

**HUNTER VALLEY  
OPERATIONS**



**Monthly Environmental  
Monitoring Report**

**Hunter Valley Operations**

**May 2018**

**CONTENTS**

1.0 INTRODUCTION..... 4

2.0 AIR QUALITY..... 4

    2.1 Meteorological Monitoring ..... 4

        2.1.1 Rainfall..... 4

        2.1.2 Wind Speed and Direction ..... 4

2.2 Depositional Dust..... 6

2.3 Suspended Particulates ..... 6

    2.3.1 HVAS PM<sub>10</sub> Results ..... 6

    2.3.2 TSP Results ..... 7

    2.3.3 Real Time PM<sub>10</sub> Results ..... 7

    2.3.4 Real Time Alarms for Air Quality..... 7

3.0 WATER QUALITY ..... 9

    3.1.1 Surface Water..... 9

    3.1.2 Site Water Use ..... 9

    3.1.3 HRSTS Discharge..... 9

    3.2.1 Groundwater Monitoring Results..... 9

4.0 BLASTING..... 9

4.1 Blast Monitoring Results..... 9

5.0 NOISE..... 13

    5.1 Attended Noise Monitoring Results ..... 13

6.0 OPERATIONAL DOWNTIME..... 18

7.0 REHABILITATION..... 18

8.0 COMPLAINTS..... 19

9.0 ENVIRONMENTAL INCIDENTS..... 19

Appendix A: Meteorological Data..... 20

## Figures

Figure 1: Rainfall Summary 2018	4
Figure 2: HVO Corporate Wind Rose – May 2018	4
Figure 3: HVO Cheshunt Wind Rose – May 2018	4
Figure 4: Air Quality Monitoring Location Plan	5
Figure 5: Depositional Dust Results – May 2018	6
Figure 6: Individual PM <sub>10</sub> Results – May 2018	6
Figure 7: Year to Date Average PM <sub>10</sub> – May 2018	7
Figure 8: Year to Date Average Total Suspended Particulates – May 2018	7
Figure 9: Real Time PM <sub>10</sub> 24hr average and YTD average – May 2018	8
Figure 10: Moses Crossing Blast Monitoring Results – May 2018	10
Figure 11: Jerrys Plains Blast Monitoring Results – May 2018	10
Figure 12: Maison Dieu Blast Monitoring Results – May 2018	10
Figure 13: Warkworth Blast Monitoring Results – May 2018	10
Figure 14: Knodlers Lane Blast Monitoring Results – May 2018	11
Figure 15: Blast Monitoring Location Plan	12
Figure 16: Noise Monitoring Location Plan	17
Figure 17: Operational Downtime by Equipment Type – May 2018	18
Figure 18: Rehabilitation YTD – May 2018	18

## Tables

Table 1: Monthly Rainfall HVO	4
Table 2: Real-time PM <sub>10</sub> Investigation Results	8
Table 3: Blasting Criteria	9
Table 4: L <sub>Aeq, 15 minute</sub> HVO South - Impact Assessment Criteria – May 2018	13
Table 5: L <sub>Aeq, 15 minute</sub> HVO South - Land Acquisition Criteria – May 2018	13
Table 6: L <sub>A1, 1minute</sub> HVO South - Impact Assessment Criteria – May 2018	14
Table 7: L <sub>Aeq, 15minute</sub> HVO North – Impact Assessment Criteria – May 2018	14
Table 8: L <sub>Aeq, 15minute</sub> HVO North - Land Acquisition Criteria – May 2018	14
Table 9: L <sub>A1, 1Minute</sub> HVO North - Impact Assessment Criteria – May 2018	15
Table 10: Low Frequency Noise Assessment - May 2018	16
Table 11: Complaints Summary YTD	19
Table 12: Meteorological Data - HVO Corporate Meteorological Station – May 2018	21

## Revision History

Version No.	Person Responsible	Document Status	Date
1.0	Environmental Advisor	Draft	24/07/2018
1.1	Environmental Specialist	Final	6/08/2018

## 1.0 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> May to 31<sup>st</sup> May 2018.

## 2.0 AIR QUALITY

### 2.1 Meteorological Monitoring

HVO maintains two meteorological stations; ‘Corporate’ and ‘Cheshunt’ (Refer to Figure 4: Air Quality Monitoring Location Plan).

#### 2.1.1 Rainfall

Rainfall for the period is summarised in Table 1, the 2018 trend and historical trend are shown in Figure 1.

Table 1: Monthly Rainfall HVO

2018	Monthly Rainfall (mm)	Cumulative Rainfall (mm)
May	4.4	168.6

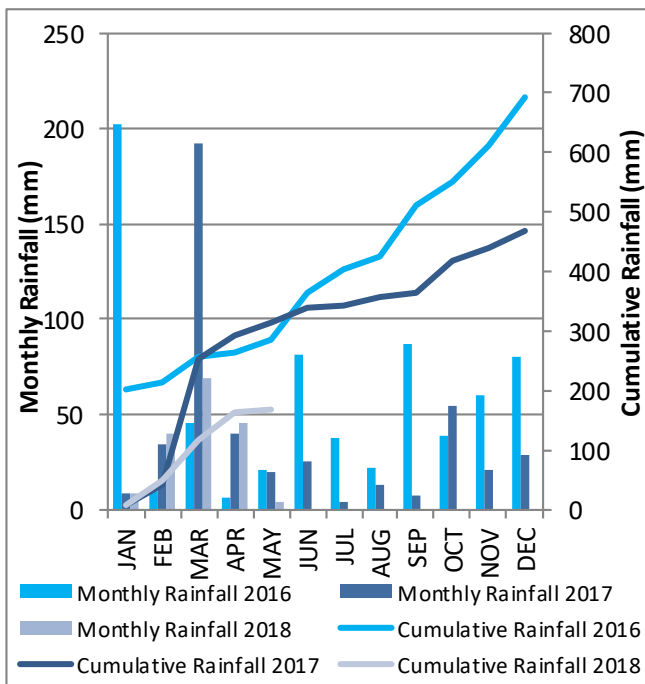


Figure 1: Rainfall Summary 2018

### 2.1.2 Wind Speed and Direction

Westerly and North-Westerly winds were dominant during May as shown in Figure 2 (HVO Corporate) and Figure 3 (HVO Cheshunt).

