

**HUNTER VALLEY
OPERATIONS**



**Monthly
Environmental
Monitoring Report**
Hunter Valley Operations
August 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 ₁₀ Results	6
2.3.2	TSP Results	7
2.3.3	Real Time PM ₁₀ Results.....	8
2.3.4	Real Time Alarms for Air Quality	8
3.0	WATER QUALITY.....	10
3.1.1	Surface Water	10
3.1.2	Site Water Use	10
3.1.3	HRSTS Discharge.....	10
3.2.1	Groundwater Monitoring Results	11
4.0	BLASTING.....	11
4.1	Blast Monitoring Results.....	11
5.0	NOISE.....	14
5.1	Attended Noise Monitoring Results	14
6.0	OPERATIONAL DOWNTIME.....	21
7.0	REHABILITATION	21
8.0	COMPLAINTS.....	22
9.0	ENVIRONMENTAL INCIDENTS.....	22
	Appendix A: Meteorological Data	23

Figures

Figure 1: Rainfall Summary 2018	4
Figure 2: HVO Corporate Wind Rose – August 2018	4
Figure 3: HVO Cheshunt Wind Rose – August 2018	4
Figure 4: Air Quality Monitoring Location Plan	5
Figure 5: Depositional Dust Results – August 2018	6
Figure 6: Individual PM ₁₀ Results – August 2018	7
Figure 7: Year to Date Average PM ₁₀ – August 2018	7
Figure 8: Year to Date Average Total Suspended Particulates – August 2018	8
Figure 9: Real Time PM ₁₀ 24hr average and YTD average – August 2018	9
Figure 10: Moses Crossing Blast Monitoring Results – August 2018	11
Figure 11: Jerrys Plains Blast Monitoring Results – August 2018	12
Figure 12: Maison Dieu Blast Monitoring Results – August 2018	12
Figure 13: Warkworth Blast Monitoring Results – August 2018	12
Figure 14: Knodlers Lane Blast Monitoring Results – August 2018	12
Figure 15: Blast Monitoring Location Plan	13
Figure 16: Noise Monitoring Location Plan	20
Figure 17: Operational Downtime by Equipment Type – August 2018	21
Figure 18: Rehabilitation YTD – August 2018	21

Tables

Table 1: Monthly Rainfall HVO	4
Table 2: Real-time PM10 Investigation Results	9
Table 3: Blasting Criteria	11
Table 4: L _{Aeq, 15 minute} HVO South - Impact Assessment Criteria – August 2018	14
Table 5: L _{Aeq, 15 minute} HVO South - Land Acquisition Criteria – August 2018	15
Table 6: L _{A1, 1minute} HVO South - Impact Assessment Criteria – August 2018	15
Table 7: L _{Aeq, 15minute} HVO North – Impact Assessment Criteria – August 2018	16
Table 8: L _{Aeq, 15minute} HVO North - Land Acquisition Criteria – August 2018	17
Table 9: L _{A1, 1Minute} HVO North - Impact Assessment Criteria – August 2018	18
Table 10: Low Frequency Noise Assessment - August 2018	19
Table 11: Complaints Summary YTD	22
Table 12: Meteorological Data - HVO Corporate Meteorological Station – August 2018	24

Revision History

Version No.	Person Responsible	Document Status	Date
1.0	Environment & Community Officer	Draft	05/10/2018
1.1	Environment & Community Coordinator	Final	18/10/2018

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 August to 31 August 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)
August	27.4	222.8

