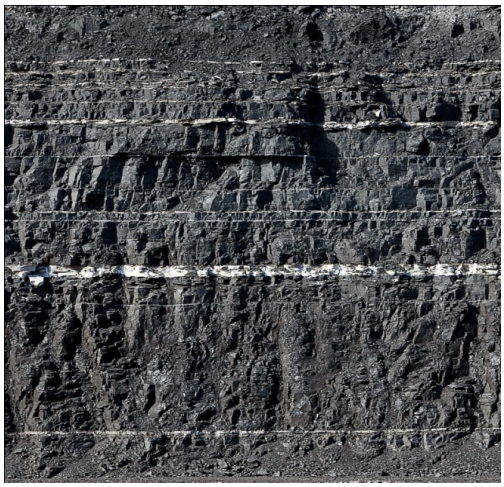
HUNTER VALLEY
OPERATIONS



Monthly Environmental Monitoring Report

Hunter Valley Operations

July 2018

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Revision History

Version No.	Person Responsible	Document Status	Date
1.0	**Environment & Community Officer**	**Draft**	**7/09/2018**
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 1st July to 31st July 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)
July	0.4	195.4

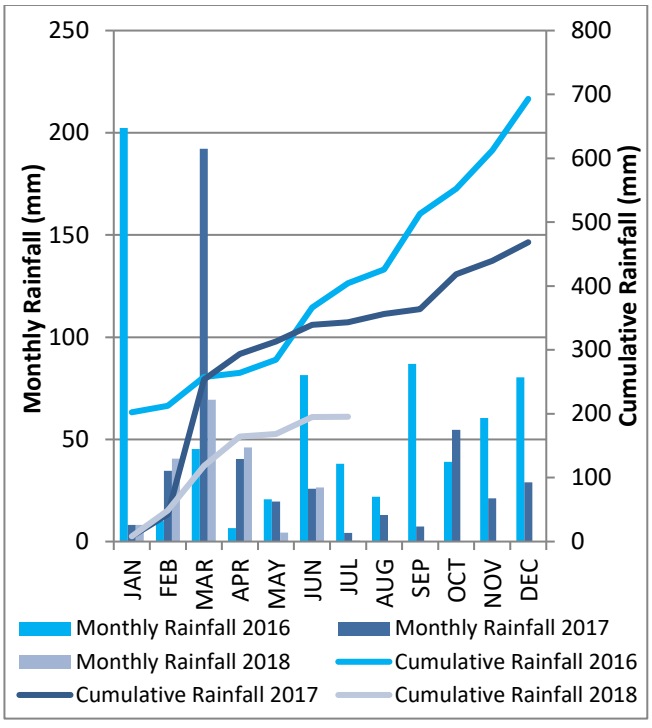

Figure 1: Rainfall Summary 2018

2.1.2 Wind Speed and Direction

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

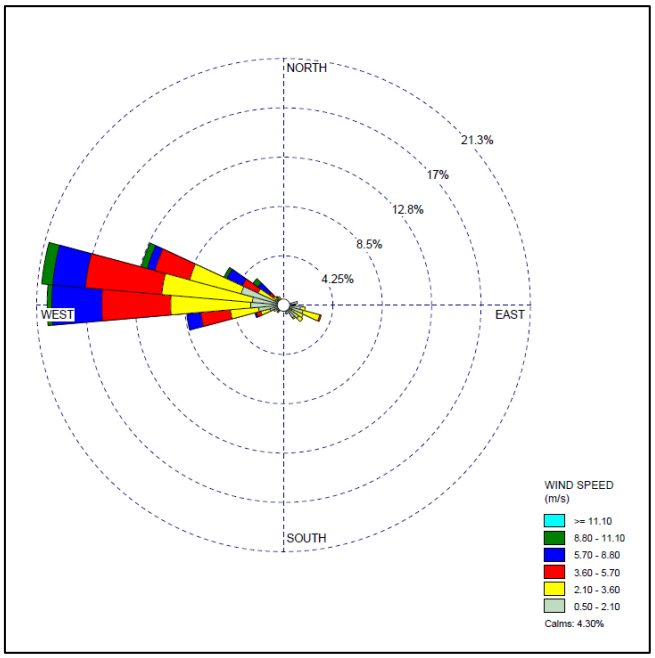

Figure 2: HVO Corporate Wind Rose – July 2018

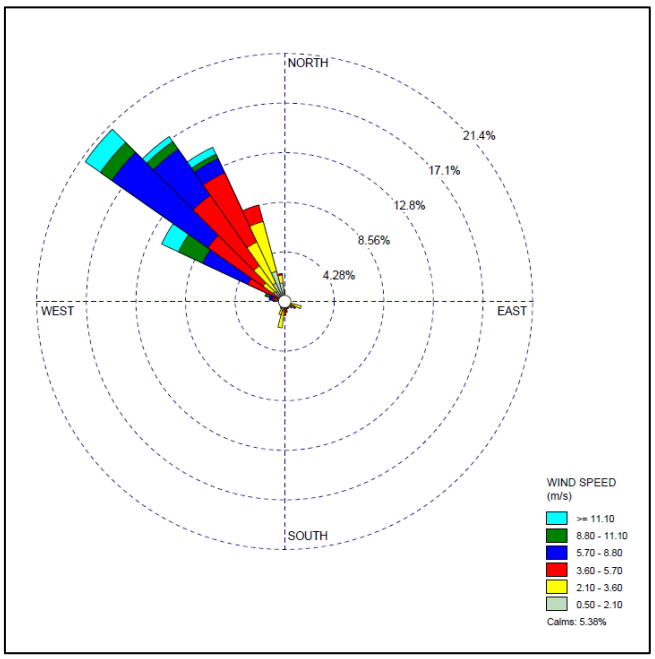

Figure 3: HVO Cheshunt Wind Rose – July 2018

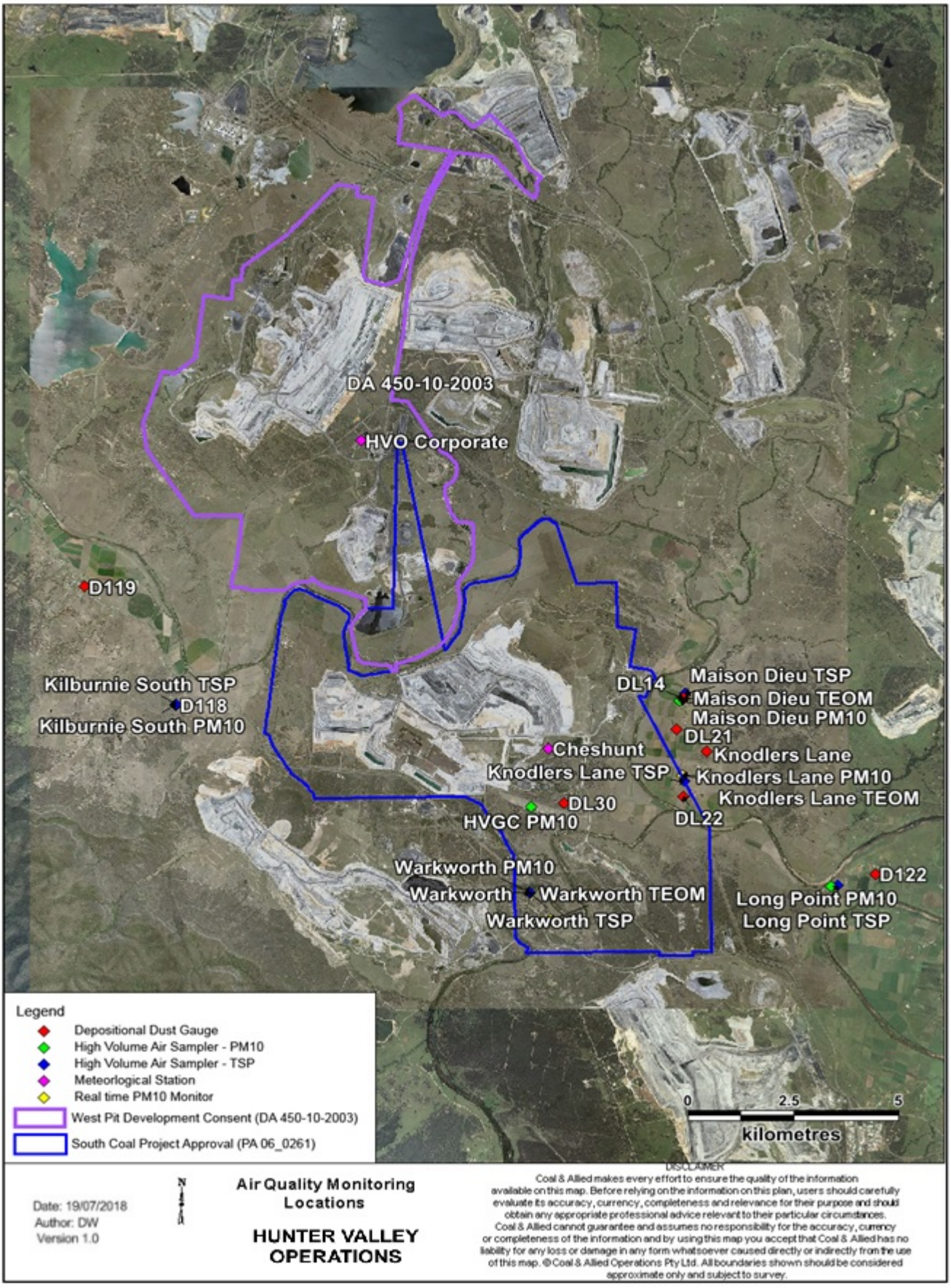

