

HUNTER VALLEY OPERATIONS



Environment Protection Licence 640 Monitoring Data – December 2022 Report



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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?ins tid=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

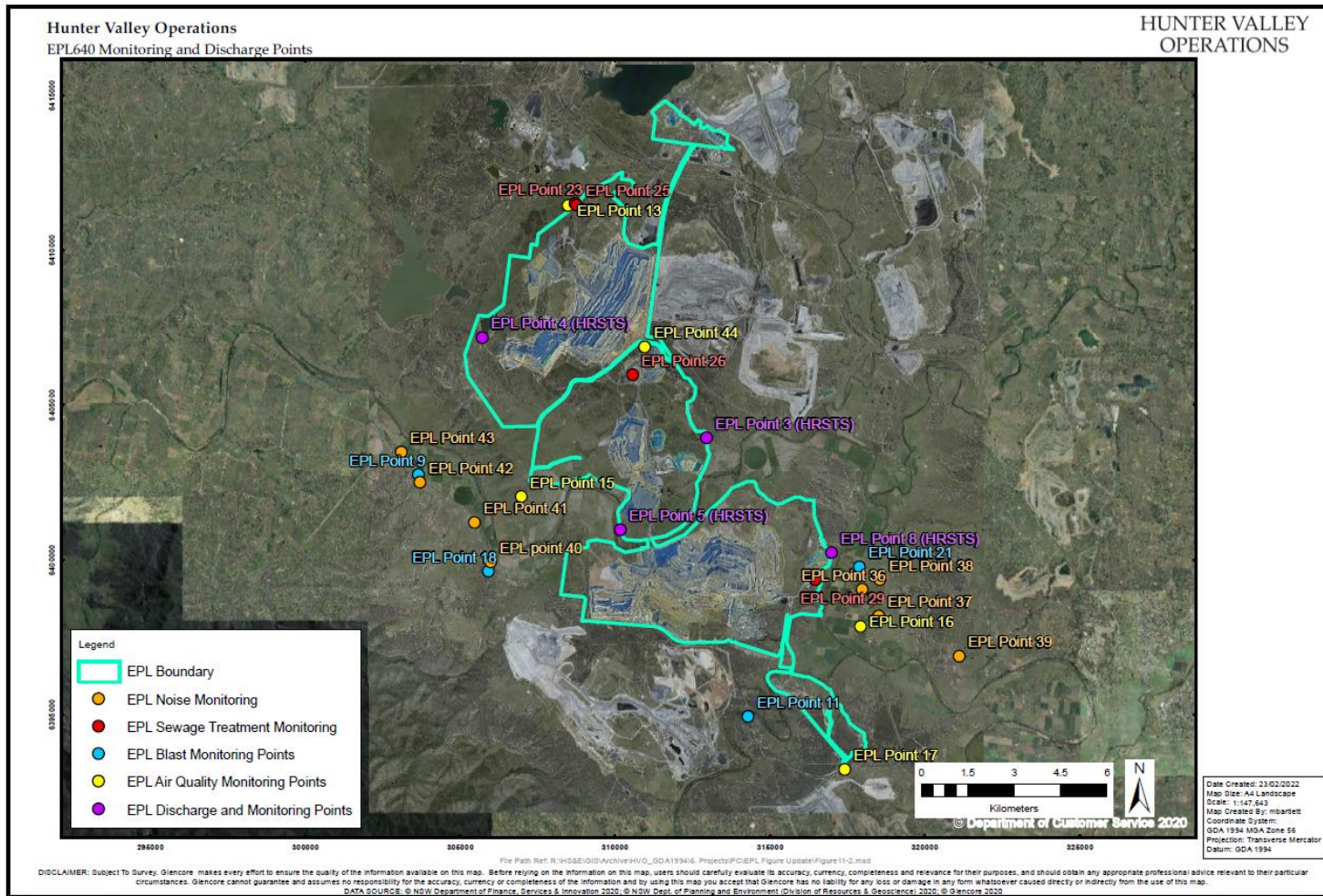


Figure 1 - EPL 640 Monitoring Locations

Number: HVOOC-1797567310-4521

Status: Approved

Effective: 09/03/2023

Owner: Environment and Community Coordinator

Version: 1.0

Review: [Planned Review Date]

3. Air Quality

Date Last Sampled: 30/12/2022

Date Obtained: 1/1/2023

Table 1- Particulate Matter Monitoring (<10µm)

