

# HUNTER VALLEY OPERATIONS



---

## Monthly Environmental Monitoring Report July 2022

**Document Number:** HVOOC-1797567310-4321

**Status:** Approved

**Version:** 1.0

**Effective:** 19/08/2022

**Owner:** Environment and Community Coordinator

## Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>4</b>
<b>2</b>	<b>Air Quality .....</b>	<b>4</b>
2.1	Meteorological Monitoring .....	4
2.1.1	Rainfall.....	4
2.1.2	Wind Speed and Direction .....	5
2.2	Depositional Dust.....	7
2.3	Suspended Particles.....	8
2.3.1	HVAS PM <sub>10</sub> Results.....	8
2.3.2	HVAS PM <sub>2.5</sub> Results .....	10
2.3.3	TSP Results.....	12
2.3.4	Real Time PM <sub>10</sub> Results .....	13
2.3.5	Real Time Alarms for Air Quality .....	14
<b>3</b>	<b>Water Quality .....</b>	<b>15</b>
3.1	Surface Water .....	15
3.1.1	Surface Water Trigger Tracking .....	17
3.2	Site Water Use.....	17
3.3	HRSTS Discharge .....	17
3.4	Groundwater Monitoring Results .....	17
3.4.1	Groundwater Trigger Tracking .....	19
<b>4</b>	<b>Blasting.....</b>	<b>19</b>
4.1	Blast Monitoring Results .....	20
<b>5</b>	<b>Noise .....</b>	<b>23</b>
5.1	Attended Noise Monitoring Results .....	23
5.2	Low Frequency Assessment .....	29
5.3	Real Time Noise Monitoring .....	31
<b>6</b>	<b>Operational Downtime .....</b>	<b>33</b>
<b>7</b>	<b>Rehabilitation .....</b>	<b>34</b>
<b>8</b>	<b>Complaints .....</b>	<b>35</b>
<b>9</b>	<b>Environmental Incidents .....</b>	<b>37</b>

## Table of Figures

Figure 1 - Rainfall Summary 2022 .....	4
Figure 2 - HVO Corporate Wind Rose for the Reporting Period .....	5
Figure 3 - HVO Cheshunt Wind Rose for the Reporting Period .....	5
Figure 4 - Air Quality Monitoring Location Plan .....	6
Figure 5 - Depositional Dust Results for the Reporting Period.....	7
Figure 6 - Individual PM <sub>10</sub> Results for the Reporting Period .....	8
Figure 7 - Year to Date Average PM <sub>10</sub> as at end of the Reporting Period.....	9
Figure 8 - Individual PM <sub>2.5</sub> Results for the Reporting Period .....	10
Figure 9 - Year to Date Average PM <sub>2.5</sub> as at end of the Reporting Period.....	11
Figure 10 - Year to Date Average Total Suspended Particulates as at end of the Reporting Period .....	12
Figure 11 - Real Time PM <sub>10</sub> 24hr for the Reporting Period .....	13
Figure 12 - Real Time PM <sub>10</sub> Annual Average July 2022.....	14
Figure 13 - HVO Surface Water Monitoring Locations .....	16
Figure 14 Groundwater monitoring Locations at HVO .....	18
Figure 15 - Blast Monitoring Location Plan.....	22
Figure 16 - Noise Monitoring Location Plan .....	32
Figure 17 - Operational Downtime by Equipment Type for the reporting period.....	33
Figure 18 - Rehabilitation YTD July 2022.....	34
Table 1 - Rainfall data for the reporting period	4
Table 2 - Blasting Criteria	19
Table 3 - Overpressure Blast Monitoring Results for the reporting period	20
Table 4 - Ground Vibration Blast Monitoring Results for the reporting period	21
Table 5 - LAeq,15minute HVO North Against Impact Assessment Criteria for the Reporting Period	24
Table 6 - LAeq,15minute HVO North Against Land Acquisition Criteria for the Reporting Period	25
Table 7 - LA1,1minute HVO North Against Impact Assessment Criteria for the Reporting Period	26
Table 8 - LAeq,15minute HVO South Against Impact Assessment Criteria for the Reporting Period	27
Table 9 - LA1,1minute HVO South Against Impact Assessment Criteria for the Reporting Period	28
Table 10 - Modifying Factor Assessment HVO North for the Reporting Period	29
Table 11 - Modifying Factor Assessment HVO South for the Reporting Period	30
Table 12 - Complaints Summary 2022	35

# 1 Introduction

This report has been compiled to provide a monthly summary of environmental monitoring results for Hunter Valley Operations (HVO). This report includes all monitoring data collected for the period 1<sup>st</sup> to 31<sup>st</sup> July 2022 (the 'Reporting Period').

## 2 Air Quality

### 2.1 Meteorological Monitoring

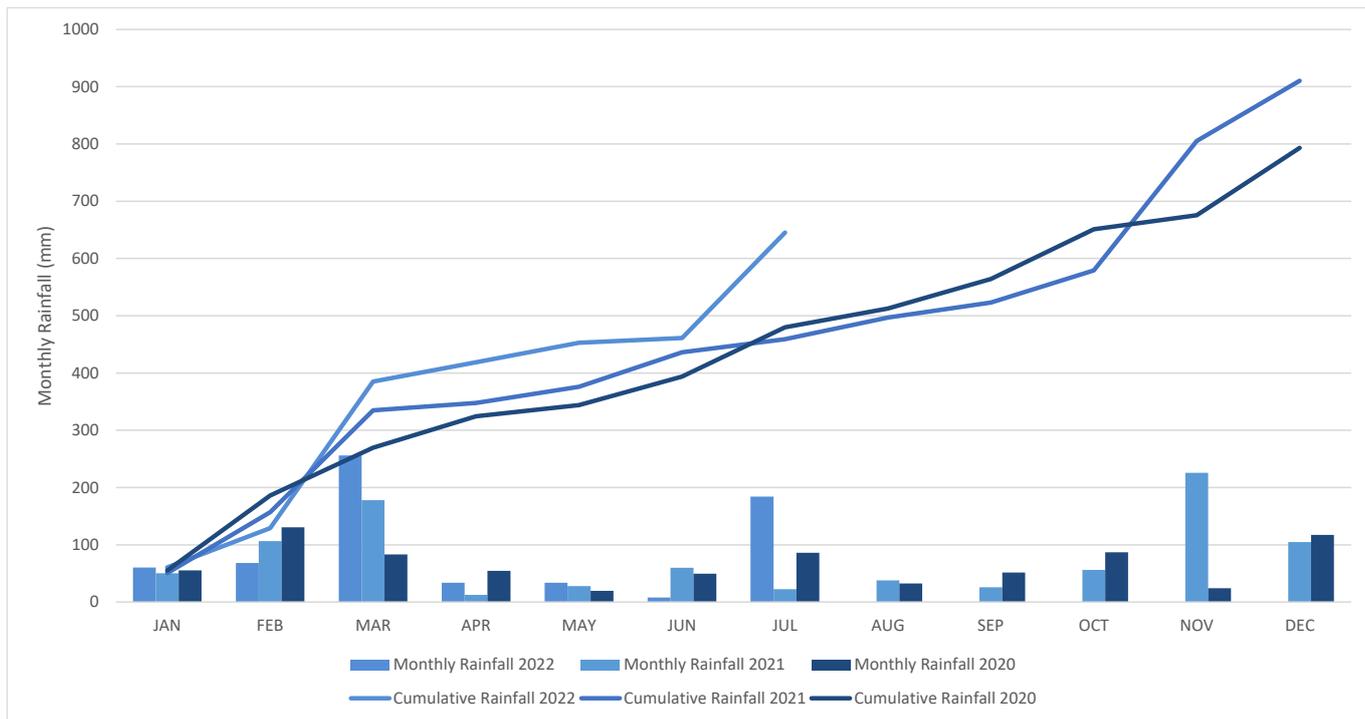
HVO maintains two meteorological stations: 'HVO Corporate' and 'Cheshunt' (refer to **Figure 4**).

#### 2.1.1 Rainfall

Rainfall for the period is summarised in **Table 1**. The 2020, 2021 and 2022 trends are shown in **Figure 1**.

**Table 1 - Rainfall data for the reporting period**

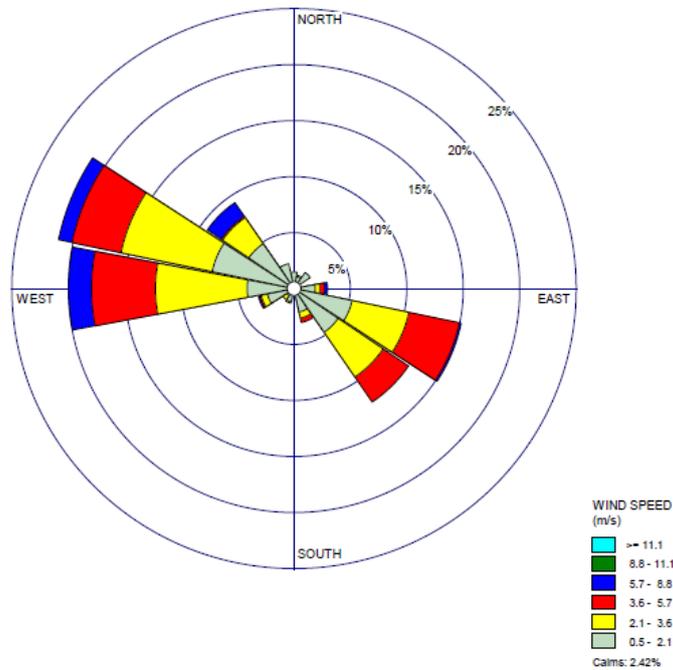
2022	Monthly Rainfall (mm)	Cumulative Rainfall (mm)
July	184.2	645.2



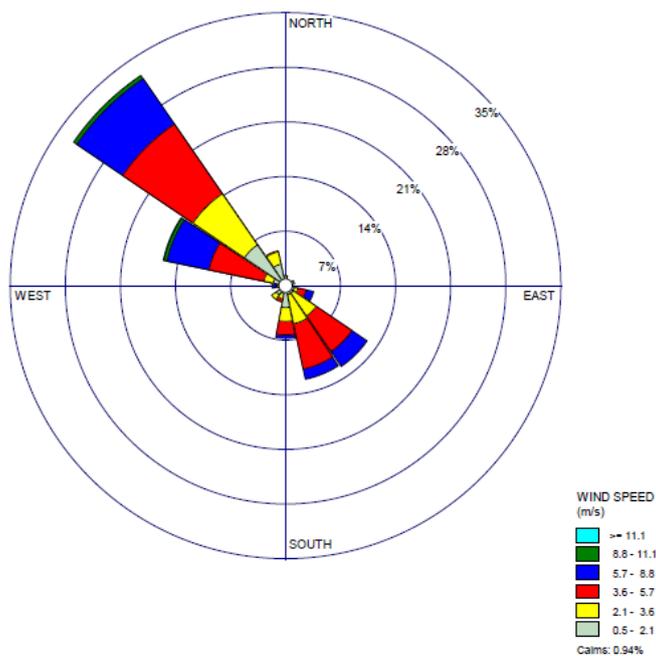
**Figure 1 - Rainfall Summary 2022**

## 2.1.2 Wind Speed and Direction

North-westerly winds were prevailing during the reporting period as shown in **Figure 2** (HVO Corporate) and **Figure 3** (HVO Cheshunt).