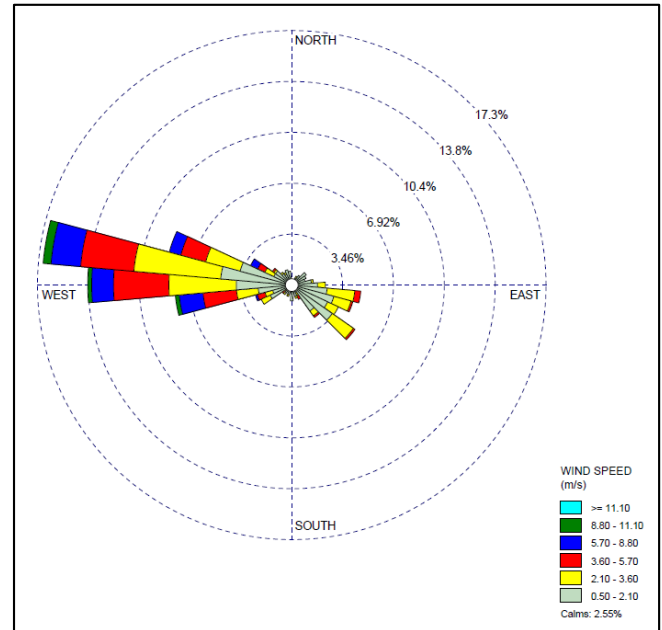


Figure 2: HVO Corporate Wind Rose – May 2018

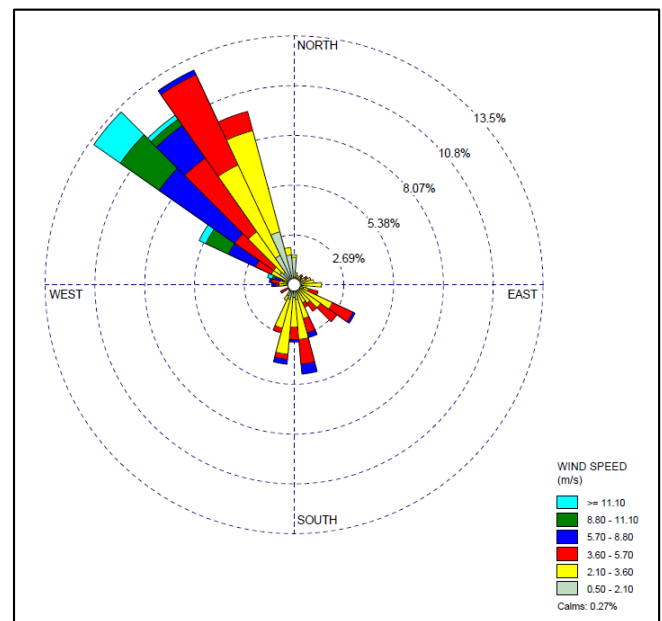


Figure 3: HVO Cheshunt Wind Rose – May 2018



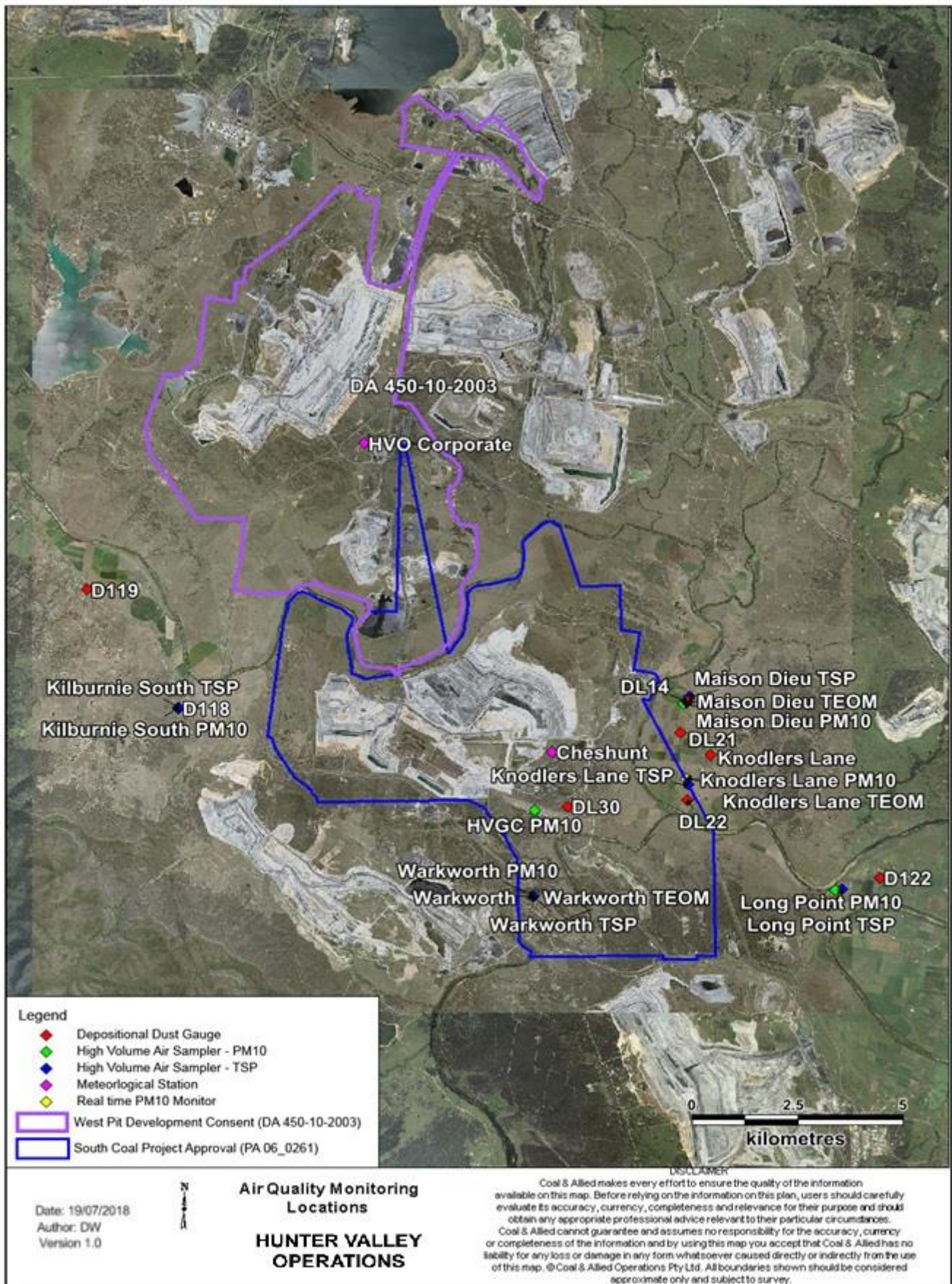


Figure 4: Air Quality Monitoring Location Plan

## 2.2 Depositional Dust

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

Figure 5 displays insoluble solids results from depositional dust gauges during the reporting period compared against the year-to-date average and the annual impact assessment criteria.

During the reporting period the D122 monitor recorded a monthly result above the long term impact assessment criteria of 4.0 g/m<sup>2</sup> per month.

The field notes associated with the D122 monitor's results confirm the presence of insects and bird droppings. As such the results are considered contaminated and will be excluded from calculation of the annual average.

An assessment of HVO's contribution against the long term impact assessment criteria will be provided in the 2018 Annual Review.

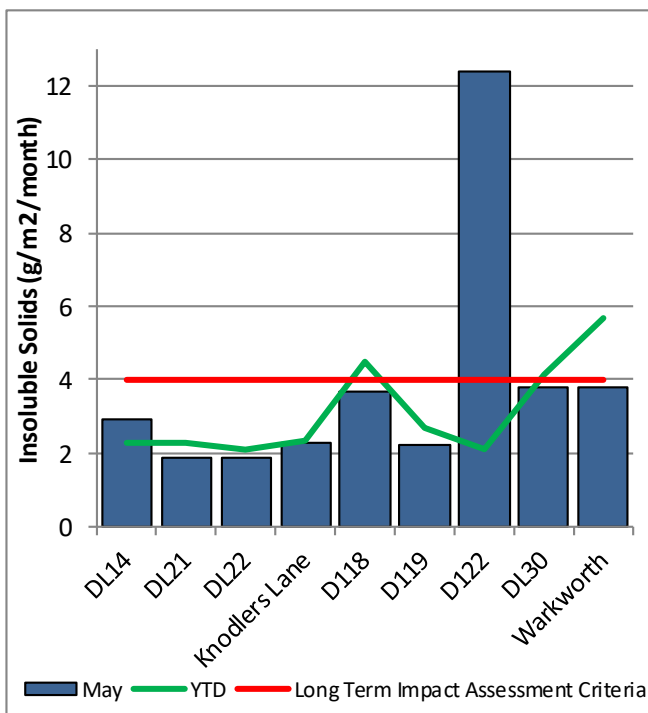


Figure 5: Depositional Dust Results – May 2018

## 2.3 Suspended Particulates

Suspended particulates 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 location of these monitors can be found in Figure 4. Each HVAS was run for 24 hours on a six-day cycle.

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

Figure 6 shows individual PM<sub>10</sub> results at each monitoring station against the short term impact assessment criteria of 50 µg/m<sup>3</sup>.

On 19/05/2018 two HVAS PM<sub>10</sub> units recorded elevated 24 hour averages; Long Point (52µg/m<sup>3</sup>) and Knodlers Lane (54µg/m<sup>3</sup>). Investigation determined that HVO's maximum contribution at each monitor is as follows:

- Long Point – 24µg/m<sup>3</sup> or 46.2% of the measured result
- Knodlers Lane - 27µg/m<sup>3</sup> or 50% of the measured result

On 25/05/2018 the Knodlers Lane HVAS PM<sub>10</sub> unit recorded an elevated 24 hour average of 53µg/m<sup>3</sup> HVO's maximum contribution was calculated to be 11.5µg/m<sup>3</sup> or 21.7% of the measured result.

Accordingly, no further action is required (as per approved Air Quality Monitoring Programme).

