

# HUNTER VALLEY OPERATIONS



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## Monthly Environmental Monitoring Report April 2021

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# 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 30<sup>th</sup> April 2021 (the 'Reporting Period').

## 2 Air Quality

### 2.1 Meteorological Monitoring

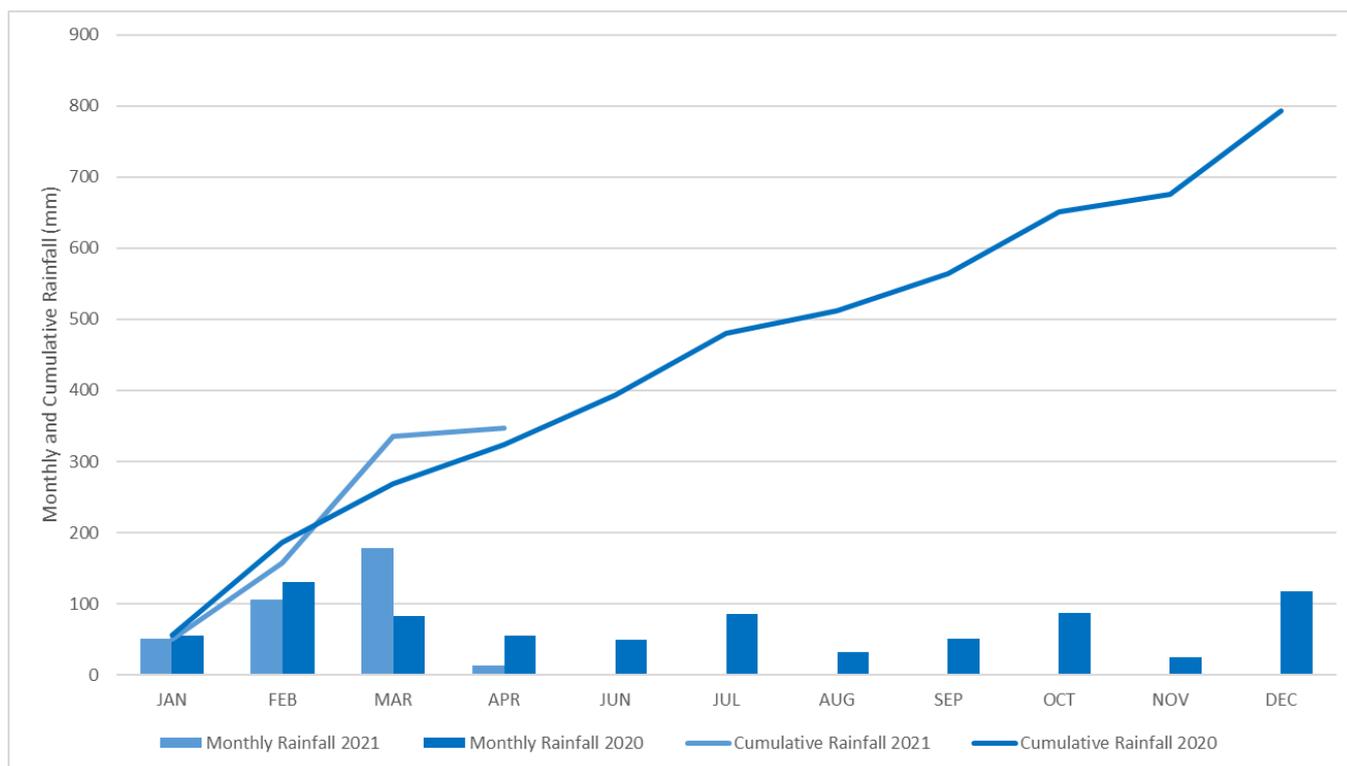
HVO maintains two meteorological stations: 'HVO Corporate' and 'Cheshunt' (refer to **Figure 4**)

#### 2.1.1 Rainfall

Rainfall for the period is summarised in **Table 1**. The 2021 trend and historical trends are shown in **Figure 1**.

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

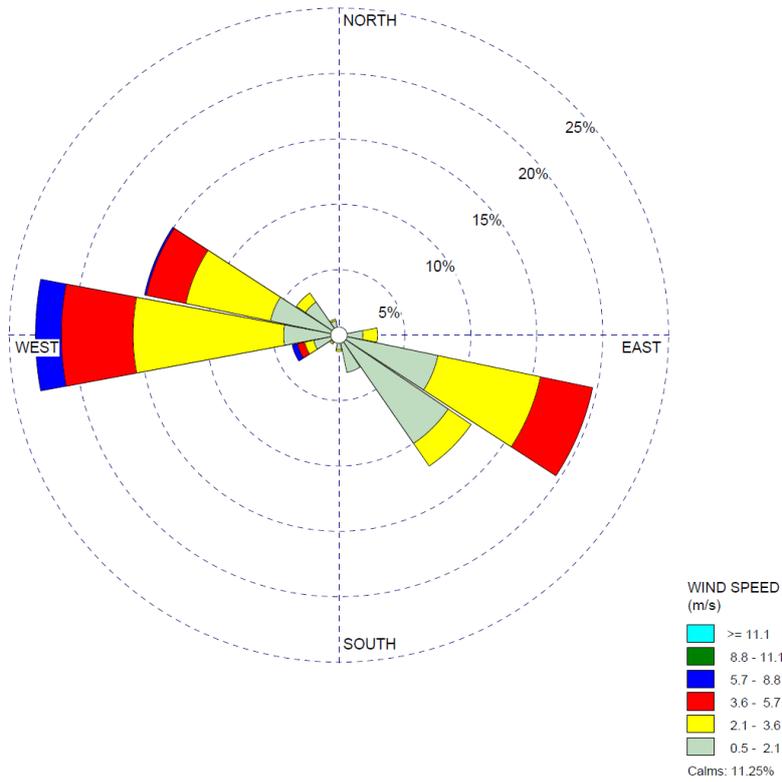
2021	Monthly Rainfall (mm)	Cumulative Rainfall (mm)
January	50.6	50.6
February	106.4	157
March	178	335
April	12.8	347.8



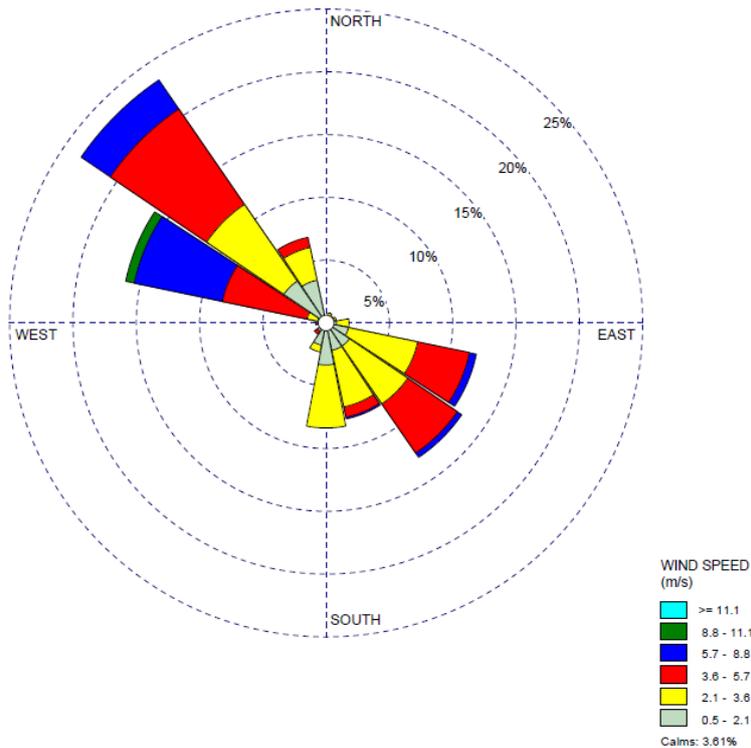
**Figure 1 - Rainfall Summary 2021**

## 2.1.2 Wind Speed and Direction

West and North Westerly winds were prevailing during the reporting period, with South-Easterly winds also common 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**