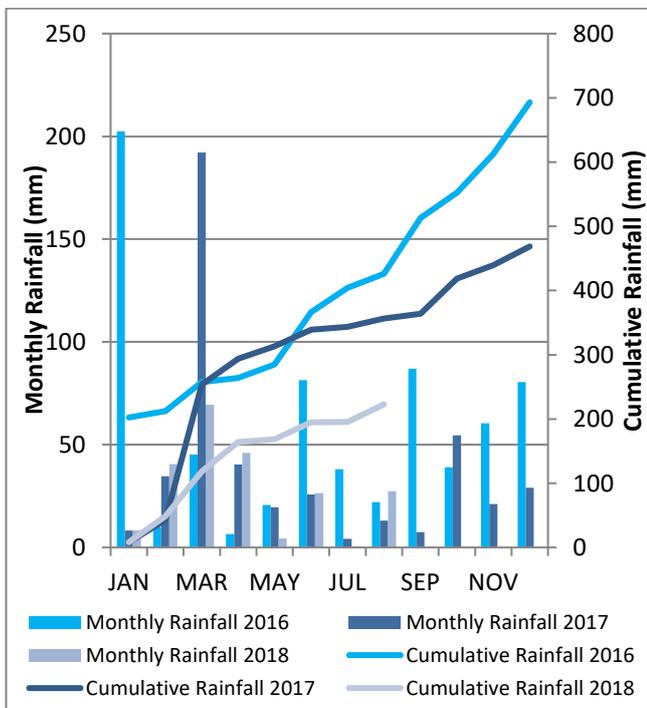


Figure 1: Rainfall Summary 2018

2.1.2 Wind Speed and Direction

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

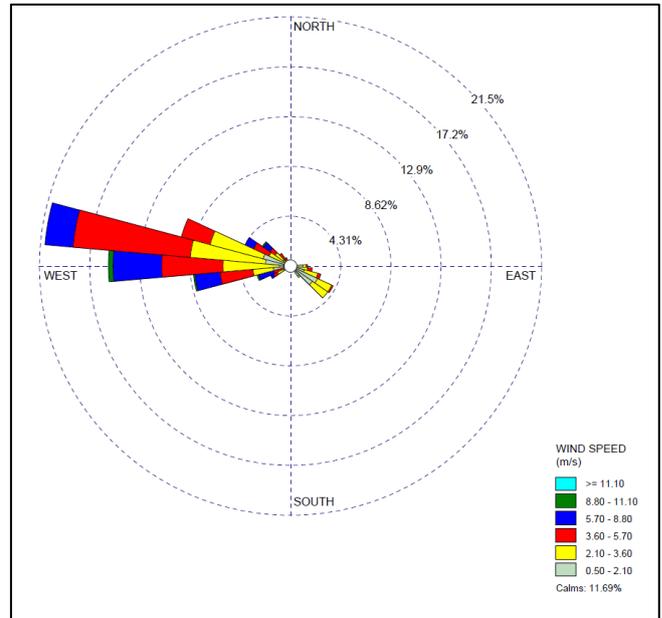


Figure 2: HVO Corporate Wind Rose – August 2018

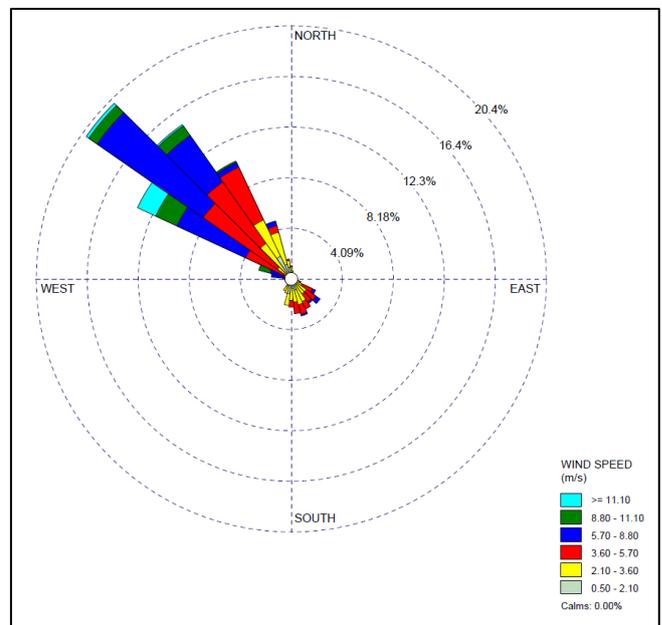


Figure 3: HVO Cheshunt Wind Rose – August 2018

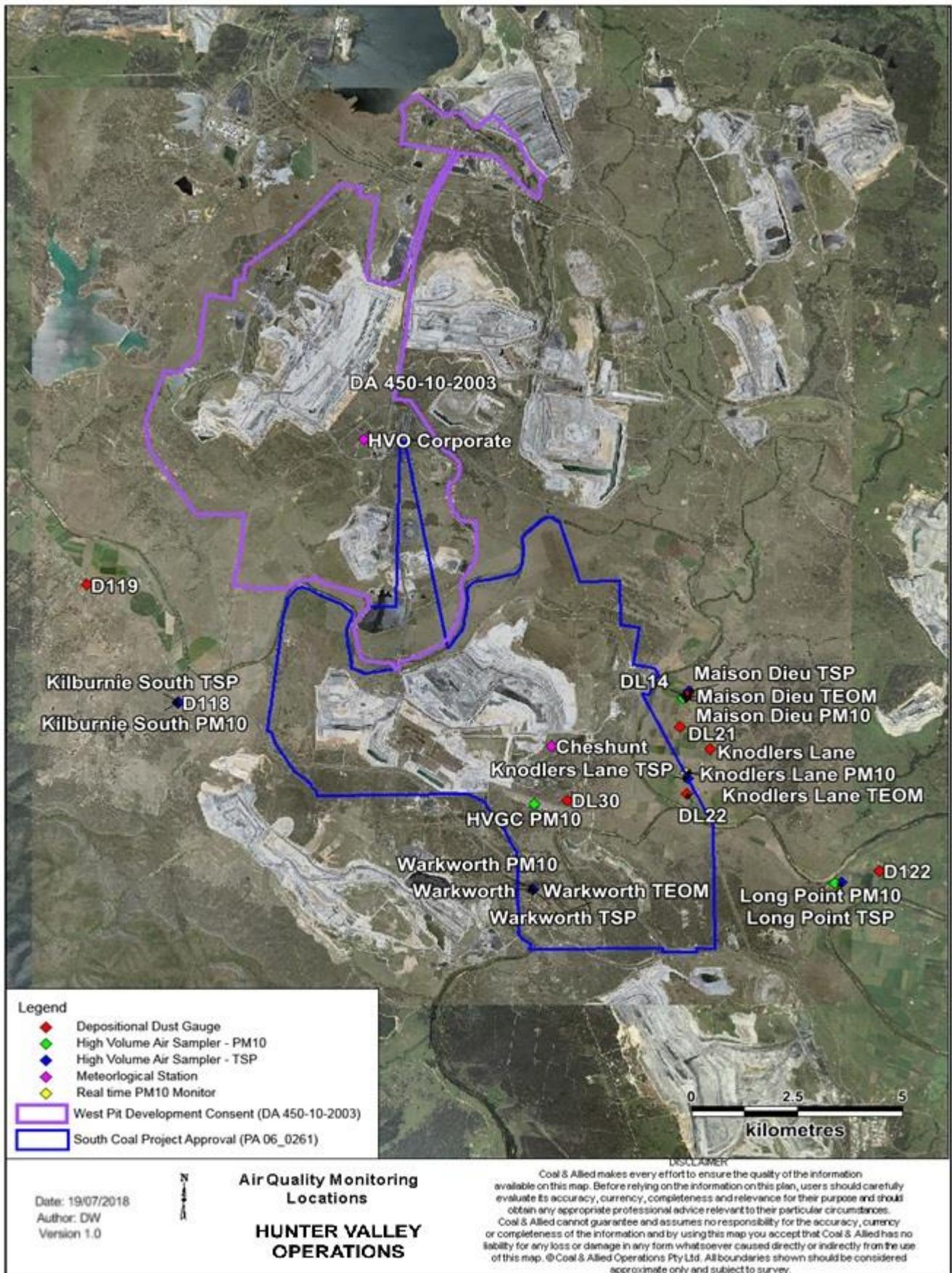


Figure 4: Air Quality Monitoring Location Plan

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 DL21, DL30 and Warkworth monitors recorded a monthly result above the long term impact assessment criteria of 4.0 g/m² per month.

There was no evidence to suggest the DL21, DL30 and Warkworth monitor's result was contaminated, as such the result will be included in the annual average for those monitors.

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

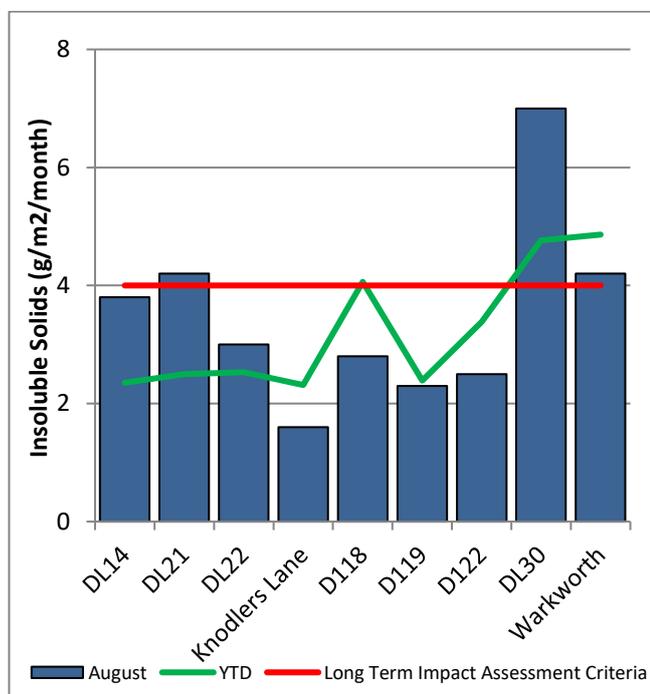


Figure 5: Depositional Dust Results – August 2018

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 (PM₁₀). 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 PM₁₀ Results

Figure 6 shows individual PM₁₀ results at each monitoring station against the short term impact assessment criteria of 50 µg/m³.

On 5 August 2018 two HVAS PM₁₀ units recorded elevated

24 hour averages: Knodlers Lane (53µg/m³) and Long Point (53µg/m³). HVO's maximum contribution was calculated to be the following:

- Knodlers Lane: 18.0 µg/m³ or 34.0% of the measured result;
- Long Point: 18.0 µg/m³ Or 34.0% of the measured result.

On 17 August 2018 Knodlers Lane HVAS PM₁₀ unit recorded an elevated 24 hour average of 61µg/m³. An external investigation determined that HVO's maximum contribution to the monitor is estimated to be 32µg/m³ or 52% of the measured result.

On 23 August 2018 Knodlers Lane HVAS PM₁₀ unit recorded an elevated 24 hour average of 51µg/m³. Wind direction on this day was generally outside of HVO's influence to the Knodlers Lane monitor. However, investigation determined that HVO's maximum contribution to the monitor is estimated to be 15.5µg/m³ or 30.4% of the measured result.

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

A sample was unable to be collected from Knodlers Lane on 11 August 2018 due to damage to the filter paper.

