

HUNTER VALLEY OPERATIONS



Environment Protection Licence 640 Monitoring Data –May 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: </Detail.aspx?instid=640&id=640&option=licence&searchchange=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**.

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

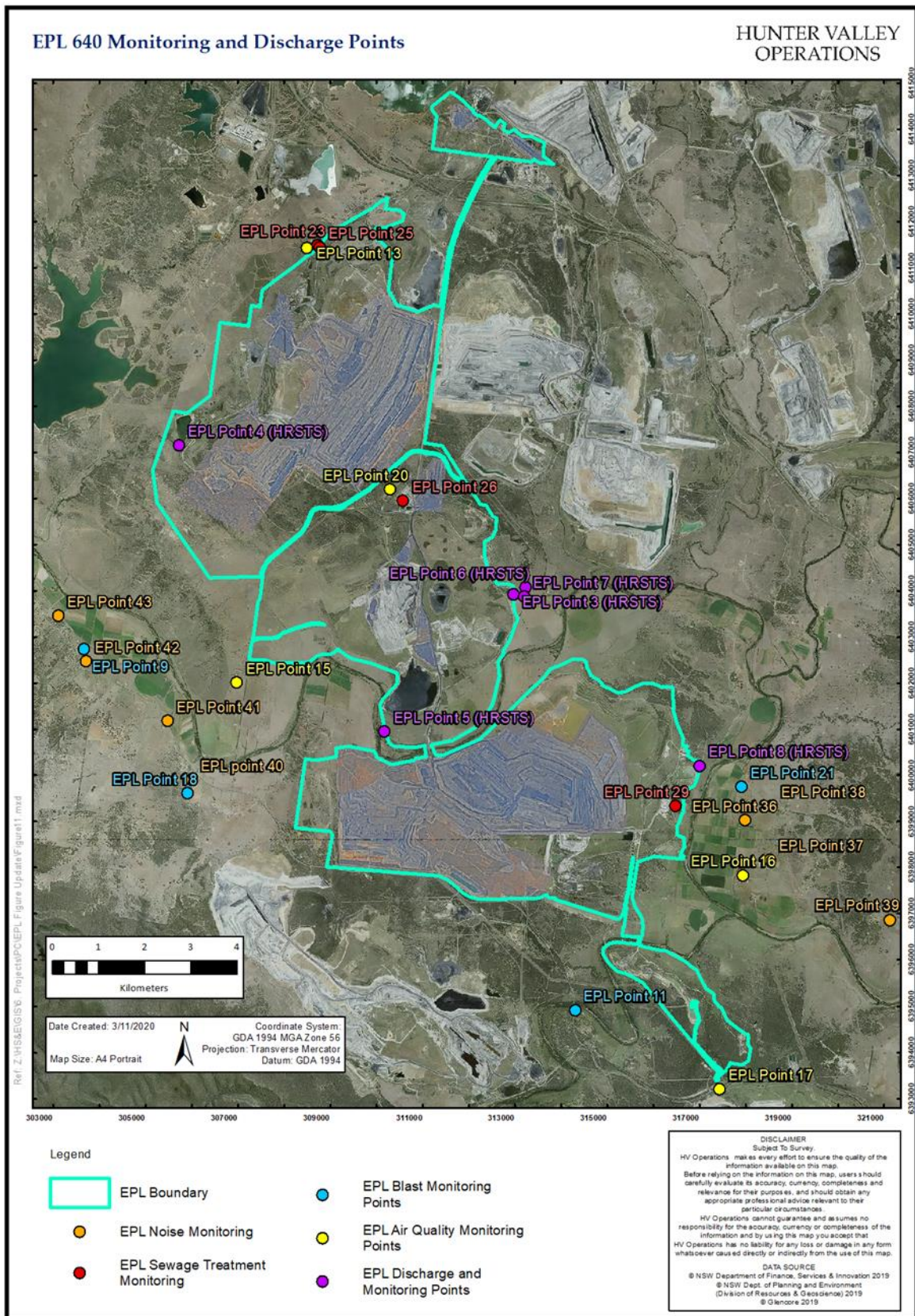


Figure 1 - EPL 640 Monitoring, Sampling and Discharge Point Locations Air Quality Monitoring Data