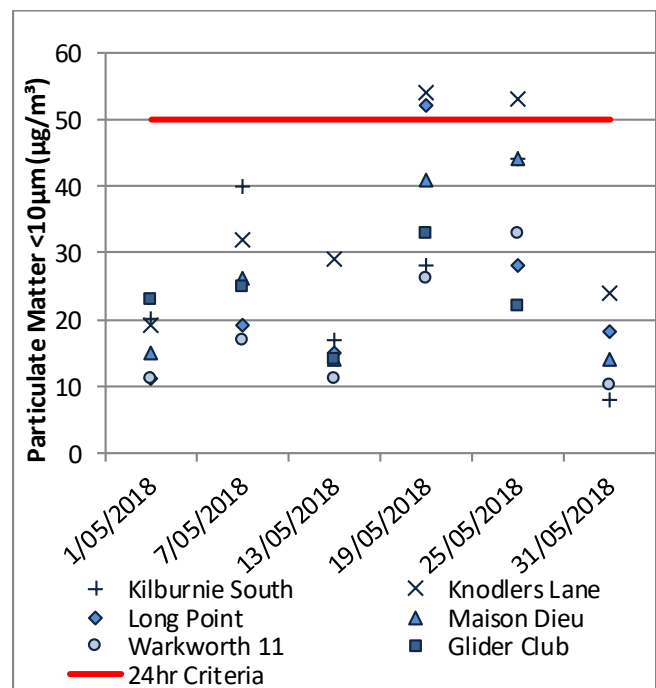


Figure 6: Individual PM<sub>10</sub> Results – May 2018

Figure 7 shows the year to date annual average PM<sub>10</sub> results.

An assessment of HVO's contribution against the long term impact assessment criteria will be provided in the 2018 Annual Review.

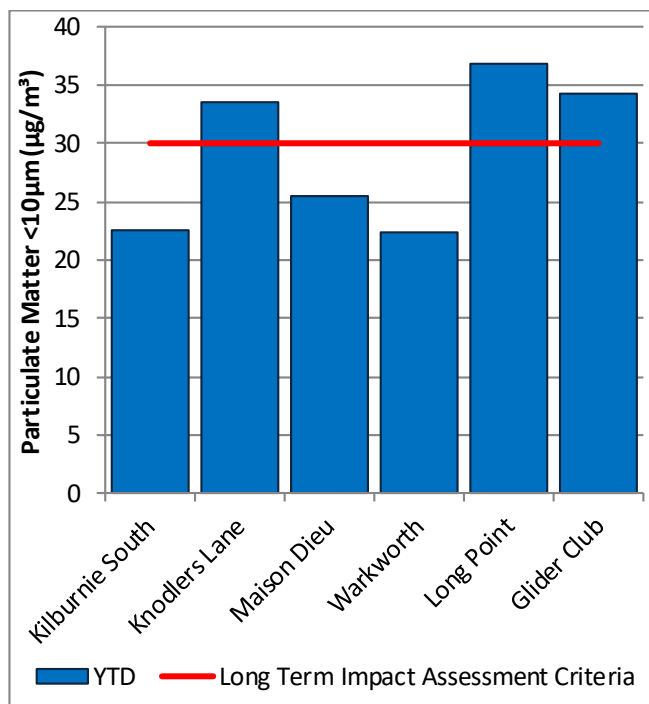


Figure 7: Year to Date Average PM<sub>10</sub> – May 2018

### 2.3.2 TSP Results

Figure 8 shows the annual average TSP results compared against the long term impact assessment criteria of 90µg/m<sup>3</sup>. An assessment of HVO's contribution against the long term impact assessment criteria will be provided in the 2018 Annual Review.

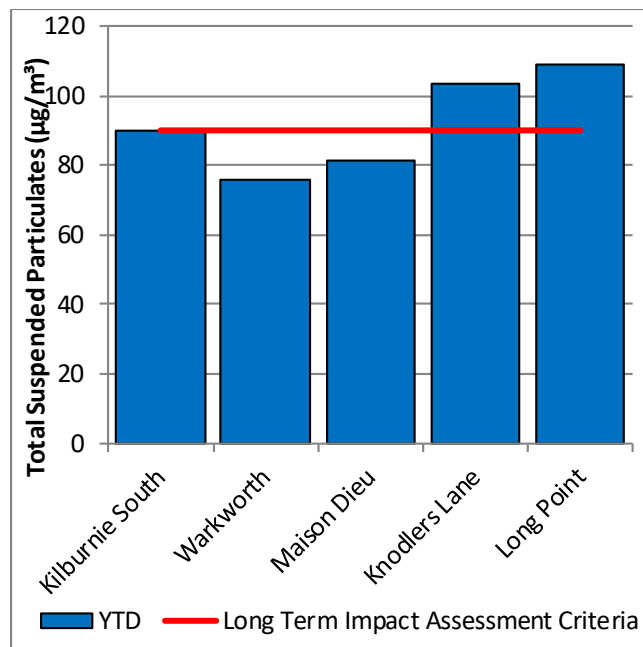


Figure 8: Year to Date Average Total Suspended Particulates – May 2018

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

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

Results for real time dust sampling is shown in Figure 9, including the daily 24 hour average PM<sub>10</sub> result and the year to date 24 hour PM<sub>10</sub> annual average.

Results from investigations of elevated results are presented in Table 2.

### 2.3.4 Real Time Alarms for Air Quality

During May the real time monitoring system generated 90 automated air quality related alarms. 18 were related to adverse weather conditions and 72 alarms relating to PM<sub>10</sub>.