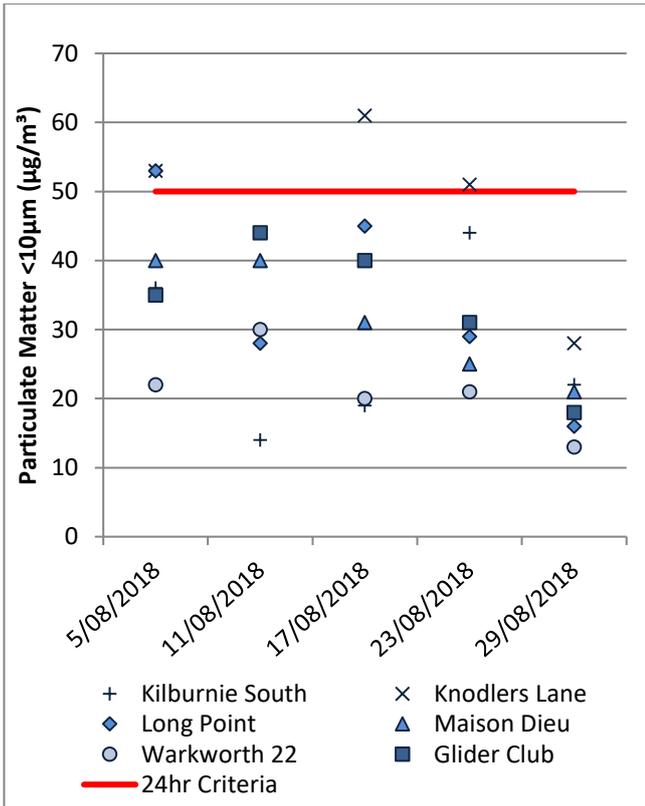


Figure 6: Individual PM₁₀ Results – August 2018

Figure 7 shows the year to date annual average PM₁₀ results.

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

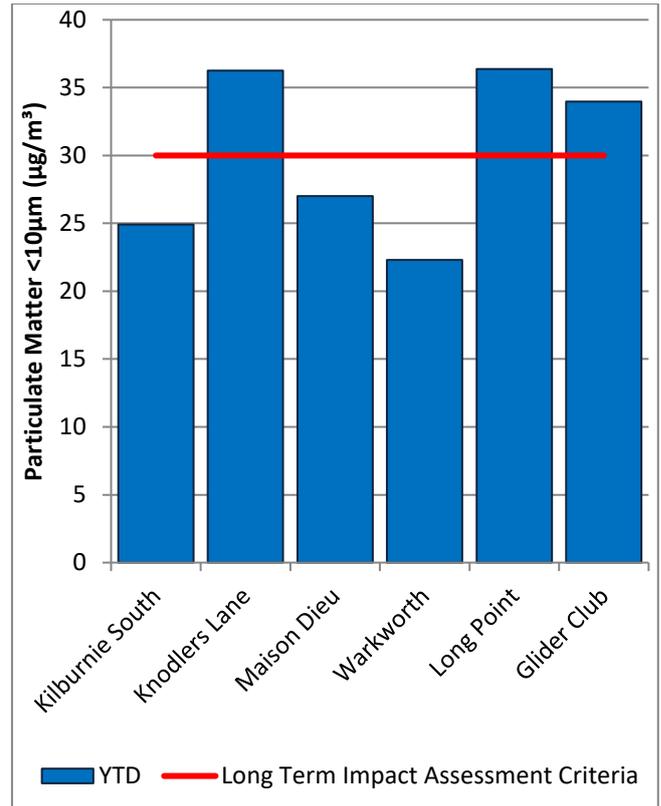


Figure 7: Year to Date Average PM₁₀ – August 2018

2.3.2 TSP Results

Figure 8 shows the annual average TSP results compared against the long term impact assessment criteria of 90µg/m³.

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

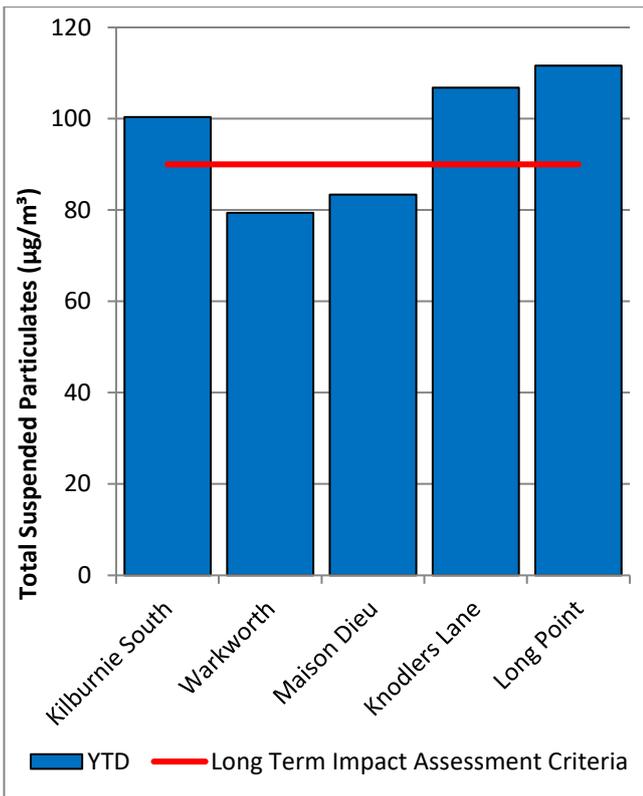


Figure 8: Year to Date Average Total Suspended Particulates – August 2018

2.3.3 Real Time PM₁₀ Results

Hunter Valley Operations maintains a network of real time PM₁₀ 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 PM₁₀ monitoring are used as a reactive measure to guide mining operations to help achieve 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 PM₁₀ result and the year to date 24 hour PM₁₀ annual average.

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

2.3.4 Real Time Alarms for Air Quality

During August the real time monitoring system generated 121 automated air quality related alarms. 33 were related to adverse weather conditions and 88 alarms relating to PM₁₀.