2 Air Quality

Date Last Sampled: 31/05/2021

Date Obtained: 01/06/2021

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 20 (HVS Proposed)
1/05/2021	µg/m ³	Continuous	22.3	19.0	13.7	14.0	32.8
2/05/2021	µg/m ³		25.2	17.3	19.0	25.3	47.4
3/05/2021	µg/m ³		26.5	13.7	19.0	39.8	41.5
4/05/2021	µg/m ³		18.0	10.2	22.5	23.5	38.8
5/05/2021	µg/m ³		15.8	11.2	10.9	18.8	25.2
6/05/2021	µg/m ³		10.5	8.7	10.8	12.8	16.9
7/05/2021	µg/m ³		14.6	12.2	11.7	8.2	16.9
8/05/2021	µg/m ³		14.9	10.2	19.3	11.3	19.8
9/05/2021	µg/m ³		18.0	12.6	18.2	24.0	25.6
10/05/2021	µg/m ³		16.3	12.4	24.9	14.8	33.6
11/05/2021	µg/m ³		18.9	17.9	15.8	14.2	20.7
12/05/2021	µg/m ³		17.6	11.5	13.5	13.6	20.6
13/05/2021	µg/m ³		22.9	10.0	20.1	13.3	36.0
14/05/2021	µg/m ³		16.5	8.4	23.6	13.4	30.9
15/05/2021	µg/m ³		16.4	9.5	30.0	12.9	36.5
16/05/2021	µg/m ³		22.2	7.8	31.2	11.1	36.5
17/05/2021	µg/m ³		20.7	12.9	21.5	18.1	34.8
18/05/2021	µg/m ³		24.8	22.9	22.5	22.5	41.5
19/05/2021	µg/m ³		22.7	10.1	20.7	21.5	36.8
20/05/2021	µg/m ³		27.9	14.1	18.9	22.7	46.9
21/05/2021	µg/m ³		27.7	17.7	21.1	24.9	60.9

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 20 (HVS Proposed)
22/05/2021	µg/m ³		24.1	17.5	14.5	22.7	36.5
23/05/2021	µg/m ³		24.7	15.9	11.6	17.2	28.3
24/05/2021	µg/m ³		19.0	15.3	17.1	16.3	42.4
25/05/2021	µg/m ³		14.4	7.9	*	11.1	31.9
26/05/2021	µg/m ³		14.6	8.9	16.1	21.2	31.7
27/05/2021	µg/m ³		15.0	6.5	23.5	11.6	25.8
28/05/2021	µg/m ³		36.6	8.1	24.5	23.7	40.6
29/05/2021	µg/m ³		22.4	11.1	21.5	27.3	29.1
30/05/2021	µg/m ³		25.4	10.3	20.5	23.5	30.3
31/05/2021	µg/m ³		30.7	13.4	18.1	29.6	37.0
Monthly Meaningful Data							
May	µg/m ³	Minimum	10.5	6.5	10.8	8.2	16.9
	µg/m ³	Mean	20.9	12.4	19.2	18.9	33.4
	µg/m ³	Maximum	36.6	22.9	31.2	39.8	60.9
	µg/m ³	Median	20.7	11.5	19.2	18.1	33.6

*Data unavailable due to less than 75% of data capture for the day as a result of annual calibration of monitoring equipment. All data miscaptures are to be recorded in the Annual Return.

3 Surface Water Monitoring Data

Date Sampled: No discharging occurred. Samples not required.

Date Obtained: N/A

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	0	0
	Total Suspended Solids	Milligrams per Litre	120	0	0

4 Blast Monitoring Data

Date Last Sampled: 31/05/2021

Date Obtained: 07/06/2021

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)
P123BR611A	3/05/2021	dB(L)	All Blasts 100%	115	120	89.71	87.64	91.58	93.76
WN43BAR03B_WN44ULP01A	4/05/2021	dB(L)		115	120	80.8	82.05	88.25	83.18
P207BR306A	5/05/2021	dB(L)		115	120	94.33	86.48	98.77	98.14
P207BR304A	8/05/2021	dB(L)		115	120	95.11	99.4	102.58	102.39
P208FCL02A	10/05/2021	dB(L)		115	120	84	84.07	104.97	92.36
P123BR609A	10/05/2021	dB(L)		115	120	89.51	93.57	101.67	97.09
P208WK903B	12/05/2021	dB(L)		115	120	87.24	85.8	97.66	98.17