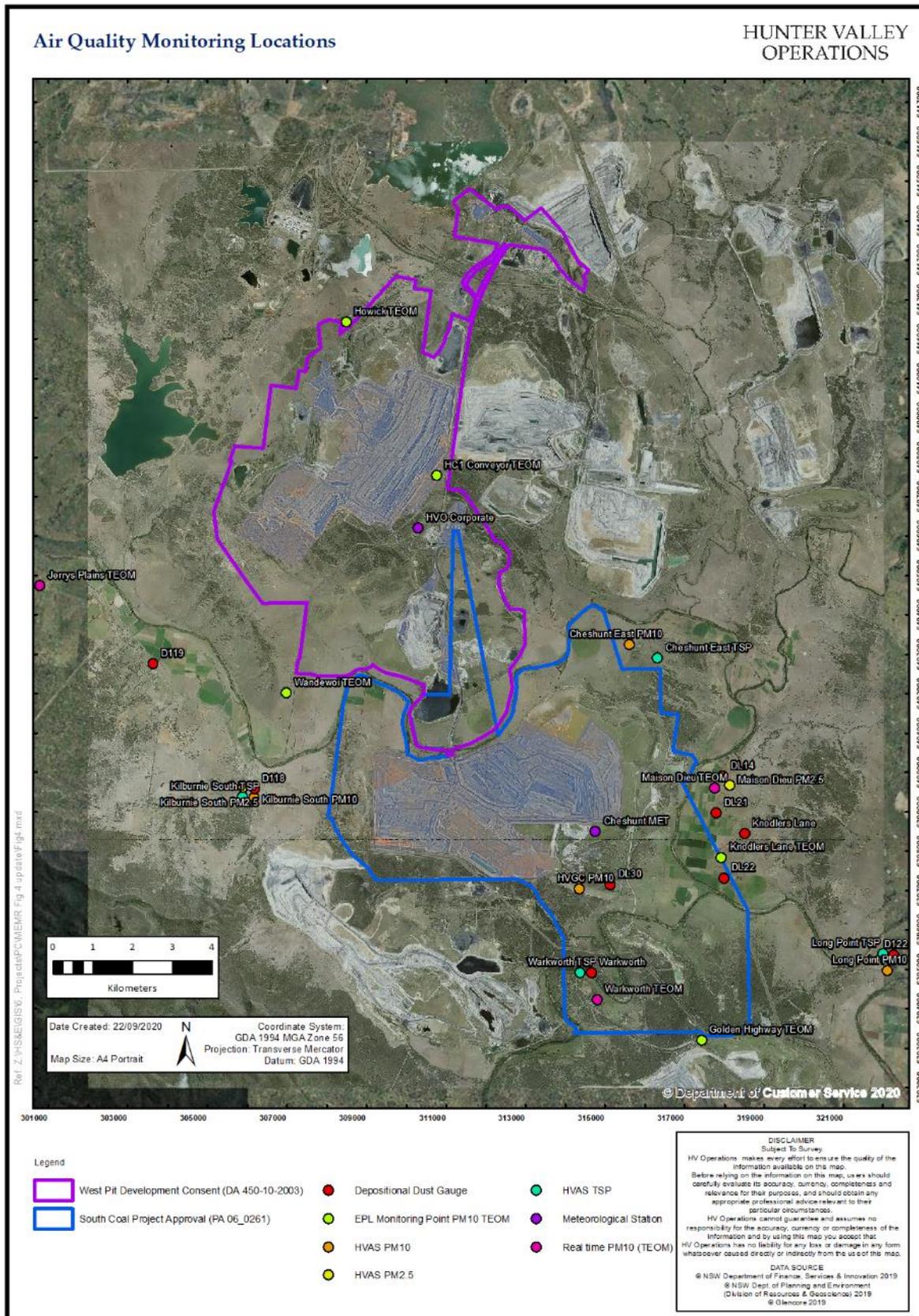


Figure 4 - Air Quality Monitoring Location Plan

## 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 2021 Annual Review.

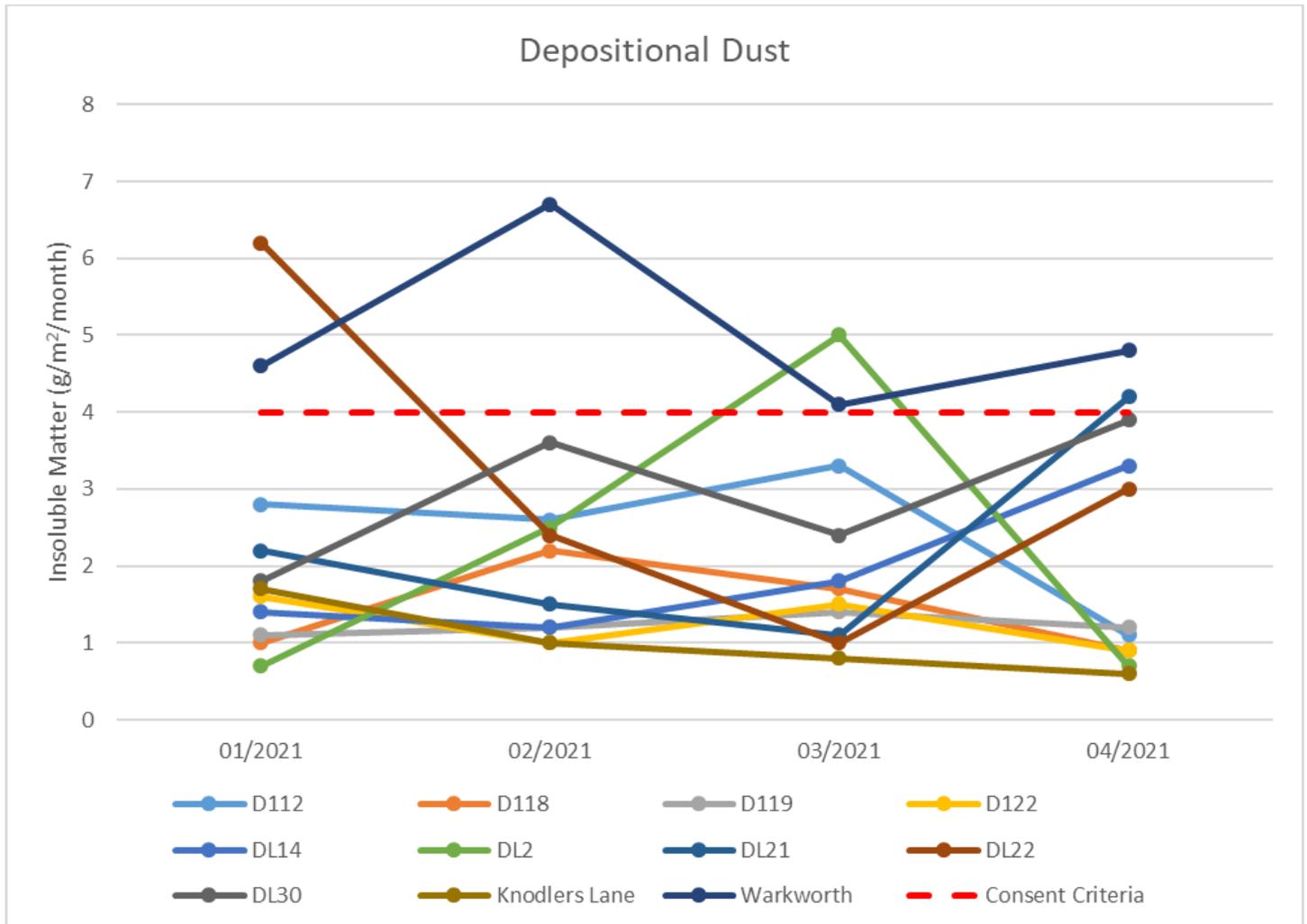


Figure5 - Depositional Dust Results for the reporting period

## 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 can be seen 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>. All monitors were below the relevant short-term impact assessment criteria during the reporting period.