Figure 4: Air Quality Monitoring Location Plan

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 Knodlers Lane, D122 and DL30 monitors recorded a monthly result above the long term impact assessment criteria of 4.0 g/m^2 per month.

The field notes associated with the Knodlers Lane and 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.

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

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

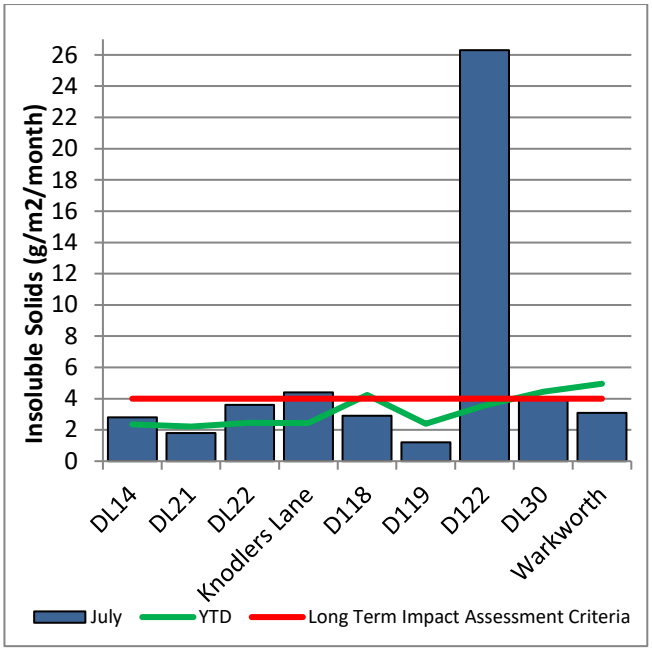

Figure 5: Depositional Dust Results – July 2018

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_{10}). 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_{10} Results

Figure 6 shows individual PM_{10} results at each monitoring station against the short term impact assessment criteria of 50 µg/m^3.

On 6/07/2018 Long Point HVAS PM_{10} unit recorded an elevated 24 hour average of 53µg/m^3. Investigation determined that HVO's maximum contribution to the monitor is estimated to be: 31.5µg/m^3 or 59.4% of the measured result.

On 18/07/2018 two HVAS PM_{10} units recorded elevated 24 hour averages: Knodlers Lane 73µg/m^3 and Long Point 66µg/m^3. HVO's maximum contribution was calculated to be the following:

- Knodlers Lane: 41.0 µg/m^3 or 56.2% of the measured result;
- Long Point: 34.0 µg/m^3 or 51.5% of the measured result.

On 24/07/2018 three HVAS PM_{10} units recorded elevated 24 hour averages: Knodlers Lane 134µg/m^3, Long Point 112µg/m^3 and Maison Dieu 51µg/m^3 HVO's maximum contribution was calculated to be the following:

- Knodlers Lane: <87.8µg/m^3 or <65% of the measured result;
- Long Point: <44µg/m^3 or <39% of the measured result; and
- Maison Deu: 27.0µg/m^3 or 52.9% of the measured result.

