discharge Point Locations Air Quality Monitoring Data

3 Air Quality

Date Last Sampled: 31/10/2021

Date Obtained: 01/11/2021

Table 1 – Particulate Matter <10µm Monitoring

Date	Unit of Measure	Monitoring Frequency & Capture	Monitoring Point				
			EPL ID 13 (Howick)	EPL ID 15 (Wandewoi)	EPL ID 16 (Knodlers Lane)	EPL ID 17 (Golden Highway)	EPL ID 44 (North CHPP)
1/10/2021	µg/m ³	Continuous	12.4	14.3	15.7	19.2	15.2
2/10/2021	µg/m ³		9.1	10.6	12.5	8.7	8.9
3/10/2021	µg/m ³		13.7	7.0	29.4	11.9	11.8
4/10/2021	µg/m ³		19.0	12.3	42.4	27.7	16.7
5/10/2021	µg/m ³		23.6	11.6	63.1	18.7	16.4
6/10/2021	µg/m ³		25.5	15.0	33.1	20.6	29.7
7/10/2021	µg/m ³		38.1	23.1	58.2	42.3	30.0
8/10/2021	µg/m ³		52.6	32.7	32.9	28.2	51.8
9/10/2021	µg/m ³		37.3	19.3	34.7	30.9	43.2
10/10/2021	µg/m ³		36.1	31.0	48.3	64.5	47.4
11/10/2021	µg/m ³		6.4	2.9	2.7	5.2	6.8
12/10/2021	µg/m ³		7.6	5.1	7.0	7.8	11.1
13/10/2021	µg/m ³		6.8	5.4	5.8	6.3	8.8
14/10/2021	µg/m ³		15.0	11.3	13.0	18.2	16.9
15/10/2021	µg/m ³		19.4	13.6	25.6	27.0	20.1
16/10/2021	µg/m ³		9.6	6.3	19.3	8.9	9.1
17/10/2021	µg/m ³		14.7	14.6	17.2	11.0	14.5
18/10/2021	µg/m ³		27.1	18.3	24.3	*	26.9
19/10/2021	µg/m ³		32.0	19.3	27.8	14.9	24.3
20/10/2021	µg/m ³		25.7	17.9	10.4	24.8	13.1
21/10/2021	µg/m ³		30.8	24.6	11.6	20.4	10.7
22/10/2021	µg/m ³		30.3	19.7	12.2	15.7	16.3

Date	Unit of Measure	Monitoring Frequency & Capture	Monitoring Point				
			EPL ID 13 (Howick)	EPL ID 15 (Wandewoi)	EPL ID 16 (Knodlers Lane)	EPL ID 17 (Golden Highway)	EPL ID 44 (North CHPP)
23/10/2021	µg/m ³		27.0	25.5	22.1	22.8	30.7
24/10/2021	µg/m ³		22.3	16.9	14.0	16.2	19.9
25/10/2021	µg/m ³		31.6	20.5	16.8	30.5	28.1
26/10/2021	µg/m ³		58.8	22.9	18.7	26.2	21.3
27/10/2021	µg/m ³		33.6	25.1	26.7	29.9	35.9
28/10/2021	µg/m ³		47.8	24.2	40.2	59.6	39.9
29/10/2021	µg/m ³		73.2	28.4	67.2	77.8	39.8
30/10/2021	µg/m ³		56.8	27.3	36.6	57.9	33.2
31/10/2021	µg/m ³		34.6	19.4	19.8	19.4	16.7
Monthly Meaningful Data							
October	µg/m ³	Minimum	6.4	2.9	2.7	5.2	6.8
	µg/m ³	Mean	28.3	17.6	26.1	25.8	23.1
	µg/m ³	Maximum	73.2	32.7	67.2	77.8	51.8
	µg/m ³	Median	27.0	18.3	22.1	20.5	19.9