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)
P207BR307A	12/05/2021	dB(L)		115	120	92.34	95.98	97.66	98.17
WN47LEC04A	13/05/2021	dB(L)		115	120	100.76	102.58	99.45	88.99
P208FCL03A	15/05/2021	dB(L)		115	120	81.57	86.38	100.05	92.79
P208WK904A	17/05/2021	dB(L)		115	120	93.19	91.29	96.32	96.3
P207BR304B	17/05/2021	dB(L)		115	120	95.79	97.12	99.82	103.12
WN45LLP01A_WN45ULP01A	18/05/2021	dB(L)		115	120	81.31	79.45	80.34	91.71
WN43BAR03C	18/05/2021	dB(L)		115	120	84.15	86.54	88.4	85.44
P208WK904B	19/05/2021	dB(L)		115	120	82.09	82.11	99.29	98.39
P208MA301A	19/05/2021	dB(L)		115	120	82.09	82.11	90.53	86.64
P208BR307B	20/05/2021	dB(L)		115	120	92.59	88.74	103.13	97.41

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)
P123BAC09A	22/05/2021	dB(L)		115	120	91.18	94.37	95.97	94.07
P123BR611B	22/05/2021	dB(L)		115	120	91.97	93.09	86.49	89.92
P124WK203A	24/05/2021	dB(L)		115	120	89.82	102.01	94.64	87.75
P207BR307C	26/05/2021	dB(L)		115	120	82.74	91.44	102.27	100.41
P208MA302A	26/05/2021	dB(L)		115	120	86.63	94.94	93.9	92.73
P208W9P06B	26/05/2021	dB(L)		115	120	83.51	89.63	101.42	91.29
WN47LEC05A	28/05/2021	dB(L)		115	120	94.42	86.66	101.59	85.42
P208FCL03B	29/05/2021	dB(L)		115	120	87.44	83.58	99.61	85.39
WN43BAR04A	31/05/2021	dB(L)		115	120	79.54	82.34	78.26	92.11
Monthly Meaningful Data									
May		dB(L)	Minimum	115	120	79.54	79.45	78.26	83.18

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)
		dB(L)	Mean	115	120	88.22	89.59	95.95	93.20
		dB(L)	Maximum	115	120	100.76	102.58	104.97	103.12
		dB(L)	Median	115	120	88.48	88.19	98.22	92.76

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
P123BR611A	3/05/2021	mm/s	All Blasts 100%	5	10	0.26	0.12	0.23	0.69
WN43BAR03B_WN44ULP01A	4/05/2021	mm/s		5	10	0.2	0.15	0.11	0.14
P207BR306A	5/05/2021	mm/s		5	10	0.17	0.05	0.58	1.11
P207BR304A	8/05/2021	mm/s		5	10	0.13	0.06	0.46	1
P208FCL02A	10/05/2021	mm/s		5	10	0.1	0.04	0.04	0.42
P123BR609A	10/05/2021	mm/s		5	10	0.22	0.08	0.17	0.76
P208WK903B	12/05/2021	mm/s		5	10	0.14	0.04	0.44	0.63
P207BR307A	12/05/2021	mm/s		5	10	0.14	0.06	0.44	1.15
WN47LEC04A	13/05/2021	mm/s		5	10	0.12	0.07	0.06	0.23
P208FCL03A	15/05/2021	mm/s		5	10	0.1	0.03	0.05	0.64