On 30/07/2018 Long Point HVAS PM_{10} unit recorded an elevated 24 hour average of 54µg/m^3. Investigation determined that HVO's maximum contribution to the monitor is estimated to be could not have been more than the contribution at Knodlers Lane on this day given Long Point is further

downwind away from HVO. HVO's contribution was estimated to be <32.5 µg/m^3 or <60.2%

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

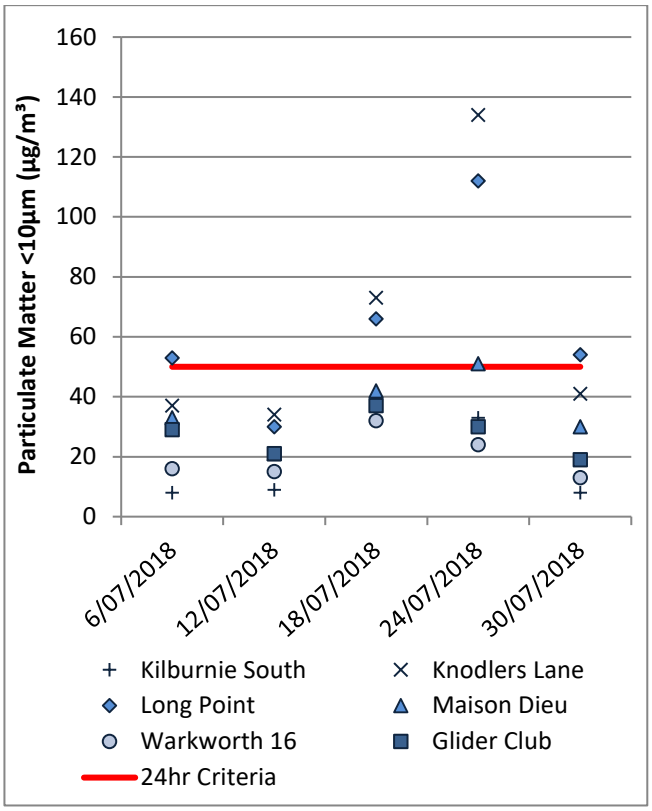

Figure 6: Individual PM_{10} Results – July 2018

Figure 7 shows the year to date annual average PM_{10} results.

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

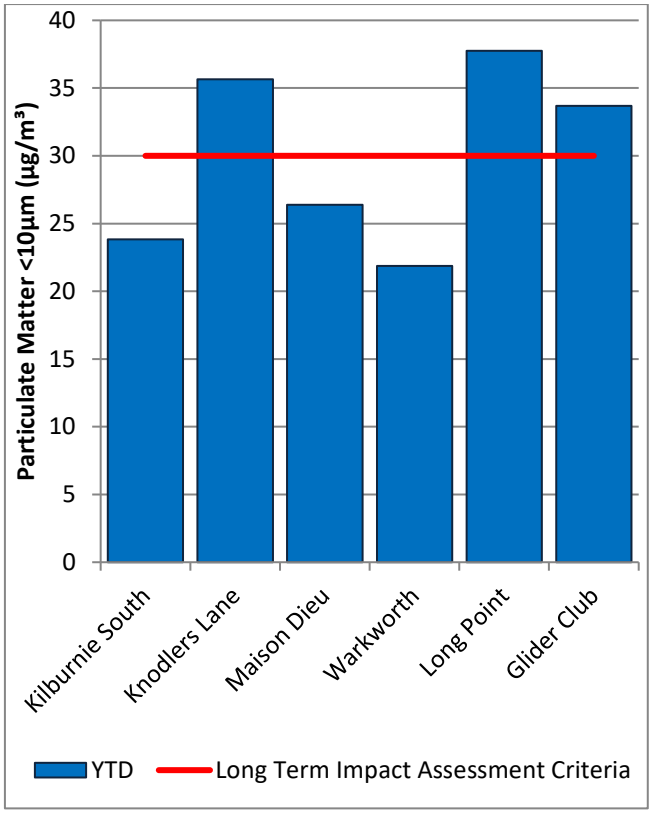

Figure 7: Year to Date Average PM_{10} – July 2018

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.