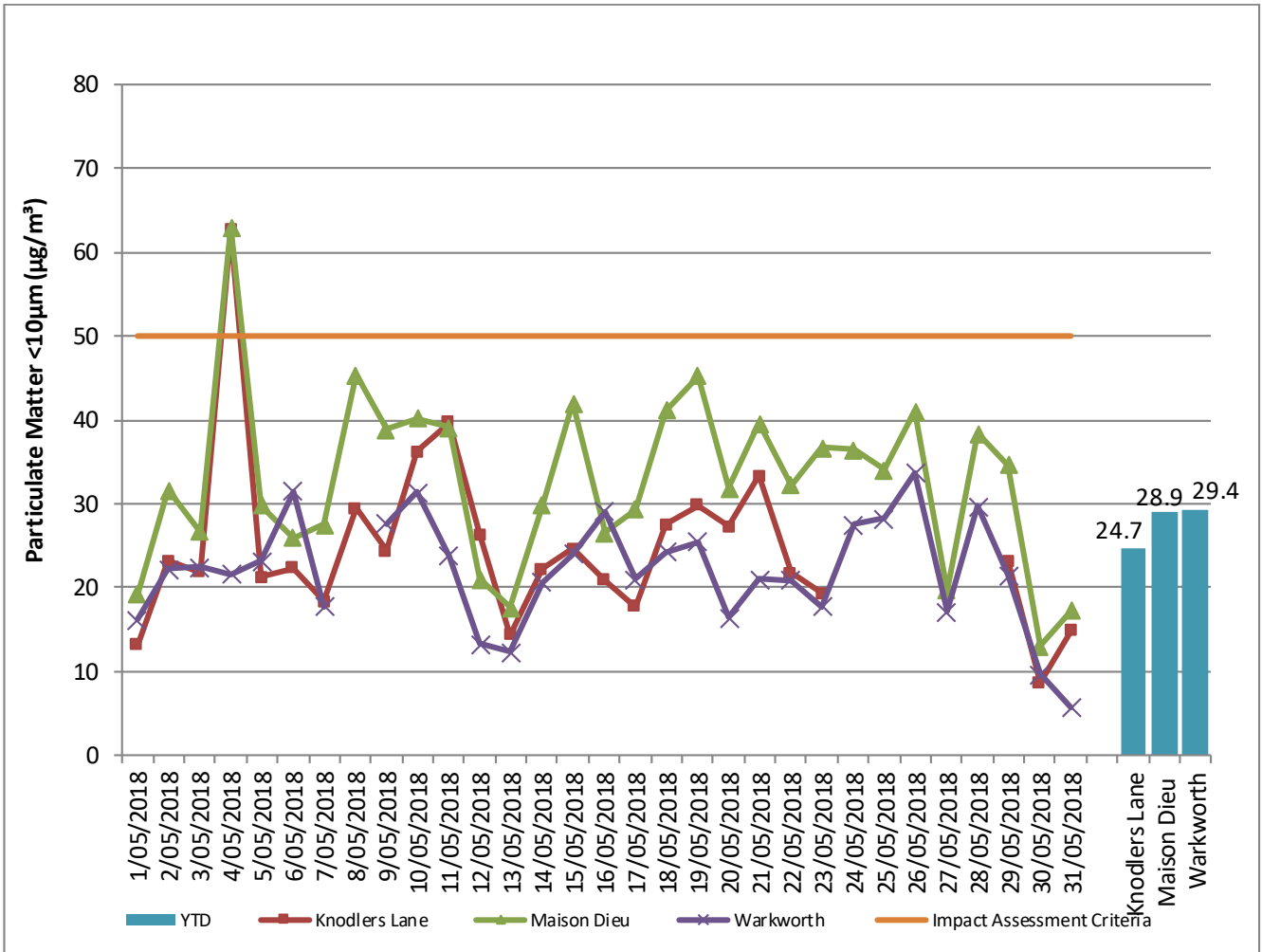


Figure 9: Real Time PM<sub>10</sub> 24hr average and YTD average – May 2018

Table 2: Real-time PM<sub>10</sub> Investigation Results

Date	Site	24hr PM <sub>10</sub> result (µg/m <sup>3</sup> )	Estimated contribution from HVO (µg/m <sup>3</sup> )	Discussion
4/05/2018	Maison Dieu TEOM	63.0	30.3	An internal investigation determined HVO maximum potential contribution to be in the order of 30.3µg/m <sup>3</sup> or 48.2% of the total measured based on prevailing wind conditions and upwind monitoring results.
4/05/2018	Knodlers Lane TEOM	62.6	29.9	An internal investigation determined HVO maximum potential contribution to be in the order of 29.9µg/m <sup>3</sup> or 47.8% of the total



				measured based on prevailing wind conditions and upwind monitoring results.
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### 3.0 WATER QUALITY

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

#### 3.1.1 Surface Water

Surface water courses are sampled on a quarterly sampling regime. Water quality is evaluated through the parameters of pH, Electrical Conductivity (EC) and Total Suspended Solids (TSS).

Results of monitoring on Site Dams and the Hunter River as well as other natural tributaries are provided on a quarterly basis, results will appear in the June 2018 report.

#### 3.1.2 Site Water Use

Under water allocation licences issued by the NSW DPI Water, HVO is permitted to extract water from the Hunter River. During the reporting period, HVO extracted 70.1ML of water from the Hunter River.

#### 3.1.3 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.

During the reporting period no water was discharged under the HRSTS

#### 3.2.1 Groundwater Monitoring Results

Groundwater monitoring is undertaken on a quarterly basis in accordance with the HVO Water Management Plan and Ground Water Monitoring Programme. Results of groundwater monitoring are reported quarterly and as such will be reported in the June 2018 monthly report.

### 4.0 BLASTING

HVO have a network of five blast monitoring units. These are 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 are summarised in Table 3.

**Table 3: Blasting Criteria**

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

#### 4.1 Blast Monitoring Results

During May, 15 blasts were initiated at HVO Figure 10 through to Figure 14 show the blast monitoring results for the reporting period against the impact assessment criteria. The criteria are summarised in Table 3.