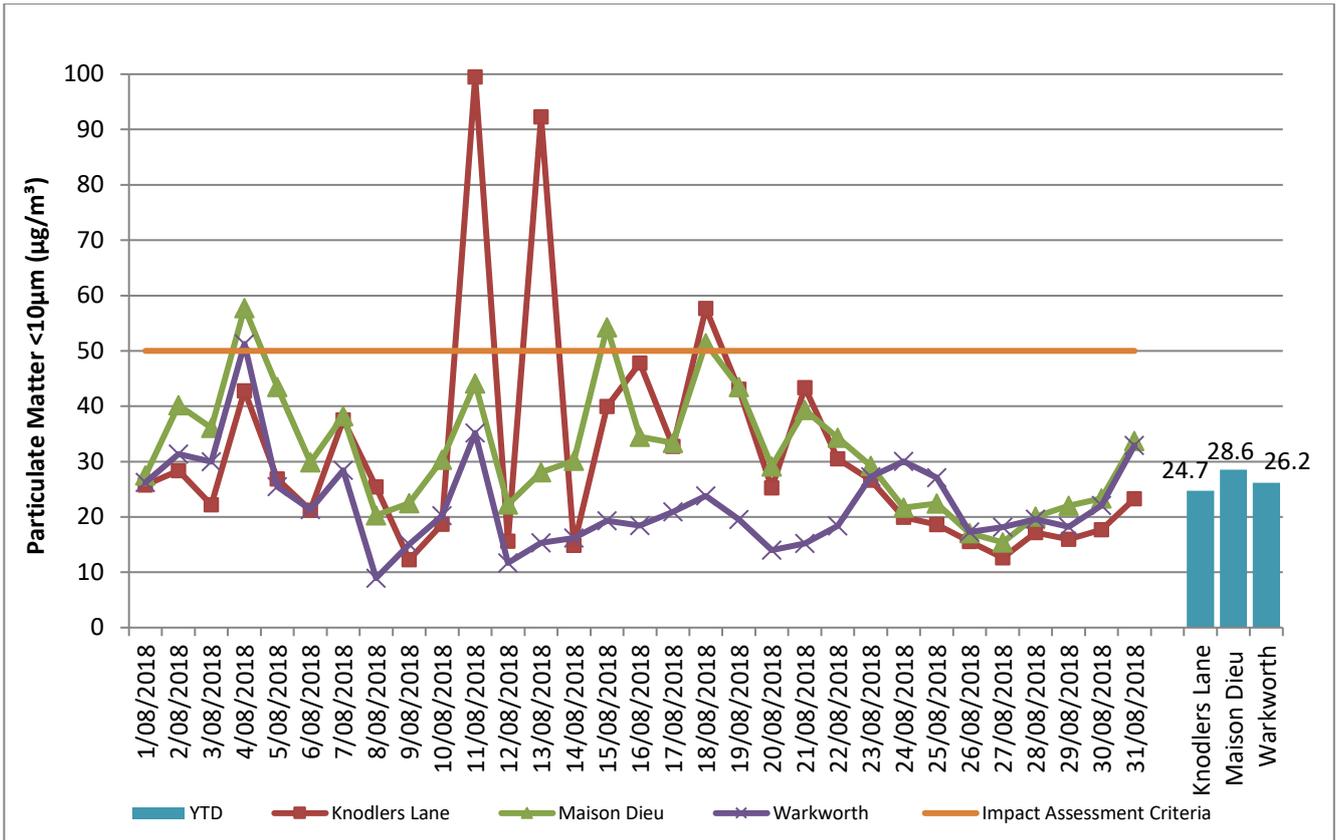


Figure 9: Real Time PM₁₀ 24hr average and YTD average – August 2018

Table 2: Real-time PM₁₀ Investigation Results

Date	Site	24hr PM ₁₀ result (µg/m ³)	Estimated contribution from HVO (µg/m ³)	Discussion
4/08/2018	Maison Dieu TEOM	28.4	49.2	An internal investigation determined HVO maximum potential contribution to be in the order of 28.4ug/m3 or 49.2% of the total measured based on prevailing wind conditions and upwind monitoring results.
4/08/2018	Warkworth TEOM	5.2	10.2	An internal investigation determined HVO maximum potential contribution to be in the order of 5.2ug/m3 or 10.2% of the total measured based on prevailing wind conditions and upwind monitoring results.
11/08/2018	Knodlers Lane TEOM	33.4	33.6	An internal investigation determined HVO maximum potential contribution to be in the order of 33.4ug/m3 or 33.6% of the total measured based on removal of erroneous data. Erroneous data is

				suspected to be caused by either a local source or malfunction.
13/08/2018	Knodlers Lane TEOM	19.3	20.1	An internal investigation determined HVO maximum potential contribution to be in the order of 19.3ug/m3 or 20.1% of the total measured based on removal of erroneous data. Erroneous data is suspected to be caused by either a local source or malfunction.
15/08/2018	Maison Dieu TEOM	36.6	67.5	An internal investigation determined HVO maximum potential contribution to be in the order of 36.6ug/m3 or 67.5% of the total measured based on prevailing wind conditions and upwind monitoring results.
18/08/2018	Knodlers Lane	37.7	65.4	An internal investigation determined HVO maximum potential contribution to be in the order of 37.7ug/m3 or 65.4% of the total measured based on prevailing wind conditions and upwind monitoring results.
18/08/2018	Maison Dieu TEOM	32.5	63.2	An internal investigation determined HVO maximum potential contribution to be in the order of 32.5ug/m3 or 63.2% of the total measured based on prevailing wind conditions and upwind monitoring results.

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 September 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 330.7ML 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 September 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 August, 18 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.

On 17 August 2018, blast WN40BAR01A in HVO West Pit recorded an overpressure result of 115.3dB(L) at the Maison Dieu monitoring location. An assessment against the 5% of the total number of blasts in a 12 month period criteria will be reported in the 2018 Annual Review.

