

HUNTER VALLEY OPERATIONS



Environment Protection Licence 640 Monitoring Data – October 2022 Report

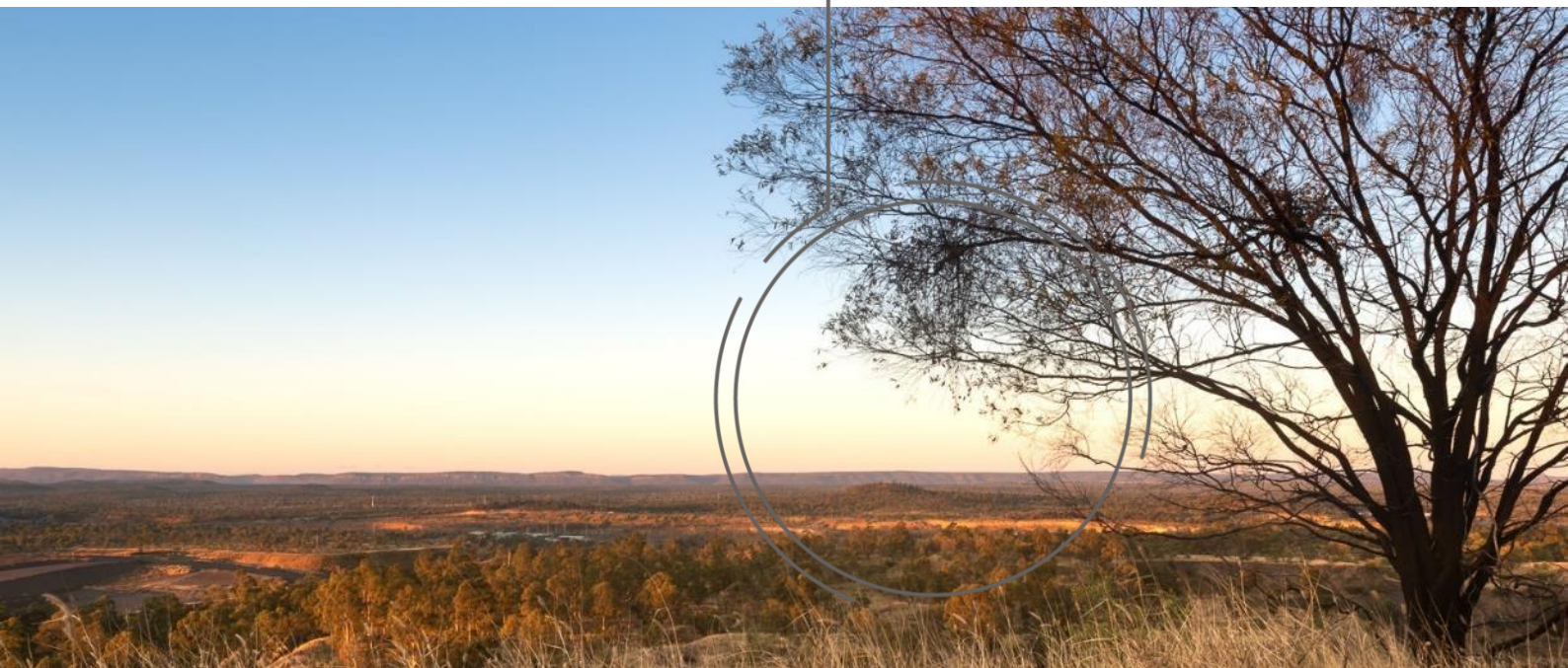


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Number: HVOOC-1797567310-4451

Status: Approved

Effective: 12/12/2022

Owner: Environment and Community Officer

Version: 1.0

Review: [Planned
Review Date]

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 |

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| | |
|-----|---|
| TSS | Total Suspended Solids |
| t | tonnes |
| YTD | Year To Date - rolling 12 month average |