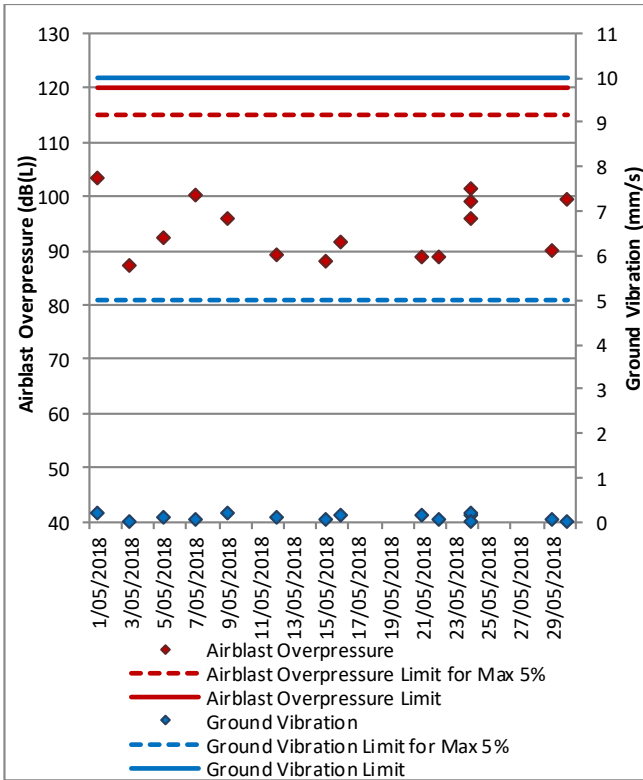


Figure 10: Moses Crossing Blast Monitoring Results – May 2018

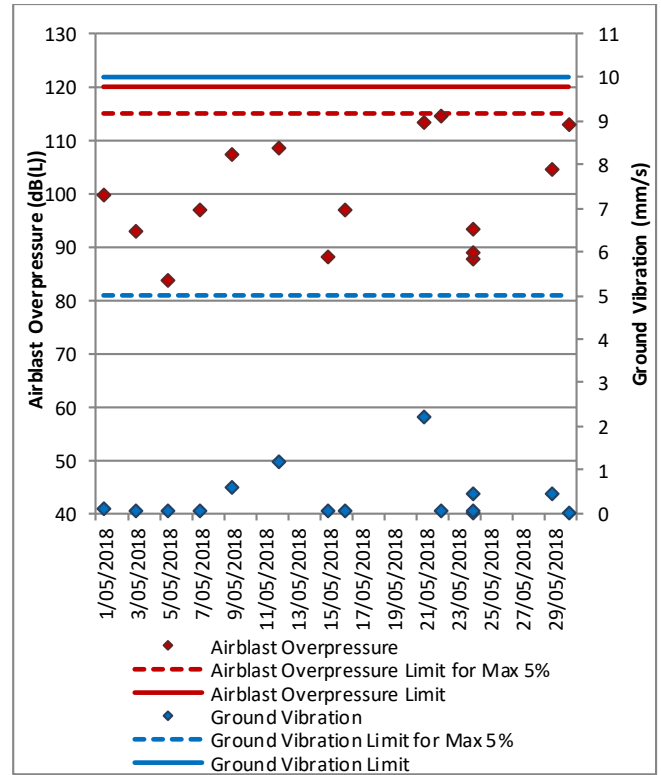


Figure 12: Maison Dieu Blast Monitoring Results – May 2018

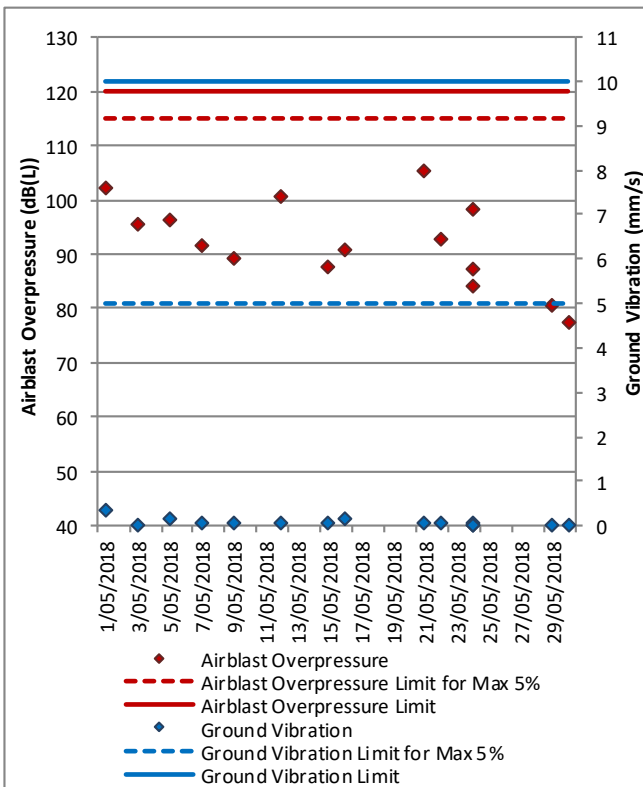


Figure 11: Jerrys Plains Blast Monitoring Results – May 2018

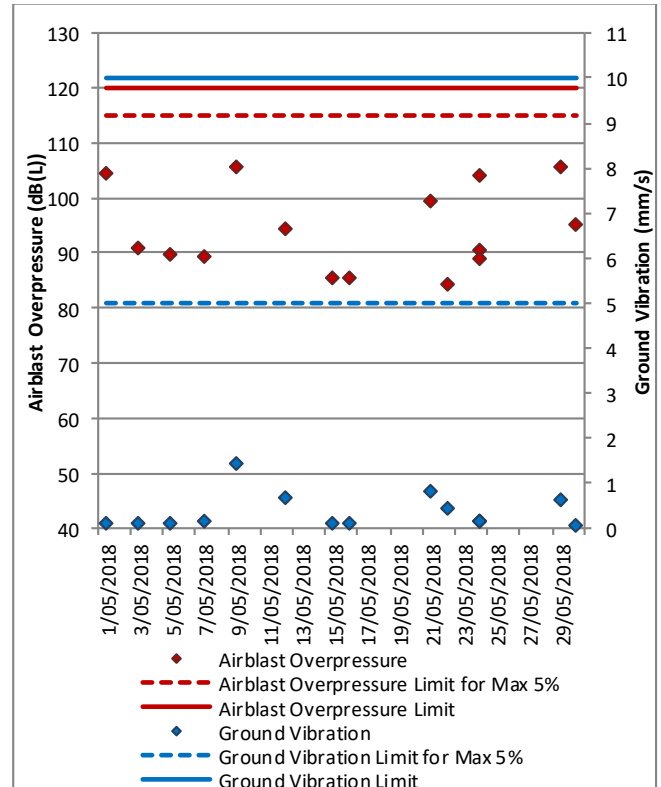


Figure 13: Warkworth Blast Monitoring Results – May 2018

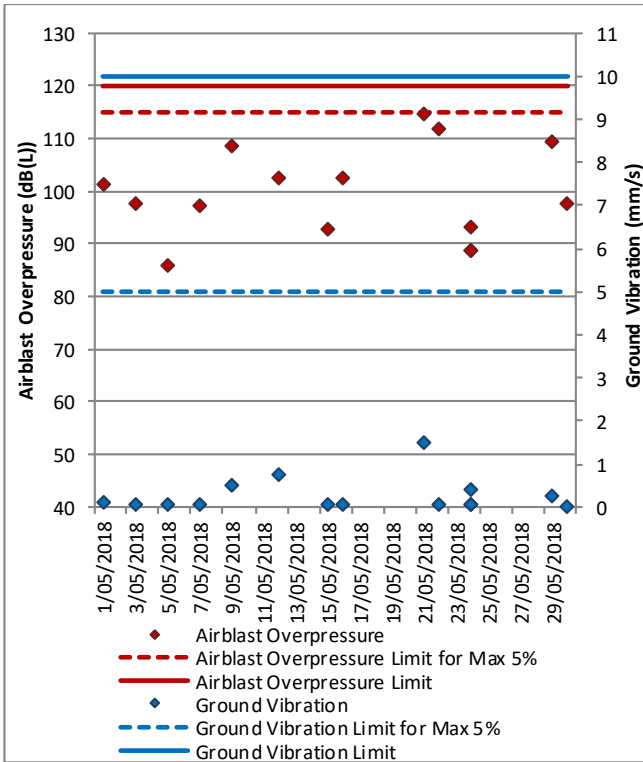


Figure 14: Knodlers Lane Blast Monitoring Results – May 2018

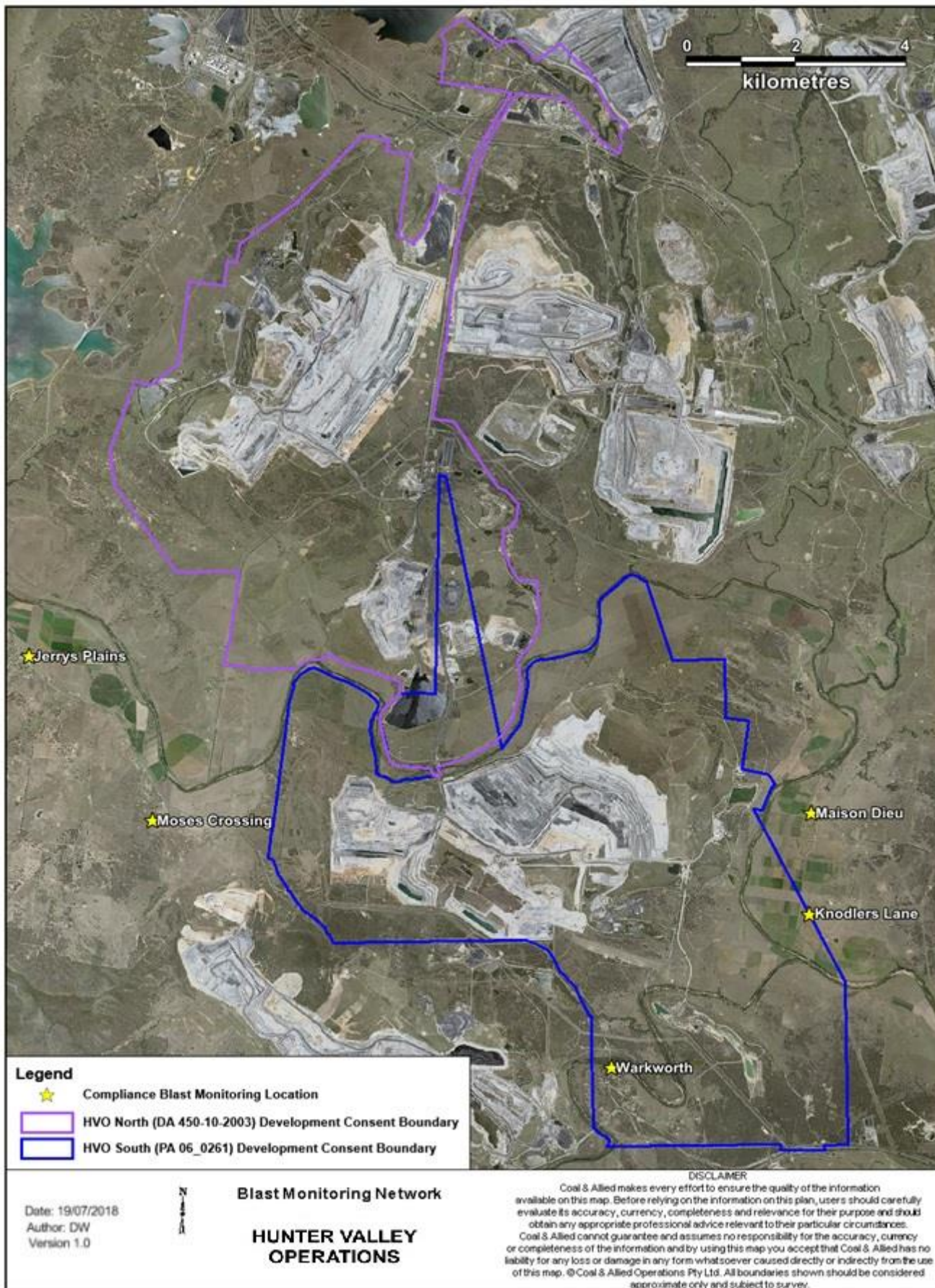


Figure 15: Blast Monitoring Location Plan

## 5.0 NOISE

Routine attended noise monitoring is carried out at defined locations around HVO as described in the HVO Noise Monitoring Programme. The purpose of the noise surveys is to quantify and describe the acoustic environment around the site and compare results with specified limits. Unattended monitoring (real time noise monitoring) also occurs at five sites surrounding HVO. The attended noise monitoring locations are displayed in Figure 16.

### 5.1 Attended Noise Monitoring Results

Attended monitoring was conducted at receiver locations surrounding HVO on the night of 17<sup>th</sup> May 2018. Monitoring results are detailed in Table 4 to Table 9.