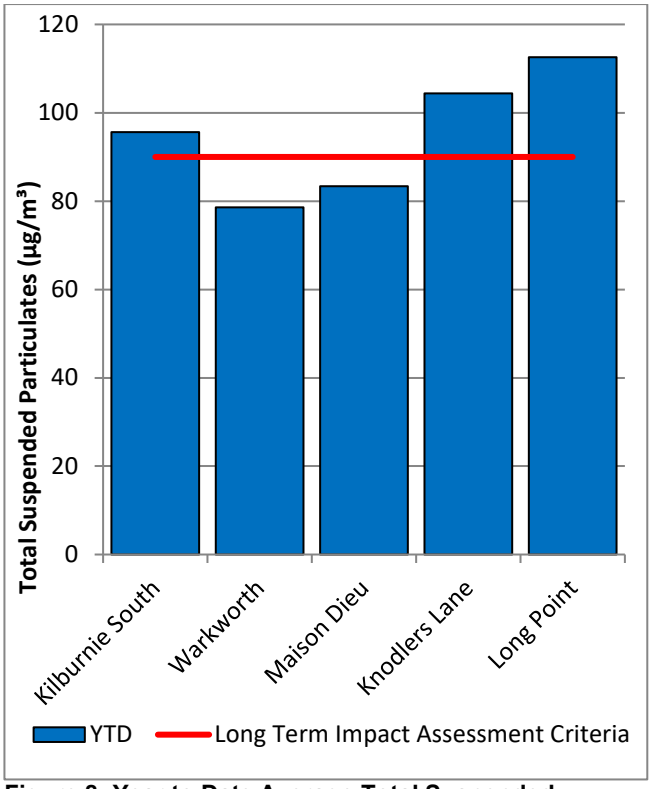

Figure 8: Year to Date Average Total Suspended Particulates – July 2018

2.3.3 Real Time PM_{10} Results

Hunter Valley Operations maintains a network of real time PM_{10} 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_{10} 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 PM_{10} result and the year to date 24 hour PM_{10} annual average.

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

2.3.4 Real Time Alarms for Air Quality

During July the real time monitoring system generated 90 automated air quality related alarms. 26 were related to adverse weather conditions and 64 alarms relating to PM_{10}.