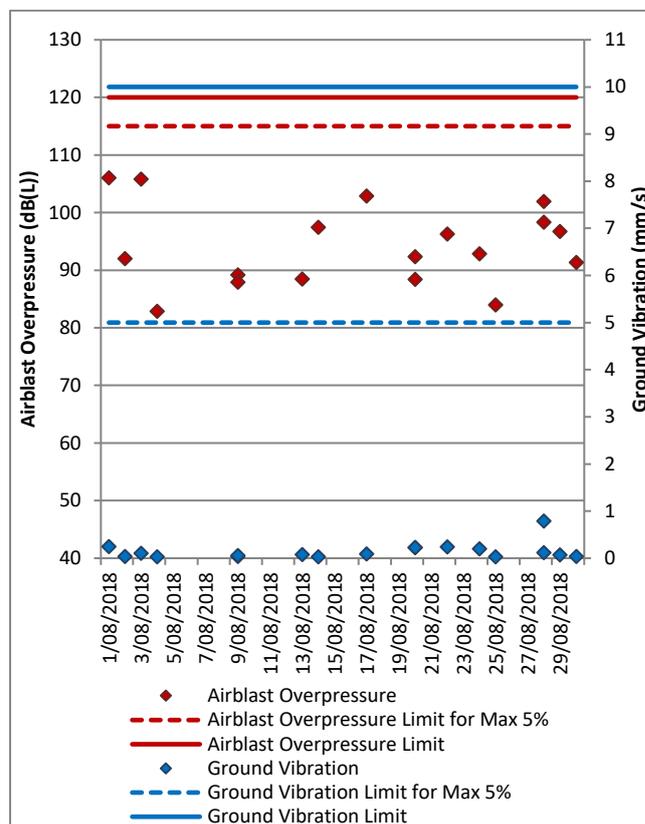


Figure 10: Moses Crossing Blast Monitoring Results – August 2018

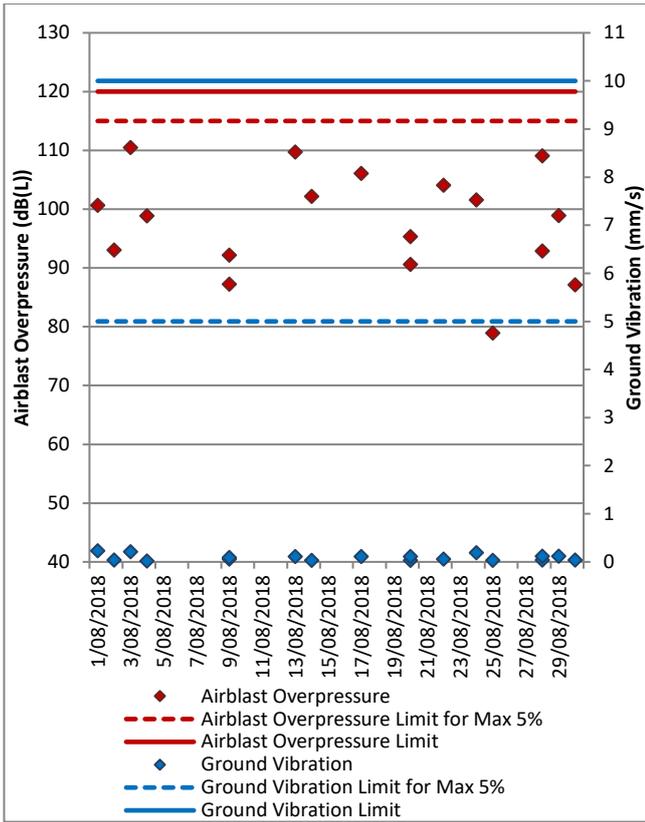


Figure 11: Jerrys Plains Blast Monitoring Results – August 2018

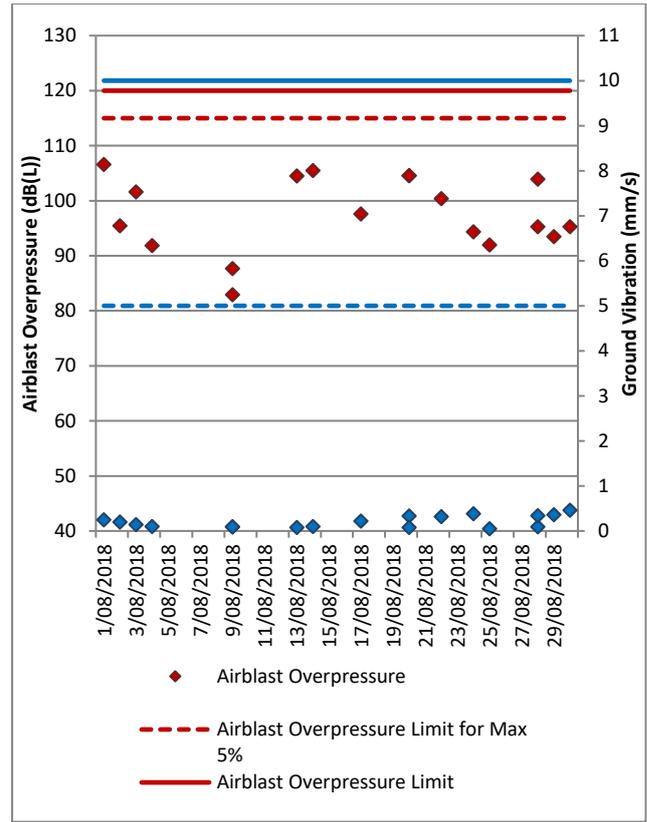


Figure 13: Warkworth Blast Monitoring Results – August 2018

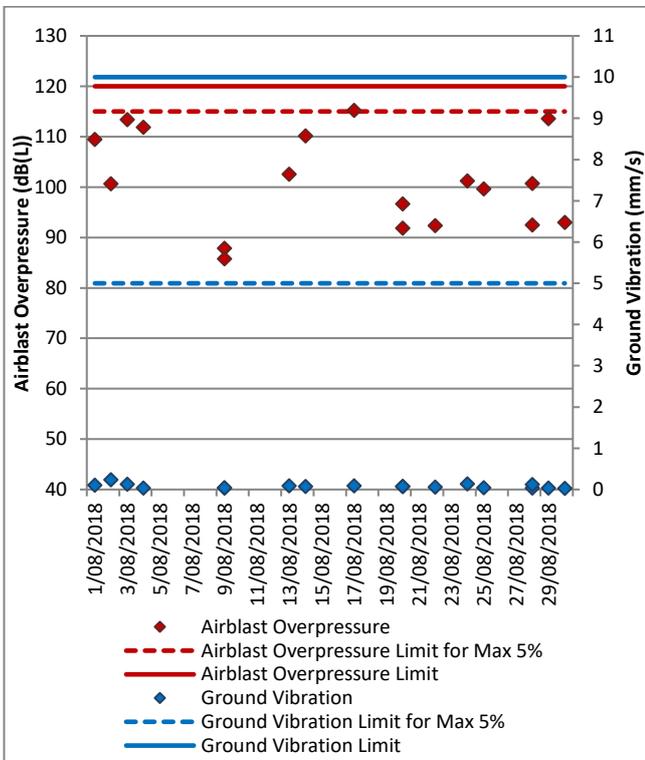


Figure 12: Maison Dieu Blast Monitoring Results – August 2018

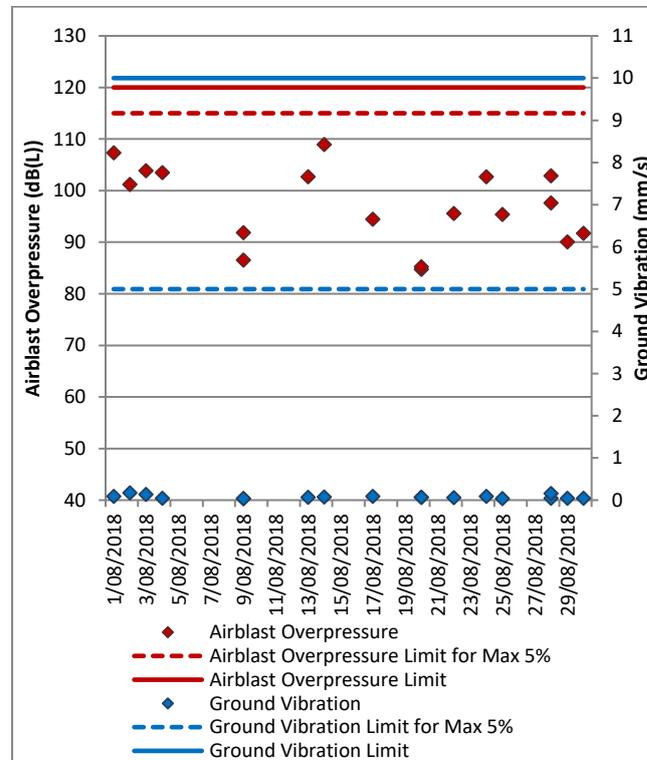


Figure 14: Knodlers Lane Blast Monitoring Results – August 2018

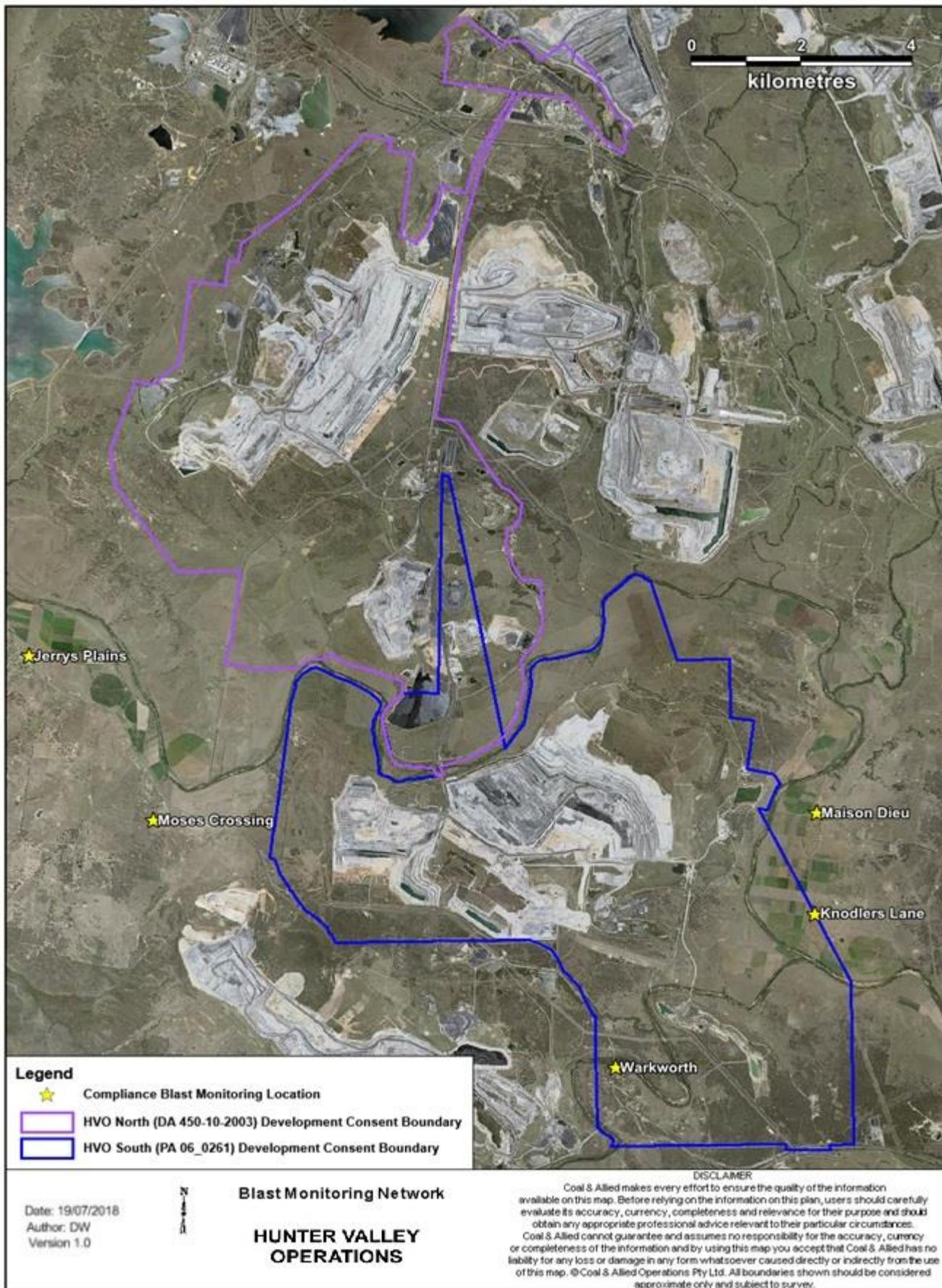


Figure 15: Blast Monitoring Location Plan

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 nights of 9 and 13 August 2018. Monitoring results are detailed in Table 4 to Table 9. During August attended noise monitoring, a single exceedance of the HVO North Impact assessment criteria was measured at the Jerrys Plains Village monitoring location. As per the HVO Noise Management Plan, follow up monitoring was conducted which indicated compliance. The results were reported to the Department of Planning and Environment

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

Location	Date and Time	Wind Speed (m/s) ¹	VTG °C/100m ¹	Criterion dB (A)	Criterion Applies? ²	HVO South LAeq dB ^{3,4}	Exceedance ^{4,5}
Knodlers Lane	9/08/2018 21:04	3.8	0.5	37	No	IA	NA
Maison Dieu	9/08/2018 21:28	3.5	0.5	37	No	IA	NA
Shearers Lane	9/08/2018 21:50	3.5	0.5	41	No	IA	NA
Kilburnie South	9/08/2018 22:52	2.9	0.5	36	Yes	<30	Nil
Jerrys Plains Village	9/08/2018 21:37	3.5	0.5	35	No	IA	NA
Jerrys Plains East	9/08/2018 21:00	3.8	0.5	35	No	NM	NA
Long Point	10/08/2018 0:10	1.8	0.5	35	Yes	IA	Nil
HVGC	9/08/2018 23:27	1.8	-1	55	Yes	36 ⁸	Nil
Redmanvale Road	9/08/2018 23:45	1.4	-1	35	Yes	IA	Nil
Jerrys Plains West	9/08/2018 22:32	3.2	0.5	35	No	IA	NA

Notes:

1. Atmospheric data is sourced from the HVO Cheshunt or HVO Corp. 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;
6. Re-measure;
7. Follow-up monitoring; and
8. Includes low frequency penalty

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

Location	Date and Time	Wind Speed (m/s) ¹	VTG °C/100m ¹	Criterion dB (A)	Criterion Applies? ²	HVO South LAeq dB ^{3,4}	Exceedance ^{4,5}
Knodlers Lane	9/08/2018 21:04	3.8	0.5	41	No	IA	NA
Maison Dieu	9/08/2018 21:28	3.5	0.5	41	No	IA	NA
Shearers Lane	9/08/2018 21:50	3.5	0.5	41	No	IA	NA
Kilburnie South	9/08/2018 22:52	2.9	0.5	41	Yes	<30	Nil
Jerrys Plains Village	9/08/2018 21:37	3.5	0.5	40	No	IA	NA
Jerrys Plains East	9/08/2018 21:00	3.8	0.5	40	No	NM	NA