Date	Unit of Measure	Monitoring Frequency & Capture	EPL ID 13 (Howick)	EPL ID 15 (Wandewoi)	EPL ID 16 (Knodlers Lane)	EPL ID 17 (Golden Highway)	EPL ID 44 (West Pit)
1/12/2022	µg/m ³	Continuous	31.4	25.0	22.9	26.0	26.5
2/12/2022	µg/m ³		36.1	22.7	22.9	31.3	20.9
3/12/2022	µg/m ³		27.7	20.6	17.2	21.1	16.7
4/12/2022	µg/m ³		25.4	19.4	15.9	24.7	17.8
5/12/2022	µg/m ³		31.2	17.3	29.3	37.3	92.2
6/12/2022	µg/m ³		37.7	30.5	31.6	28.2	38.6
7/12/2022	µg/m ³		23.0	15.9	25.6	24.5	38.3
8/12/2022	µg/m ³		23.7	20.0	20.4	16.7	34.4
9/12/2022	µg/m ³		52.8	29.2	28.8	34.4	40.7
10/12/2022	µg/m ³		34.0	19.9	25.1	23.4	21.0
11/12/2022	µg/m ³		26.5	21.1	22.6	29.6	56.9
12/12/2022	µg/m ³		25.6	20.6	27.7	31.5	57.4
13/12/2022	µg/m ³		14.2	12.8	19.8	17.3	0.0*
14/12/2022	µg/m ³		17.1	12.2	22.3	24.0	58.9
15/12/2022	µg/m ³		31.3	16.6	21.6	24.3	23.0
16/12/2022	µg/m ³		33.2	22.2	21.4	21.2	18.0
17/12/2022	µg/m ³		30.7	18.7	18.2	19.6	18.2
18/12/2022	µg/m ³		19.9	14.4	10.0	14.8	12.9
19/12/2022	µg/m ³		36.9	19.1	19.5	29.8	24.7
20/12/2022	µg/m ³		40.2	21.2	23.4	30.6	30.9

Date	Unit of Measure	Monitoring Frequency & Capture	EPL ID 13 (Howick)	EPL ID 15 (Wandewoi)	EPL ID 16 (Knodlers Lane)	EPL ID 17 (Golden Highway)	EPL ID 44 (West Pit)
21/12/2022	µg/m ³		37.5	19.7	17.1	27.9	26.5
22/12/2022	µg/m ³		39.2	23.1	14.3	24.2	27.1
23/12/2022	µg/m ³		20.7	12.1	14.8	20.4	30.8
24/12/2022	µg/m ³		14.7	10.6	13.1	19.3	14.3
25/12/2022	µg/m ³		13.7	13.5	17.6	16.4	15.4
26/12/2022	µg/m ³		0.0*	13.5	12.8	13.7	9.6
27/12/2022	µg/m ³		24.7	21.3	14.6	14.5	14.1
28/12/2022	µg/m ³		33.0	21.8	16.7	15.8	34.8
29/12/2022	µg/m ³		48.3	25.2	22.8	42.0	36.9
30/12/2022	µg/m ³		35.9	22.5	24.9	22.0	20.5
Monthly Meaningful Data							
December	µg/m ³	Minimum	0.0	10.6	10.0	13.7	0.0
	µg/m ³	Mean	28.8	19.4	20.4	24.1	28.8
	µg/m ³	Maximum	52.8	30.5	31.6	42.0	92.2
	µg/m ³	Median	30.7	19.9	20.4	24.0	24.7

* - Less than 75% data capture

4. Surface Water Monitoring Data

Date Sampled:

EPL ID 3: - Nil

EPL ID 4: 1/12/2022, 2/12/2022, 5/12/2022, 6/12/2022, 7/12/2022, 8/12/2022, 9/12/2022, 13/12/2022, 14/12/2022, 15/12/2022

EPL ID 8: - Nil

Date Obtained:

EPL ID 3: - Nil

EPL ID 4: 2/12/2022, 5/12/2022, 6/12/2022, 7/12/2022, 8/12/2022, 9/12/2022, 12/12/2022, 14/12/2022, 15/12/2022, 16/12/2022

EPL ID 8: - Nil

Table 2- HRSTS 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	10	10
	Total Suspended Solids	Milligrams per Litre	120	10	10
EPL ID 8 (Dam 15S)	pH	pH	6.5-9.5	0	0
	Total Suspended Solids	Milligrams per Litre	120	0	0