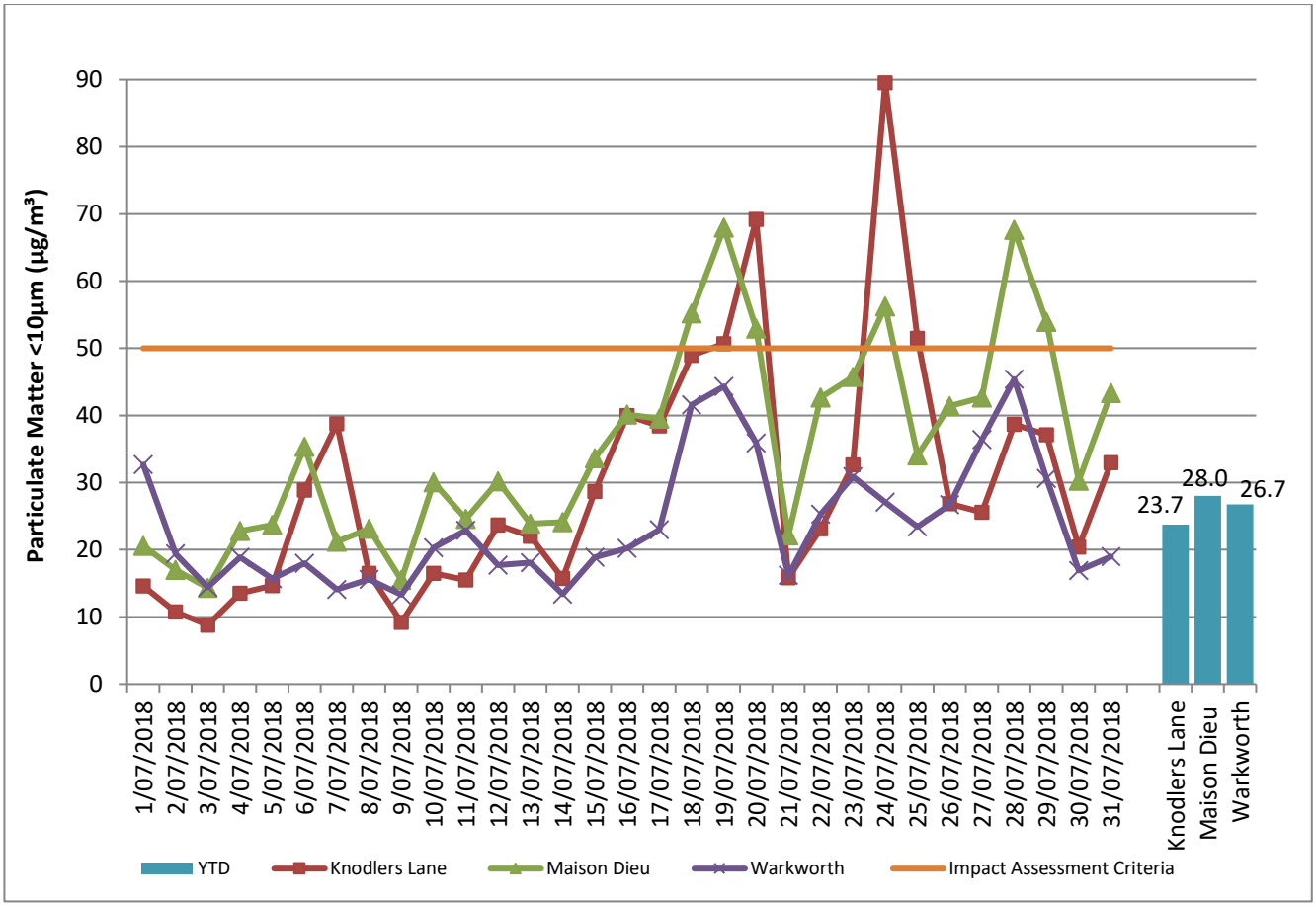

Figure 9: Real Time PM_{10} 24hr average and YTD average – July 2018

Table 2: Real-time PM10 Investigation Results

Date	Site	24hr PM_{10} result (µg/m³)	Estimated contribution from HVO (µg/m³)	Discussion
18/07/2018	Maison Dieu TEOM	55.2	10.0	An internal investigation determined HVO maximum potential contribution to be in the order of 10.0ug/m3 or 18% of the total measured based on prevailing wind conditions and upwind monitoring results.
19/07/2018	Knodlers Lane TEOM	50.7	13.2	An internal investigation determined HVO maximum potential contribution to be in the order of 13.2ug/m3 or 26% of the total measured based on prevailing wind conditions and upwind monitoring results.

19/07/2018	Maison Dieu TEOM	67.9	30.4	An internal investigation determined HVO maximum potential contribution to be in the order of 30.4ug/m3 or 44.8% of the total measured based on prevailing wind conditions and upwind monitoring results.
20/07/2018	Knodlers Lane TEOM	69.2	37.3	An internal investigation determined HVO maximum potential contribution to be in the order of 37.3ug/m3 or 53.9% of the total measured based on prevailing wind conditions and upwind monitoring results.
20/07/2018	Maison Dieu TEOM	52.9	21.1	An internal investigation determined HVO maximum potential contribution to be in the order of 21.1ug/m3 or 39.8% of the total measured based on prevailing wind conditions and upwind monitoring results.
24/07/2018	Knodlers Lane	89.5	59.9	An internal investigation determined HVO maximum potential contribution to be in the order of 59.9ug/m3 or 67.0% of the total measured based on prevailing wind conditions and upwind monitoring results.
24/07/2018	Maison Dieu TEOM	56.2	30.3	An internal investigation determined HVO maximum potential contribution to be in the order of 30.3ug/m3 or 53.9% of the total measured based on prevailing wind conditions and upwind monitoring results.
25/07/2018	Knodlers Lane TEOM	51.5	30.7	An internal investigation determined HVO maximum potential contribution to be in the order of 30.7ug/m3 or 59.7% of the total measured based on prevailing wind conditions and upwind monitoring results.
28/07/2018	Maison Dieu TEOM	67.7	29.2	An internal investigation determined HVO maximum potential contribution to be in the order of 29.2ug/m3 or 43.2% of the total measured based on prevailing wind conditions and upwind monitoring results.

29/07/2018	Maison Dieu TEOM	53.9	34.9	An internal investigation determined HVO maximum potential contribution to be in the order of 34.9ug/m3 or 64.7% 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 128.4ML 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 July, 19 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 the 31 July 2018, blast WN45LEP02A in HVO West Pit recorded an overpressure result of 115.5dB(L) at the Warkworth 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