**Figure 2 - HVO Corporate Wind Rose for the Reporting Period**



**Figure 3 - HVO Cheshunt Wind Rose for the Reporting Period**

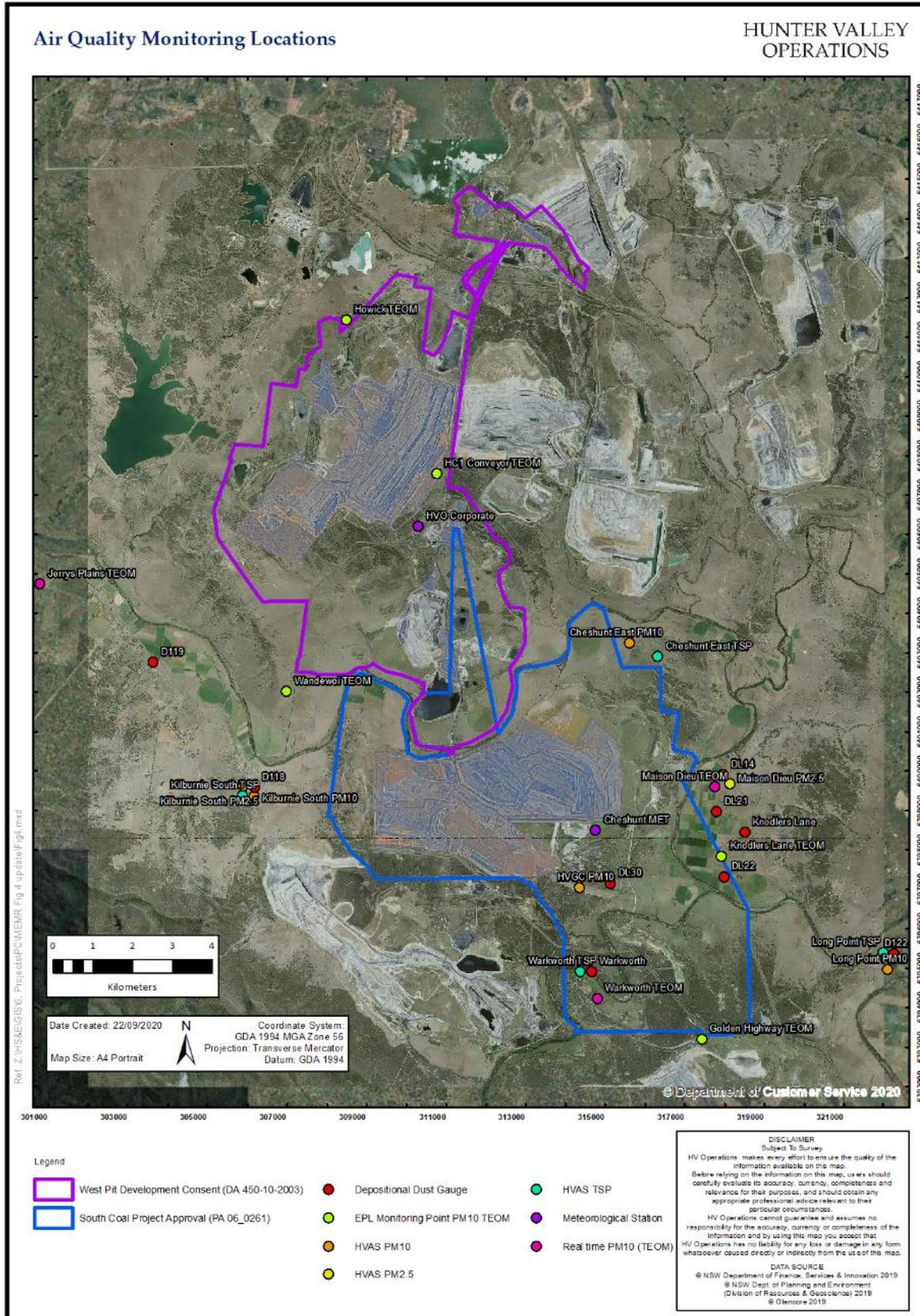


Figure 4 - Air Quality Monitoring Location Plan

## 2.2 Depositional Dust

HVO operates and maintains a network of nine depositional dust gauges situated on private and mine owned land surrounding HVO to monitor regional air quality.

**Figure 5** displays insoluble solids results from depositional dust gauges during the reporting period compared against the annual impact assessment criteria. Any monthly results deemed to be contaminated (due to presence of bird droppings, insects, etc.) are not displayed. An assessment of HVO’s contribution against the long-term impact assessment criteria will be provided in the 2022 Annual Review.

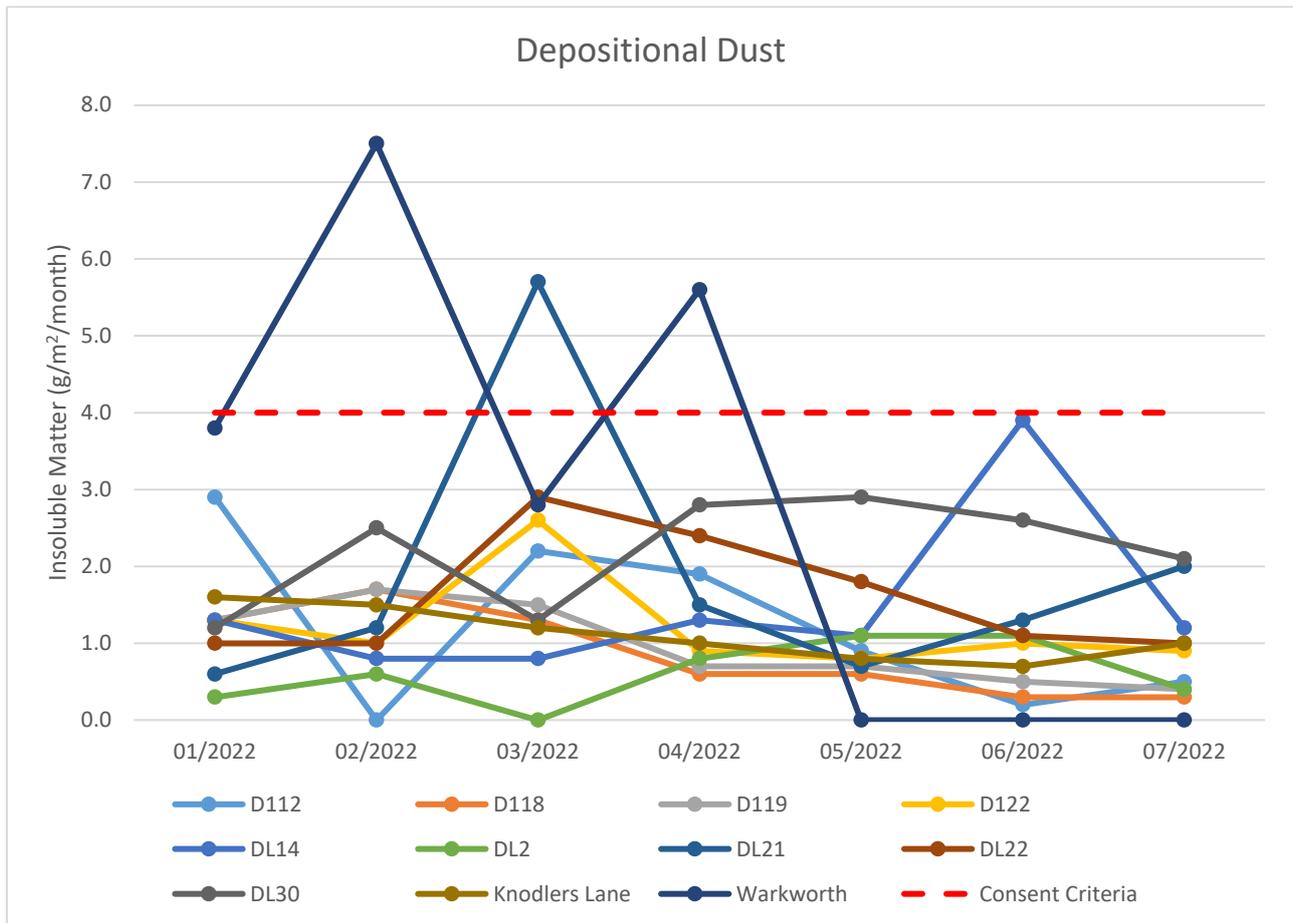


Figure 5 - Depositional Dust Results for the Reporting Period

## 2.3 Suspended Particles

Suspended particles are measured by a network of High Volume Air Samplers (HVAS) measuring Total Suspended Particulates (TSP) and Particulate Matter <10µm (PM<sub>10</sub>). The Kilburnie South and Maison Dieu HVAS also monitor Particulate Matter <2.5µm (PM<sub>2.5</sub>). The location of these monitors is presented in Figure 4. Each HVAS runs for 24-hours on a six-day cycle.

### 2.3.1 HVAS PM<sub>10</sub> Results

#### 2.3.1.1 Performance against short term impact assessment criteria

Figure 6 shows individual PM<sub>10</sub> results at each monitoring station against the short-term impact assessment criteria of 50µg/m<sup>3</sup>. No exceedances were recorded.

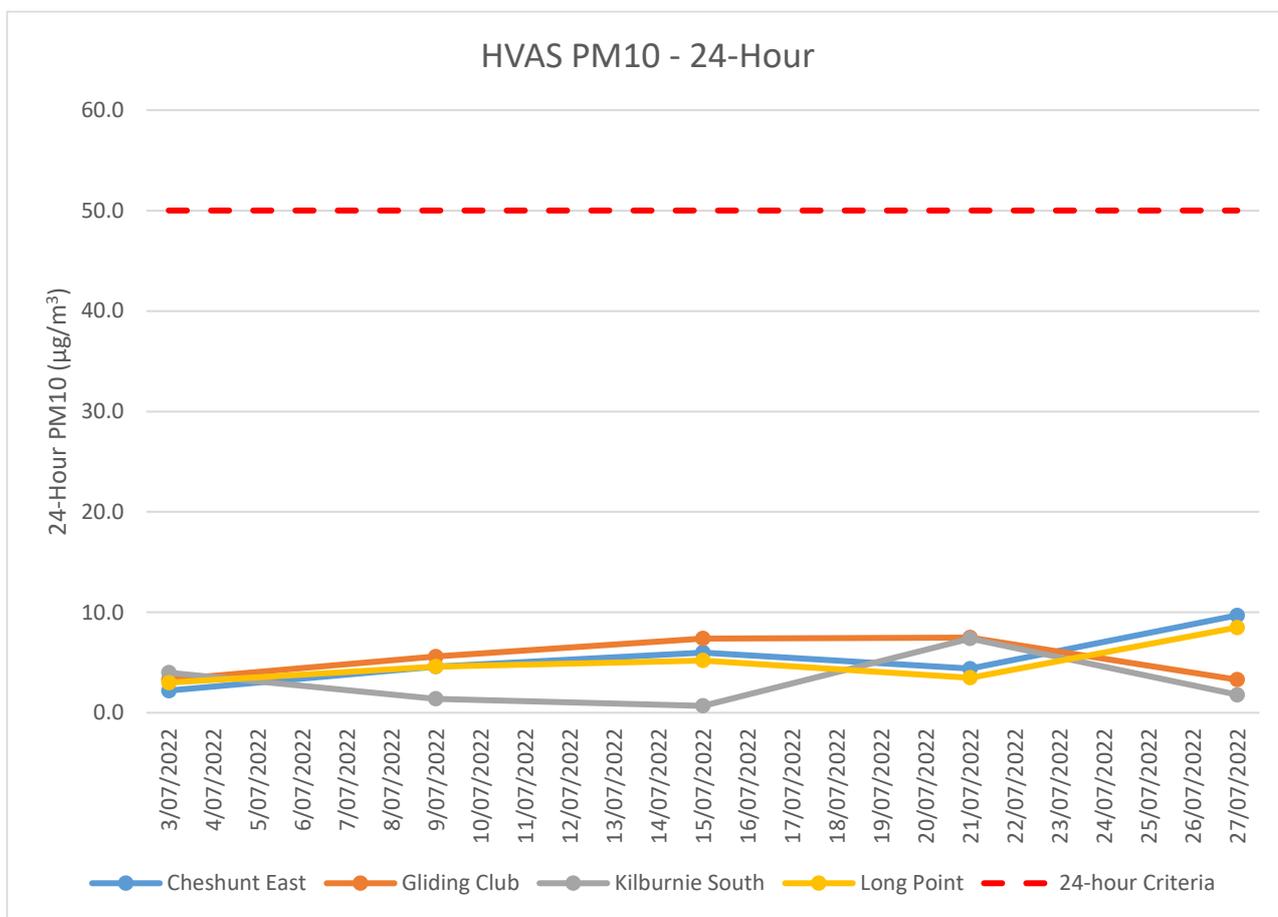


Figure 6 - Individual PM<sub>10</sub> Results for the Reporting Period

### 2.3.1.2 Performance against long term impact assessment criteria

Figure 7 shows the year to date annual average PM<sub>10</sub> results. All monitors were below the relevant long term impact assessment criteria during the reporting period. An assessment of HVO’s contribution against the long-term impact assessment criteria will be provided in the 2022 Annual Review.