**Table 4: LAeq, 15 minute HVO South - Impact Assessment Criteria – May 2018**

Location	Date and Time	Wind Speed (m/s) <sup>5</sup>	VTG °C/100m <sup>1</sup>	Criterion dB (A)	Criterion Applies? <sup>2</sup>	HVO South LAeq dB <sup>3,4</sup>	Exceedance <sup>4,5</sup>
Knodlers Lane	17/05/2018 21:00	1	0.5	37	Yes	<25	Nil
Maison Dieu	17/05/2018 21:25	1.2	-1	37	Yes	32	Nil
Shearers Lane	17/05/2018 21:49	1.3	0.5	41	Yes	40 <sup>6</sup>	Nil
Kilburnie South	17/05/2018 23:13	1.1	3	36	No	36	NA
Jerrys Plains Village	17/05/2018 21:28	1.2	-1	35	Yes	IA	Nil
Jerrys Plains East	17/05/2018 21:02	1	0.5	35	Yes	IA	Nil
Long Point	18/05/2018 0:20	2.1	0.5	35	Yes	31	Nil
HVGC	18/05/2018 1:04	2.5	-1	55	Yes	45	Nil

Notes:

1. Atmospheric data is sourced from the HVO Cheshunt or MTW Charlton Ridge weather station using logged meteorological data;
2. Assumed noise emission limits (see Section 2.2 of this report for more information) apply for wind speeds up to 3 metres per second (at a height of 10m), or temperature inversion conditions of up to 3 degrees/100m (at a height of 10m). Criterion may or may not apply due to rounding of meteorological data values;
3. Estimated or measured LAeq,15minute attributed to HVO South Pit Area;
4. Bold results in red indicate exceedance of criteria;
5. NA in exceedance column means atmospheric conditions outside specified in approval and so criterion is not applicable; and
6. LF modifying factor applied (see Table 4.2)

**Table 5: LAeq, 15 minute HVO South - Land Acquisition Criteria – May 2018**

Location	Date and Time	Wind Speed (m/s) <sup>5</sup>	VTG °C/100m <sup>1</sup>	Criterion dB (A)	Criterion Applies? <sup>2</sup>	HVO South LAeq dB <sup>3,4</sup>	Exceedance <sup>4,5</sup>
Knodlers Lane	17/05/2018 21:00	1	0.5	41	Yes	<25	Nil
Maison Dieu	17/05/2018 21:25	1.2	-1	41	Yes	32	Nil
Shearers Lane	17/05/2018 21:49	1.3	0.5	41	Yes	40 <sup>6</sup>	Nil
Kilburnie South	17/05/2018 23:13	1.1	3	41	No	36	NA
Jerrys Plains Village	17/05/2018 21:28	1.2	-1	40	Yes	IA	Nil
Jerrys Plains East	17/05/2018 21:02	1	0.5	40	Yes	IA	Nil
Long Point	18/05/2018 0:20	2.1	0.5	40	Yes	31	Nil
HVGC	18/05/2018 1:04	2.5	-1	NA	Yes	45	Nil

Notes:

1. Atmospheric data is sourced from the HVO Cheshunt or MTW Charlton Ridge weather station using logged meteorological data;
2. Assumed noise emission limits (see Section 2.3 of this report for more information) apply for wind speeds up to 3 metres per second (at a height of 10m), or temperature inversion conditions of up to 3 degrees/100m (at a height of 10m). Criterion may or may not apply due to rounding of meteorological data values;
3. Estimated or measured LAeq,15minute attributed to HVO South Pit Area;
4. Bold results in red indicate exceedance of criteria;
5. NA in exceedance column means atmospheric conditions outside specified in approval and so criterion is not applicable; and
6. LF modifying factor applied (see Table 4.2)



**Table 6: LA1, 1minute HVO South - Impact Assessment Criteria – May 2018**

Location	Date and Time	Wind Speed (m/s) <sup>5</sup>	VTG °C/100m <sup>1</sup>	Criterion dB (A)	Criterion Applies? <sup>2</sup>	HVO South LA1, 1min dB <sup>3,4</sup>	Exceedance <sup>4,5</sup>
Knodlers Lane	17/05/2018 21:00	1	0.5	45	Yes	<25	Nil
Maison Dieu	17/05/2018 21:25	1.2	-1	45	Yes	38	Nil
Shearers Lane	17/05/2018 21:49	1.3	0.5	45	Yes	44	Nil
Kilburnie South	17/05/2018 23:13	1.1	3	45	No	50	NA
Jerrys Plains Village	17/05/2018 21:28	1.2	-1	45	Yes	IA	Nil
Jerrys Plains East	17/05/2018 21:02	1	0.5	45	Yes	IA	Nil
Long Point	18/05/2018 0:20	2.1	0.5	45	Yes	39	Nil
HVGC	18/05/2018 1:04	2.5	-1	NA	Yes	56	NA

Notes:

1. Atmospheric data is sourced from the HVO Cheshunt or MTW Charlton Ridge weather station using logged meteorological data;
2. Assumed noise emission limits (see Section 2.3 of this report for more information) apply for wind speeds up to 3 metres per second (at a height of 10m), or temperature inversion conditions of up to 3 degrees/100m (at a height of 10m). Criterion may or may not apply due to rounding of meteorological data values;
3. These are results for HVO South Pit Area in the absence of all other noise sources;
4. Bold results in red indicate exceedance of criteria; and
5. NA in exceedance column means atmospheric conditions outside specified in approval and so criterion is not applicable.

**Table 7: LAeq, 15minute HVO North – Impact Assessment Criteria – May 2018**

Location	Date and Time	Wind Speed (m/s) <sup>1</sup>	VTG °C/100m <sup>1</sup>	Criterion dB (A)	Criterion Applies? <sup>2</sup>	HVO North LAeq dB <sup>3,4</sup>	Exceedance <sup>5</sup>
Knodlers Lane	17/05/2018 21:00	0.5	-1	35	Yes	IA	Nil
Maison Dieu	17/05/2018 21:25	1.2	-1	35	Yes	IA	Nil
Shearers Lane	17/05/2018 21:49	0.8	0.5	35	Yes	IA	Nil
Kilburnie South	17/05/2018 23:13	1	0.5	39	Yes	IA	Nil
Jerrys Plains Village	17/05/2018 21:28	1.2	-1	36	Yes	<30	Nil
Jerrys Plains East	17/05/2018 21:02	0.5	-1	39	Yes	<30	Nil
Long Point	18/05/2018 0:20	2.4	-1	35	Yes	IA	Nil
HVGC	18/05/2018 1:04	1.8	3	NA	Yes	NM	NA

Notes:

1. Atmospheric data is sourced from the HVO Corporate or MTW Charlton Ridge weather station using logged meteorological data;
2. Noise emission limits apply under all meteorological conditions, except during periods of rain or hail, when average winds speed at microphone heights exceeds 5 metres per second, when wind speeds greater than 3 metres per second are measured at 10m above ground level, or during temperature inversion conditions greater than 3 degrees C/100m. Criterion may or may not apply due to rounding of meteorological data values;
3. Estimated or measured LAeq,15minute attributed to HVO North Pit Area;
4. Bold results in red indicate exceedance of criteria; and
5. NA in exceedance column means atmospheric conditions outside specified in approval and so criterion is not applicable.

**Table 8: LAeq,15minute HVO North - Land Acquisition Criteria – May 2018**

Location	Date and Time	Wind Speed (m/s) <sup>5</sup>	VTG <sup>5</sup>	Criterion dB (A)	Criterion Applies? <sup>1,6</sup>	HVO North LAeq dB <sup>2,4</sup>	Exceedance <sup>3</sup>
Knodlers Lane	17/05/2018 21:00	0.5	-1	41	Yes	IA	Nil
Maison Dieu	17/05/2018 21:25	1.2	-1	41	Yes	IA	Nil
Shearers Lane	17/05/2018 21:49	0.8	0.5	41	Yes	IA	Nil
Kilburnie South	17/05/2018 23:13	1	0.5	41	Yes	IA	Nil
Jerrys Plains Village	17/05/2018 21:28	1.2	-1	41	Yes	<30	Nil
Jerrys Plains East	17/05/2018 21:02	0.5	-1	41	Yes	<30	Nil
Long Point	18/05/2018 0:20	2.4	-1	41	Yes	IA	Nil
HVGC	18/05/2018 1:04	1.8	3	NA	Yes	NM	NA

Notes:

1. Atmospheric data is sourced from the HVO Corporate or MTW Charlton Ridge weather station using logged meteorological data;
2. Noise emission limits apply under all meteorological conditions, except during periods of rain or hail, when average winds speed at microphone heights exceeds 5 metres per second, when wind speeds greater than 3 metres per second are measured at 10m above ground level, or during temperature inversion conditions greater than 3 degrees C/100m. Criterion may or may not apply due to rounding of meteorological data values;
3. Estimated or measured LAeq,15minute attributed to HVO North Pit Area;
4. Bold results in red indicate exceedance of criteria;

5. NA in exceedance column means atmospheric conditions outside specified in approval and so criterion is not applicable.