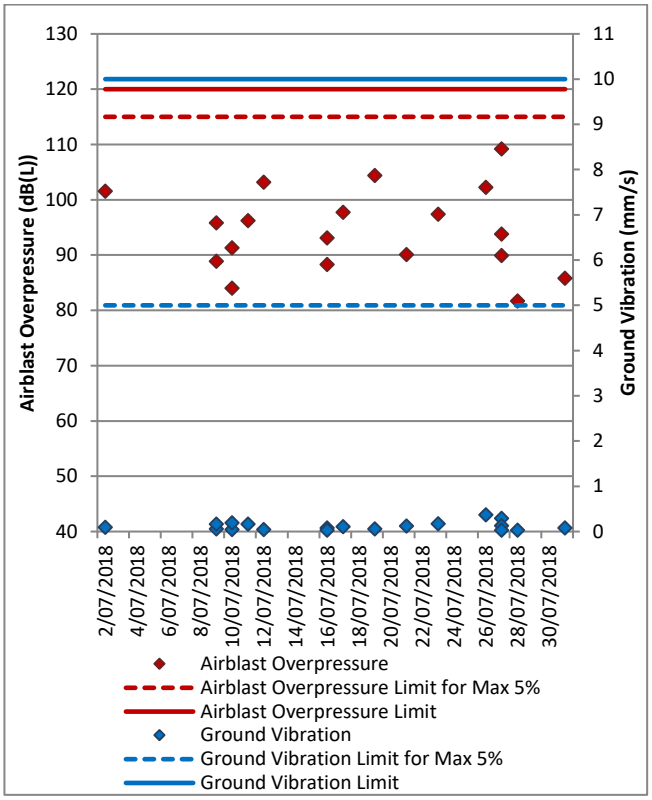

Figure 10: Moses Crossing Blast Monitoring Results – July 2018

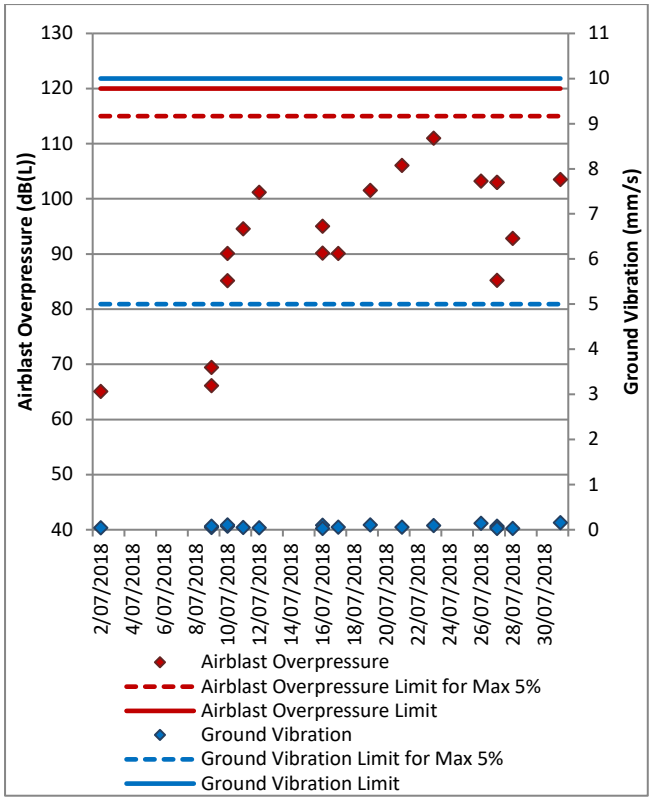

Figure 11: Jerrys Plains Blast Monitoring Results – July 2018

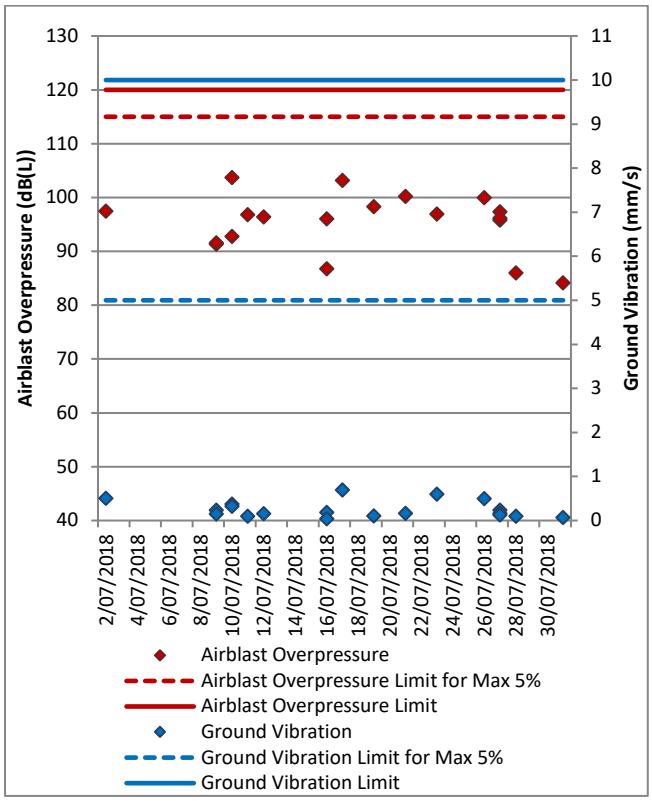