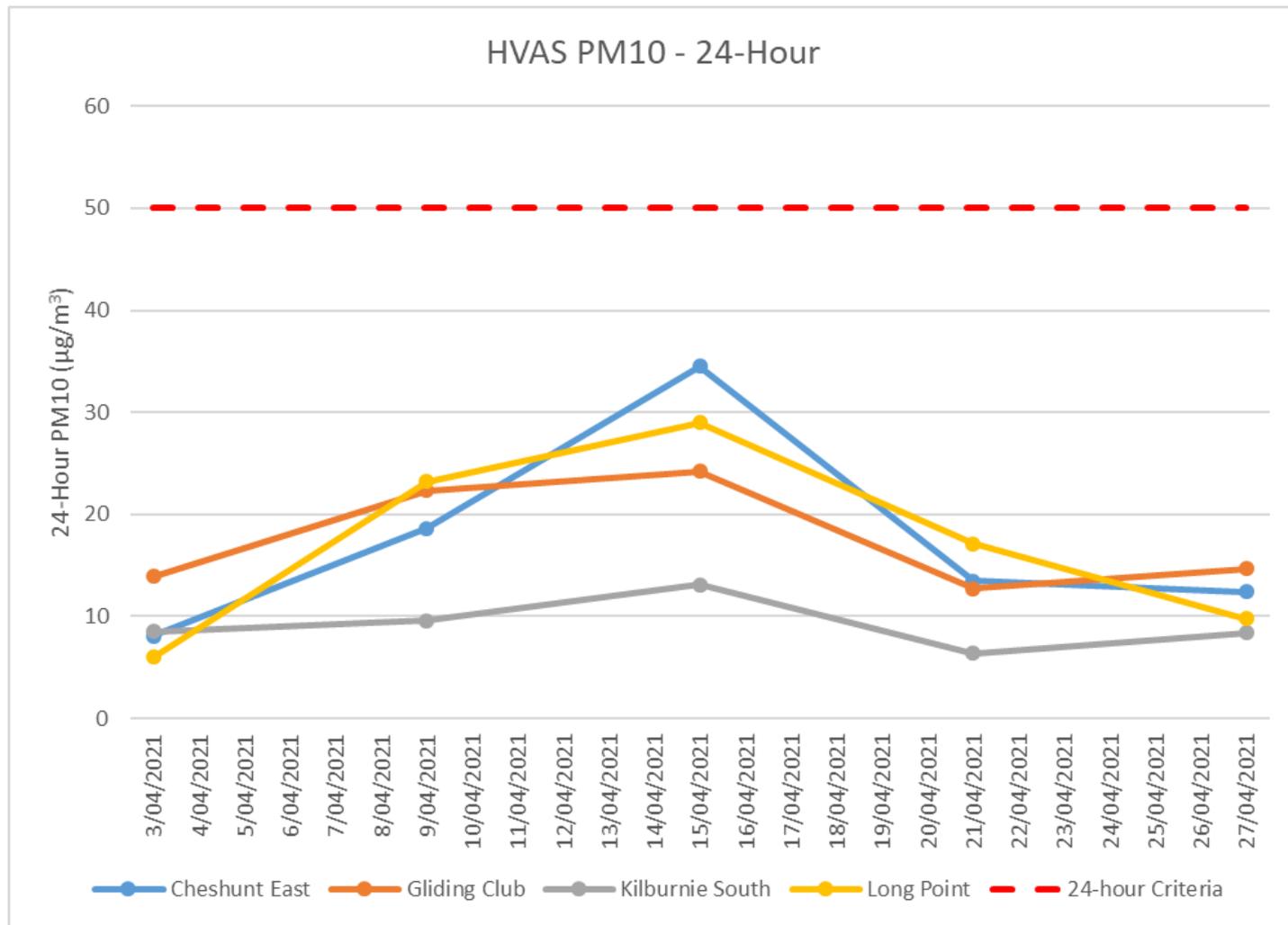


Figure 6 - Individual PM<sub>10</sub> Results for the reporting period

### 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 2021 Annual Review.

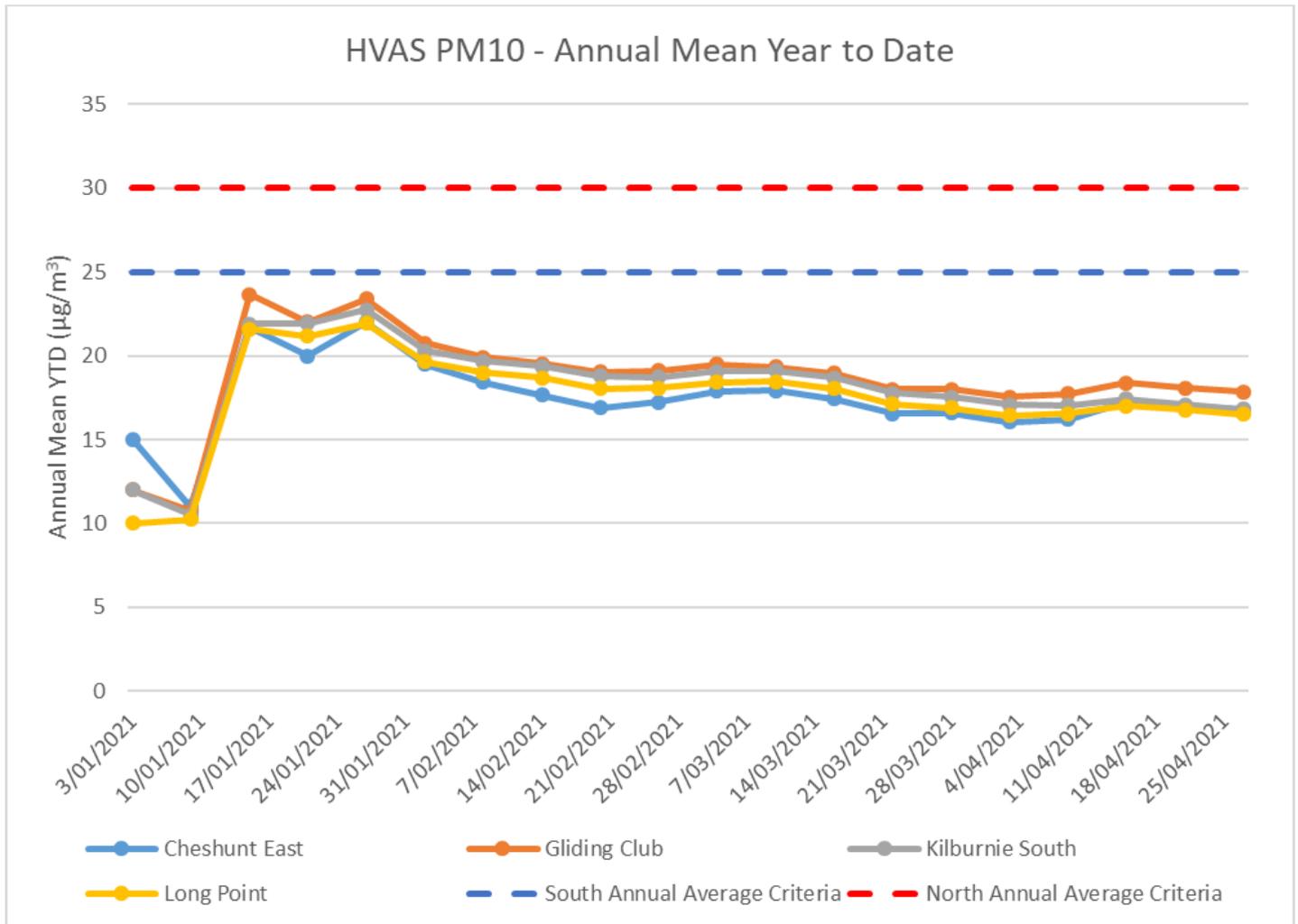


Figure 7 - Year to Date Average PM<sub>10</sub> as at end of April 2021

## 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.

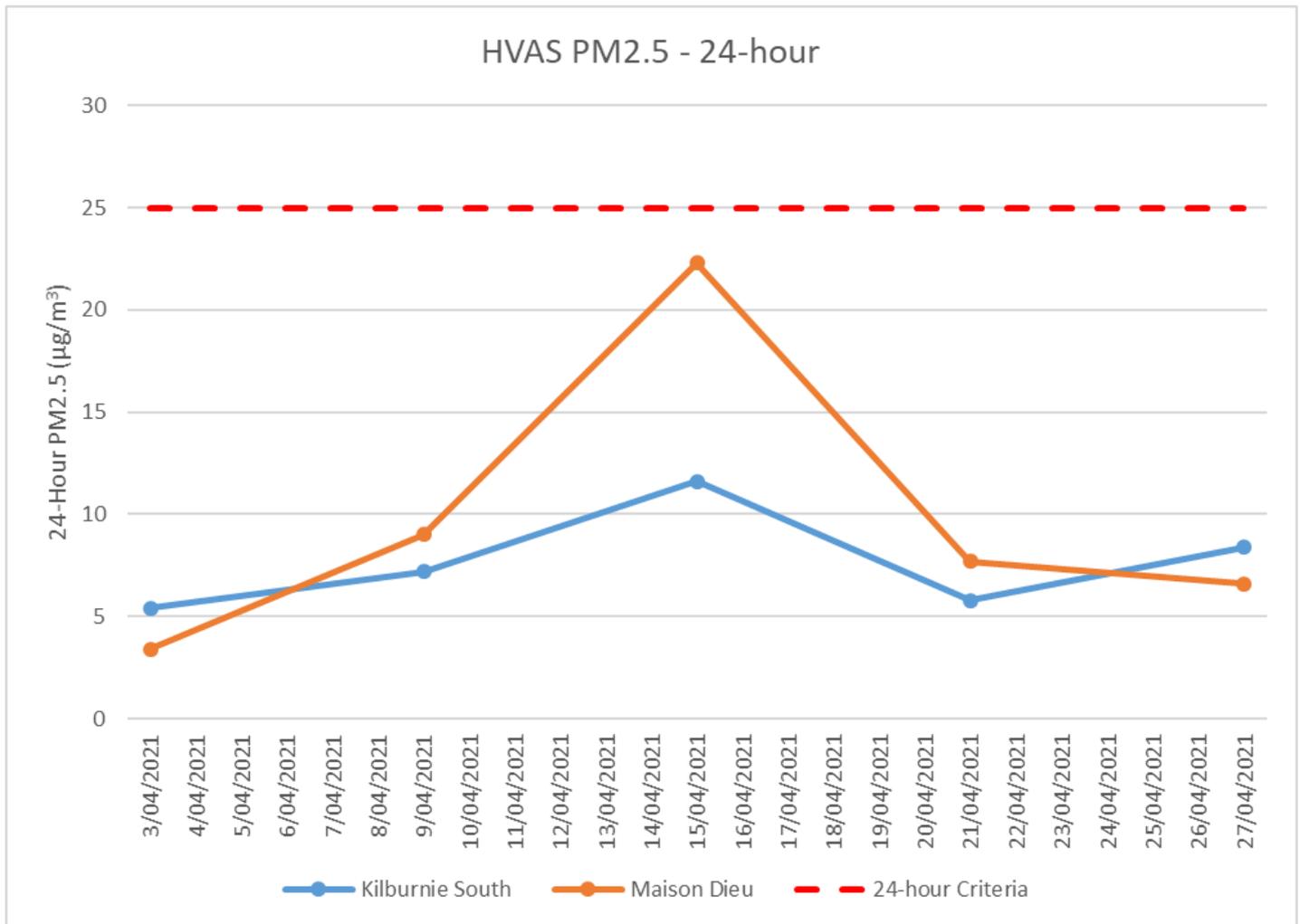


Figure 8 - Individual PM<sub>2.5</sub> Results for the reporting period

### 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, both monitors recorded an annual average above 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 2021 Annual Review.