**Table 9: LA1, 1Minute HVO North - Impact Assessment Criteria – May 2018**

Location	Date and Time	Wind Speed (m/s) <sup>5</sup>	VTG <sup>5</sup>	Criterion dB (A)	Criterion Applies? <sup>1,6</sup>	HVO North LA1, 1min dB <sup>2,4</sup>	Exceedance <sup>3</sup>
Knodlers Lane	17/05/2018 21:00	0.5	-1	46	Yes	IA	Nil
Maison Dieu	17/05/2018 21:25	1.2	-1	46	Yes	IA	Nil
Shearers Lane	17/05/2018 21:49	0.8	0.5	46	Yes	IA	Nil
Kilburnie South	17/05/2018 23:13	1	0.5	46	Yes	IA	Nil
Jerrys Plains Village	17/05/2018 21:28	1.2	-1	46	Yes	<30	Nil
Jerrys Plains East	17/05/2018 21:02	0.5	-1	46	Yes	<30	Nil
Long Point	18/05/2018 0:20	2.4	-1	46	Yes	IA	Nil
HVGC	18/05/2018 1:04	1.8	3	NA	Yes	NM	NA

**Notes**

1. Noise emission limits apply under all meteorological conditions, except during periods of rain or hail, when average winds speed at microphone heights exceeds 5 metres per second, when wind speeds greater than 3 metres per second are measured at 10m above ground level, or during temperature inversion conditions greater than 3 degrees C/100m;
2. Estimated or measured LAeq, 15minute dB attributed to HVO North Area;
3. NA in exceedance column means atmospheric conditions outside specified in approval and so criterion is not applicable;
4. Bolded results in red indicate exceedance of criteria;
5. Atmospheric data is sourced from the HVO Corporate or Cheshunt weather station using logged met data;
6. Criterion may or may not apply due to rounding of meteorological data values

## 5.2 NPfI 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. During May 2018 no measurements required the penalty to be applied. The assessment for low frequency noise is shown in Table 10.

**Table 10: Low Frequency Noise Assessment - May 2018**

Location	Date and Time	Measured Site Only LA <sub>eq</sub> dB (Sth/Nth)	Site Only LC <sub>eq</sub> dB <sup>1</sup> (Sth/Nth)	Site Only LC <sub>eq</sub> -LA <sub>eq</sub> dB <sup>1,2</sup> (Sth/Nth)	Result Max exceedance of ref spectrum dB <sup>1,3</sup> (Sth/Nth)	Penalty dB(A) <sup>1</sup>	Site LA <sub>eq,15min</sub> dB with modifying factor (if applicable)
Knodlers Lane	17/05/2018 21:00	<25/IA	NA/NA	NA/NA	NA/NA	NA/NA	<25/IA
Maison Dieu	17/05/2018 21:25	32/IA	56/NA	17/NA	0/NA	0/NA	32/IA
Shearers Lane	17/05/2018 21:49	38/IA	58/NA	17/NA	2/NA	2/NA	40/IA
Kilburnie South	17/05/2018 23:13	36/IA	NA/NA	NA/NA	NA/NA	NA/NA	36/IA
Jerrys Plains Village	17/05/2018 21:28	IA/<30	NA/NA	NA/NA	NA/NA	NA/NA	IA/<30
Jerrys Plains East	17/05/2018 21:02	IA/<30	NA/NA	NA/NA	NA/NA	NA/NA	IA/<30
Long Point	18/05/2018 0:20	31/IA	NA/NA	NA/NA	NA/NA	NA/NA	31/IA
HVGC	18/05/2018 1:04	45/NM	59/NA	13/NA	0/NA	0/NA	45/NM

**Notes:**

1. Where it is not possible to determine the site only result due to the presence of other low frequency noise sources occurring during the measurement, or where criteria were not applicable due to meteorological conditions, this is noted as NA (not available) and no further assessment has been undertaken;
2. As per NPfI, if LC<sub>eq</sub> – LA<sub>eq</sub> ≥ 15 dB further assessment of low frequency noise required as detailed in Section 2.4.2 of this report; and
3. As per NPfI, compare measured spectrum against reference spectrum to determine if the low frequency modifying factor is triggered and application of penalty is required.

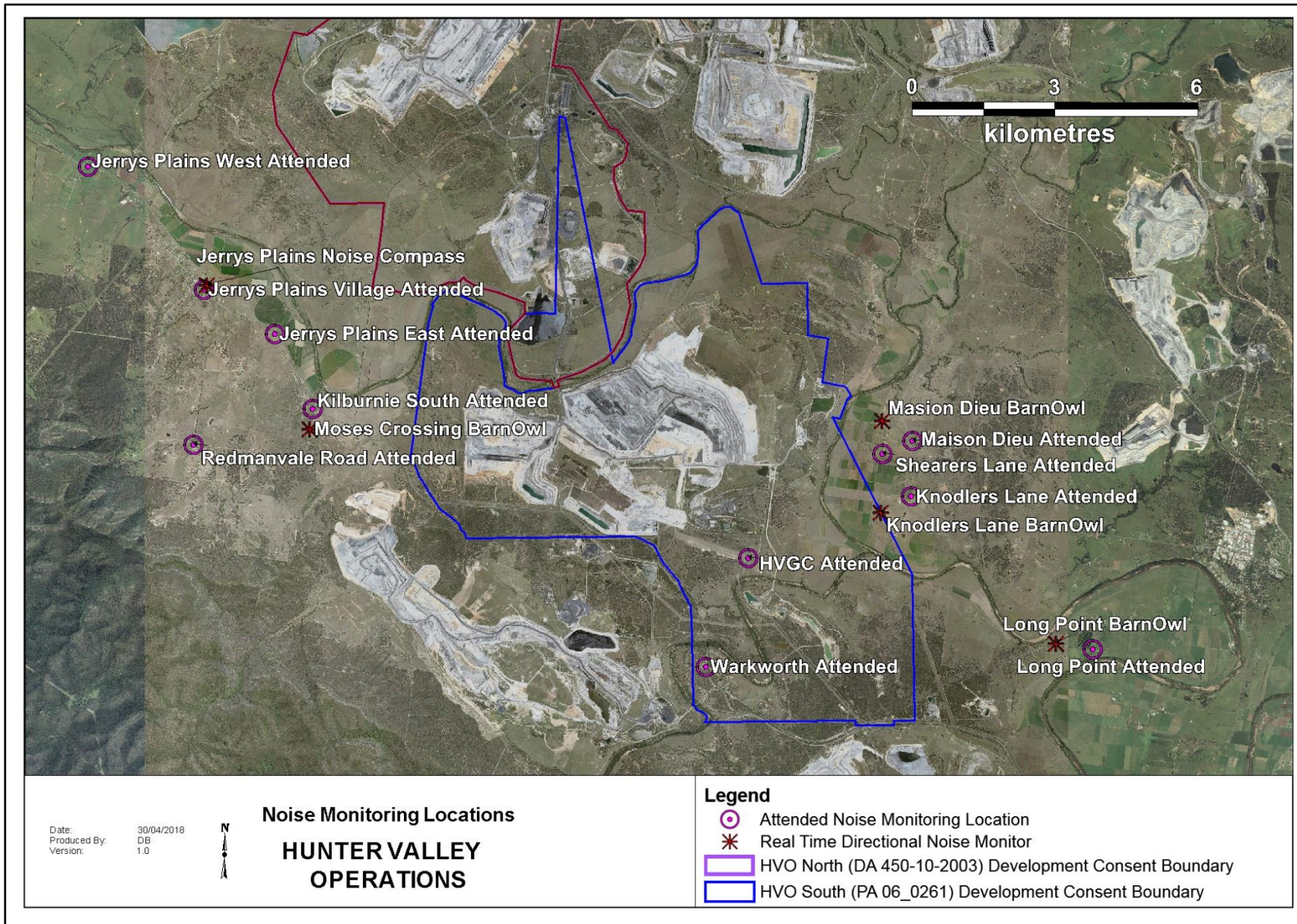


Figure 16: Noise Monitoring Location Plan



### 5.2.1 Real Time Noise Monitoring

HVO utilises a network of real-time directional noise monitors to manage noise impacts on a continuous basis. 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 likely to be attributable to HVO. Noise alarms are investigated and responded to with the appropriate level of operational modification. Changes in response to a noise alarm can include replacing equipment with quieter (noise attenuated) units, changing or relocating tasks, and shutting down equipment.