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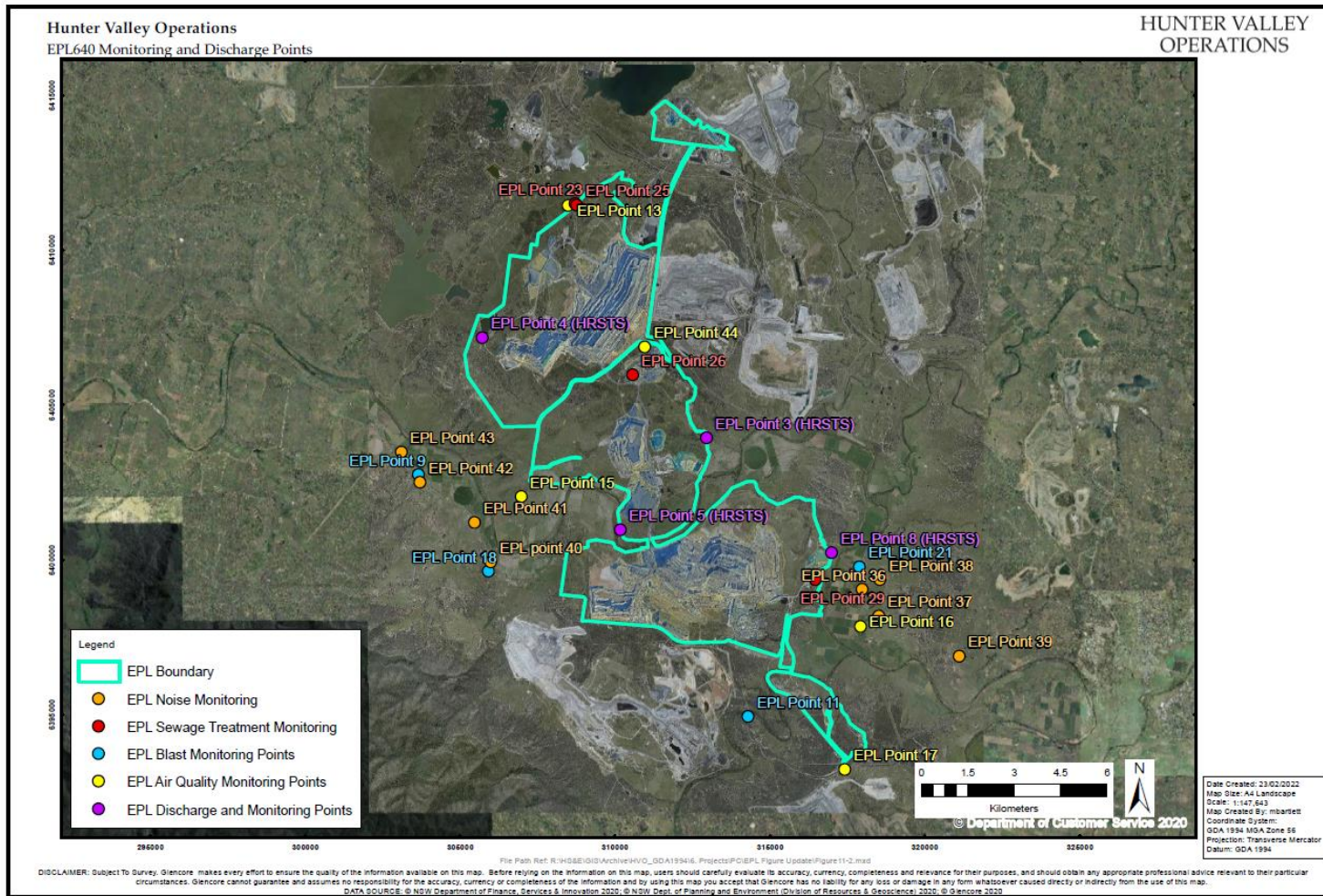
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3. Air Quality