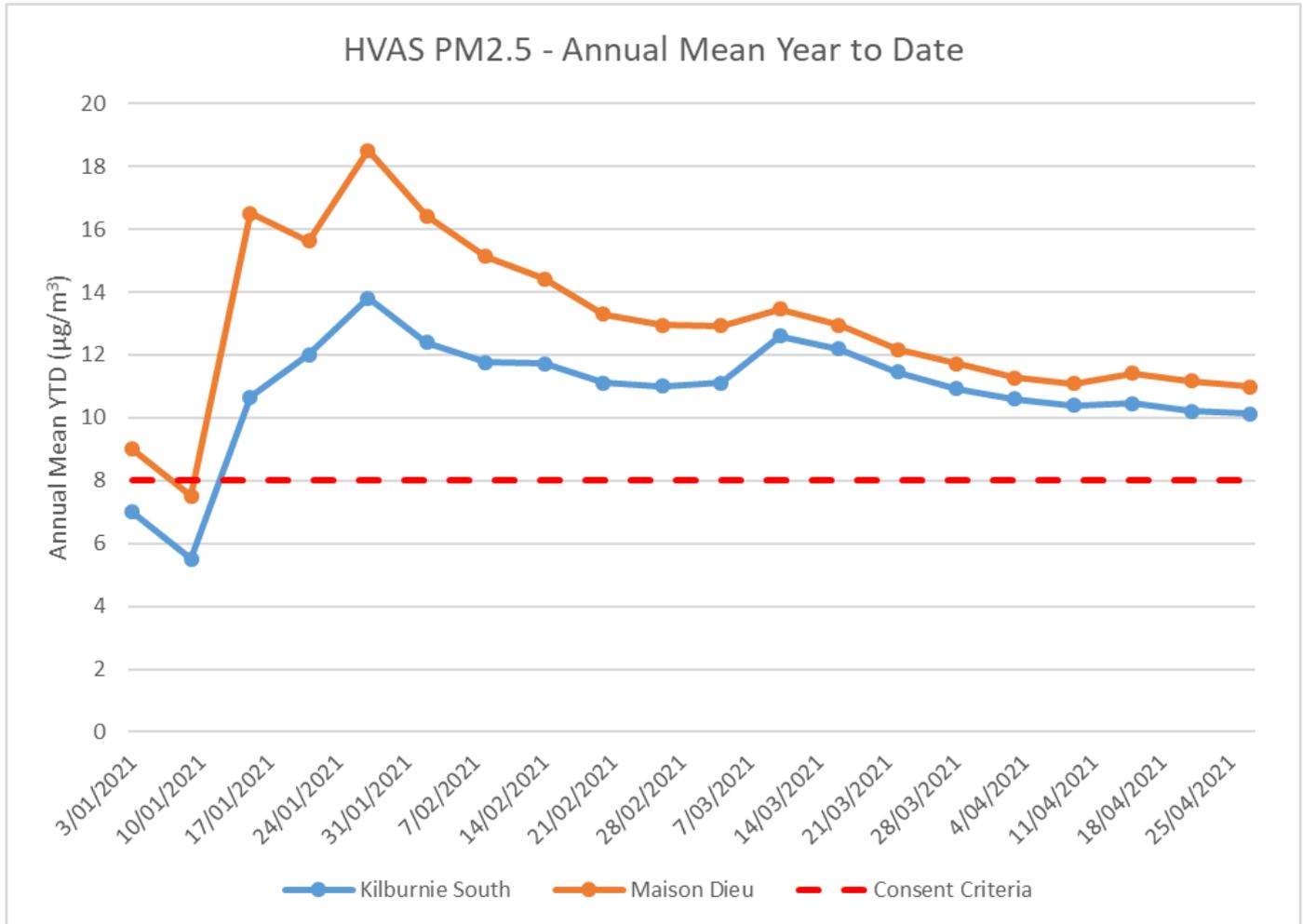


Figure 9 - Year to Date Average PM<sub>2.5</sub> as at end of April 2021

## 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 2021 Annual Review.

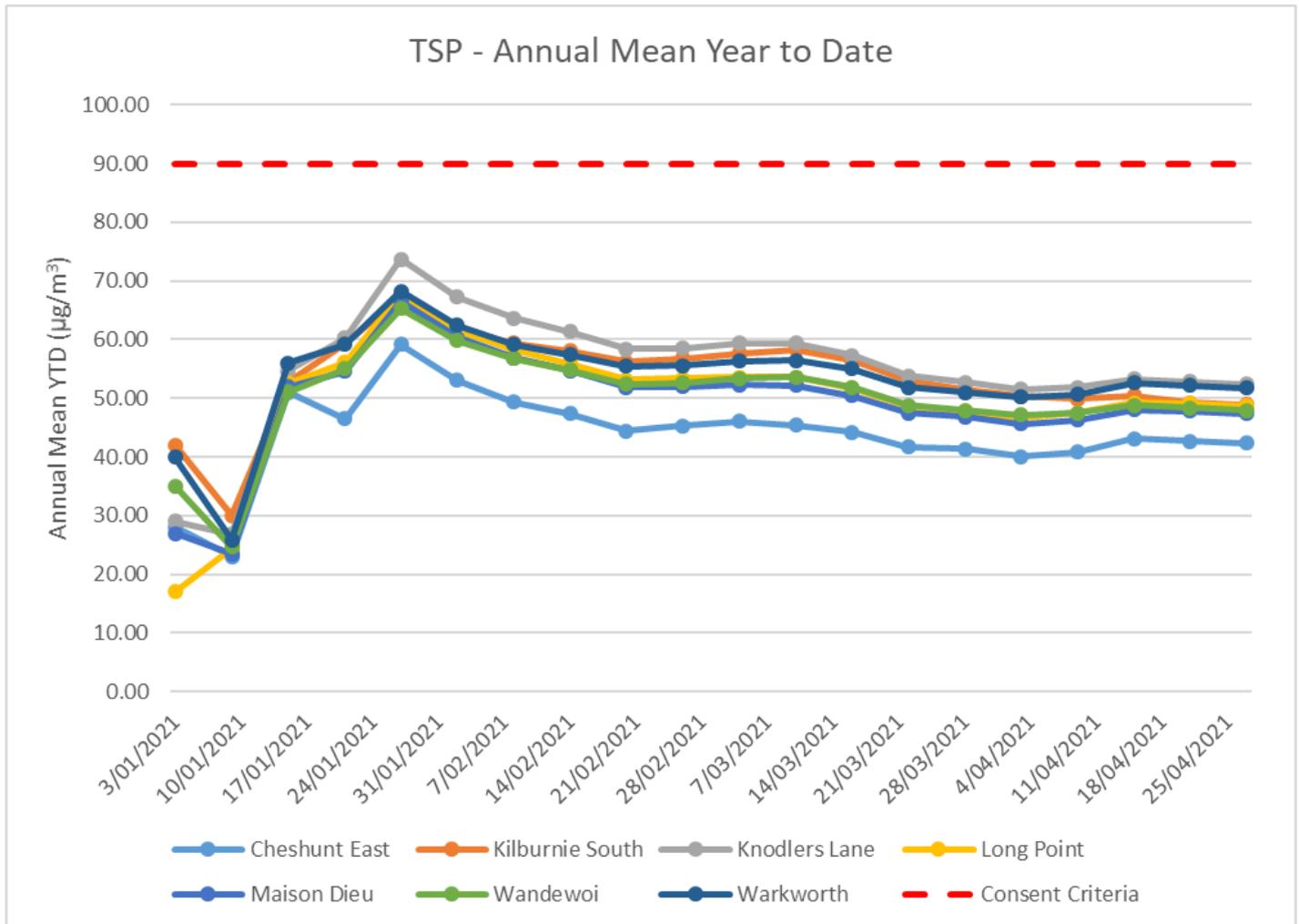


Figure 10 - Year to Date Average Total Suspended Particulates as at end of April 2021

## 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. The year to date annual averages for each monitoring site are shown in **Figure 12**.

The Knodlers Lane TEOM recorded an elevated result of 108.3µg/m<sup>3</sup> which is above the impact assessment criteria. An internal investigation identified that the Rural Fire Service were conducting a hazard reduction burn in the Wollemi National Park area. HVO's contribution did not significantly contribute to this elevated result. Further information will be provided in the 2021 annual review.

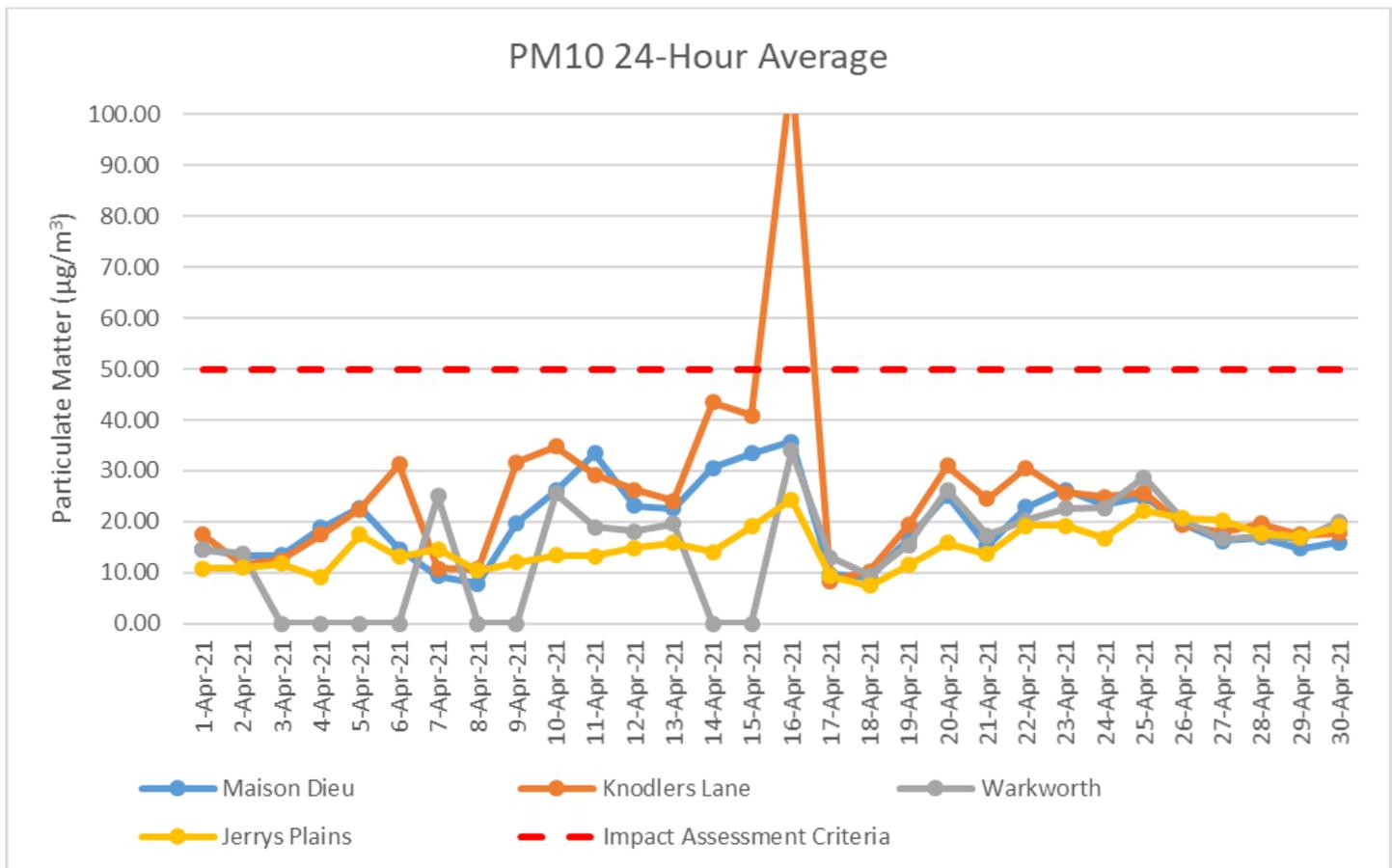


Figure 11 - Real Time PM<sub>10</sub> 24hr for the reporting 2021

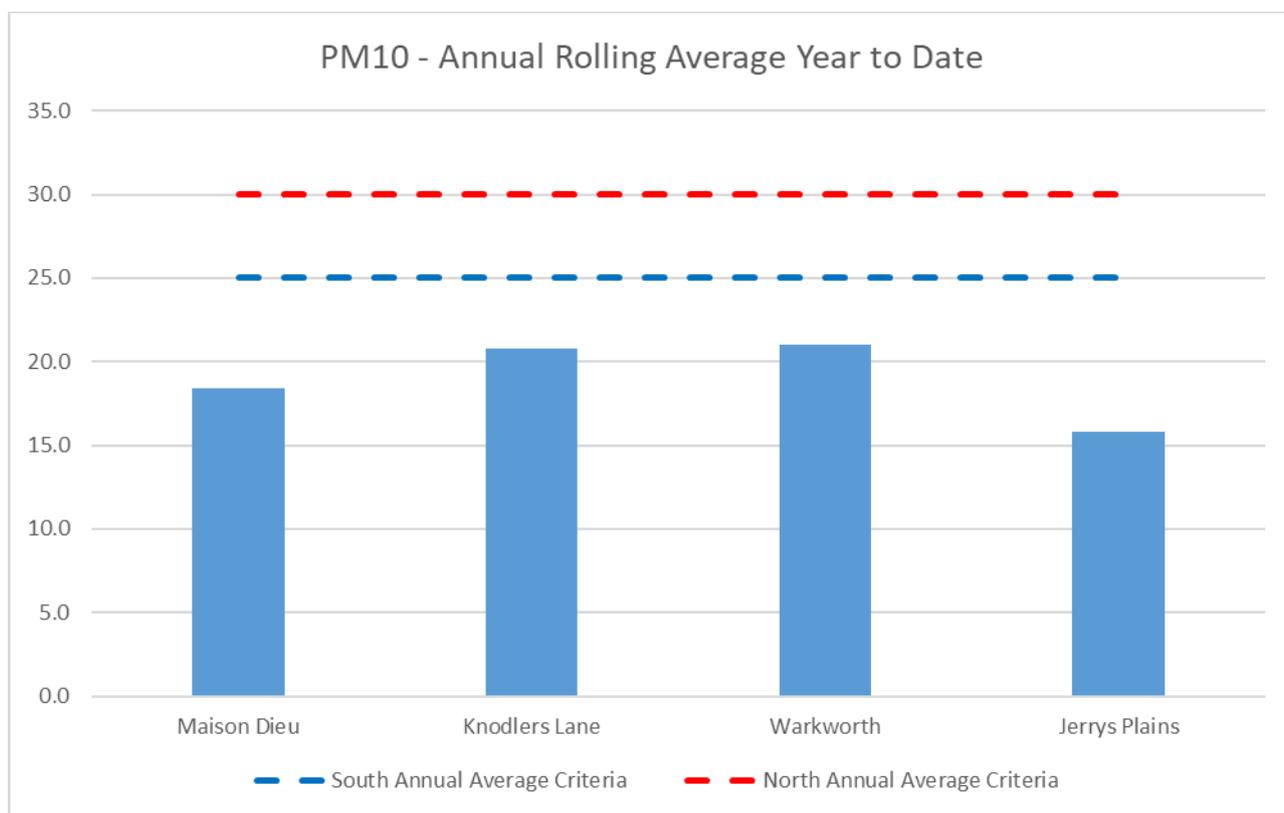


Figure 12 - Real Time PM<sub>10</sub> Annual Average April 2021

### 2.3.5 Real Time Alarms for Air Quality

The real time monitoring system generated 57 automated air quality related alarms during the reporting period. 26 alarms related to adverse weather conditions and 31 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 are 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 June 2021 Monthly Environmental Monitoring Report.