5. Blast Monitoring Data

Date Last Sampled: 1/12/2022

Date Obtained: 1/01/2023

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	Moses Crossing EPL ID 18	Jerrys Plains EPL ID 9	Maison Dieu EPL ID 21	Warkworth EPL ID 11
M1T2ULD04A	1/12/2022 13:00	dB(L)	All blasts 100%	115	120	102.52	106.21	100	111.45
WN49LEB01A_WN49LEP01A	2/12/2022 13:25	dB(L)		115	120	104.15	105.32	104.4	86.74
WS49ARC02A	5/12/2022 13:23	dB(L)		115	120	101.63	99.51	93.87	99.58
WS4910801A	5/12/2022 13:25	dB(L)		115	120	100.34	93.14	98.58	95.48
P20900101A_P209WP02A	6/12/2022 13:28	dB(L)		115	120	87.94	103.89	105.61	102.99
P20900902A	6/12/2022 13:30	dB(L)		115	120	101.29	104.94	99.89	98.36
WN45BAR06A	7/12/2022 13:08	dB(L)		115	120	88.94	98.8	93.1	93.54

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 21	Warkworth EPL ID 11
M1T2ULD07A	8/12/2022 12:53	dB(L)	All blasts 100%	115	120	97.17	99.34	87.99	85.44
WN49LEB02A	10/12/2022 12:59	dB(L)		115	120	95.91	103.36	97.67	84.1
P20900102A	13/12/2022 14:01	dB(L)		115	120	110.74	113.87	100.6	96.29
P209WK609A	13/12/2022 14:02	dB(L)		115	120	93.05	113.34	96.75	96.01
P208BR304C	16/12/2022 13:04	dB(L)		115	120	87.31	104.2	100.44	98.36
WS49BAY16A	17/12/2022 16:30	dB(L)		115	120	100.56	112.19	97.97	83.41
WN49LEA01A_WN49LEP01A	19/12/2022 13:40	dB(L)		115	120	100.12	98.55	86.23	94.29
WS49ARC04A	19/12/2022 13:43	dB(L)		115	120	108.61	95.91	86.61	86.36
P20900103/04A	20/12/2022 12:23	dB(L)		115	120	99.93	88.63	101.12	91.04
WN47BAP01A	20/12/2022 13:20	dB(L)		115	120	101.17	102.51	94.68	85.99

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 21	Warkworth EPL ID 11
WN47LLD01B	22/12/2022 13:16	dB(L)		115	120	86.34	88.91	86.65	85.68
WS46ULD03A_WS46ULP03A	22/12/2022 13:17	dB(L)		115	120	88.64	91.88	89.48	88.7
M1T2ULD08A	23/12/2022 13:44	dB(L)		115	120	86.96	102.61	89.61	99.76
M1T313601A	23/12/2022 13:45	dB(L)		115	120	95.36	104.35	85.46	94.7
P20900104B	31/12/2022 13:34	dB(L)		115	120	95.1	102.2	94.95	89.74
Monthly Meaningful Data									
December	dB(L)	Minimum	115	120	86.34	88.63	85.46	83.41	
	dB(L)	Mean	115	120	96.99	101.53	95.08	93.09	
	dB(L)	Maximum	115	120	110.74	113.87	105.61	111.45	
	dB(L)	Median	115	120	98.55	102.56	95.85	93.92	

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 21	Warkworth EPL ID 11
M1T2ULD04A	1/12/2022 13:00	mm/s	All Blasts 100%	5	10	0.2	0.05	0.11	1.73
WN49LEB01A_WN49LEP01A	2/12/2022 13:25	mm/s		5	10	0.13	0.05	0.05	0.5
WS49ARC02A	5/12/2022 13:23	mm/s		5	10	0.13	0.07	0.05	0.63
WS4910801A	5/12/2022 13:25	mm/s		5	10	0.14	0.08	0.05	0.14
P20900101A_P209WP02A	6/12/2022 13:28	mm/s		5	10	0.18	0.06	0.43	1.04
P20900902A	6/12/2022 13:30	mm/s		5	10	0.13	0.04	0.14	0.35
WN45BAR06A	7/12/2022 13:08	mm/s		5	10	0.13	0.08	0.04	0.58
M1T2ULD07A	8/12/2022 12:53	mm/s		5	10	0.14	0.11	0.04	0.63
WN49LEB02A	10/12/2022 12:59	mm/s		5	10	0.14	0.06	0.05	0.14
P20900102A	13/12/2022 14:01	mm/s		5	10	0.18	0.18	0.27	0.69
P209WK609A	13/12/2022 14:02	mm/s		5	10	0.14	0.07	0.25	0.52
P208BR304C	16/12/2022 13:04	mm/s		5	10	0.19	0.07	0.47	0.63
WS49BAY16A	17/12/2022 16:30	mm/s		5	10	0.13	0.06	0.04	0.17