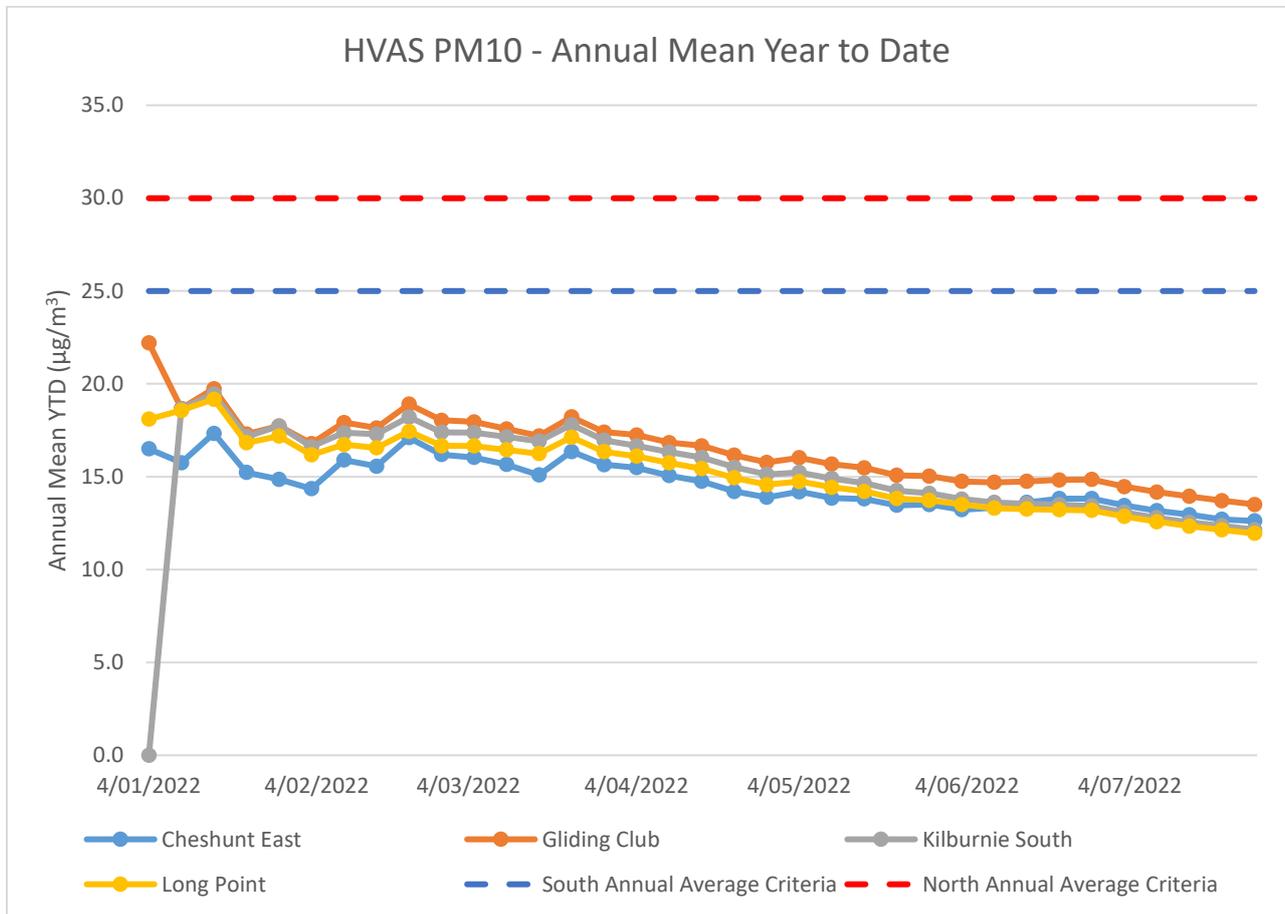


Figure 7 - Year to Date Average PM<sub>10</sub> as at end of the Reporting Period

## 2.3.2 HVAS PM<sub>2.5</sub> Results

HVO monitors PM<sub>2.5</sub> at two HVAS locations, Kilburnie South and Maison Dieu.

### 2.3.2.1 Performance against short term impact assessment criteria

Figure 8 shows individual PM<sub>2.5</sub> results at each monitoring station against the HVO South short-term impact assessment criteria of 25µg/m<sup>3</sup>.

All monitors were below the relevant short-term impact assessment criteria during the reporting period.

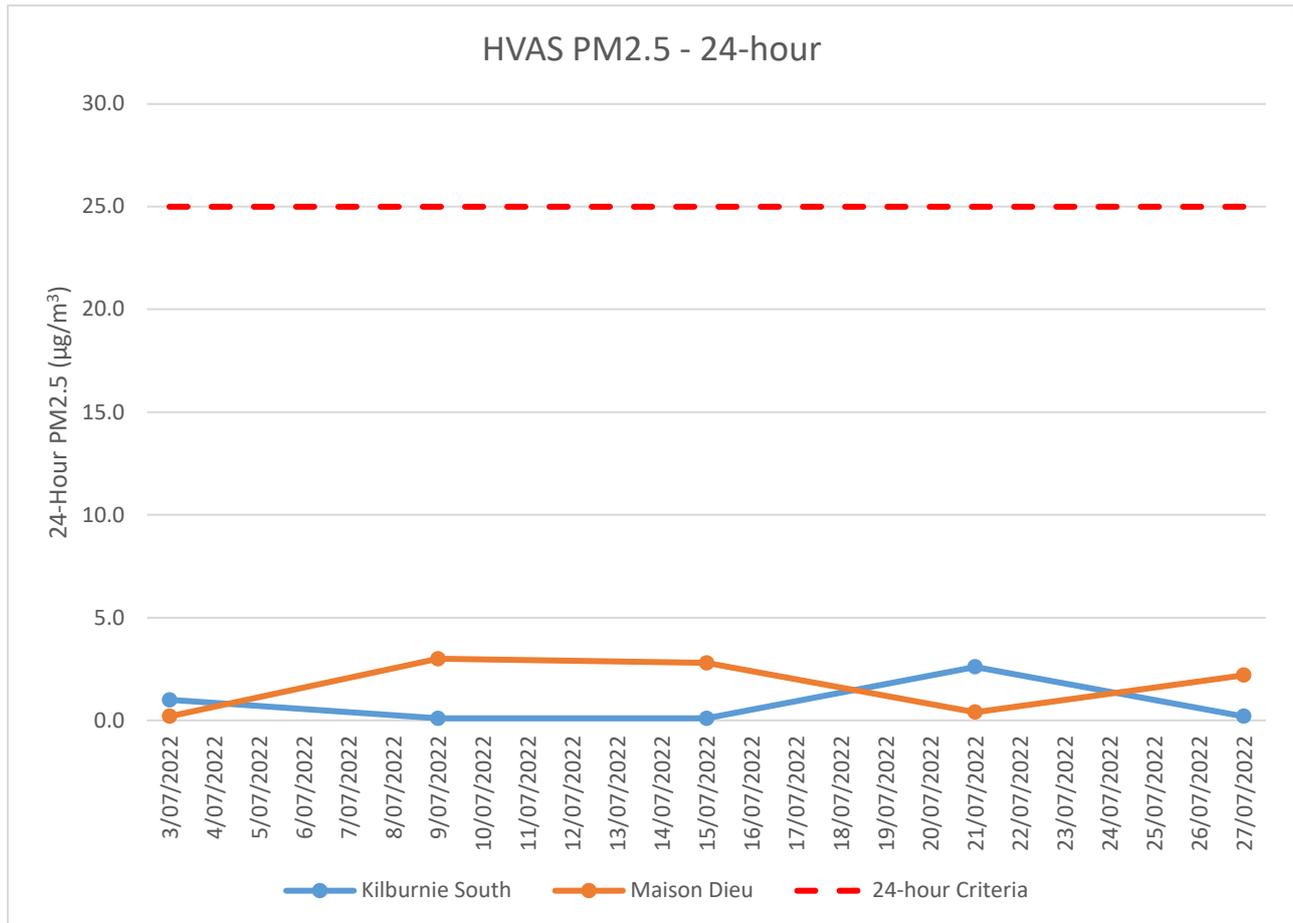


Figure 8 - Individual PM<sub>2.5</sub> Results for the Reporting Period

### 2.3.2.2 Performance against long term impact assessment criteria

Figure 9 shows the year to date annual average PM<sub>2.5</sub> results. During the reporting period, the Maison Dieu monitor and Kilburnie South monitor annual average year to date were below the PM<sub>2.5</sub> Annual Rolling Mean criteria of 8µg/m<sup>3</sup>.

An assessment of HVO’s contribution against the long term impact assessment criteria will be provided in the 2022 Annual Review.

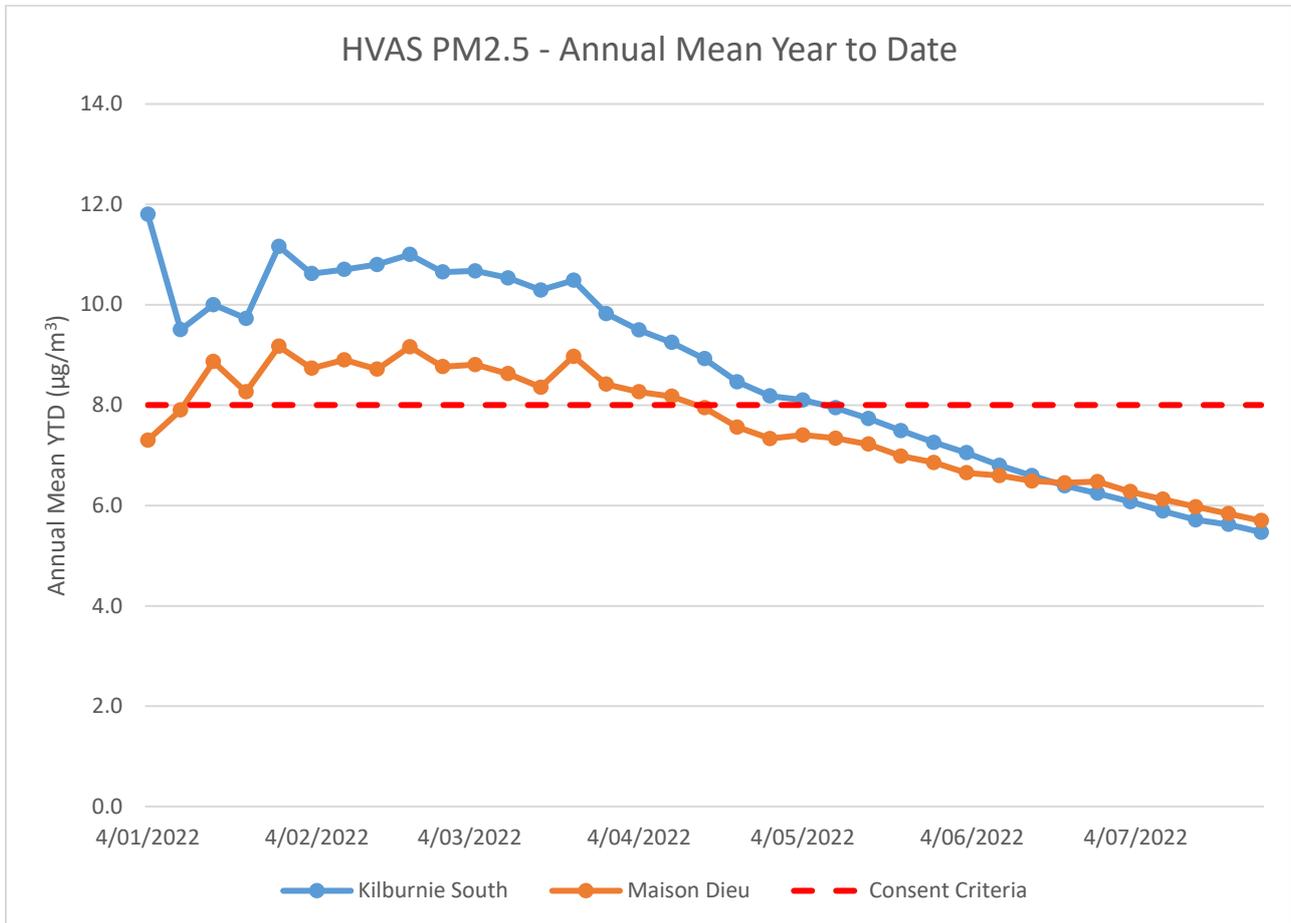


Figure 9 - Year to Date Average PM<sub>2.5</sub> as at end of the Reporting Period

## 2.3.3 TSP Results

### 2.3.3.1 Performance against long term impact assessment criteria

Figure 10 shows the annual average TSP results compared against the long-term impact assessment criteria of 90µg/m<sup>3</sup>.