Long Point	10/08/2018 0:10	1.8	0.5	40	Yes	IA	Nil
HVGC	9/08/2018 23:27	1.8	-1	NA	Yes	36 ⁸	Nil
Redmanvale Road	9/08/2018 23:45	1.4	-1	40	Yes	IA	Nil
Jerrys Plains West	9/08/2018 22:32	3.2	0.5	40	No	IA	NA

Notes:

1. Atmospheric data is sourced from the HVO Cheshunt or HVO Corp. 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;
6. Re-measure;
7. Follow-up monitoring; and
8. Includes low frequency penalty

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

Location	Date and Time	Wind Speed (m/s) ¹	VTG °C/100m ¹	Criterion dB (A)	Criterion Applies? ²	HVO South LA1, 1min dB ^{3,4}	Exceedance ^{4,5}
Knodlers Lane	9/08/2018 21:04	3.8	0.5	45	No	IA	NA
Maison Dieu	9/08/2018 21:28	3.5	0.5	45	No	IA	NA
Shearers Lane	9/08/2018 21:50	3.5	0.5	45	No	IA	NA
Kilburnie South	9/08/2018 22:52	2.9	0.5	45	Yes	33	Nil
Jerrys Plains Village	9/08/2018 21:37	3.5	0.5	45	No	IA	NA
Jerrys Plains East	9/08/2018 21:00	3.8	0.5	45	No	NM	NA
Long Point	10/08/2018 0:10	1.8	0.5	45	Yes	IA	Nil
HVGC	9/08/2018 23:27	1.8	-1	NA	NA	38	NA
Redmanvale Road	9/08/2018 23:45	1.4	-1	45	Yes	IA	Nil
Jerrys Plains West	9/08/2018 22:32	3.2	0.5	45	No	IA	NA

Notes:

1. Atmospheric data is sourced from the HVO Cheshunt or HVO Corp. 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;
5. NA in exceedance column means atmospheric conditions outside specified in approval and so criterion is not applicable;
6. Re-measure; and
7. Follow-up monitoring.

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

Location	Date and Time	Wind Speed (m/s) ¹	VTG °C/100m ₁	Criterion dB (A)	Criterion Applies? ²	HVO North LAeq dB ^{3,4}	Exceedance ^{4,5}
Knodlers Lane	9/08/2018 21:04	1.7	0.5	35	Yes	IA	Nil
Maison Dieu	9/08/2018 21:28	1.8	0.5	35	Yes	IA	Nil
Shearers Lane	9/08/2018 21:50	1.8	0.5	35	Yes	IA	Nil
Kilburnie South	9/08/2018 22:52	0	-1	39	Yes	30	Nil
Jerrys Plains Village	9/08/2018 21:37	1.8	0.5	36	Yes	39⁶	3⁶
Jerrys Plains Village	9/08/2018 23:02	0.1	3	36	Yes	34	Nil
Re-measure ⁷							
Jerrys Plains Village	13/08/2018 21:00	3.6	-1	36	No	IA	NA
Follow up re-measure ⁸							
Jerrys Plains East	9/08/2018 21:00	1.7	0.5	39	Yes	34	Nil
Long Point	10/08/2018 0:10	1.8	0.5	35	Yes	IA	Nil
HVGC	9/08/2018 23:27	0.1	0.5	NA	NA	IA	NA
Redmanvale Road	9/08/2018 23:45	0.3	3	35	Yes	<30	Nil
Jerrys Plains West	9/08/2018 22:32	0	0.5	35	Yes	32	Nil

Notes:

1. Atmospheric data is sourced from the HVO Cheshunt or HVO Corp. 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;
6. Includes low frequency penalty;
7. Re-measure; and
8. Follow-up monitoring.