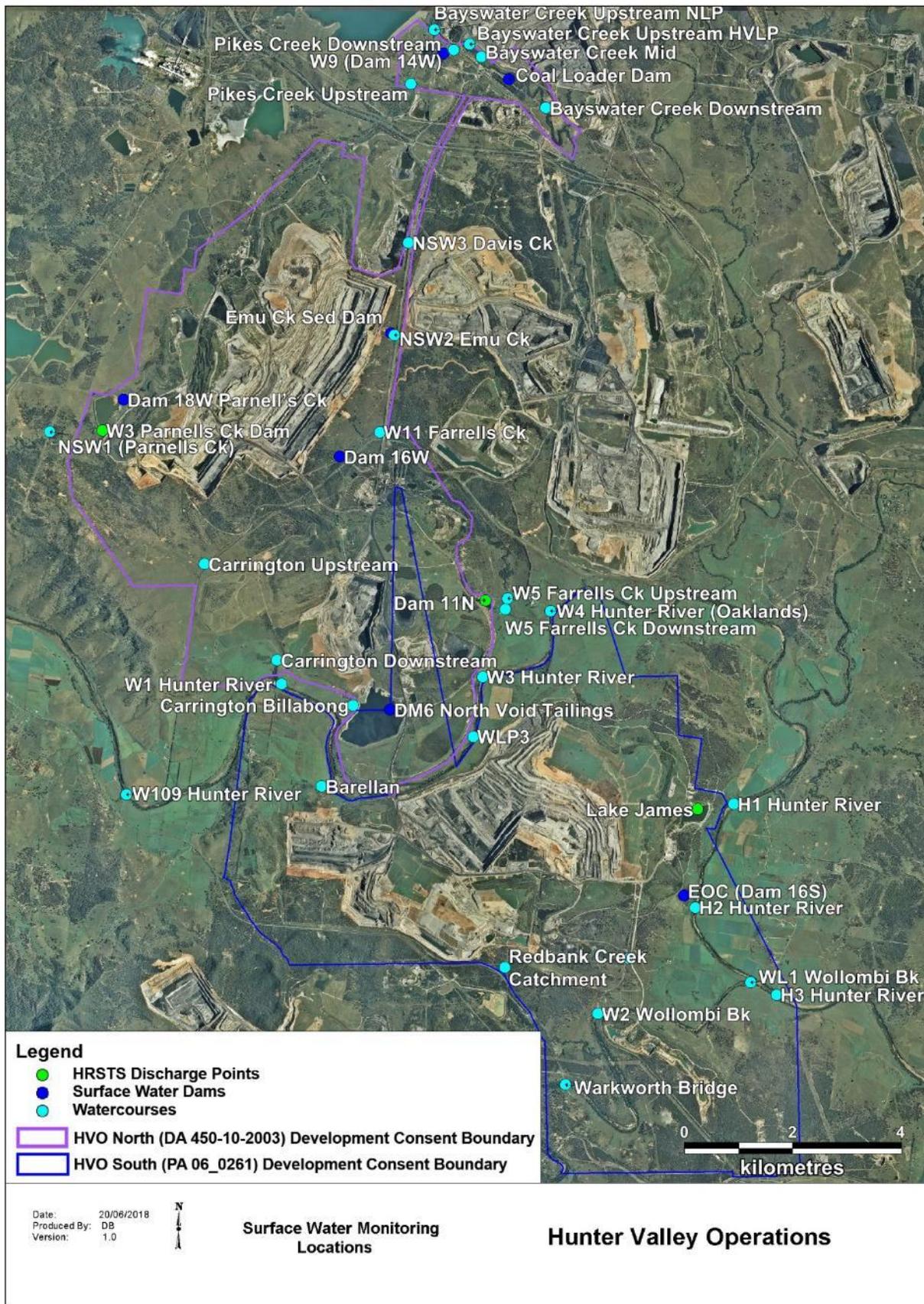


Figure 13 - HVO Surface Water Monitoring Locations

### 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 2021 report.

### 3.2 Site Water Use

HVO is permitted to extract water from the Hunter River under water allocation licenses issued by Water NSW. During the reporting period, HVO extracted 0 ML of water from the Hunter River.

### 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 10.28ML of water under the HRSTS during the reporting period.

### 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 June 2021 Monthly Environmental Monitoring Report.

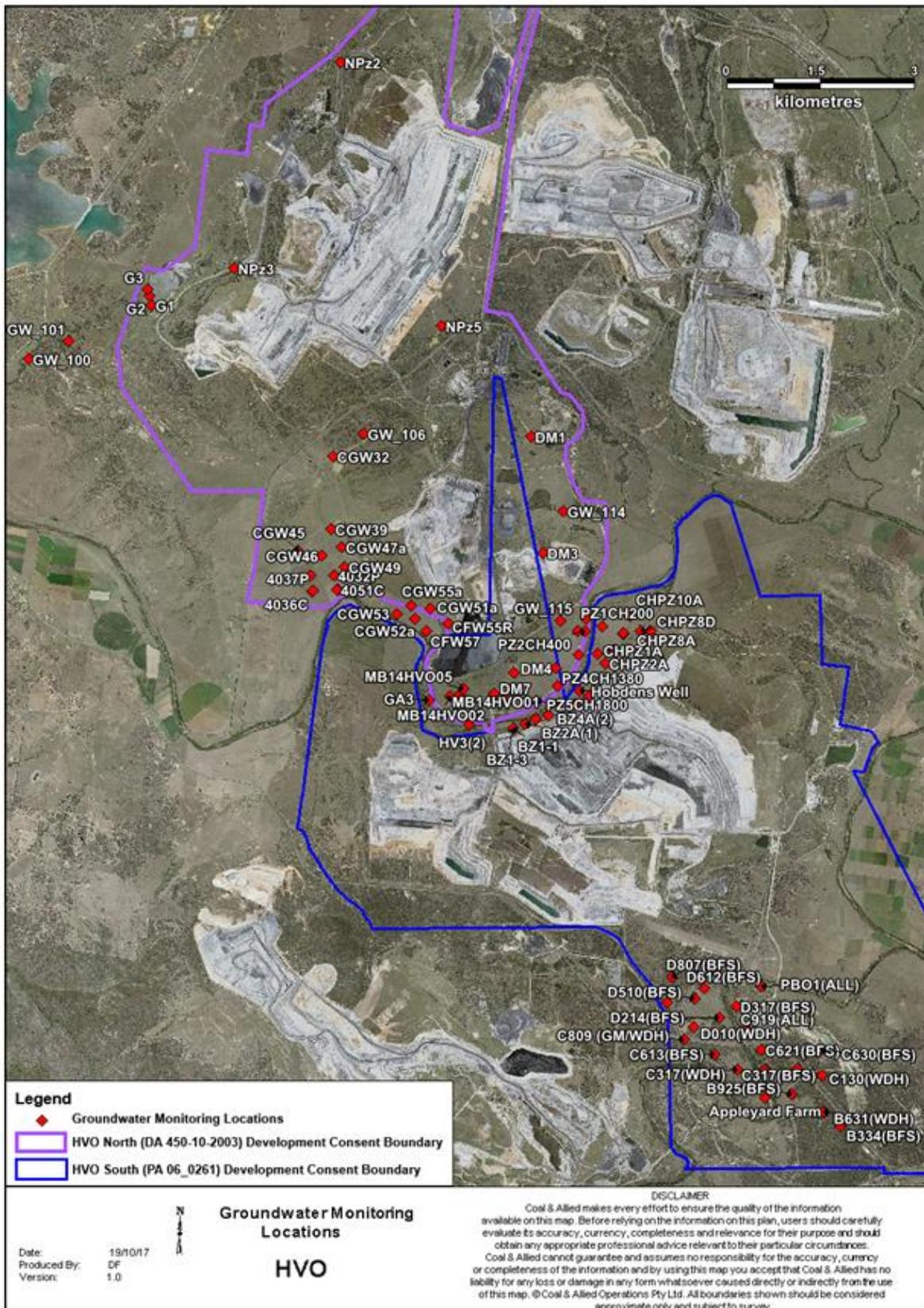


Figure 14 Groundwater monitoring Locations at HVO

### 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 June 2021 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 (dB(L))	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 two (22) 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 (dB)	Jerrys Plains Village (dB)	Maison Dieu (dB)	Warkworth (dB)	Knodlers Lane (dB)
1/04/2021 13:03	83.21	91.78	87.2	99.11	88.17
6/04/2021 13:35	93.03	94.41	86.90	91.21	88.91
6/04/2021 13:35	96.03	98.08	93.14	95.77	92.31
7/04/2021 13:37	102.73	101.20	88.50	91.34	104.25
10/04/2021 13:26	94.20	107.65	113.60	109.70	111.00
10/04/2021 13:27	83.69	103.10	113.60	110.62	112.00
12/04/2021 13:06	86.10	86.25	87.15	88.77	88.15
13/04/2021 13:47	89.62	82.68	93.23	93.42	94.34
14/04/2021 13:00	102.02	109.91	106.02	106.18	109.83
16/04/2021 13:42	94.34	90.04	98.43	95.18	99.01
17/04/2021 13:07	101.58	100.80	97.23	97.81	97.43
21/04/2021 13:16	91.55	83.74	91.63	94.47	96.31
21/04/2021 13:17	85.38	86.74	79.66	85.59	99.42
21/04/2021 16:49	89.25	86.11	96.84	98.10	97.82
23/04/2021 15:40	89.74	90.46	100.06	99.92	99.55
24/04/2021 14:07	81.75	89.82	94.71	96.60	96.92
27/04/2021 13:00	88.58	91.50	99.27	96.71	98.93
28/04/2021 13:11	88.81	80.69	86.10	94.07	90.85
28/04/2021 13:12	102.05	95.06	92.00	95.07	93.44
28/04/2021 15:32	91.06	98.62	89.12	90.30	87.83
29/04/2021 13:16	92.51	93.93	79.60	92.55	86.98
30/04/2021 15:22	94.94	98.37	96.74	98.37	97.06