All monitors were below the relevant long-term impact assessment criteria during the reporting period.

An assessment of HVO’s contribution against the long-term impact assessment criteria will be provided in the 2022 Annual Review.

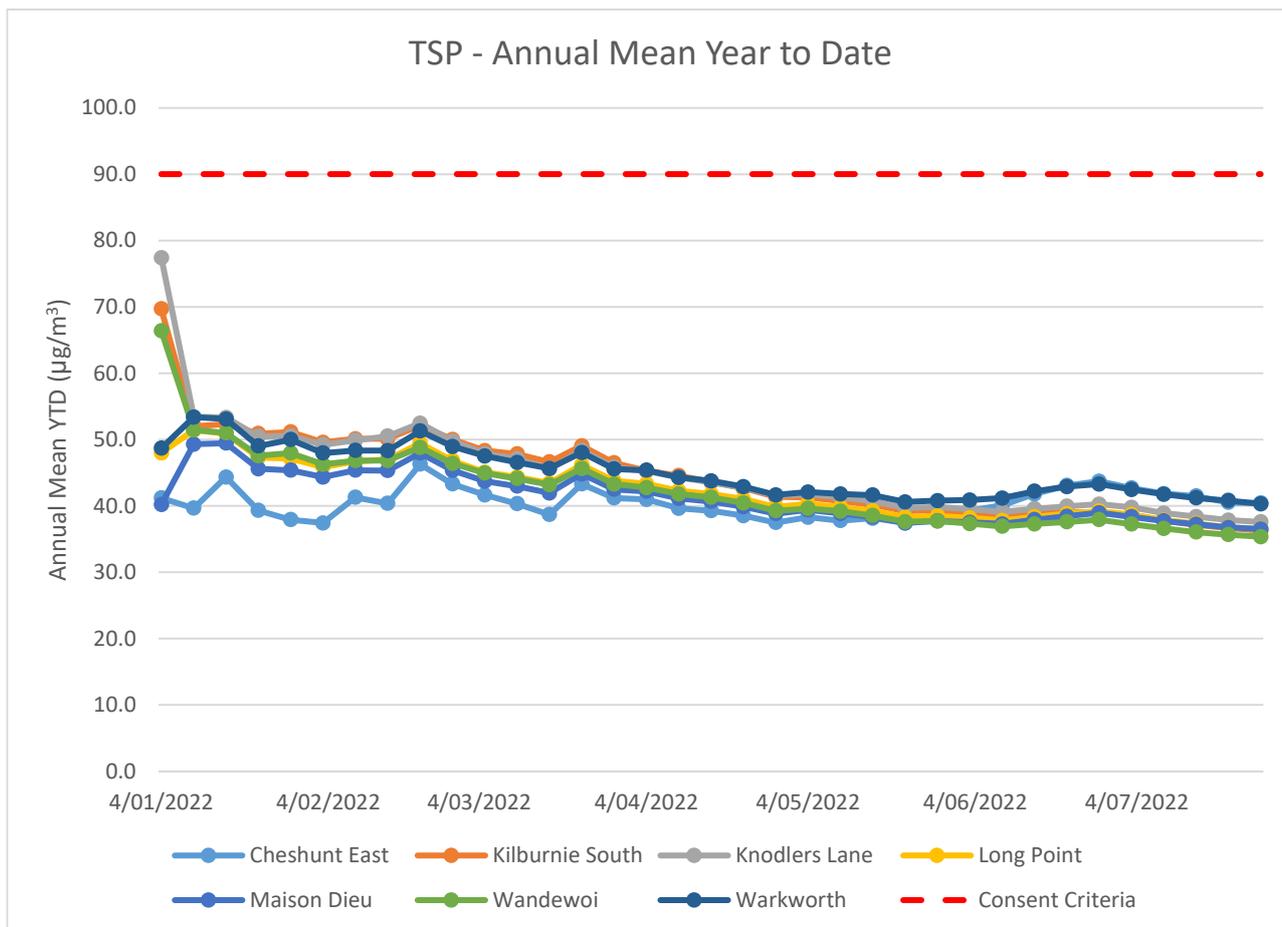
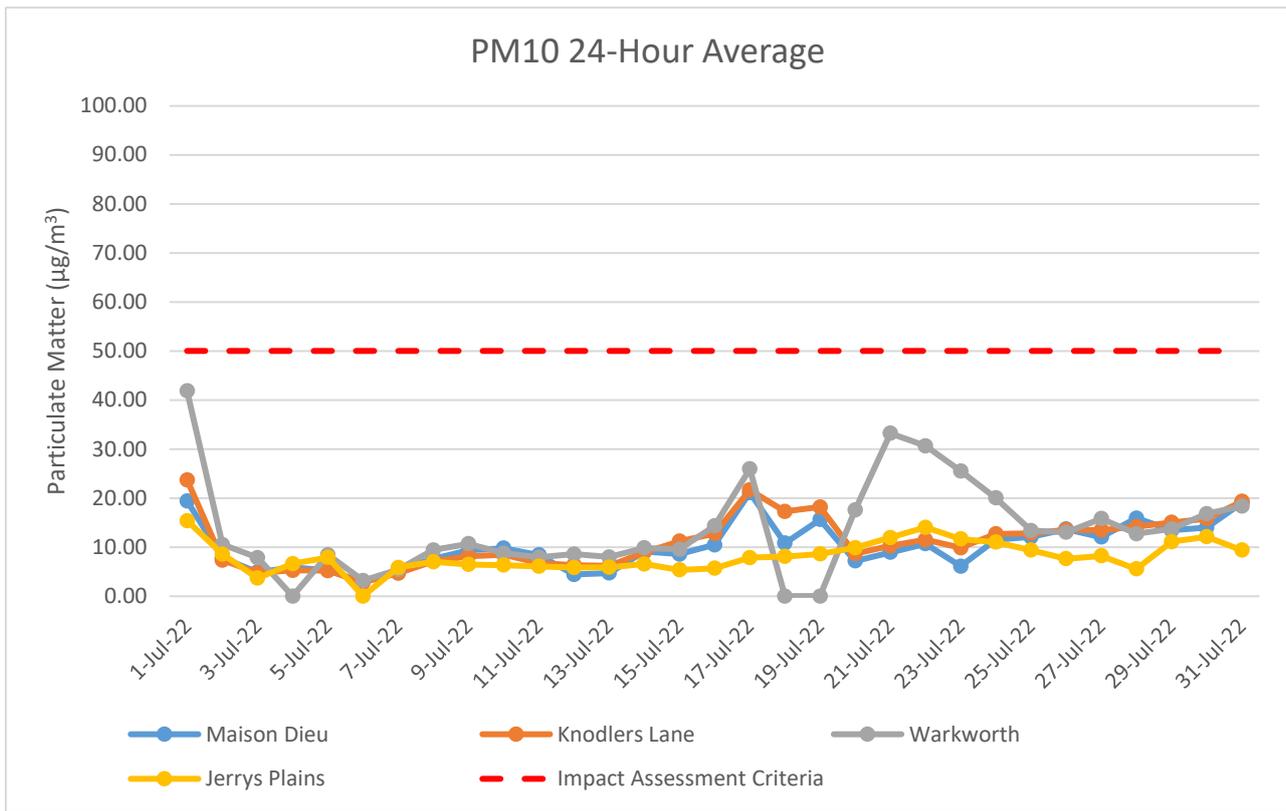


Figure 10 - Year to Date Average Total Suspended Particulates as at end of the Reporting Period

### 2.3.4 Real Time PM<sub>10</sub> Results

HVO maintains a network of real time PM<sub>10</sub> monitors. The real time air quality monitoring stations continuously record information and transmit data to a central database, generating alarms when particulate matter levels exceed internal trigger levels. Results from real time PM<sub>10</sub> monitoring are used as a reactive measure to guide mining operations to help achieve compliance with the relevant conditions of the project approval.

**Figure 11** shows the daily 24-hour average PM<sub>10</sub> result from the real time monitoring sites which shows no exceedances reported for the period.



**Figure 11 - Real Time PM<sub>10</sub> 24hr for the Reporting Period**

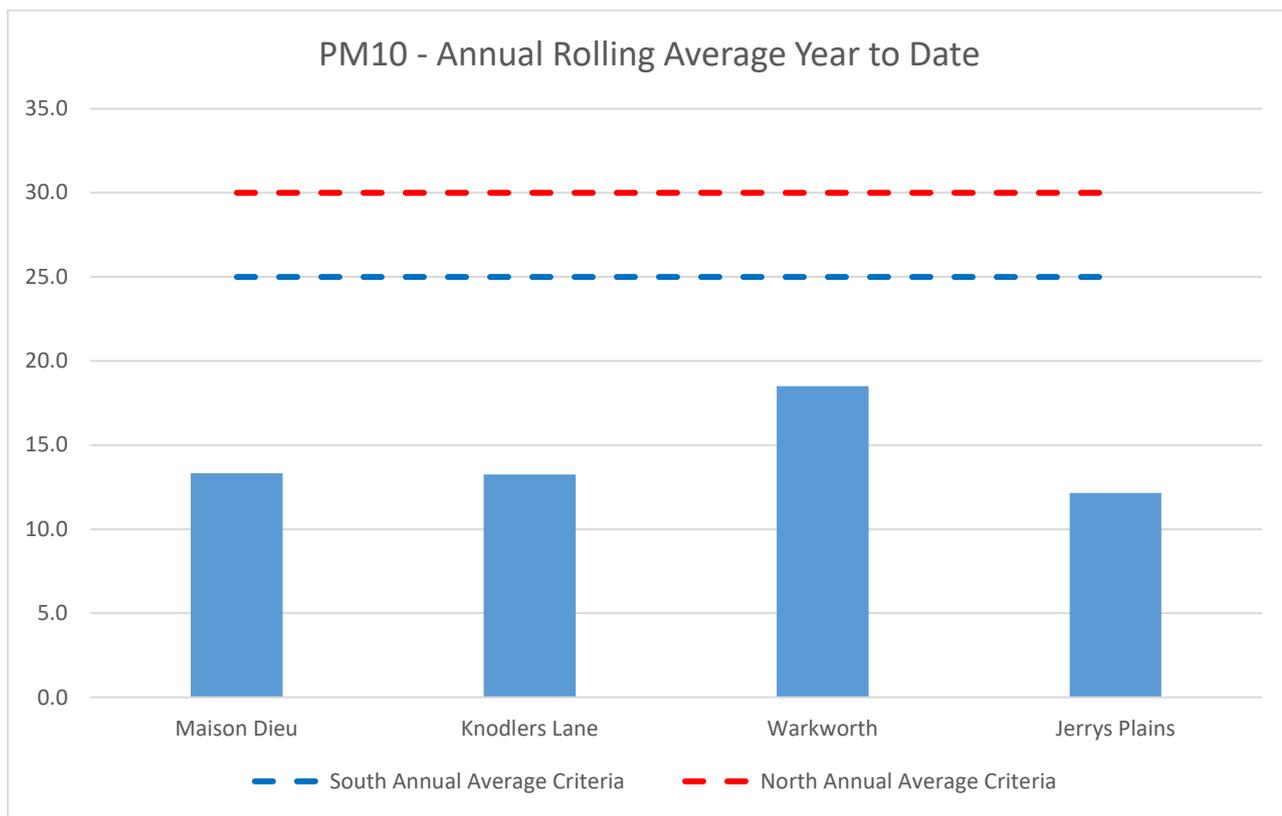


Figure 12 - Real Time PM<sub>10</sub> Annual Average July 2022

### 2.3.5 Real Time Alarms for Air Quality

The real time monitoring system generated 41 automated air quality related alarms during the reporting period. 41 alarms related to adverse weather conditions and 0 alarms related to dust conditions.

## 3 Water Quality

HVO maintains a network of surface water and groundwater monitoring sites.

### 3.1 Surface Water

Surface watercourses are sampled on a quarterly sampling regime. Water quality is assessed through the parameters of pH, electrical conductivity (EC) and Total Suspended Solids (TSS). The location of surface water monitoring points across HVO is shown in **Figure 13**.