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 21	Warkworth EPL ID 11
WN49LEA01A_WN49LEP01A	19/12/2022 13:40	mm/s		5	10	0.16	0.15	0.07	0.3
WS49ARC04A	19/12/2022 13:43	mm/s		5	10	0.12	0.07	0.05	0.13
P20900103/04A	20/12/2022 12:23	mm/s		5	10	0.14	0.06	0.21	0.52
WN47BAP01A	20/12/2022 13:20	mm/s		5	10	0.12	0.12	0.05	0.12
WN47LLD01B	22/12/2022 13:16	mm/s		5	10	0.12	0.1	0.05	0.41
WS46ULD03A_WS46ULP03A	22/12/2022 13:17	mm/s		5	10	0.15	0.09	0.06	0.29
M1T2ULD08A	23/12/2022 13:44	mm/s		5	10	0.11	0.05	0.03	0.19
M1T313601A	23/12/2022 13:45	mm/s		5	10	0.16	0.14	0.05	0.23
P20900104B	31/12/2022 13:34	mm/s		5	10	0.2	0.09	0.7	1.28
Monthly Meaningful Data									
December		mm/s	Minimum	5	10	0.11	0.04	0.03	0.12
		mm/s	Mean	5	10	0.15	0.08	0.15	0.51
		mm/s	Maximum	5	10	0.20	0.18	0.70	1.73
		mm/s	Median	5	10	0.14	0.07	0.05	0.46

6. Sewage Treatment Plant Monitoring Data

Date Sampled: 7 December 2022

Date Obtained: 10 January 2023

Table 4 Sewage Treatment Plant Monitoring

Monitoring Site	Date & Time	Pollutant	Unit of Measure	Monitoring Result
EPA ID 23	7/12/2022 08:15	Faecal Coliforms	Colony forming units/100ml	770000
		pH	pH	7.03
EPA ID 25	7/12/2022 08:25	Faecal Coliforms	Colony forming units/100ml	53000
		pH	pH	6.90
EPA ID 26	7/12/2022 09:40	Faecal Coliforms	Colony forming units/100ml	770000
		pH	pH	7.26
EPA ID 29	7/12/2022 11:25	Faecal Coliforms	Colony forming units/100ml	1300
		pH	pH	9.62

7. Noise Monitoring Data

Date Sampled: 1/12/2022

Date Obtained: 13/01/2023

Table 5 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	1/12/2022 21:00	4	E	41	No	IA	NA
EPA ID 37	1/12/2022 21:40	4.9	D	40	No	IA	NA
EPA ID 38	1/12/2022 21:19	4.3	D	39	No	IA	NA
EPA ID 39	1/12/2022 22:32	3.9	E	37	No	IA	NA
EPA ID 40	1/12/2022 23:39	3.2	D	39	No	NM	NA
EPA ID 41	1/12/2022 23:13	3.4	E	39	No	30	NA
EPA ID 42	1/12/2022 21:21	4.3	D	40	No	<25	NA
EPA ID 43	1/12/2022 21:00	4	E	40	No	IA	NA

Notes:

1. Atmospheric data is sourced from the HVO Cheshunt 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, including modifying factors if applicable;
4. Bold results in red indicate exceedance of criterion; and
5. NA in exceedance column means atmospheric conditions outside specified in approval, therefore criterion was not applicable.

Table 6 Night $L_{A1, 1 \text{ minute}}$ 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	1/12/2022 21:00	4	E	46	No	IA	NA
EPA ID 37	1/12/2022 21:40	4.9	D	46	No	IA	NA
EPA ID 38	1/12/2022 21:19	4.3	D	46	No	IA	NA
EPA ID 39	1/12/2022 22:32	3.9	E	46	No	IA	NA
EPA ID 40	1/12/2022 23:39	3.2	D	46	No	42	NA
EPA ID 41	1/12/2022 23:13	3.4	E	46	No	30	NA
EPA ID 42	1/12/2022 21:21	4.3	D	46	No	32	NA
EPA ID 43	1/12/2022 21:00	4	E	46	No	IA	NA

Notes:

1. Atmospheric data is sourced from the HVO Cheshunt 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 $L_{A1, 1 \text{ minute}}$ 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.