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

Location	Date and Time	Wind Speed (m/s) ¹	VTG °C/100m ¹	Criterion dB (A)	Criterion Applies? ²	HVO North LAeq dB ^{3,4}	Exceedance ^{4,5}
Knodlers Lane	9/08/2018 21:04	1.7	0.5	41	Yes	IA	Nil
Maison Dieu	9/08/2018 21:28	1.8	0.5	41	Yes	IA	Nil
Shearers Lane	9/08/2018 21:50	1.8	0.5	41	Yes	IA	Nil
Kilburnie South	9/08/2018 22:52	0	-1	41	Yes	30	Nil
Jerrys Plains Village	9/08/2018 21:37	1.8	0.5	41	Yes	39 ⁶	Nil
Jerrys Plains Village Re-measure ⁷	9/08/2018 23:02	0.1	3	41	Yes	34	Nil
Jerrys Plains Village Follow up re-measure ⁸	13/08/2018 21:00	3.6	-1	41	No	IA	NA
Jerrys Plains East	9/08/2018 21:00	1.7	0.5	41	Yes	34	Nil
Long Point	10/08/2018 0:10	1.8	0.5	41	Yes	IA	Nil
HVGC	9/08/2018 23:27	0.1	0.5	NA	NA	IA	NA
Redmanvale Road	9/08/2018 23:45	0.3	3	41	Yes	<30	Nil
Jerrys Plains West	9/08/2018 22:32	0	0.5	41	Yes	32	Nil

Notes:

1. Atmospheric data is sourced from the HVO Cheshunt or HVO Corp. 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;
6. Includes low frequency penalty;
7. Re-measure; and
8. Follow-up monitoring.

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

Location	Date and Time	Wind Speed (m/s) ¹	VTG °C/100m ¹	Criterion dB (A)	Criterion Applies? ²	HVO North LA1, 1min dB ^{3,4}	Exceedance ^{4,5}
Knodlers Lane	9/08/2018 21:04	1.7	0.5	46	Yes	IA	Nil
Maison Dieu	9/08/2018 21:28	1.8	0.5	46	Yes	IA	Nil
Shearers Lane	9/08/2018 21:50	1.8	0.5	46	Yes	IA	Nil
Kilburnie South	9/08/2018 22:52	0	-1	46	Yes	33	Nil
Jerrys Plains Village	9/08/2018 21:37	1.8	0.5	46	Yes	44	Nil
Jerrys Plains Village Re-measure ⁷	9/08/2018 23:02	0.1	3	46	Yes	36	Nil
Jerrys Plains Village Follow up re-measure ⁸	13/08/2018 21:00	3.6	-1	46	No	IA	NA
Jerrys Plains East	9/08/2018 21:00	1.7	0.5	46	Yes	44	Nil
Long Point	10/08/2018 0:10	1.8	0.5	46	Yes	IA	Nil
HVGC	9/08/2018 23:27	0.1	0.5	NA	NA	IA	NA
Redmanvale Road	9/08/2018 23:45	0.3	3	46	Yes	33	Nil
Jerrys Plains West	9/08/2018 22:32	0	0.5	46	Yes	36	Nil

Notes:

1. Atmospheric data is sourced from the HVO Cheshunt or HVO Corp. 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. These are results for HVO North Pit Area in the absence of all other noise sources;
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;
6. Re-measure; and
7. Follow-up monitoring.

5.2 NPfl Low Frequency Assessment

In accordance with the requirements of the EPA's Noise Policy for Industry (NPfl), the applicability of the low frequency modification penalty has been assessed. During August 2018 two measurements required the penalty to be applied. The assessment for low frequency noise is shown in Table 10.

Table 10: Low Frequency Noise Assessment - August 2018

Location	Date and Time	Measured Site Only LA _{eq} dB (Sth/Nth)	Site Only LC _{eq} dB ¹ (Sth/Nth)	Site Only LC _{eq} -LA _{eq} dB ^{1,2} (Sth/Nth)	Result Max exceedance of ref spectrum dB ^{1,3} (Sth/Nth)	Penalty dB(A) ¹	Site L _{Aeq,15min} dB with modifying factor (if applicable)
Knodlers Lane	9/08/2018 21:04	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Maison Dieu	9/08/2018 21:28	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Shearers Lane	9/08/2018 21:50	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Kilburnie South	9/08/2018 22:52	<30/30	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Jerrys Plains Village	9/08/2018 21:37	IA/37	NA/55	NA/18	NA/1	NA/2	NA/39
Jerrys Plains Village Re-measure ⁷	9/08/2018 23:02	NM/34	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Jerrys Plains Village Follow up re-measure ⁸	13/08/2018 21:00	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Jerrys Plains East	9/08/2018 21:00	NM/34	NA/53	NA/19	NA/Nil	NA/Nil	NA/NA
Long Point	10/08/2018 0:10	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
HVGC	9/08/2018 23:27	34/IA	54/NA	20/NA	2/NA	2/NA	36/NA
Redmanvale Road	9/08/2018 23:45	IA/<30	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Jerrys Plains West	9/08/2018 22:32	IA/32	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA

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 NPfl, if LC_{eq} – LA_{eq} ≥ 15 dB further assessment of low frequency noise required as detailed in Sections 2.4 and 3.3 of this report;
3. As per NPfl, compare measured spectrum against reference spectrum to determine if the low frequency modifying factor is triggered and application of penalty is required;
4. Re-measure; and
5. Follow-up measurement.