**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)
1/04/2021 13:03	0.14	0.07	0.06	0.81	0.08
6/04/2021 13:35	0.26	0.09	0.31	0.66	0.31
6/04/2021 13:35	0.13	0.05	0.19	1.13	0.20
7/04/2021 13:37	0.15	0.08	0.07	0.14	0.09
10/04/2021 13:26	0.17	0.07	0.47	0.61	0.53
10/04/2021 13:27	0.10	0.04	0.05	1.12	0.09
12/04/2021 13:06	0.11	0.06	0.05	0.15	0.09
13/04/2021 13:47	0.18	0.09	0.25	1.01	0.26
14/04/2021 13:00	0.22	0.22	0.11	0.91	0.12
16/04/2021 13:42	0.13	0.05	0.24	0.35	0.19
17/04/2021 13:07	0.14	0.05	0.56	0.52	0.42
21/04/2021 13:16	0.12	0.06	0.04	0.83	0.08
21/04/2021 13:17	0.21	0.08	0.04	0.15	0.08
21/04/2021 16:49	0.15	0.07	0.38	0.94	0.40
23/04/2021 15:40	0.17	0.10	0.47	1.22	0.70
24/04/2021 14:07	0.11	0.05	0.05	0.24	0.09
27/04/2021 13:00	0.17	0.07	0.52	0.83	0.62
28/04/2021 13:11	0.12	0.04	0.08	0.81	0.10
28/04/2021 13:12	0.33	0.08	0.08	0.65	0.10
28/04/2021 15:32	0.10	0.04	0.04	0.11	0.08
29/04/2021 13:16	0.11	0.07	0.04	0.86	0.08
30/04/2021 15:22	0.19	0.09	0.67	1.08	0.94

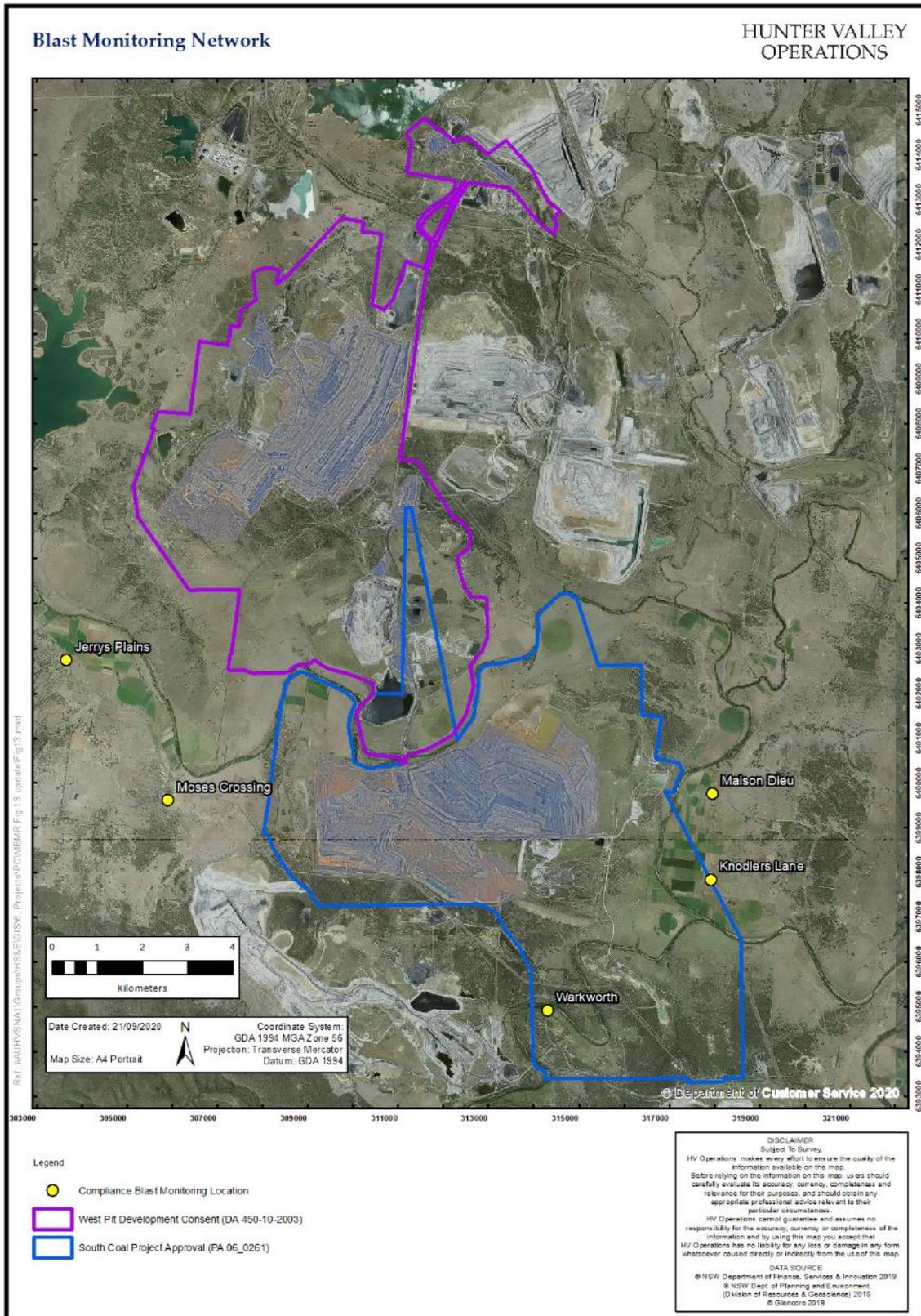


Figure 15 - Blast Monitoring Location Plan

## 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 on the night of 26<sup>th</sup> April 2021. All monitoring levels were below relevant criteria. Monitoring results are detailed in **Table 7** to **Table 11**.

**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 dB(A)	Criterion Applies <sup>2</sup>	HVO North LAeq dB <sup>3,4,5,6</sup>	Exceedance <sup>4,5</sup>
Shearers Lane	26/04/2021 21:02	1.8	E	35	Yes	IA	Nil
Knodlers Lane	26/04/2021 21:43	1.4	E	35	Yes	IA	Nil
Maison Dieu	26/04/2021 21:23	1.8	E	35	Yes	IA	Nil
Long Point (Dights Crossing)	26/04/2021 22:38	1.1	E	35	Yes	IA	Nil
Kilburnie South	26/04/2021 23:13	0.9	E	39	Yes	IA	Nil
Jerrys Plains East	26/04/2021 21:03	1.8	E	39	Yes	29	Nil
Jerrys Plains Village	26/04/2021 21:47	1.4	E	40	Yes	30	Nil
Jerrys Plains West	26/04/2021 21:25	1.8	E	40	Yes	30	Nil
HVGC	26/04/2021 23:40	0.1	F	NA	Yes	IA	Nil

1. Atmospheric data is sourced from the HVO Cheshunt (or MTW Charlton Ridge for Long Point) AWS using logged meteorological data;

2. Noise criteria apply for wind speeds up to 3m/s (at a height of 10m), or during stability class G conditions. Criterion may or may not apply due to rounding of meteorological data values;

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

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;

6. IA means inaudible, there was no site noise at the monitoring location; and

**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 dB(A)	Criterion Applies <sup>2</sup>	HVO North LAeq dB <sup>3,4,6</sup>	Exceedance <sup>4,5</sup>
Shearers Lane	26/04/2021 21:02	1.8	E	41	Yes	IA	Nil
Knodlers Lane	26/04/2021 21:43	1.4	E	41	Yes	IA	Nil
Maison Dieu	26/04/2021 21:23	1.8	E	41	Yes	IA	Nil
Long Point (Dights Crossing)	26/04/2021 22:38	1.1	E	41	Yes	IA	Nil
Kilburnie South	26/04/2021 23:13	0.9	E	41	Yes	IA	Nil
Jerrys Plains East	26/04/2021 21:03	1.8	E	41	Yes	29	Nil
Jerrys Plains Village	26/04/2021 21:47	1.4	E	41	Yes	30	Nil
Jerrys Plains West	26/04/2021 21:25	1.8	E	41	Yes	30	Nil
HVGC	26/04/2021 23:40	0.1	F	NA	Yes	IA	Nil

1. Atmospheric data is sourced from the HVO Cheshunt (or MTW Charlton Ridge for Long Point) AWS using logged meteorological data;

2. Noise criteria apply for wind speeds up to 3m/s (at a height of 10m), or during stability class G conditions. Criterion may or may not apply due to rounding of meteorological data values;

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

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;

6. IA means inaudible, there was no site noise at the monitoring location; and

**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 dB(A)	Criterion Applies <sup>2</sup>	HVO North L <sub>Aeq</sub> dB <sup>3,4,6</sup>	Exceedance <sup>4,5</sup>
Shearers Lane	26/04/2021 21:02	1.8	E	46	Yes	IA	Nil
Knodlers Lane	26/04/2021 21:43	1.4	E	46	Yes	IA	Nil
Maison Dieu	26/04/2021 21:23	1.8	E	46	Yes	IA	Nil
Long Point (Dights Crossing)	26/04/2021 22:38	1.1	E	46	Yes	IA	Nil
Kilburnie South	26/04/2021 23:13	0.9	E	46	Yes	IA	Nil
Jerrys Plains East	26/04/2021 21:03	1.8	E	46	Yes	31	Nil
Jerrys Plains Village	26/04/2021 21:47	1.4	E	46	Yes	34	Nil
Jerrys Plains West	26/04/2021 21:25	1.8	E	46	Yes	32	Nil
HVGC	26/04/2021 23:40	0.1	F	NA	Yes	IA	Nil

1. Atmospheric data is sourced from the HVO Cheshunt (or MTW Charlton Ridge for Long Point) AWS using logged meteorological data;
2. Noise criteria apply for wind speeds up to 3m/s (at a height of 10m), or during stability class G conditions. Criterion may or may not apply due to rounding of meteorological data values;
3. Site-only L<sub>Aeq</sub> 15 minute attributed to HVO South Pit Area, including modifying factors if applicable;
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;
6. IA means inaudible, there was no site noise at the monitoring location; and