Results from monitoring on site dams, the Hunter River and other natural tributaries are provided on a quarterly basis. Results will be provided in the September 2022 Monthly Environmental Monitoring Report.

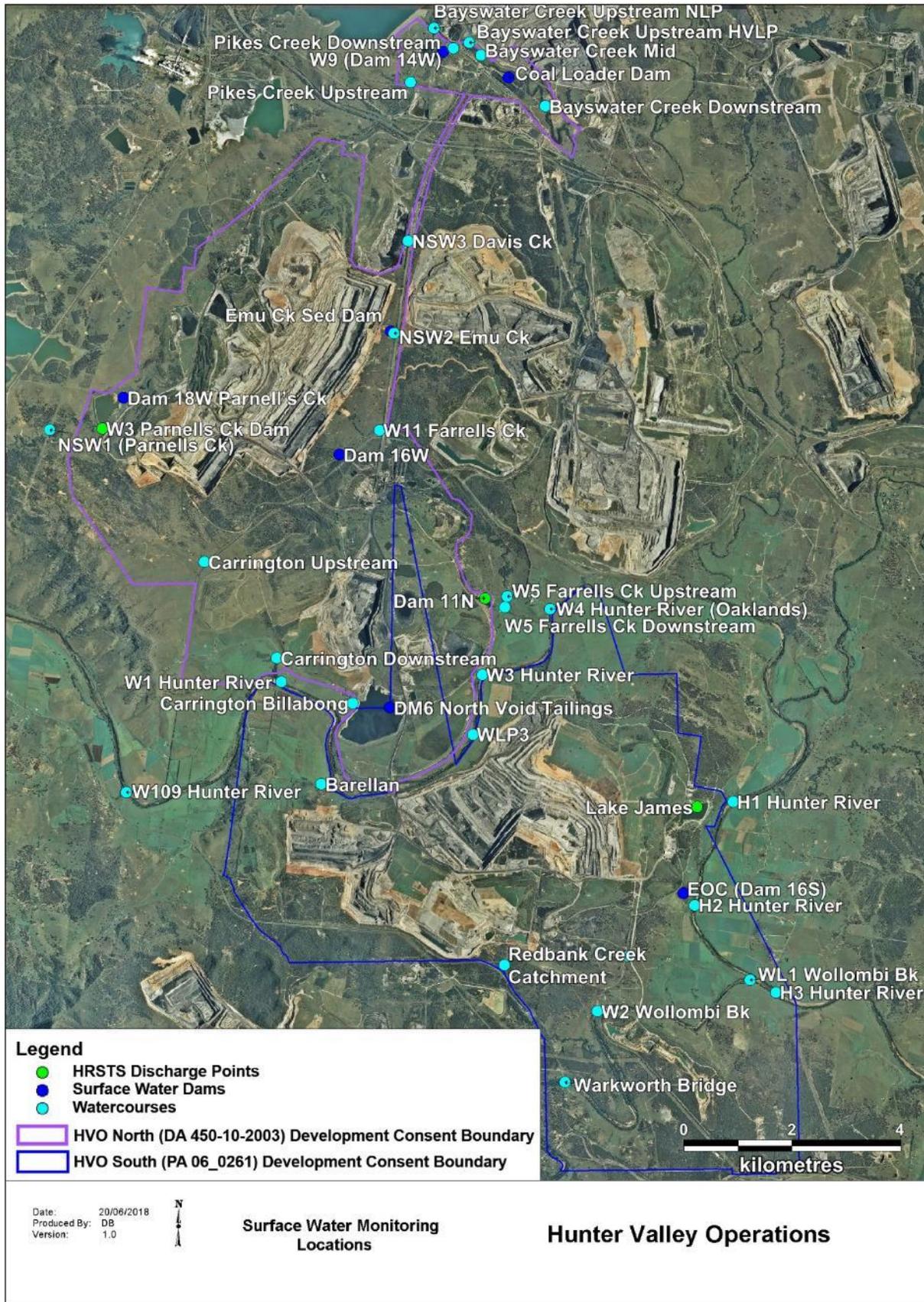


Figure 13 - HVO Surface Water Monitoring Locations

### 3.1.1 Surface Water Trigger Tracking

Internal trigger limits have been developed to assess monitoring data on an on-going basis and to highlight potentially adverse surface water impacts. The process for evaluating monitoring results against the internal triggers and subsequent responses are outlined in the HVO Water Management Plan.

Surface water trigger tracking results are provided on a quarterly basis; results will appear in the June 2022 Monthly Environmental Monitoring Report.

### 3.2 Site Water Use

HVO is permitted to extract water from the Hunter River under water allocation licenses issued by Water NSW.

HVO did not extract water from the Hunter River during the reporting period.

### 3.3 HRSTS Discharge

HVO participates in the Hunter River Salinity Trading Scheme (HRSTS), allowing discharge from licensed discharge points Dam 11N (to Farrell's Creek), Lake James (to the Hunter River) and Parnell's Dam (to Parnell's Creek). Discharges can only take place subject to HRSTS regulations.

HVO discharged a total of 1,817 ML under the HRSTS during the reporting period comprising 18 ML from Dam 11N, 937. ML from Lake James and 862 ML from Parnell's Dam.

### 3.4 Groundwater Monitoring Results

Groundwater monitoring is undertaken on a quarterly basis in accordance with the HVO Water Management Plan and Groundwater Monitoring Program. The location of groundwater monitoring points across HVO are show in **Figure 14**.

Groundwater monitoring results are provided on a quarterly basis. Results will be provided in the September 2022 Monthly Environmental Monitoring Report.

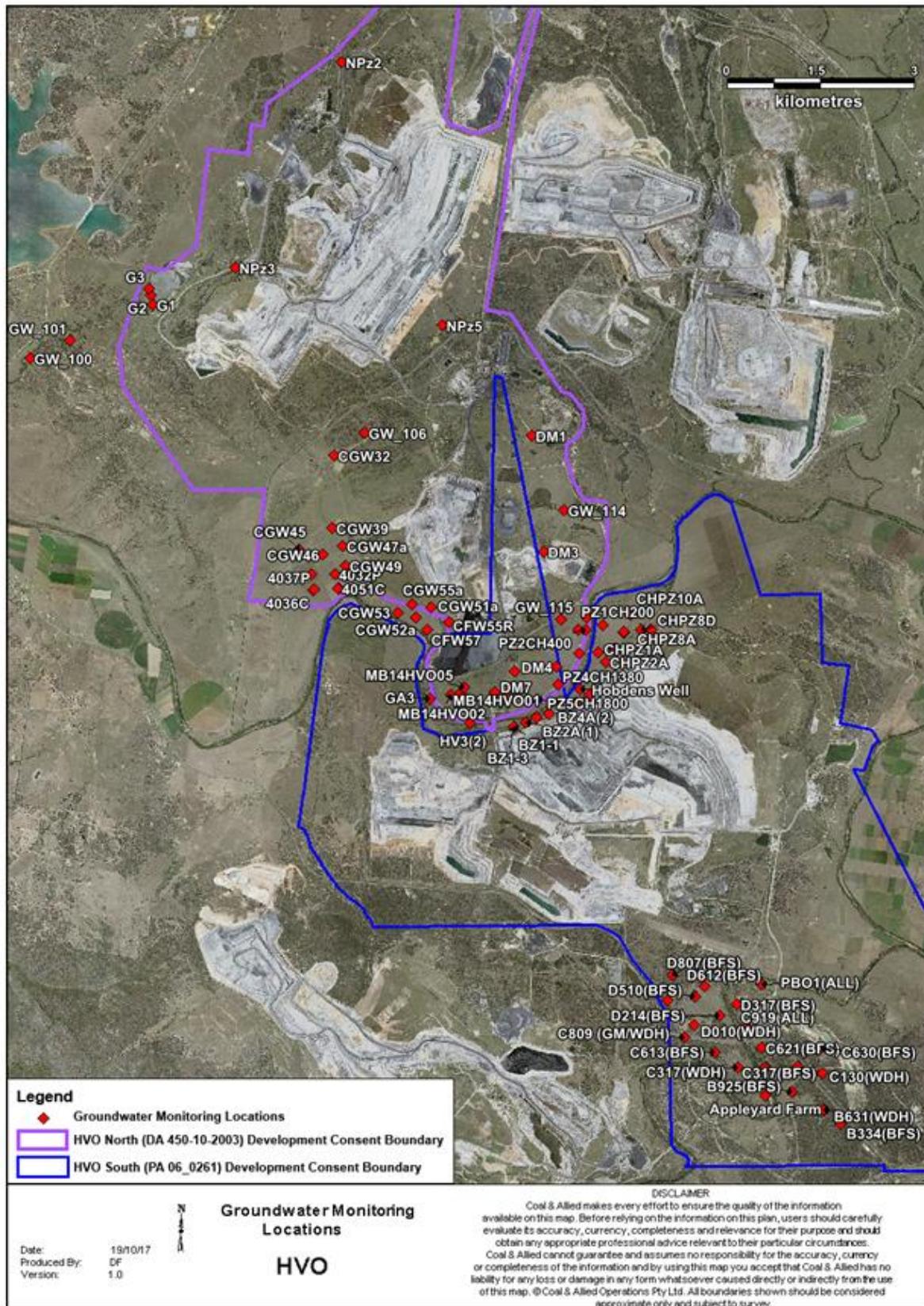


Figure 14 Groundwater monitoring Locations at HVO

### 3.4.1 Groundwater Trigger Tracking

Internal trigger limits have been developed to assess monitoring data on an on-going basis and to highlight potentially adverse groundwater impacts. The process for evaluating monitoring results against the internal triggers and subsequent responses is outlined in the HVO Water Management Plan.

Groundwater trigger tracking results are provided on a quarterly basis. Results will be provided in the September 2022 Monthly Environmental Monitoring Report.

## 4 Blasting

HVO maintains a network of blast monitoring units located at nearby privately owned residences and function as regulatory compliance monitors. The location of these monitors can be found in **Figure 15**. Blasting criteria for HVO are summarised in **Table 2**.

**Table 2 - Blasting Criteria**

Airblast Overpressure (dBL)	Comments
115	5% of the total number of blasts in a 12-month period
120	0% of blasts
Ground Vibration (mm/s)	Comments
5	5% of the total number of blasts in a 12-month period
10	0% of blasts

## 4.1 Blast Monitoring Results

Twenty three (23) blasts were initiated at HVO during the reporting period. Blast monitoring results for the period are shown in **Table 3** and **Table 4**.