*Annual zero test conducted no data available on this day

4 Surface Water Monitoring Data

Date Sampled: Discharged on 15 October 2021 from Dam 15S

Date Obtained: 16 October 2021

Table 2 – Mine Water Discharge Monitoring

Discharge Point	Pollutant	Unit of Measure	Licence Limits	No. Samples Required by Licence	No. Samples Collected and Analysed
EPL ID 3 (Dam 11N)	pH	pH	6.5-9.5	0	0
	Total Suspended Solids	Milligrams per Litre	120	0	0
EPL ID 4 (Dam 9W)	pH	pH	6.5-9.5	0	0
	Total Suspended Solids	Milligrams per Litre	120	0	0
EPL ID 8 (Dam 15S)	pH	pH	6.5-9.5	2	2
	Total Suspended Solids	Milligrams per Litre	120	2	2

5 Blast Monitoring Data

Date Last Sampled: 28/10/2021

Date Obtained: 01/11/2021

Table 3 – Blast Monitoring (Air Blast Overpressure and Ground Vibration))

Blast ID	Date & Time	Unit of Measure	Monitoring Frequency & Capture	EPL Limits		Monitoring Point			
				95% of Blasts	100% of Blasts	EPL ID 18 (Moses Crossing)	EPL ID 9 (Jerrys Plains)	EPL ID 12 (Maison Dieu)	EPL ID 11 (Warkworth)
P208VA101A	1/10/2021 12:45	dB(L)	All blasts 100%	115	120	92.32	78.99	100.52	97.76
WN45BAP02A	2/10/2021 13:30	dB(L)		115	120	104.65	109.35	109.65	100.08
P210BF404B	6/10/2021 13:20	dB(L)		115	120	93.78	98.47	100.62	102.83
RW34WHA05A	8/10/2021 10:13	dB(L)		115	120	96	97.17	90.93	91.06
WN45LLD02A	8/10/2021 13:13	dB(L)		115	120	86.69	94.3	85.42	92.7
WN47LPP01A	8/10/2021 13:16	dB(L)		115	120	92.44	92.27	84.22	83
P123BR615A_P123B6P08A	9/10/2021 14:06	dB(L)		115	120	89.04	100.44	103.67	96.63

Blast ID	Date & Time	Unit of Measure	Monitoring Frequency & Capture	EPL Limits		Monitoring Point			
				95% of Blasts	100% of Blasts	EPL ID 18 (Moses Crossing)	EPL ID 9 (Jerrys Plains)	EPL ID 12 (Maison Dieu)	EPL ID 11 (Warkworth)
P124VA101A	9/10/2021 14:07	dB(L)	All blasts 100%	115	120	91.04	93.88	101.68	96.87
WN47UPG01A	11/10/2021 13:06	dB(L)		115	120	92.33	98.44	93.79	89.41
P207BAC01A	14/10/2021 10:07	dB(L)		115	120	93.07	89.71	92.26	101.86
WN45LLD02B	15/10/2021 14:16	dB(L)		115	120	105.25	106.95	101.74	110.64
P21007301A	19/10/2021 13:29	dB(L)		115	120	100.87	91.25	98.51	101.63
P208VA101B	19/10/2021 13:31	dB(L)		115	120	104.98	87.23	97.22	93.94
RW32BFA01A	20/10/2021 10:00	dB(L)		115	120	99.41	98.9	98.53	97.87
P123B6P09A	21/10/2021 13:05	dB(L)		115	120	85.01	96.69	87.77	99.62
WN47LED04A_WN47UPG01B	21/10/2021 15:54	dB(L)		115	120	101.16	111.1	103.69	91.46
WN45ULD06A	22/10/2021 13:37	dB(L)		115	120	89.37	93.84	87.24	86.72

Blast ID	Date & Time	Unit of Measure	Monitoring Frequency & Capture	EPL Limits		Monitoring Point			
				95% of Blasts	100% of Blasts	EPL ID 18 (Moses Crossing)	EPL ID 9 (Jerrys Plains)	EPL ID 12 (Maison Dieu)	EPL ID 11 (Warkworth)
P208FCL05A	25/10/2021 15:46	dB(L)		115	120	91.45	106.41	101.75	101.67
P210BF404C	25/10/2021 15:48	dB(L)		115	120	97.83	106.01	104.71	101.17
P123BR517A	26/10/2021 14:24	dB(L)		115	120	89.75	87.57	92.69	98.63
WN44ULD01/02A	28/10/2021 13:01	dB(L)		115	120	88.24	96.25	94.61	92.09
Monthly Meaningful Data									
October		dB(L)	Minimum	115	120	85.01	78.99	84.22	83.00
		dB(L)	Mean	115	120	94.51	96.92	96.72	96.55
		dB(L)	Maximum	115	120	105.25	111.10	109.65	110.64
		dB(L)	Median	115	120	92.44	96.69	98.51	97.76