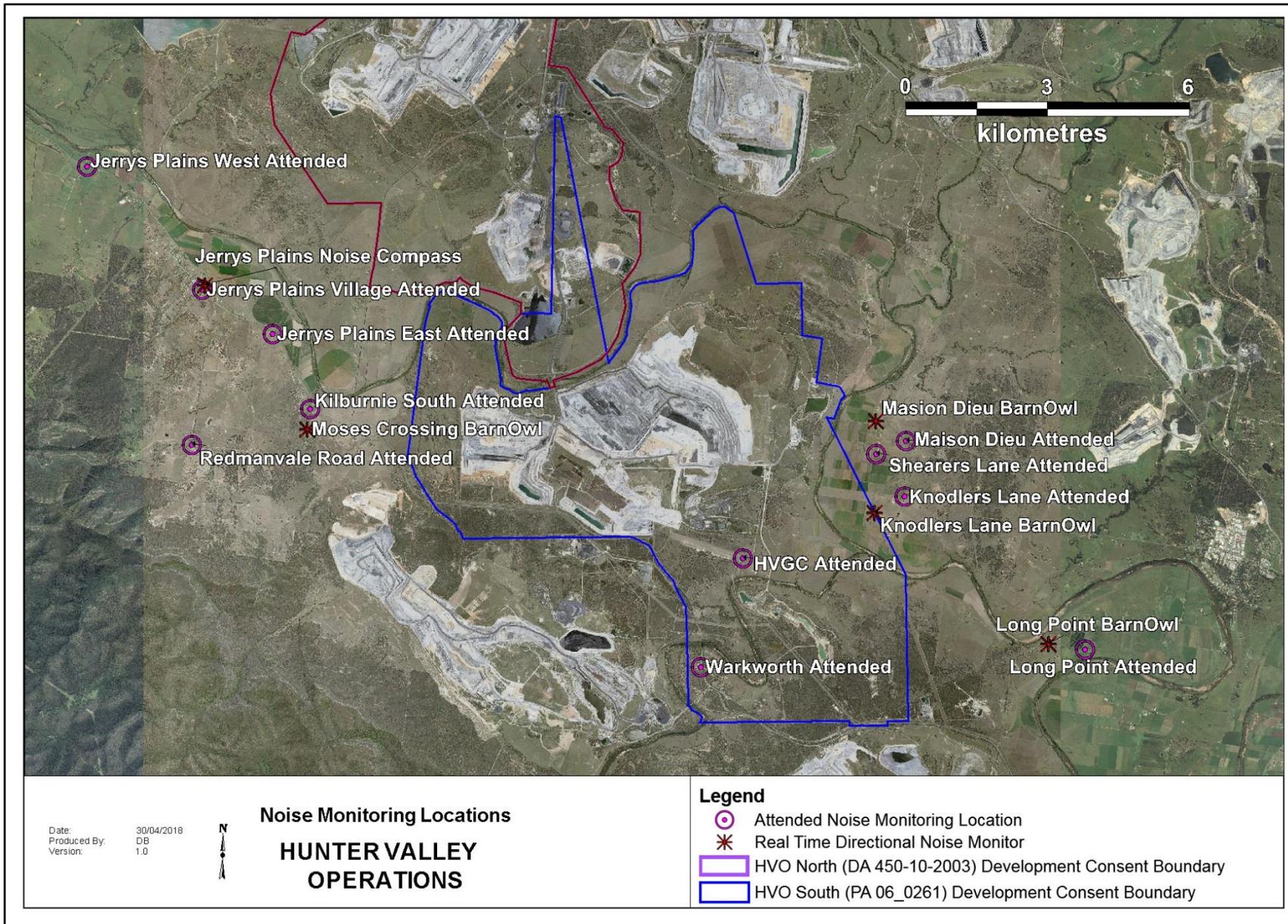


Figure 16: Noise Monitoring Location Plan

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 August, a total of 445 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.

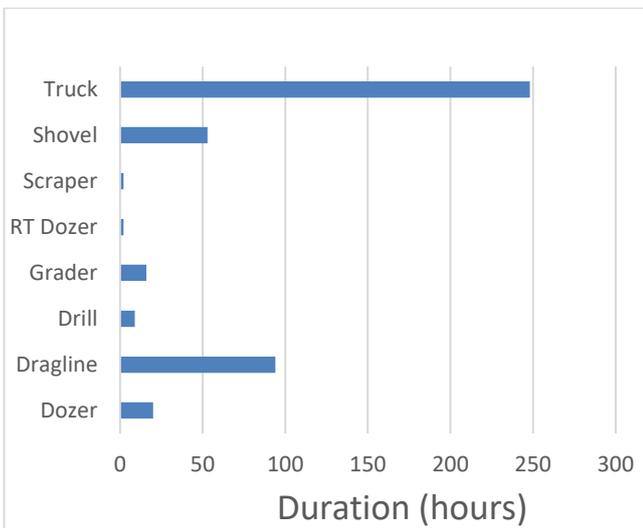


Figure 17: Operational Downtime by Equipment Type – August 2018

7.0 REHABILITATION

During August 32.2 Ha of land was released, 3.7 Ha of land was bulk shaped and 5.9 Ha of land was rehabilitated. Year to date progress can be viewed in Figure 18.

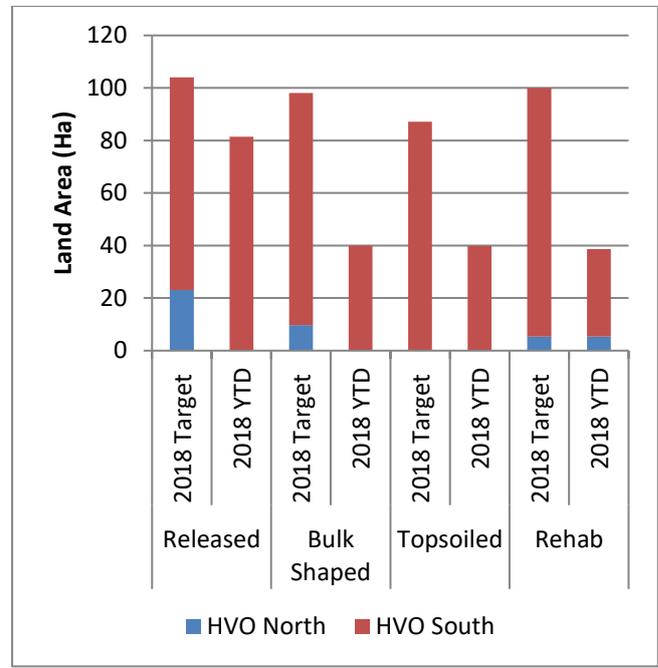


Figure 18: Rehabilitation YTD – August 2018

8.0 COMPLAINTS

One complaint was 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	1	-	1	-	1	3
July	-	-	2	-	-	2
August	1	-	-	-	-	1
September	-	-	-	-	-	-
October	-	-	-	-	-	-
November	-	-	-	-	-	-
December	-	-	-	-	-	-
Total	7	3	10	-	2	22

9.0 ENVIRONMENTAL INCIDENTS

During the reporting period there were three recordable environmental incidents;

9 August 2018 – Noise Exceedance

Noise Exceedance measured at the Jerrys Plains Village attended monitoring location in relation to haul truck noise from HVO West Pit.

As per the Noise Management Plan, the monitoring consultant contacted dispatch and advised of the exceedance, within 75 minutes a re-measure was undertaken and a follow up measurement within a week was also undertaken. Both follow up measurements resulted in compliant measurements.

The results were reported to the Department of Planning and Environment

17 August 2018 – Blast Overpressure exceedance (>115dB)

On 17 August 2018, blast WN40BAR01A in HVO West Pit recorded an overpressure result of 115.3 dB(L) at the Maison Dieu monitoring location. An assessment against the 5% of the total number of blasts in a 12 month period criteria will be reported in the 2018 Annual Review.

23 August 2018 – Leak from Hunter River Pump Pipeline

On 23 August 2018, a pipeline from the Oaklands Hunter River pumping station to HVO CHPP receiving dam was observed to have developed a leak when transferring river water. Pumping ceased immediately and repairs were made to the pipeline before recommencing the pump.

Appendix A: Meteorological Data

Table 12: Meteorological Data - HVO Corporate Meteorological Station – August 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)
1/08/2018	20	4	51	16	606	246	2.9	0.0
2/08/2018	17	5	88	46	12	125	2.2	0.0
3/08/2018	22	1	100	19	593	261	2.5	0.6
4/08/2018	18	3	86	26	677	282	4.2	0.2
5/08/2018	22	0	76	10	634	256	2.1	0.0
6/08/2018	15	2	100	40	586	275	3.6	9.0
7/08/2018	16	3	62	23	947	275	5.4	0.0
8/08/2018	18	0	69	18	672	273	4.0	0.0
9/08/2018	20	3	86	20	657	-	2.3	0.0
10/08/2018	22	2	84	10	662	260	1.8	0.0
11/08/2018	24	3	58	13	646	283	4.7	0.0
12/08/2018	16	2	67	16	825	270	4.8	0.0
13/08/2018	19	-1	63	21	647	281	4.2	0.0
14/08/2018	21	1	74	18	676	279	4.1	0.0
15/08/2018	22	4	57	3	685	280	5.6	0.0
16/08/2018	23	5	69	10	759	243	5.0	0.0
17/08/2018	18	1	75	15	683	276	2.8	0.0
18/08/2018	21	1	50	10	690	265	5.2	0.0
19/08/2018	15	1	52	14	781	261	6.2	0.0
20/08/2018	16	0	60	8	701	256	2.9	0.0
21/08/2018	16	0	52	22	677	273	4.7	0.0
22/08/2018	18	1	76	21	908	243	2.7	0.0
23/08/2018	18	-1	93	22	817	145	1.6	0.0
24/08/2018	19	1	100	26	828	113	1.7	0.0
25/08/2018	18	4	91	37	794	128	1.5	0.0
26/08/2018	15	4	100	65	917	207	1.2	5.8
27/08/2018	17	2	93	47	979	176	2.2	5.0
28/08/2018	16	0	86	27	924	157	1.3	0.2
29/08/2018	18	-2	88	8	742	243	2.1	0.0
30/08/2018	19	-3	88	7	765	196	1.4	0.0
31/08/2018	16	2	92	40	859	206	2.0	6.6

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