**Table 3 - Overpressure Blast Monitoring Results for the reporting period**

Date and Time	Moses Crossing (dBL)	Jerrys Plains Village (dBL)	Maison Dieu (dBL)	Warkworth (dBL)	Knodlers Lane (dBL)
1/07/2022 13:15	95.74	101.02	102.69	98.2	106.56
1/07/2022 13:19	85.73	93.64	93.96	93.32	109.41
2/07/2022 11:24	87.76	93.11	77.99	79.86	90.81
11/07/2022 13:32	82.96	83.78	81.49	82.76	79.53
13/07/2022 13:14	73.26	86.27	89.88	84.47	86.76
15/07/2022 13:10	84.89	94.28	96.73	89.13	97.62
16/07/2022 13:03	101.32	101.24	98.05	87.21	110.16
18/07/2022 13:04	79.66	96.85	103.13	93.55	104.76
18/07/2022 13:06	92.27	89.29	97.9	97.55	114.92
19/07/2022 13:18	94.1	107.03	93.82	84.64	95.32
19/07/2022 13:19	94.1	107.03	89.66	82.2	97.22
19/07/2022 14:26	97.39	107.84	102.57	91.93	102.51
20/07/2022 11:03	106.83	106.01	93.62	91.74	96.04
20/07/2022 13:05	99.22	105.71	94.83	103.6	95.08
22/07/2022 13:06	102.87	108.52	107.47	98.69	106.45
23/07/2022 12:53	89.85	106.69	94.85	92.86	94.73
25/07/2022 11:09	83.5	89.42	80.46	88.89	86.63
25/07/2022 13:12	90.71	86.86	88.41	90.76	89.97
26/07/2022 10:48	95.32	105.79	100.56	97.46	101.45
26/07/2022 10:50	93.99	89.2	100.61	103.47	103.48
27/07/2022 13:05	98.43	106.31	102.29	98.23	111.11
29/07/2022 13:00	89.04	93.52	94.56	98.56	95.89
30/07/2022 13:06	92.1	82.8	84.37	94.89	82.59

**Table 4 - Ground Vibration Blast Monitoring Results for the reporting period**

Date and Time	Moses Crossing (mm/s)	Jerrys Plains Village (mm/s)	Maison Dieu (mm/s)	Warkworth (mm/s)	Knodlers Lane (mm/s)
1/07/2022 13:15	0.13	0.04	0.04	0.25	0.08
1/07/2022 13:19	0.15	0.13	0.07	0.49	0.08
2/07/2022 11:24	0.21	0.29	0.07	0.14	0.12
11/07/2022 13:32	0.11	0.07	0.03	0.13	0.08
13/07/2022 13:14	0.14	0.05	0.04	0.27	0.09
15/07/2022 13:10	0.17	0.2	0.07	0.21	0.08
16/07/2022 13:03	0.11	0.05	0.03	0.31	0.07
18/07/2022 13:04	0.17	0.04	0.05	0.55	0.08
18/07/2022 13:06	0.17	0.04	0.04	0.35	0.09
19/07/2022 13:18	0.16	0.17	0.17	0.15	0.36
19/07/2022 13:19	0.16	0.17	0.17	0.15	0.36
19/07/2022 14:26	0.15	0.16	0.11	0.55	0.08
20/07/2022 11:03	0.09	0.03	0.04	0.53	0.08
20/07/2022 13:05	0.1	0.03	0.08	0.72	0.1
22/07/2022 13:06	0.11	0.03	0.04	0.18	0.08
23/07/2022 12:53	0.11	0.04	0.12	0.33	0.14
25/07/2022 11:09	0.1	0.02	0.02	0.45	0.08
25/07/2022 13:12	0.11	0.04	0.03	0.78	0.08
26/07/2022 10:48	0.15	0.04	0.37	0.58	0.4
26/07/2022 10:50	0.12	0.03	0.1	0.92	0.12
27/07/2022 13:05	0.17	0.12	0.07	0.46	0.1
29/07/2022 13:00	0.26	0.1	0.26	1.17	0.29
30/07/2022 13:06	0.13	0.06	0.06	0.92	0.08

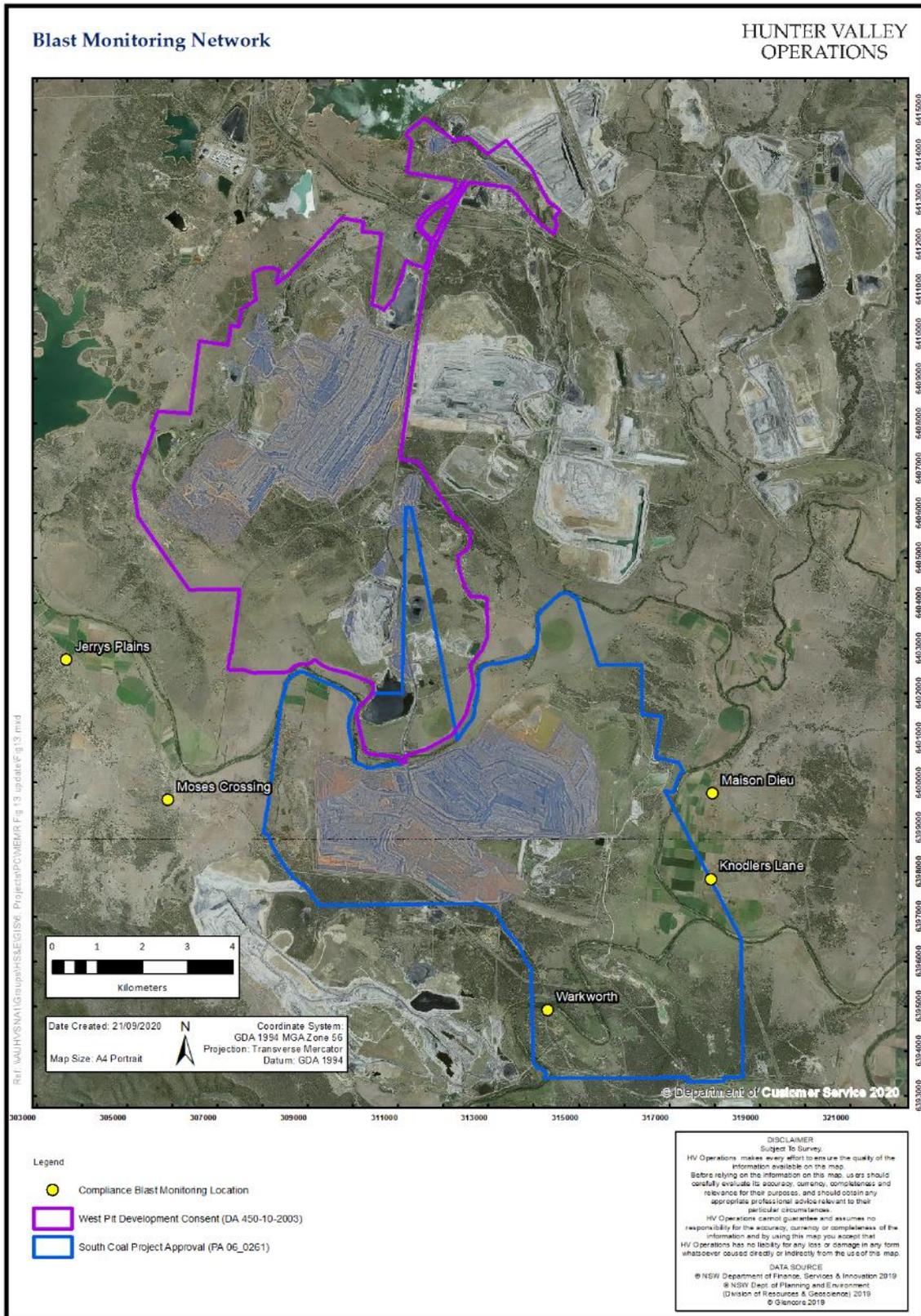


Figure 15 - Blast Monitoring Location Plan

## 5 Noise

Routine attended noise monitoring occurs at defined locations around HVO, as described in the HVO Noise Monitoring Program. The noise monitoring aims to quantify and describe the acoustic environment around the site and compare results with specified limits. The attended noise monitoring locations are displayed in **Figure 16**.

### 5.1 Attended Noise Monitoring Results

Attended monitoring was conducted at receiver locations around HVO during the night period of 20-21 July 2022.

Monitoring results are detailed in **Table 5** to **Table 9**.

**Table 5 - LAeq,15minute HVO North Against Impact Assessment Criteria for the Reporting Period**

Location	Date and Time	Wind Speed (m/s) <sup>1</sup>	Stability Class	Criterion (A)	Criterion Applies <sup>2</sup>	HVO North LAeq <sup>3,4,5,6</sup>	Exceedance <sup>4,5</sup>
Shearers Lane	20/07/2022 21:00	2.5	D	35	Yes	IA	Nil
Knodlers Lane	20/07/2022 21:43	2.4	D	35	Yes	IA	Nil
Maison Dieu	20/07/2022 21:23	2.4	D	35	Yes	IA	Nil
Long Point (Dights Crossing)	20/07/2022 22:35	2.6	D	35	Yes	IA	Nil
Kilburnie South	20/07/2022 23:19	3.2	D	39	No	IA	NA
Jerrys Plains East	20/07/2022 22:59	3	D	39	Yes	38	Nil
Jerrys Plains Village	20/07/2022 21:23	2.4	D	40	Yes	37	Nil
Jerrys Plains West	20/07/2022 21:03	2.5	D	40	Yes	<25	Nil
HVGC	20/07/2022 23:46	3.5	D	NA	No	IA	NA

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, or temperature inversion conditions greater than 3°C/100m (G stability class);
3. Site-only LAeq 15 minute attributed to HVO North Pit Area, including modifying factors if applicable;
4. Bold results in red indicate exceedance of criterion;
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 not applicable;

**Table 6 - LAeq,15minute HVO North Against Land Acquisition Criteria for the Reporting Period**

Location	Date and Time	Wind Speed (m/s) <sup>1</sup>	Stability Class	Criterion (A)	Criterion Applies <sup>2</sup>	HVO North LAeq <sup>3,4,6</sup>	Exceedance <sup>4,5</sup>
Shearers Lane	20/07/2022 21:00	2.5	D	41	Yes	IA	Nil
Knodlers Lane	20/07/2022 21:43	2.4	D	41	Yes	IA	Nil
Maison Dieu	20/07/2022 21:23	2.4	D	41	Yes	IA	Nil
Long Point (Dights Crossing)	20/07/2022 22:35	2.6	D	41	Yes	IA	Nil
Kilburnie South	20/07/2022 23:19	3.2	D	41	No	IA	NA
Jerrys Plains East	20/07/2022 22:59	3	D	41	Yes	38	Nil
Jerrys Plains Village	20/07/2022 21:23	2.4	D	41	Yes	37	Nil
Jerrys Plains West	20/07/2022 21:03	2.5	D	41	Yes	<25	Nil
HVGC	20/07/2022 23:46	3.5	D	NA	No	IA	NA

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, or temperature inversion conditions greater than 3°C/100m (G stability class);

3. Site-only LAeq,15minute attributed to HVO North Pit Area, including modifying factors if applicable;

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 7 - LA1,1minute HVO North Against Impact Assessment Criteria for the Reporting Period**

Location	Date and Time	Wind Speed (m/s) <sup>1</sup>	Stability Class	Criterion (A)	Criterion Applies <sup>2</sup>	HVO North L <sub>Aeq</sub> <sup>3,4,6</sup>	Exceedance <sup>4,5</sup>
Shearers Lane	20/07/2022 21:00	2.5	D	46	Yes	IA	Nil
Knodlers Lane	20/07/2022 21:43	2.4	D	46	Yes	IA	Nil
Maison Dieu	20/07/2022 21:23	2.4	D	46	Yes	IA	Nil
Long Point (Dights Crossing)	20/07/2022 22:35	2.6	D	46	Yes	IA	Nil
Kilburnie South	20/07/2022 23:19	3.2	D	46	No	IA	NA
Jerrys Plains East	20/07/2022 22:59	3	D	46	Yes	40	Nil
Jerrys Plains Village	20/07/2022 21:23	2.4	D	46	Yes	43	Nil
Jerrys Plains West	20/07/2022 21:03	2.5	D	46	Yes	<25	Nil
HVGC	20/07/2022 23:46	3.5	D	NA	No	IA	NA

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, or temperature inversion conditions greater than 3°C/100m (G stability class);

3. Site-only LA1,1minute attributed to HVO North Pit Area;

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 8 - LAeq,15minute HVO South Against Impact Assessment Criteria for the Reporting Period**

Location	Date and Time	Wind Speed (m/s) <sup>1</sup>	Stability Class	Criterion (A)	Criterion Applies <sup>2</sup>	HVO South L <sub>Aeq</sub> <sup>3,4,6</sup>	Exceedance <sup>4,5</sup>
Shearers Lane	20/07/2022 21:00	3.2	E	41	No	IA	NA
Knodlers Lane	20/07/2022 21:43	2.7	D	40	Yes	IA	Nil
Maison Dieu	20/07/2022 21:23	2.3	D	39	Yes	IA	Nil
Long Point (Dights Crossing)	20/07/2022 22:35	2	D	37	Yes	IA	Nil
Kilburnie South	20/07/2022 23:19	3	D	39	Yes	35	Nil
Jerrys Plains East	20/07/2022 22:59	3.1	E	38	No	<35	NA
Jerrys Plains Village	20/07/2022 21:23	2.3	D	35	Yes	NM	Nil
Jerrys Plains West	20/07/2022 21:03	3.2	E	35	No	IA	NA
HVGC	20/07/2022 23:46	2.5	E	55	Yes	IA	Nil

1. Atmospheric data is sourced from the HVO Cheshunt AWS using logged meteorological data;
2. Noise criteria apply under meteorological conditions of wind speeds up to 3 m/s measured at 10 metres above ground level and temperature inversion conditions of up to 3°C/100m (G stability class);
3. Site-only LAeq,15minute attributed to HVO South Pit Area, including modifying factors if applicable;
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 9 - LA1,1minute HVO South Against Impact Assessment Criteria for the Reporting Period**

Location	Date and Time	Wind Speed (m/s) <sup>1</sup>	Stability Class	Criterion (A)	Criterion Applies <sup>2</sup>	HVO South L <sub>Aeq</sub> <sup>3,4,6,7</sup>	Exceedance <sup>4,5</sup>
Shearers Lane	20/07/2022 21:00	3.2	E	45	No	IA	NA
Knodlers Lane	20/07/2022 21:43	2.7	D	45	Yes	IA	Nil
Maison Dieu	20/07/2022 21:23	2.3	D	45	Yes	IA	Nil
Long Point (Dights Crossing)	20/07/2022 22:35	2	D	45	Yes	IA	Nil
Kilburnie South	20/07/2022 23:19	3	D	45	Yes	40	Nil
Jerrys Plains East	20/07/2022 22:59	3.1	E	45	No	<35	NA
Jerrys Plains Village	20/07/2022 21:23	2.3	D	45	Yes	NM	Nil
Jerrys Plains West	20/07/2022 21:03	3.2	E	45	No	IA	NA
HVGC	20/07/2022 23:46	2.5	E	NA	Yes	IA	NA

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 LA1,1minute 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.