**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 dB(A)	Criterion Applies <sup>2</sup>	HVO South LAeq dB <sup>3,4,6</sup>	Exceedance <sup>4,5</sup>
Shearers Lane	26/04/2021 21:02	3	E	41	No	IA	NA
Knodlers Lane	26/04/2021 21:43	2.8	E	40	Yes	IA	Nil
Maison Dieu	26/04/2021 21:23	2.7	E	39	Yes	IA	Nil
Long Point (Dights Crossing)	26/04/2021 22:38	2.8	E	37	Yes	IA	Nil
Kilburnie South	26/04/2021 23:13	2.6	E	39	Yes	33	Nil
Jerrys Plains East	26/04/2021 21:03	3	E	38	No	IA	NA
Jerrys Plains Village	26/04/2021 21:47	2.8	E	35	Yes	IA	Nil
Jerrys Plains West	26/04/2021 21:25	2.7	E	35	Yes	IA	Nil
HVGC	26/04/2021 23:40	2.6	E	55	Yes	IA	Nil

1. Atmospheric data is sourced from the HVO Cheshunt (or MTW Charlton Ridge for Long Point) AWS using logged meteorological data;

2. Noise criteria apply for wind speeds up to 3m/s (at a height of 10m), or during stability class G conditions. Criterion may or may not apply due to rounding of meteorological data values;

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

6. IA means inaudible, there was no site noise at the monitoring location; and

**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 dB(A)	Criterion Applies <sup>2</sup>	HVO South L <sub>Aeq</sub> dB <sup>3,4,6,7</sup>	Exceedance <sup>4,5</sup>
Shearers Lane	26/04/2021 21:02	3	E	45	No	IA	NA
Knodlers Lane	26/04/2021 21:43	2.8	E	45	Yes	IA	Nil
Maison Dieu	26/04/2021 21:23	2.7	E	45	Yes	IA	Nil
Long Point (Dights Crossing)	26/04/2021 22:38	2.8	E	45	Yes	IA	Nil
Kilburnie South	26/04/2021 23:13	2.6	E	45	Yes	36	Nil
Jerrys Plains East	26/04/2021 21:03	3	E	45	No	IA	NA
Jerrys Plains Village	26/04/2021 21:47	2.8	E	45	Yes	IA	Nil
Jerrys Plains West	26/04/2021 21:25	2.7	E	45	Yes	IA	Nil
HVGC	26/04/2021 23:40	2.6	E	NA	Yes	IA	Nil

1. Atmospheric data is sourced from the HVO Cheshunt (or MTW Charlton Ridge for Long Point) AWS using logged meteorological data;
2. Noise criteria apply for wind speeds up to 3m/s (at a height of 10m), or during stability class G conditions. Criterion may or may not apply due to rounding of meteorological data values;
3. Site-only L<sub>Aeq</sub> 15 minute attributed to HVO South Pit Area, including modifying factors if applicable;
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;
6. IA means inaudible, there was no site noise at the monitoring location; and

## 5.2 Low Frequency Assessment

In accordance with the requirements of the EPA's Noise Policy for Industry (NPfI), 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 $L_{Aeq}dB$	Criterion Applies?	Intermittency Modifying Factor?	Tonality Modifying Factor?	Frequency of Tonality <sup>1</sup>	Low-frequency Modifying Factor?	Maximum Exceedance of NPfI Reference Spectrum <sup>1,2</sup>	Total Penalty $dB^2$
Shearers Lane	26/04/2021 21:02	IA	Yes	No	No	NA	No	NA	Nil
Knodlers Lane	26/04/2021 21:43	IA	Yes	No	No	NA	No	NA	Nil
Maison Dieu	26/04/2021 21:23	IA	Yes	No	No	NA	No	NA	Nil
Long Point (Dights Crossing)	26/04/2021 22:38	IA	Yes	No	No	NA	No	NA	Nil
Kilburnie South	26/04/2021 23:13	IA	Yes	No	No	NA	No	NA	Nil
Jerrys Plains East	26/04/2021 21:03	29	Yes	No	No	NA	No	NA	Nil
Jerrys Plains Village	26/04/2021 21:47	30	Yes	No	No	NA	No	NA	Nil
Jerrys Plains West	26/04/2021 21:25	30	Yes	No	No	NA	No	NA	Nil
HVGC	26/04/2021 23:40	IA	Yes	No	No	NA	No	NA	Nil

1. NA means not applicable;

**Table 11 - Modifying Factor Assessment HVO South for the reporting period**

Location	Date and Time	Measured HVO South $L_{Aeq}dB$	Criterion Applies?	Intermittency Modifying Factor?	Tonality Modifying Factor?	Frequency of Tonality <sup>1</sup>	Low-frequency Modifying Factor?	Maximum Exceedance of NPfI Reference Spectrum <sup>1,2</sup>	Total Penalty $dB^2$
Shearers Lane	26/04/2021 21:02	IA	No	No	No	NA	No	NA	Nil
Knodlers Lane	26/04/2021 21:43	IA	Yes	No	No	NA	No	NA	Nil
Maison Dieu	26/04/2021 21:23	IA	Yes	No	No	NA	No	NA	Nil
Long Point (Dights Crossing)	26/04/2021 22:38	IA	Yes	No	No	NA	No	NA	Nil
Kilburnie South	26/04/2021 23:13	33	Yes	No	No	NA	No	NA	Nil
Jerrys Plains East	26/04/2021 21:03	IA	No	No	No	NA	No	NA	Nil
Jerrys Plains Village	26/04/2021 21:47	IA	Yes	No	No	NA	No	NA	Nil
Jerrys Plains West	26/04/2021 21:25	IA	Yes	No	No	NA	No	NA	Nil
HVGC	26/04/2021 23:40	IA	Yes	No	No	NA	No	NA	Nil

1. NA means not applicable;

### 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.

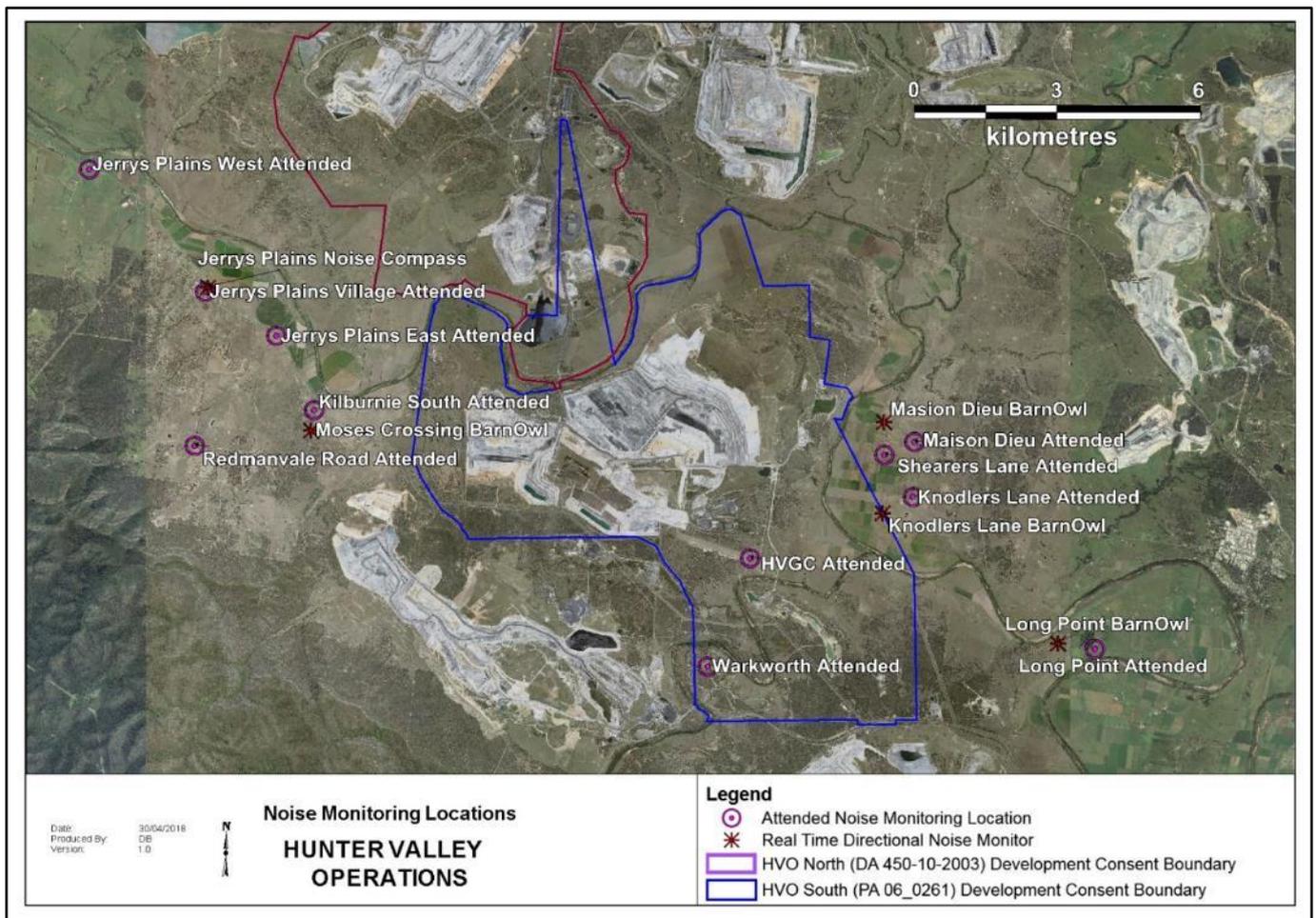


Figure 16 - Noise Monitoring Location Plan

# 6 Operational Downtime

A total of 43.8 hours of equipment downtime were 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).