Date Last Sampled: 31/10/2022

Date Obtained: 1/11/2022

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) |
|------------|-------------------|--------------------------------|--------------------|----------------------|---------------------------|----------------------------|----------------------|
| 1/10/2022 | µg/m ³ | Continuous | 18.9 | 15.3 | 11.1 | 15.2 | 14.5 |
| 2/10/2022 | µg/m ³ | | 16.0 | 12.7 | 11.8 | 13.8 | 14.9 |
| 3/10/2022 | µg/m ³ | | 16.4 | 12.3 | 9.1 | 10.7 | 20.5 |
| 4/10/2022 | µg/m ³ | | 27.9 | 18.2 | 17.7 | 22.5 | 37.0 |
| 5/10/2022 | µg/m ³ | | 16.8 | 14.0 | 9.7 | 15.0 | 12.7 |
| 6/10/2022 | µg/m ³ | | 10.3 | 8.3 | 6.8 | 8.4 | 12.0 |
| 7/10/2022 | µg/m ³ | | 10.6 | 9.9 | 6.5 | 11.4 | 14.5 |
| 8/10/2022 | µg/m ³ | | 8.9 | 11.1 | 9.6 | 10.3 | 12.9 |
| 9/10/2022 | µg/m ³ | | 6.2 | 6.4 | 5.4 | 6.2 | 6.5 |
| 10/10/2022 | µg/m ³ | | 18.8 | 16.6 | 14.5 | 14.9 | 18.2 |
| 11/10/2022 | µg/m ³ | | 14.8 | 15.6 | 15.9 | 13.0 | 14.9 |
| 12/10/2022 | µg/m ³ | | 17.9 | 15.1 | 19.4 | 12.3 | 20.0 |
| 13/10/2022 | µg/m ³ | | 21.4 | 17.6 | 13.6 | 11.2 | 19.8 |
| 14/10/2022 | µg/m ³ | | 11.9 | 10.5 | 16.4 | 13.6 | 31.3 |
| 15/10/2022 | µg/m ³ | | 13.8 | 14.9 | 17.3 | 14.4 | 36.0 |
| 16/10/2022 | µg/m ³ | | 19.2 | 17.3 | 19.9 | 22.7 | 33.7 |
| 17/10/2022 | µg/m ³ | | 22.7 | 13.7 | 20.2 | 26.0 | 22.1 |
| 18/10/2022 | µg/m ³ | | 27.0 | 17.3 | 16.6 | 23.3 | 19.6 |
| 19/10/2022 | µg/m ³ | | 16.8 | 17.0 | 18.7 | 23.8 | 20.5 |
| 20/10/2022 | µg/m ³ | | 9.5 | 10.7 | 11.0 | 13.0 | 11.9 |

| 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) |
|-------------------------|-------------------|--------------------------------|--------------------|----------------------|---------------------------|----------------------------|----------------------|
| 21/10/2022 | µg/m ³ | | 8.2 | 28.7 | 7.3 | 8.3 | 8.7 |
| 22/10/2022 | µg/m ³ | | 11.8 | 10.0 | 10.0 | 13.0 | * |
| 23/10/2022 | µg/m ³ | | 8.3 | 11.4 | 9.3 | 10.9 | 10.8 |
| 24/10/2022 | µg/m ³ | | 11.6 | 11.3 | 8.5 | 16.7 | 12.3 |
| 25/10/2022 | µg/m ³ | | 10.9 | 11.8 | 12.3 | 16.7 | 18.1 |
| 26/10/2022 | µg/m ³ | | 10.4 | 8.1 | 16.7 | 12.5 | 18.3 |
| 27/10/2022 | µg/m ³ | | 13.6 | 7.9 | 17.1 | 12.8 | 25.0 |
| 28/10/2022 | µg/m ³ | | 13.5 | 10.8 | 23.4 | 18.0 | 34.9 |
| 29/10/2022 | µg/m ³ | | 17.3 | 9.3 | 18.8 | 16.3 | 29.0 |
| 30/10/2022 | µg/m ³ | | 25.1 | 15.1 | 15.3 | 17.9 | 29.6 |
| 31/10/2022 | µg/m ³ | | 26.6 | 21.9 | 19.3 | 35.5 | 52.3 |
| Monthly Meaningful Data | | | | | | | |
| October | µg/m ³ | Minimum | 6.2 | 6.4 | 5.4 | 6.2 | 6.5 |
| | µg/m ³ | Mean | 15.6 | 13.6 | 13.8 | 15.5 | 21.1 |
| | µg/m ³ | Maximum | 27.9 | 28.7 | 23.4 | 35.5 | 52.3 |
| | µg/m ³ | Median | 14.8 | 12.7 | 14.5 | 13.8 | 18.9 |

* - Less than 75% data

4. Surface Water Monitoring Data

Date Sampled:

EPL ID 3: 24/10/2022

EPL ID 4: 12/10/22, 13/10/22, 14/10/22, 20/10/22, 21/10/22, 25/10/22, 26/10/22

EPL ID 8: 4/10/22, 7/10/22, 10/10/22, 11/10/22, 12/10/22, 13/10/22, 17/10/22, 18/10/22, 19/10/22, 24/10/22, 25/10/22, 26/10/22, 28/10/22, 31/10/22

Date Obtained:

EPL ID 3: 25/10/22

EPL ID 4: 14/10/22, 14/10/22, 18/10/22, 21/10/22, 24/10/22, 26/10/22, 3/11/22

EPL ID 8: 6/10/22, 6/10/22, 12/10/22, 12/10/22, 13/10/22, 13/10/22, 14/10/22, 19/10/22, 19/10/22, 20/10/22, 25/10/22, 25/10/22, 26/10/22, 1/11/22, 1/11/22