Blast ID	Date & Time	Unit of Measure	Monitoring Frequency & Capture	EPL Limits			Monitoring Point		
				95% of Blasts	100% of Blasts	Moses Crossing EPL ID 18	Jerrys Plains EPL ID 9	Maison Dieu EPL ID 12	Warkworth EPL ID 11
P208VA101A	1/10/2021 12:45	mm/s	All Blasts 100%	5	10	0.11	0.05	0.14	0.82
WN45BAP02A	2/10/2021 13:30	mm/s		5	10	0.17	0.16	0.08	0.19
P210BF404B	6/10/2021 13:20	mm/s		5	10	0.15	0.07	0.2	0.53
RW34WHA05A	8/10/2021 10:13	mm/s		5	10	0.18	0.05	0.05	0.18
WN45LLD02A	8/10/2021 13:13	mm/s		5	10	0.16	0.12	0.11	0.18
WN47LPP01A	8/10/2021 13:16	mm/s		5	10	0.14	0.1	0.07	0.22
P123BR615A_P123B6P08A	9/10/2021 14:06	mm/s		5	10	0.2	0.11	0.25	0.6
P124VA101A	9/10/2021 14:07	mm/s		5	10	0.13	0.07	0.07	0.23
WN47UPG01A	11/10/2021 13:06	mm/s		5	10	0.11	0.03	0.05	0.07
P207BAC01A	14/10/2021 10:07	mm/s		5	10	0.11	0.04	0.12	0.74
WN45LLD02B	15/10/2021 14:16	mm/s		5	10	0.11	0.05	0.04	0.29

Blast ID	Date & Time	Unit of Measure	Monitoring Frequency & Capture	EPL Limits			Monitoring Point		
				95% of Blasts	100% of Blasts	Moses Crossing EPL ID 18	Jerrys Plains EPL ID 9	Maison Dieu EPL ID 12	Warkworth EPL ID 11
P21007301A	19/10/2021 13:29	mm/s	All Blasts 100%	5	10	0.11	0.05	0.09	0.44
P208VA101B	19/10/2021 13:31	mm/s		5	10	0.11	0.04	0.15	0.45
RW32BFA01A	20/10/2021 10:00	mm/s		5	10	0.27	0.07	0.1	0.24
P123B6P09A	21/10/2021 13:05	mm/s		5	10	0.24	0.11	0.22	0.85
WN47LED04A_WN47UPG01B	21/10/2021 15:54	mm/s		5	10	0.1	0.06	0.04	0.49
WN45ULD06A	22/10/2021 13:37	mm/s		5	10	0.18	0.17	0.11	0.23
P208FCL05A	25/10/2021 15:46	mm/s		5	10	0.1	0.05	0.06	0.14
P210BF404C	25/10/2021 15:48	mm/s		5	10	0.12	0.05	0.13	0.32
P123BR517A	26/10/2021 14:24	mm/s		5	10	0.17	0.08	0.27	0.49
WN44ULD01/02A	28/10/2021 13:01	mm/s		5	10	0.23	0.22	0.13	0.21
Monthly Meaningful Data									
October		mm/s	Minimum	5	10	0.10	0.03	0.04	0.07

Blast ID	Date & Time	Unit of Measure	Monitoring Frequency & Capture	EPL Limits			Monitoring Point		
				95% of Blasts	100% of Blasts	Moses Crossing EPL ID 18	Jerrys Plains EPL ID 9	Maison Dieu EPL ID 12	Warkworth EPL ID 11
		mm/s	Mean	5	10	0.15	0.08	0.12	0.38
		mm/s	Maximum	5	10	0.27	0.22	0.27	0.85
		mm/s	Median	5	10	0.14	0.07	0.11	0.29