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
P208WK904A	17/05/2021	mm/s		5	10	0.17	0.08	0.24	0.67
P207BR304B	17/05/2021	mm/s		5	10	0.16	0.1	0.55	0.9
WN45LLP01A_WN45ULP01A	18/05/2021	mm/s		5	10	0.14	0.09	0.05	0.62
WN43BAR03C	18/05/2021	mm/s		5	10	0.13	0.16	0.09	0.6
P208WK904B	19/05/2021	mm/s		5	10	0.12	0.05	0.21	0.31
P208MA301A	19/05/2021	mm/s		5	10	0.1	0.03	0.05	0.24
P208BR307B	20/05/2021	mm/s		5	10	0.18	0.07	0.51	0.81
P123BAC09A	22/05/2021	mm/s		5	10	0.12	0.05	0.1	0.29
P123BR611B	22/05/2021	mm/s		5	10	0.24	0.08	0.26	0.61
P124WK203A	24/05/2021	mm/s		5	10	0.1	0.03	0.04	0.22

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
P207BR307C	26/05/2021	mm/s		5	10	0.17	0.05	0.61	0.97
P208MA302A	26/05/2021	mm/s		5	10	0.1	0.02	0.24	0.34
P208W9P06B	26/05/2021	mm/s		5	10	0.27	0.16	0.24	0.44
WN47LEC05A	28/05/2021	mm/s		5	10	0.12	0.08	0.06	0.69
P208FCL03B	29/05/2021	mm/s		5	10	0.1	0.03	0.06	0.22
WN43BAR04A	31/05/2021	mm/s		5	10	0.14	0.1	0.07	0.23
Monthly Meaningful Data									
May	mm/s	Minimum	5	10	0.10	0.02	0.04	0.14	
	mm/s	Mean	5	10	0.15	0.07	0.23	0.57	
	mm/s	Maximum	5	10	0.27	0.16	0.61	1.15	
	mm/s	Median	5	10	0.14	0.07	0.19	0.62	

5 Sewage Treatment Plant Monitoring Data

Date Sampled: 4/05/2021

Date Obtained: 15/06/2021

Table 5 Sewage Treatment Plant Monitoring

Monitoring Site	Date & Time	Pollutant	Unit of Measure	Monitoring Result
EPA ID 23	4/05/2021 10:40	Faecal Coliforms	Colony forming units/100ml	300,000
		pH	pH	7.38
EPA ID 25	4/05/2021 10:55	Faecal Coliforms	Colony forming units/100ml	<910
		pH	pH	6.96
EPA ID 26	4/05/2021 11:50	Faecal Coliforms	Colony forming units/100ml	13,000
		pH	pH	6.99
EPA ID 29	4/05/2021 12:35	Faecal Coliforms	Colony forming units/100ml	~270
		pH	pH	7.76

6 Noise Monitoring Data

Date Sampled: 17 - 18/05/2021

Date Obtained: 28/05/2021

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	Exceedance dB
EPA ID 36	17/05/2021 21:10:00	1.6	E	41	Yes	<25	Nil
EPA ID 37	17/05/2021 21:52:00	1.1	D	40	Yes	IA	Nil
EPA ID 38	17/05/2021 21:32:00	1	E	39	Yes	IA	Nil
EPA ID 39	17/05/2021 22:42:00	0.6	E	37	Yes	IA	Nil
EPA ID 40	17/05/2021 23:50:00	0.6	D	39	Yes	IA	Nil
EPA ID 41	17/05/2021 23:19:00	0	G	39	No	<25	NA
EPA ID 42	17/05/2021 21:13:00	1.6	E	40	Yes	32	Nil
EPA ID 43	17/05/2021 21:42:00	1.1	D	40	Yes	29	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;

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 LA1, 1min dB ³	Exceedance dB
EPA ID 36	17/05/2021 21:10:00	1.6	E	46	Yes	30	Nil
EPA ID 37	17/05/2021 21:52:00	1.1	D	46	Yes	IA	Nil
EPA ID 38	17/05/2021 21:32:00	1	E	46	Yes	IA	Nil
EPA ID 39	17/05/2021 22:42:00	0.6	E	46	Yes	IA	Nil
EPA ID 40	17/05/2021 23:50:00	0.6	D	46	Yes	IA	Nil
EPA ID 41	17/05/2021 23:19:00	0	G	46	No	<25	NA
EPA ID 42	17/05/2021 21:13:00	1.6	E	46	Yes	32	Nil
EPA ID 43	17/05/2021 21:42:00	1.1	D	46	Yes	29	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 LA1,1minute attributed to HVO;