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 | 1 | 1 |
| | Total Suspended Solids | Milligrams per Litre | 120 | 1 | 1 |
| EPL ID 4 (Dam 9W) | pH | pH | 6.5-9.5 | 7 | 7 |
| | Total Suspended Solids | Milligrams per Litre | 120 | 7 | 7 |
| EPL ID 8 (Dam 15S) | pH | pH | 6.5-9.5 | 14 | 14 |
| | Total Suspended Solids | Milligrams per Litre | 120 | 14 | 14 |

5. Blast Monitoring Data

Date Last Sampled: 29/10/2022

Date Obtained: 1/11/2022

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 |
| M1T212501A | 1/10/2022 13:23 | dB(L) | All blasts 100% | 115 | 120 | 99.93 | 109.48 | 101.31 | 94.49 |
| P209BR104C_P209BR105A | 4/10/2022 13:56 | dB(L) | | 115 | 120 | 90.4 | 87.05 | 94.58 | 92.88 |
| P20902002A | 7/10/2022 15:29 | dB(L) | | 115 | 120 | 89.69 | 90.39 | 96.75 | 95.94 |
| P12506405A | 8/10/2022 13:01 | dB(L) | | 115 | 120 | 93.07 | 90.55 | 92.59 | 95.77 |
| WS49BAY14A | 11/10/2022 13:14 | dB(L) | | 115 | 120 | 92.04 | 109.9 | 99.23 | 95.22 |
| M1T2ULD06A | 12/10/2022 13:32 | dB(L) | | 115 | 120 | 93.86 | 99.91 | 101.25 | 88.3 |
| WN45U2A02A_WN45BAP06A | 15/10/2022 15:56 | dB(L) | | 115 | 120 | 83.62 | 92.74 | 86.78 | 84.03 |

| 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 |
| RW37WHA06A_RW37WAP01A | 17/10/2022 8:59 | dB(L) | All blasts 100% | 115 | 120 | 105.92 | 102.13 | 94.93 | 88.94 |
| P209WK607A_P209WK608A | 17/10/2022 15:04 | dB(L) | | 115 | 120 | 105.15 | 100.05 | 105.81 | 100.92 |
| WS49BAY15A | 19/10/2022 13:01 | dB(L) | | 115 | 120 | 88 | 88.59 | 87.11 | 85.71 |
| WN44BAR03C | 24/10/2022 14:16 | dB(L) | | 115 | 120 | 81.45 | 82.29 | 85.54 | 89.49 |
| RW37WHA06B_RW37WHA07A | 27/10/2022 9:56 | dB(L) | | 115 | 120 | 93.89 | 103.5 | 100.59 | 106.51 |
| P125WK504A | 29/10/2022 9:43 | dB(L) | | 115 | 120 | 101.89 | 97.09 | 101.03 | 103.36 |
| Monthly Meaningful Data | | | | | | | | | |
| October | dB(L) | Minimum | 115 | 120 | 81.45 | 82.29 | 85.54 | 84.03 | |
| | dB(L) | Mean | 115 | 120 | 93.76 | 96.44 | 95.96 | 93.97 | |
| | dB(L) | Maximum | 115 | 120 | 105.92 | 109.90 | 105.81 | 106.51 | |
| | dB(L) | Median | 115 | 120 | 93.07 | 97.09 | 96.75 | 94.49 | |

| 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 |
| M1T212501A | 1/10/2022 13:23 | mm/s | All Blasts 100% | 5 | 10 | 0.13 | 0.11 | 0.05 | 0.93 |
| P209BR104C_P209BR105A | 4/10/2022 13:56 | mm/s | | 5 | 10 | 0.23 | 0.07 | 0.42 | 0.87 |
| P20902002A | 7/10/2022 15:29 | mm/s | | 5 | 10 | 0.14 | 0.04 | 0.28 | 0.83 |
| P12506405A | 8/10/2022 13:01 | mm/s | | 5 | 10 | 0.13 | 0.03 | 0.05 | 0.23 |
| WS49BAY14A | 11/10/2022 13:14 | mm/s | | 5 | 10 | 0.22 | 0.1 | 0.13 | 0.96 |
| M1T2ULD06A | 12/10/2022 13:32 | mm/s | | 5 | 10 | 0.14 | 0.05 | 0.03 | 0.33 |
| WN45U2A02A_WN45BAP06A | 15/10/2022 15:56 | mm/s | | 5 | 10 | 0.14 | 0.18 | 0.07 | 0.19 |
| RW37WHA06A_RW37WAP01A | 17/10/2022 8:59 | mm/s | | 5 | 10 | 0.43 | 0.08 | 0.07 | 0.44 |
| P209WK607A_P209WK608A | 17/10/2022 15:04 | mm/s | | 5 | 10 | 0.19 | 0.08 | 0.26 | 0.97 |
| WS49BAY15A | 19/10/2022 13:01 | mm/s | | 5 | 10 | 0.25 | 0.14 | 0.1 | 0.15 |
| WN44BAR03C | 24/10/2022 14:16 | mm/s | | 5 | 10 | 0.17 | 0.12 | 0.05 | 0.25 |
| RW37WHA06B_RW37WHA07A | 27/10/2022 9:56 | mm/s | | 5 | 10 | 0.43 | 0.04 | 0.04 | 0.5 |
| P125WK504A | 29/10/2022 9:43 | mm/s | | 5 | 10 | 0.12 | 0.02 | 0.03 | 0.24 |