It should be noted that this assessment does not compliment or conflict with attended noise monitoring detailed in Section 5.1, and that real time monitoring data includes non-mine noise sources such as dogs, cows, or more commonly, road traffic.

## 6.0 OPERATIONAL DOWNTIME

During May, a total of 277 hours of equipment downtime was logged in response to real time monitoring and visual inspections for environmental reasons such as dust, noise and meteorological conditions. Operational downtime by equipment type is shown in Figure 17.

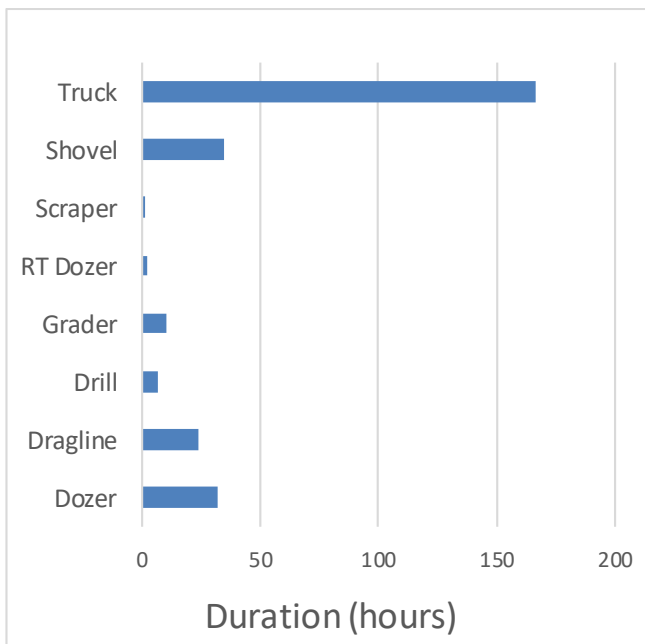


Figure 17: Operational Downtime by Equipment Type – May 2018

## 7.0 REHABILITATION

During May 2.3 Ha of land was released, 5.9 Ha of land was bulk shaped and 10.7 Ha of land was rehabilitated. Year to date progress can be viewed in Figure 18.

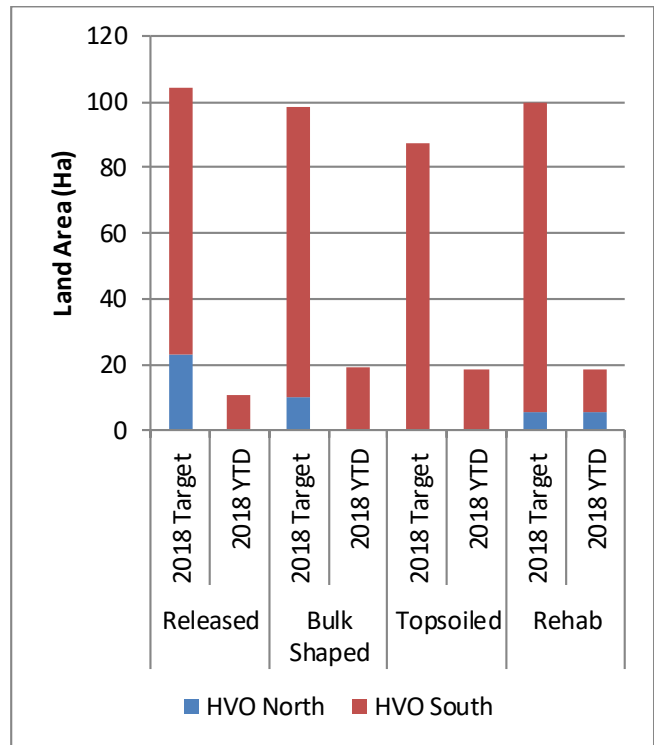


Figure 18: Rehabilitation YTD – May 2018



## 8.0 COMPLAINTS

Seven complaints were received during the reporting period. Details of complaints received YTD are shown in Table 11 below.

Table 11: Complaints Summary YTD

	Noise	Dust	Blast	Lighting	Other	Total
January	-	2	4	-	-	6
February	1	-	-	-	1	2
March	-	-	-	-	-	0
April	-	-	1	-	-	1
May	4	1	2	-	-	7
June	-	-	-	-	-	-
July	-	-	-	-	-	-
August	-	-	-	-	-	-
September	-	-	-	-	-	-
October	-	-	-	-	-	-
November	-	-	-	-	-	-
December	-	-	-	-	-	-
<b>Total</b>	5	3	7	-	1	16

and down stream of the flow. An Incident investigation was undertaken.

HVO's Pollution Incident Response Management Plan was enacted and relevant authorities notified. Incident is currently under investigation by the EPA.

## 9.0 ENVIRONMENTAL INCIDENTS

During the reporting period there was one reportable environmental incident.

On the 11<sup>th</sup> May the Newdell fire water tank was found to be overflowing as the water supply (pumped from Dam 14W) continued to supply the tank despite reaching its full cut off level. The overflow water reported via a drainage line to Sump 060. The float operated pump on 060 failed to contain the volume of water in the sump which has then flowed to a culvert under the rail loop and into Bayswater Creek.

Once identified the supply to the fire water tank was stopped, onsite investigation commenced to determine extent and pathway of flow of water. A small pump was installed to stop the flow of water from the culvert, once contained recovery of the water in the creek commenced. Sampling was undertaken to determine water quality at the source and up

## **Appendix A: Meteorological Data**

**Table 12: Meteorological Data - HVO Corporate Meteorological Station – May 2018**

Date	Air Temperature Maximum (°C)	Air Temperature Minimum (°C)	Relative Humidity Maximum (%)	Relative Humidity Minimum (%)	Solar Radiation Maximum (W/Sq. M)	Wind Direction Average (°)	Wind Speed Average (m/sec)	Rainfall(mm)
1/05/2018	23	8	100	38	760	170	1.4	0.0
2/05/2018	24	9	100	35	836	192	1.2	0.0
3/05/2018	27	9	98	26	672	214	1.6	0.0
4/05/2018	26	11	73	24	777	259	4.3	0.0
5/05/2018	22	5	67	22	643	211	2.0	0.0
6/05/2018	21	3	94	28	622	162	1.8	0.0
7/05/2018	25	10	96	22	608	189	1.6	0.0
8/05/2018	25	8	82	27	721	205	1.5	0.0
9/05/2018	26	9	84	26	582	252	1.8	0.0
10/05/2018	25	10	57	20	781	268	4.7	0.0
11/05/2018	14	4	63	32	887	284	7.0	0.0
12/05/2018	19	10	76	39	878	271	6.7	0.0
13/05/2018	19	7	74	41	945	196	2.7	0.0
14/05/2018	18	8	73	42	514	145	2.1	0.0
15/05/2018	21	6	84	30	598	186	1.6	0.0
16/05/2018	19	6	91	36	685	144	1.5	0.0
17/05/2018	19	4	100	32	610	202	0.9	0.0
18/05/2018	22	3	78	11	552	252	2.6	0.0
19/05/2018	21	5	81	28	535	219	1.2	0.0
20/05/2018	20	5	78	27	543	277	3.4	0.0
21/05/2018	21	5	72	28	542	280	4.0	0.0
22/05/2018	22	7	66	28	518	281	3.9	0.0
23/05/2018	21	6	80	39	591	195	1.6	0.0
24/05/2018	22	8	100	33	518	181	2.0	0.0
25/05/2018	21	10	86	38	706	98	2.5	0.0
26/05/2018	20	5	100	44	544	155	1.4	0.0
27/05/2018	18	6	100	63	658	171	1.1	0.0
28/05/2018	20	5	100	43	691	208	1.1	0.0
29/05/2018	23	6	93	25	489	266	2.2	0.0
30/05/2018	18	5	100	28	623	255	3.4	4.4
31/05/2018	17	3	79	25	811	226	3.2	0.0

“-“ Indicates that data was not available due to technical issues.