6 Sewage Treatment Plant Monitoring Data

Date Sampled: 6/10/2021

Date Obtained: 10/11/2021

Table 5 Sewage Treatment Plant Monitoring

Monitoring Site	Date & Time	Pollutant	Unit of Measure	Monitoring Result
EPA ID 23	6/10/2021 10:00:00 AM	Faecal Coliforms	Colony forming units/100ml	~64000
		pH	pH	6.84
EPA ID 25	6/10/2021 10:30:00 AM	Faecal Coliforms	Colony forming units/100ml	Insufficient water to obtain sample
		pH	pH	
EPA ID 26	6/10/2021 8:50:00 AM	Faecal Coliforms	Colony forming units/100ml	~900000
		pH	pH	7.42
EPA ID 29	6/10/2021 2:10:00 PM	Faecal Coliforms	Colony forming units/100ml	91
		pH	pH	7.68

7 Noise Monitoring Data

Date Sampled: 27/10/2021

Date Obtained: 9/11/2021

Table 1 Night $L_{Aeq,15minute}$ Generated by HVO Against EPL Criteria

Location	Date & Time	Wind Speed (m/s) ¹	Stability Class ¹	Criterion dB	Criterion Applies? ²	HVO L_{Aeq} dB ^{3,4}	Exceedance dB ^{4,5}
EPA ID 36	27/10/2021 21:00	1.5	F	41	Yes	28	Nil
EPA ID 37	27/10/2021 21:48	2.8	E	40	Yes	38	Nil
EPA ID 38	27/10/2021 21:22	3	E	39	Yes	36	Nil
EPA ID 39	27/10/2021 22:45	2.8	D	37	Yes	<30	Nil
EPA ID 40	27/10/2021 23:20	2.9	E	39	Yes	IA	Nil
EPA ID 41	27/10/2021 22:56	2.9	E	39	Yes	<25	Nil
EPA ID 42	27/10/2021 21:00	1.5	F	40	Yes	IA	Nil
EPA ID 43	27/10/2021 21:22	3	E	40	Yes	IA	Nil

Notes:

1. Atmospheric data is sourced from the HVO Corporate AWS using logged meteorological data;
2. Noise criteria apply under all meteorological conditions except during periods of rain or hail, wind speeds greater than 3 m/s measured at 10 metres above ground level, stability category F conditions and wind speeds greater than 2 m/s measured at 10m above ground level, or stability category G conditions;
3. Site-only $L_{Aeq,15minute}$ attributed to HVO;
4. Bold results in red indicate exceedance of criterion; and
5. NA in criterion column indicates no criterion is applicable at this location. NA in exceedance column means atmospheric conditions outside specified in approval, therefore criterion was not applicable.

Table 2 Night LA1,1minute Generated by HVO Against EPL Criteria

Location	Date & Time	Wind Speed (m/s) ¹	Stability Class ¹	Criterion dB	Criterion Applies? ²	HVO L _{Aeq} dB ^{3,4}	Exceedance dB ^{4,5}
EPA ID 36	27/10/2021 21:00	1.5	F	46	Yes	32	Nil
EPA ID 37	27/10/2021 21:48	2.8	E	46	Yes	43	Nil
EPA ID 38	27/10/2021 21:22	3	E	46	Yes	41	Nil
EPA ID 39	27/10/2021 22:45	2.8	D	46	Yes	<30	Nil
EPA ID 40	27/10/2021 23:20	2.9	E	46	Yes	IA	Nil
EPA ID 41	27/10/2021 22:56	2.9	E	46	Yes	<25	Nil
EPA ID 42	27/10/2021 21:00	1.5	F	46	Yes	IA	Nil
EPA ID 43	27/10/2021 21:22	3	E	46	Yes	IA	Nil

Notes:

1. Atmospheric data is sourced from the HVO Corporate AWS using logged meteorological data;
2. Noise criteria apply under all meteorological conditions except during periods of rain or hail, wind speeds greater than 3 m/s measured at 10 metres above ground level, stability category F conditions and wind speeds greater than 2 m/s measured at 10m above ground level, or stability category G conditions;
3. Site-only L_{Aeq,15minute} attributed to HVO;
4. Bold results in red indicate exceedance of criterion; and
5. NA in criterion column indicates no criterion is applicable at this location. NA in exceedance column means atmospheric conditions outside specified in approval, therefore criterion was not applicable.