Monthly Meaningful Data

| Monthly Meaningful Data | | | | | | | | |
|-------------------------|------|---------|---|----|------|------|------|------|
| October | mm/s | Minimum | 5 | 10 | 0.12 | 0.02 | 0.03 | 0.15 |
| | mm/s | Mean | 5 | 10 | 0.21 | 0.08 | 0.12 | 0.53 |
| | mm/s | Maximum | 5 | 10 | 0.43 | 0.18 | 0.42 | 0.97 |
| | mm/s | Median | 5 | 10 | 0.17 | 0.08 | 0.07 | 0.44 |

6. Sewage Treatment Plant Monitoring Data

Date Sampled: 4 October 2022

Date Obtained: 16 November 2022

Table 4 Sewage Treatment Plant Monitoring

| Monitoring Site | Date & Time | Pollutant | Unit of Measure | Monitoring Result |
|-----------------|--------------------------|------------------|----------------------------|-------------------|
| EPA ID 23 | 4/10/2022 8:10:00 AM | Faecal Coliforms | Colony forming units/100ml | 350000 |
| | | pH | pH | 6.86 |
| EPA ID 25 | 4/10/2022 8:20:00 AM | Faecal Coliforms | Colony forming units/100ml | 5600 |
| | | pH | pH | 7.17 |
| EPA ID 26 | 4/10/2022 10:10:00 AM | Faecal Coliforms | Colony forming units/100ml | 210000 |
| | | pH | pH | 7.59 |
| EPA ID 29 | 04/10/2022 11:30:00 | Faecal Coliforms | Colony forming units/100ml | ~55 |
| | | pH | pH | 9.2 |

7. Noise Monitoring Data

Date Sampled: 13/10/2022

Date Obtained: 8/11/2022

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 | 13/10/2022 21:00 | 3.5 | E | 41 | No | IA | NA |
| EPA ID 37 | 13/10/2022 21:42 | 3.5 | E | 40 | No | IA | NA |
| EPA ID 38 | 13/10/2022 21:21 | 3.5 | E | 39 | No | IA | NA |
| EPA ID 39 | 13/10/2022 22:30 | 2.6 | E | 37 | Yes | IA | Nil |
| EPA ID 40 | 13/10/2022 23:51 | 2.6 | E | 39 | Yes | 34 | Nil |
| EPA ID 41 | 13/10/2022 23:25 | 2.6 | D | 39 | Yes | 37 | Nil |
| EPA ID 42 | 13/10/2022 21:40 | 3.5 | E | 40 | No | 37 | NA |
| EPA ID 43 | 13/10/2022 21:11 | 3.5 | E | 40 | No | 34 | 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 | 13/10/2022 21:00 | 3.5 | E | 46 | No | IA | NA |
| EPA ID 37 | 13/10/2022 21:42 | 3.5 | E | 46 | No | IA | NA |
| EPA ID 38 | 13/10/2022 21:21 | 3.5 | E | 46 | No | IA | NA |
| EPA ID 39 | 13/10/2022 22:30 | 2.6 | E | 46 | Yes | IA | Nil |
| EPA ID 40 | 13/10/2022 23:51 | 2.6 | E | 46 | Yes | 39 | Nil |
| EPA ID 41 | 13/10/2022 23:25 | 2.6 | D | 46 | Yes | 37 | Nil |
| EPA ID 42 | 13/10/2022 21:40 | 3.5 | E | 46 | No | 43 | NA |
| EPA ID 43 | 13/10/2022 21:11 | 3.5 | E | 46 | No | 39 | 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.