## 5.2 Low Frequency Assessment

In accordance with the requirements of the EPA’s Noise Policy for Industry (NPI), the applicability of the low frequency modification penalty has been assessed. No penalties were applied for monitoring undertaken through the reporting period. The assessments for the low frequency noise are shown in **Table 10** and **Table 11**.

**Table 10 - Modifying Factor Assessment HVO North for the Reporting Period**

Location	Date and Time	Measured HVO North $L_{Aeq}$	Criterion Applies?	Intermittency Modifying Factor?	Tonality Modifying Factor?	Frequency of Tonality <sup>1</sup>	Low-frequency Modifying Factor?	Maximum Exceedance of NPI Reference Spectrum <sup>1,2</sup>	Total Penalty <sup>2</sup>
Shearers Lane	20/07/2022 21:00	IA	Yes	No	No	NA	No	NA	Nil
Knodlers Lane	20/07/2022 21:43	IA	Yes	No	No	NA	No	NA	Nil
Maison Dieu	20/07/2022 21:23	IA	Yes	No	No	NA	No	NA	Nil
Long Point (Dights Crossing)	20/07/2022 22:35	IA	Yes	No	No	NA	No	NA	Nil
Kilburnie South	20/07/2022 23:19	IA	No	NA	NA	NA	NA	NA	NA
Jerrys Plains East	20/07/2022 22:59	36	Yes	No	No	NA	Yes	2 dB @ 80 Hz	2
Jerrys Plains Village	20/07/2022 21:23	35	Yes	No	No	NA	Yes	2 dB @ 80 Hz	2
Jerrys Plains West	20/07/2022 21:03	<25	Yes	No	No	NA	No	NA	Nil
HVGC	20/07/2022 23:46	IA	No	NA	NA	NA	NA	NA	NA

1. NA denotes 'not applicable'; and

2. Bold results indicate that application of NPI modifying factor/s is required

**Table 11 - Modifying Factor Assessment HVO South for the Reporting Period**

Location	Date and Time	Measured HVO South $L_{Aeq}$	Criterion Applies?	Intermittency Modifying Factor?	Tonality Modifying Factor?	Frequency of Tonality <sup>1</sup>	Low-frequency Modifying Factor?	Maximum Exceedance of NPfl Reference Spectrum <sup>1,2</sup>	Total Penalty <sup>2</sup>
Shearers Lane	20/07/2022 21:00	IA	No	NA	NA	NA	NA	NA	NA
Knodlers Lane	20/07/2022 21:43	IA	Yes	No	No	NA	No	NA	Nil
Maison Dieu	20/07/2022 21:23	IA	Yes	No	No	NA	No	NA	Nil
Long Point (Dights Crossing)	20/07/2022 22:35	IA	Yes	No	No	NA	No	NA	Nil
Kilburnie South	20/07/2022 23:19	35	Yes	No	No	NA	No	NA	Nil
Jerrys Plains East	20/07/2022 22:59	<35	No	NA	NA	NA	NA	NA	NA
Jerrys Plains Village	20/07/2022 21:23	NM	Yes	No	No	NA	No	NA	Nil
Jerrys Plains West	20/07/2022 21:03	IA	No	NA	NA	NA	NA	NA	NA
HVGC	20/07/2022 23:46	IA	Yes	No	No	NA	No	NA	Nil

1. NA denotes 'not applicable'; and

2. Bold results indicate that application of NPfl modifying factor/s is required

## 5.3 Real Time Noise Monitoring

HVO utilises a network of real-time directional noise monitors to manage noise impacts on a continuous basis, shown in **Figure 16**. Noise alarms are in place at five monitoring locations (Knodlers Lane, Maison Dieu, Jerrys Plains, Moses Crossing, and Long Point) which alert HVO staff to elevated noise levels that require investigation.

HVO investigates and responds to noise alarms with appropriate modification to operations. Changes in response to a noise alarm can include replacing equipment with alternative units, changing or relocating tasks, or shutting down equipment. It should be noted that this assessment does not compliment or conflict with attended noise monitoring detailed in **Section 5.1**. Real time monitoring data includes non-mine noise sources such as animals, road traffic and weather.

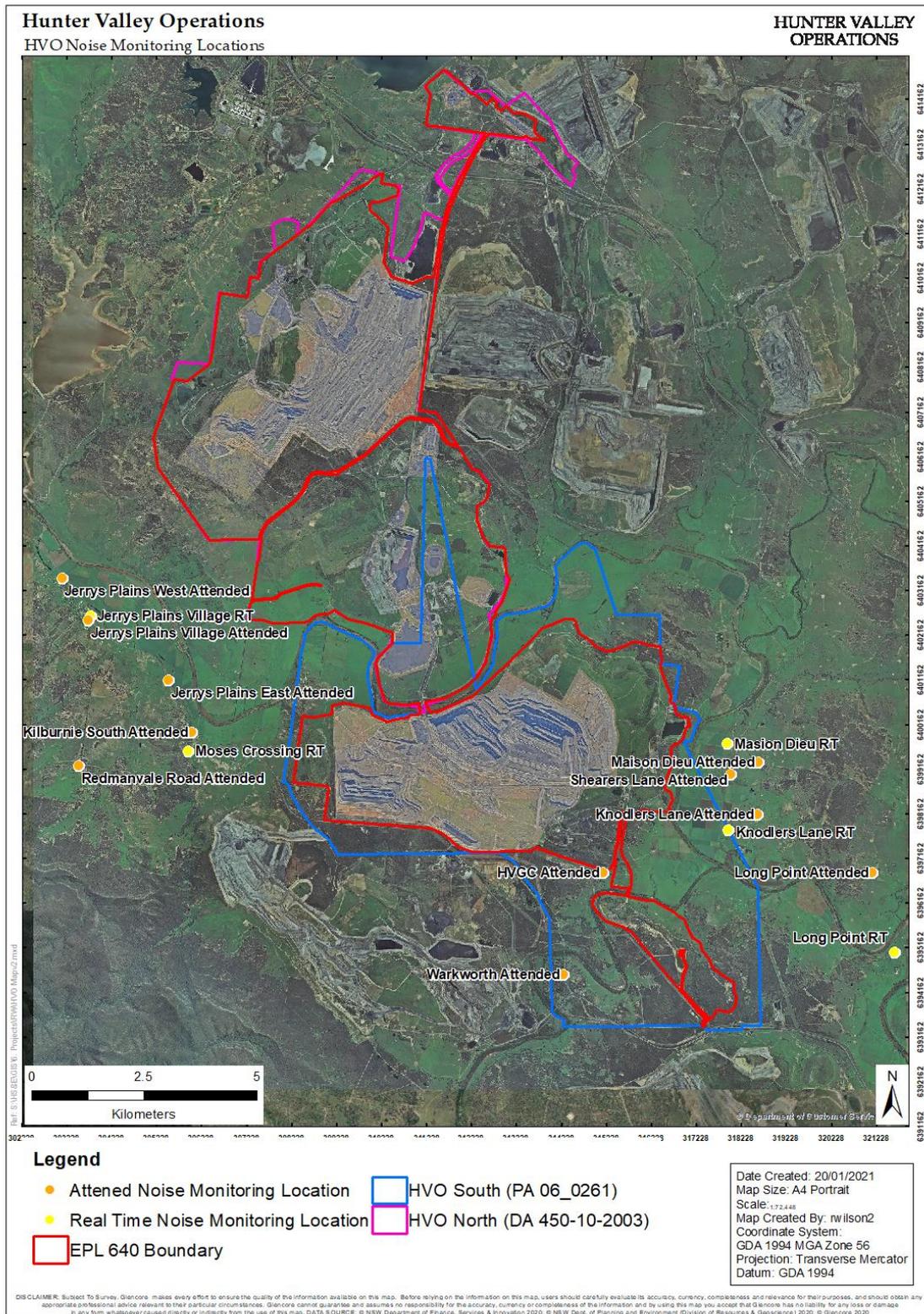


Figure 16 - Noise Monitoring Location Plan

## 6 Operational Downtime

A total of 5.4 hours of equipment downtime was logged in response to real time monitoring and inspections for environmental factors such as noise and dust during the reporting period. Operational downtime by equipment type is show in **Figure 17**. Note that these delays are instances where operations were completely stopped and does not include occasions where operations were changed/modified but not stopped (e.g. changed from exposed dump to in-pit dump).