HUNTER VALLEY  
OPERATIONS

Hunter Valley Operations  
Monthly Operational Downtime  
Thursday 01-Apr-2021 to Friday 30-Apr-2021

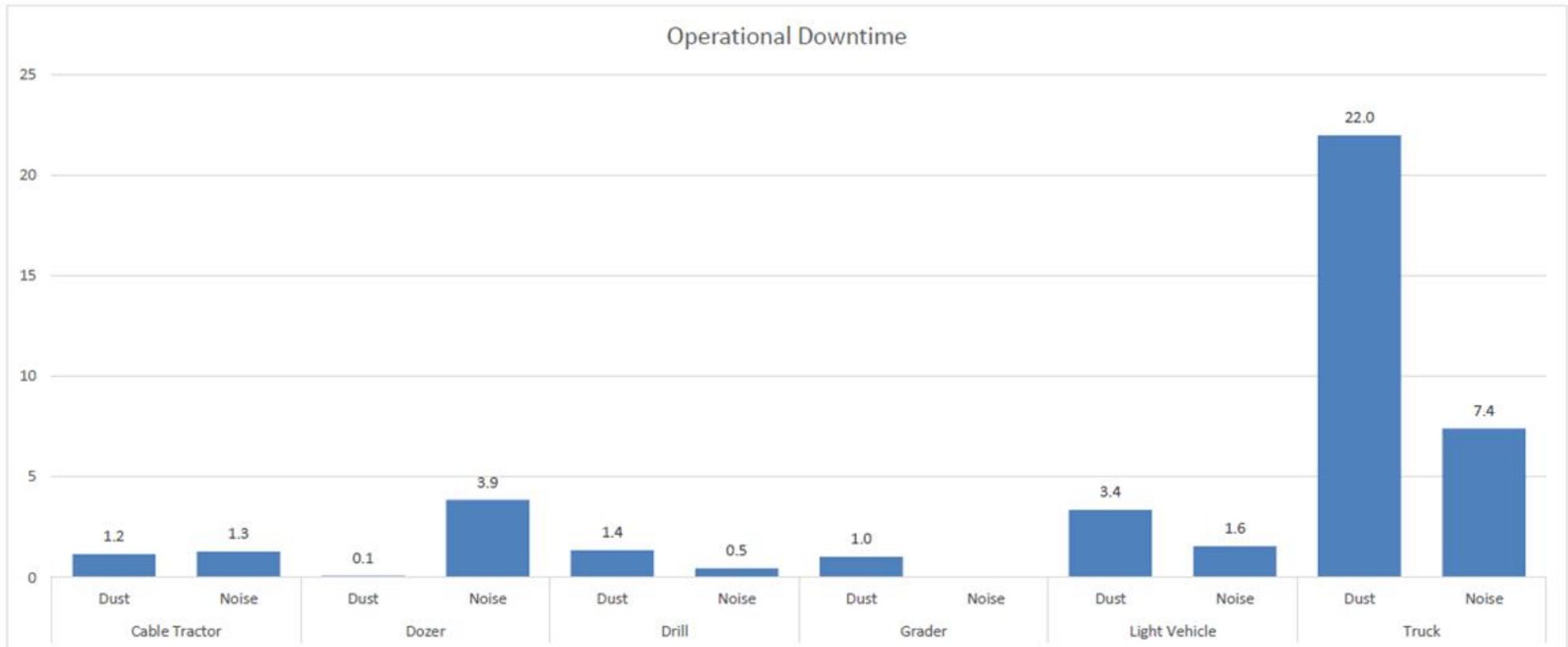


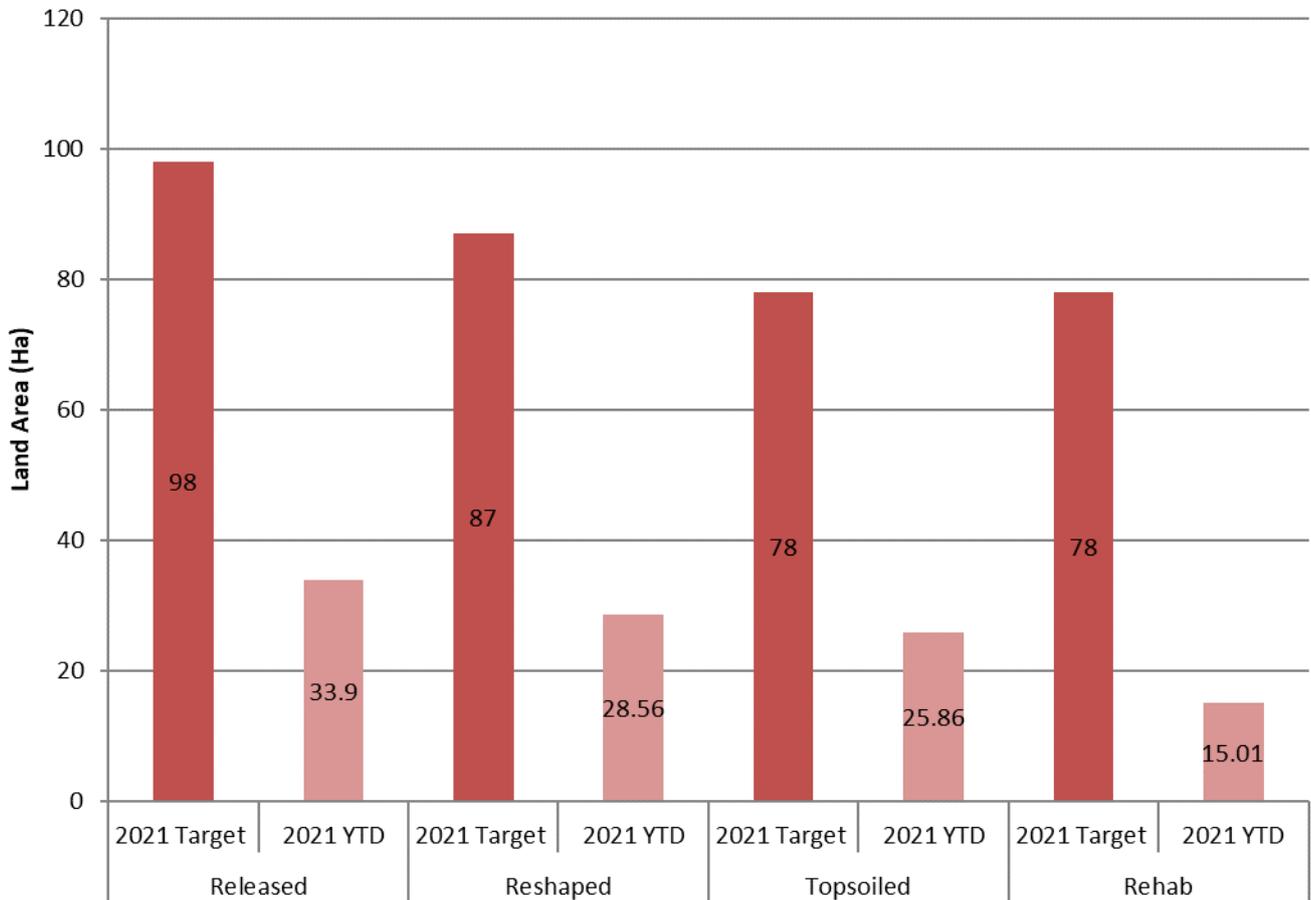
Figure 17 - Operational Downtime by Equipment Type for the reporting period

# 7 Rehabilitation

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

- 0.98 Ha of land was reshaped
- 5.46 Ha of land was released (became available for the application of topsoil)
- 10.68 Ha of land was topsoiled
- 15.01 Ha was rehabilitated

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



**Figure 18 - Rehabilitation YTD April 2021**

# 8 Complaints

Four (4) complaints were received during the reporting period. Details of complaints received are shown in Table 12.

**Table 12 - Complaints Summary 2021**

Month	Noise	Dust	Blast	Lighting	Other	Total
January	1	-	-	1	-	2
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April	-	-	3	1	-	4
May						
June						
July						
August						
September						
October						
November						
December						
<b>Total</b>	<b>1</b>		<b>3</b>	<b>2</b>		<b>6</b>

## 9 Environmental Incidents

During April there were two (2) reportable environmental incidents. These will be discussed in the next annual review.

- **03/04/2021 – Missed Sample at Warkworth TEOM**

There was an issue with the logger at the TEOM from 07:00 on 3 April which was resolved at 09:00 on 6 April. Data capture included 20% on 3 April, no data on 4 and 5 April and 64% on 6 April. The monitor is operated externally as part of the Upper Hunter Air Quality Monitoring Network and is outside of HVO control.

- **14/04/2021 – Missed Sample at Warkworth TEOM**

An issue with the data capture at Warkworth TEOM data logger from 14 - 15 April was identified as part daily checks on 15 April. 54% of meaningful data was recorded on 14 April, and 67% of meaningful data was recorded on 15 April. The monitor is operated externally as part of the Upper Hunter Air Quality Monitoring Network and is outside of HVO control.

## 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)
1/04/2021	21.29	-1.479	100	51.53	1159	144.5	1.254	0
2/04/2021	24.31	-1.876	111.2	36.26	1086	138.2	2.015	0
3/04/2021	24.57	-1.949	110.3	43.2	1129	119.6	2.112	0
4/04/2021	26.04	-2.453	111.3	37.18	992	220.4	1.593	0.2
5/04/2021	24.97	1.515	100	46.99	1036	132.3	1.897	0
6/04/2021	24.22	1.379	110.3	53.78	796.5	113	2.529	0.6
7/04/2021	23.34	1.619	109.5	57.31	1126	117.6	2.137	1.2
8/04/2021	24.33	0.776	111.2	46.63	947	117	1.444	0
9/04/2021	27.21	-0.161	108.6	20.37	1028	276.6	3.206	0
10/04/2021	22.67	-0.708	98.3	15.85	776.2	261.1	3.311	0.2
11/04/2021	17.49	-6.144	78.83	12.83	1100	276.2	4.071	0
12/04/2021	18.59	-7.957	79.72	19.26	785.6	219.7	2.082	0
13/04/2021	22.05	-9.54	100	15.77	749.9	202.5	1.069	0
14/04/2021	25.02	-5.508	92.3	11.51	843	278.2	3.323	0
15/04/2021	25.11	-1.04	67.62	13.75	738.4	270.6	3.057	0
16/04/2021	19.76	-2.384	91.2	30.58	1147	174.2	2.344	0
17/04/2021	14.04	-2.95	110.2	69.29	225.4	139.9	1.404	10.4
18/04/2021	20.11	4.356	111.8	45.45	743.6	229.9	1.51	0.2
19/04/2021	21.29	-2.011	100	24.22	720.6	274.2	2.247	0
20/04/2021	21.61	1.349	67.69	21.4	988	275.3	3.839	0
21/04/2021	19.97	-4.507	77.48	11.24	821	221.1	2.266	0
22/04/2021	18.02	-8.46	90.3	15.43	748.8	278.8	3.578	0
23/04/2021	19.98	-6.439	68.1	23.41	729	283	3.247	0
24/04/2021	20.51	-5.061	87.1	21.43	818	259	1.889	0
25/04/2021	20.51	-5.738	100	27.95	719.6	190.5	1.527	0

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)
26/04/2021	20.41	-5.71	110.4	35.76	746	171.7	1.121	0
27/04/2021	20.95	-5.407	110.8	37.89	811	157.1	1.137	0.2
28/04/2021	20.82	-3.994	110.9	41.69	977	162	1.2	0
29/04/2021	21.15	-5.812	109.8	33.16	653.5	180.6	1.212	0
30/04/2021	21.49	-3.722	110.3	41.27	828	146.6	1.434	0