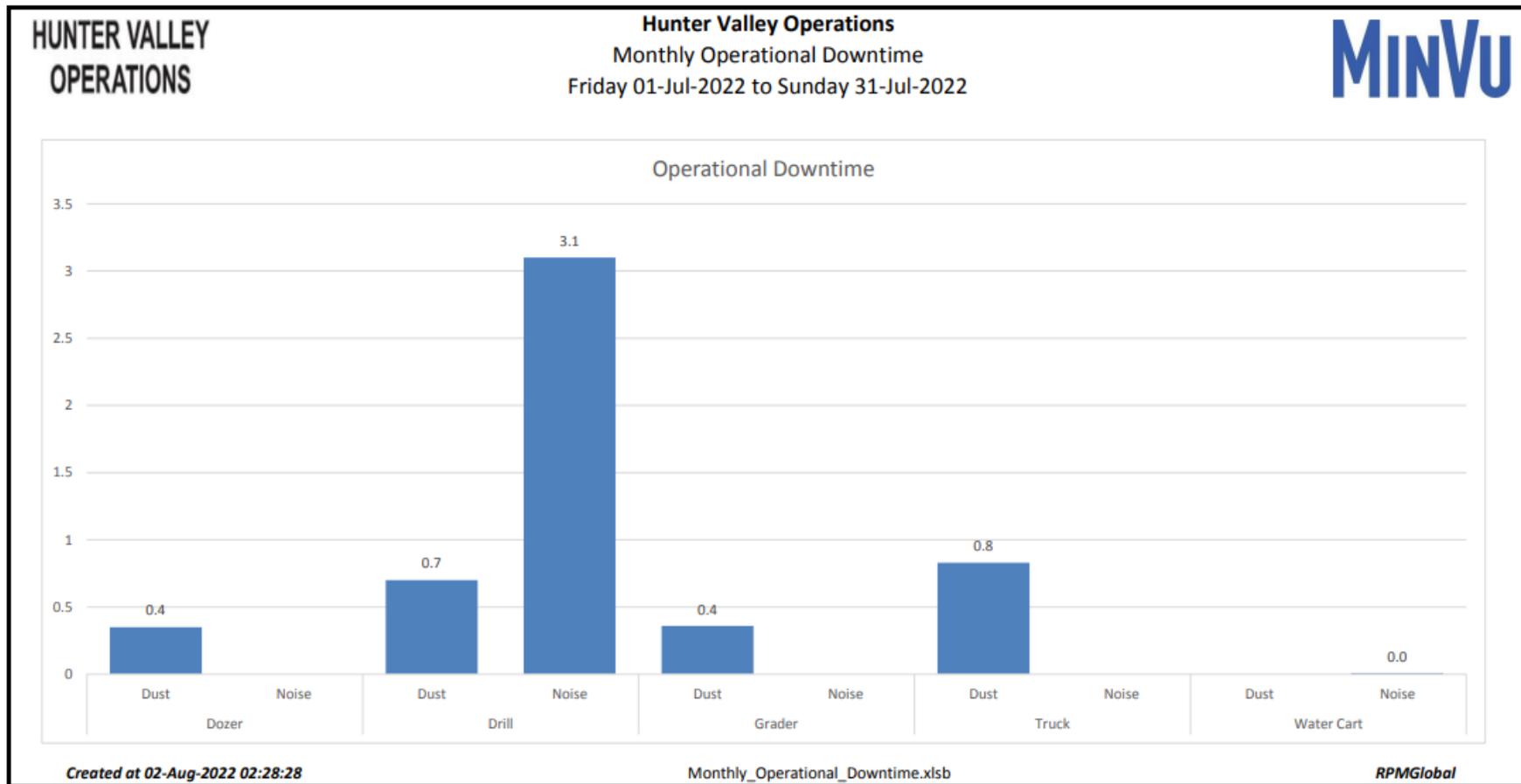


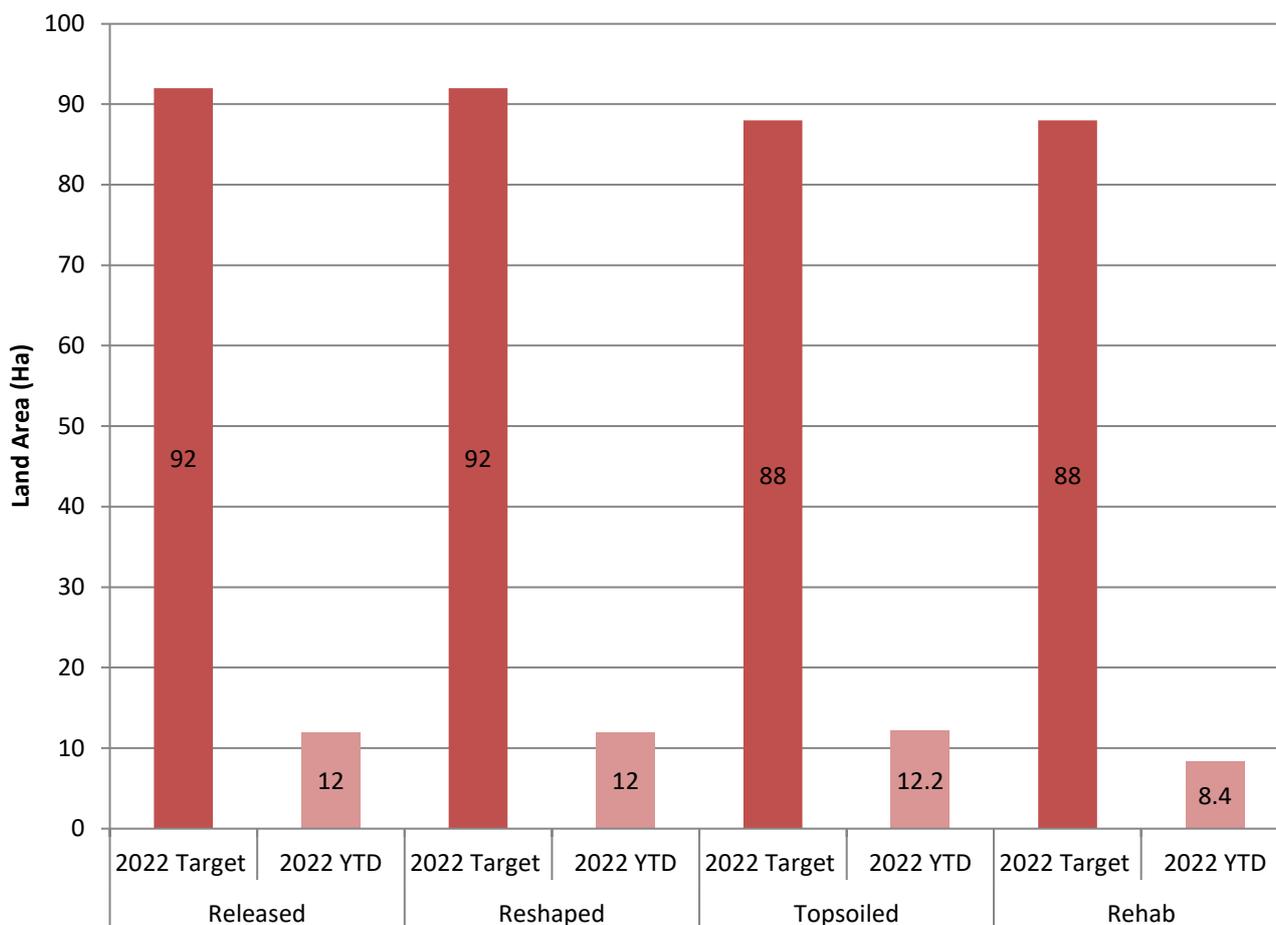
Figure 17 - Operational Downtime by Equipment Type for the reporting period

## 7 Rehabilitation

The following activities related to rehabilitation were completed during the reporting period:

- 0 Ha of land was reshaped
- 0 Ha of land was released (became available for the application of topsoil)
- 0 Ha of land was topsoiled
- 0 Ha of land was rehabilitated

Year to date progress is shown in **Figure 18**.



**Figure 18 - Rehabilitation YTD July 2022**

## 8 Complaints

No complaints were received during the reporting period.

Details of complaints received for 2022 are shown in **Table 12**.

*Table 12 - Complaints Summary 2022*

Complaint Number	Date	Time	Complainant ID	Nature of Complaint	Mode of Complaint	Brief Description and Response
1	5 January	1.24pm	1	Blast	Community Hotline	<ul style="list-style-type: none"> <li>A complainant from Jerrys Plains called the Community Hotline at 1.24pm to mention that a blast fired at approximately 1:06pm was noisy and sounded like lightning had struck her house and that the windows rattled.</li> <li>The blasting database was checked which confirmed that the blast was below the compliance criteria.</li> <li>The Environment and Community Officer contacted the complainant who confirmed that a blast had been fired from HVO and informed the complainant of the investigation results.</li> </ul>
2	11 February	1.05pm	2	Blast	SMS to Environment and Community Officer	<ul style="list-style-type: none"> <li>A complainant from Maison Dieu sent an SMS to the Environment and Community Officer at 1.05pm asking to record a complaint due to noise and movement from a blast fired at 1pm from HVO.</li> <li>The Environment and Community Officer confirmed HVO blast firing times aligned with the complaint and called the complainant.</li> </ul>

Number: HVOOC-1797567310-4321

Status: Approved

Effective: 19/08/2022

Owner: Environment and Community Coordinator

Version: 1.0

Review: [Planned Review  
Date]

Page 35 of 39

Complaint Number	Date	Time	Complainant ID	Nature of Complaint	Mode of Complaint	Brief Description and Response
						<ul style="list-style-type: none"> <li>The blasting database was checked which recorded overpressure and ground vibration levels at the Maison Dieu blast monitor which is the closest monitor to the complainant's property and recorded low overpressure and vibration.</li> </ul>
3	19 March	7.35pm	3	Driving	Community Hotline	<ul style="list-style-type: none"> <li>A member of the public made a complaint about reckless driving from a vehicle observed to be entering Golden Highway from an HVO access road.</li> <li>Complaint was communicated internally, however vehicle was unable to be identified.</li> <li>A slide was included in the presentation pack at the quarterly HVO Safety Training Day about the importance of safe driving practices when driving to and from HVO.</li> </ul>

## 9 Environmental Incidents

There were three reportable environmental incidents during the reporting period:

- **4/7/2022 – Sediment Dam 2N overflow**

Sediment Dam (2N) overtopped to Farrells Creek following continued rainfall in the preceding days. Rainfall volume exceeded the dam design capacity. The dam was being pumped out at the time and continued to operate until the level reduced below the spillway and water quality samples were collected. Due to the fresh quality of the water and excessive rainfall in the local catchment there was no potential for environmental harm. Notifications were sent to DPE, DPE - Water, EPA and the Resource Regulator.

- **6/7/2022 – Dam 35S, 39S and 15N overflow**

During consecutive rain days between 2 and 6 July 2022, HVO recorded 161.6mm and 157.2mm of rainfall at its North and South weather stations respectively. The rainfall recorded significantly exceeded the design rainfall depth for sediment dams 35S and 39S and exceeded the capacity of mine stormwater containment dam 15N. The dams were pumped out to reduce water levels and water quality samples were collected. Notifications were sent to DPE, DPE - Water, EPA and the Resource Regulator.

- **9/07/2022 – Warkworth TSP HVAS miscapture**

On the 8th of July, HVO environmental monitoring technician inspected the Warkworth site and confirmed that the power was off and that the HVAS had sustained significant damage from the flooding of the Wollombi Brook between 3 and 6 July. Due to road access issues associated with the flooding, a replacement HVAS unit was not able to be installed prior to the scheduled run day on 9 July therefore missing a sample. A temporary unit was arranged to be installed whilst the unit was being repaired. The DPE were notified of the miscapture.

## Appendix A - Meteorological Data

Date	Air Temp Max (°C)	Air Temp Min (°C)	Relative Humidity (Max %)	Relative Humidity (Min %)	Solar Radiation Maximum (W/Sq. M)	Average Wind Direction (°)	Average Wind Speed (m/sec)	Rainfall (mm)
1/7/2022	13.75	9.75	100	80.6	309.8	114.8	1.6	0
2/7/2022	13.68	9.75	112.1	100.0	337.4	169.6	0.6	8
3/7/2022	14.18	10.64	112.5	100.0	509.6	265.6	2.8	55.6
4/7/2022	14.26	10.03	111.9	99.3	439.4	275.6	2.4	35.2
5/7/2022	15.34	11.60	112.9	108.2	212.6	132.2	3.8	48.2
6/7/2022	14.98	12.56	112.1	99.9	191.7	137.1	3.7	16
7/7/2022	17	8.92	111	75.1	646.5	243.1	1.9	3.4
8/7/2022	15.2	5.84	91.2	58.7	572.4	287.8	4.5	0
9/7/2022	15.89	6.04	96.4	47.8	568.9	282.2	2.6	0
10/7/2022	12.1	5.63	111	79.1	715.7	226.4	1.9	4.2
11/7/2022	16.56	7.54	111.1	66.7	909	166.1	1.0	0.2
12/7/2022	16.22	4.85	112	59.5	702.9	272.8	1.6	4.6
13/7/2022	14.03	6.07	100	60.1	814	270.3	3.0	0
14/7/2022	15.36	7.60	95.6	62.6	910	193.6	2.2	0
15/7/2022	16.05	4.42	100	46.9	582.7	278.6	2.1	0
16/7/2022	17.37	3.68	97.4	49.3	678.5	282.2	2.9	0
17/7/2022	19.68	7.61	77.7	43.7	711.6	294.6	5.6	0
18/7/2022	15.24	6.66	65.7	29.9	588.4	252.6	3.6	0.4
19/7/2022	12.35	2.18	95.5	57.2	929	178.3	1.9	2.2
20/7/2022	14.87	4.85	95.7	49.8	851	121.9	2.4	0.2
21/7/2022	16.7	6.49	93.9	39.0	878	113.1	3.7	0.8
22/7/2022	16.86	8.93	92.9	52.9	893	118.2	3.3	0.4
23/7/2022	17.41	7.02	96.3	51.5	839	129.7	1.7	0.2
24/7/2022	16.79	7.66	96.4	58.2	869	169.3	1.1	0
25/7/2022	17.08	6.86	97.1	54.7	893	222.2	1.0	0.2

Date	Air Temp Max (°C)	Air Temp Min (°C)	Relative Humidity (Max %)	Relative Humidity (Min %)	Solar Radiation Maximum (W/Sq. M)	Average Wind Direction (°)	Average Wind Speed (m/sec)	Rainfall (mm)
26/7/2022	17.19	7.49	94.3	36.0	936	261.1	4.4	6.2
27/7/2022	15.72	5.87	74.49	35.4	602.2	289.5	3.9	0
28/7/2022	17.08	5.47	81.7	38.0	628.5	293.5	2.6	0
29/7/2022	17.44	4.83	87.4	28.0	829	201.9	1.9	0
30/7/2022	14.75	2.80	91.4	38.4	826	195.8	1.2	0
31/7/2022	17.43	2.88	93.8	38.0	738.4	206.4	1.1	0