Figure 12: Maison Dieu Blast Monitoring Results – July 2018

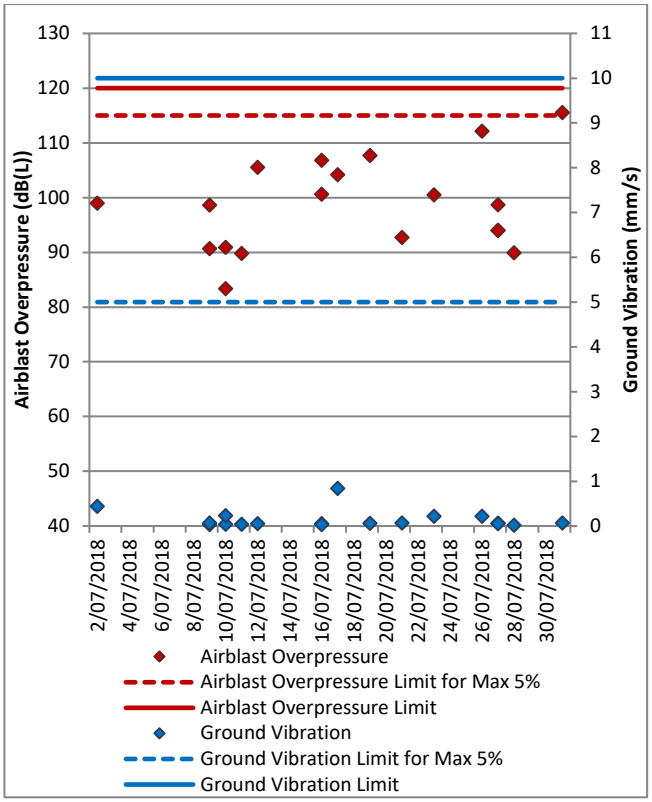

Figure 13: Warkworth Blast Monitoring Results – July 2018

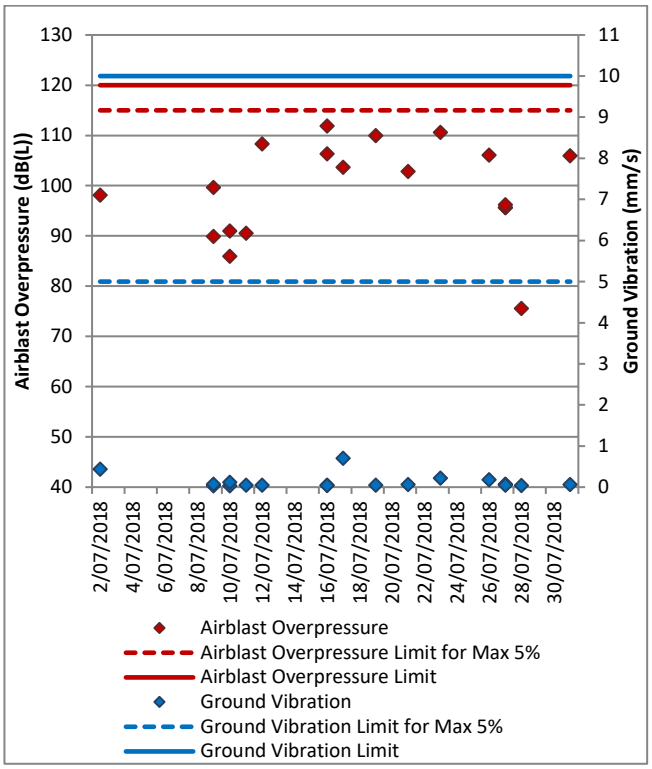

Figure 14: Knodlers Lane Blast Monitoring Results – July 2018

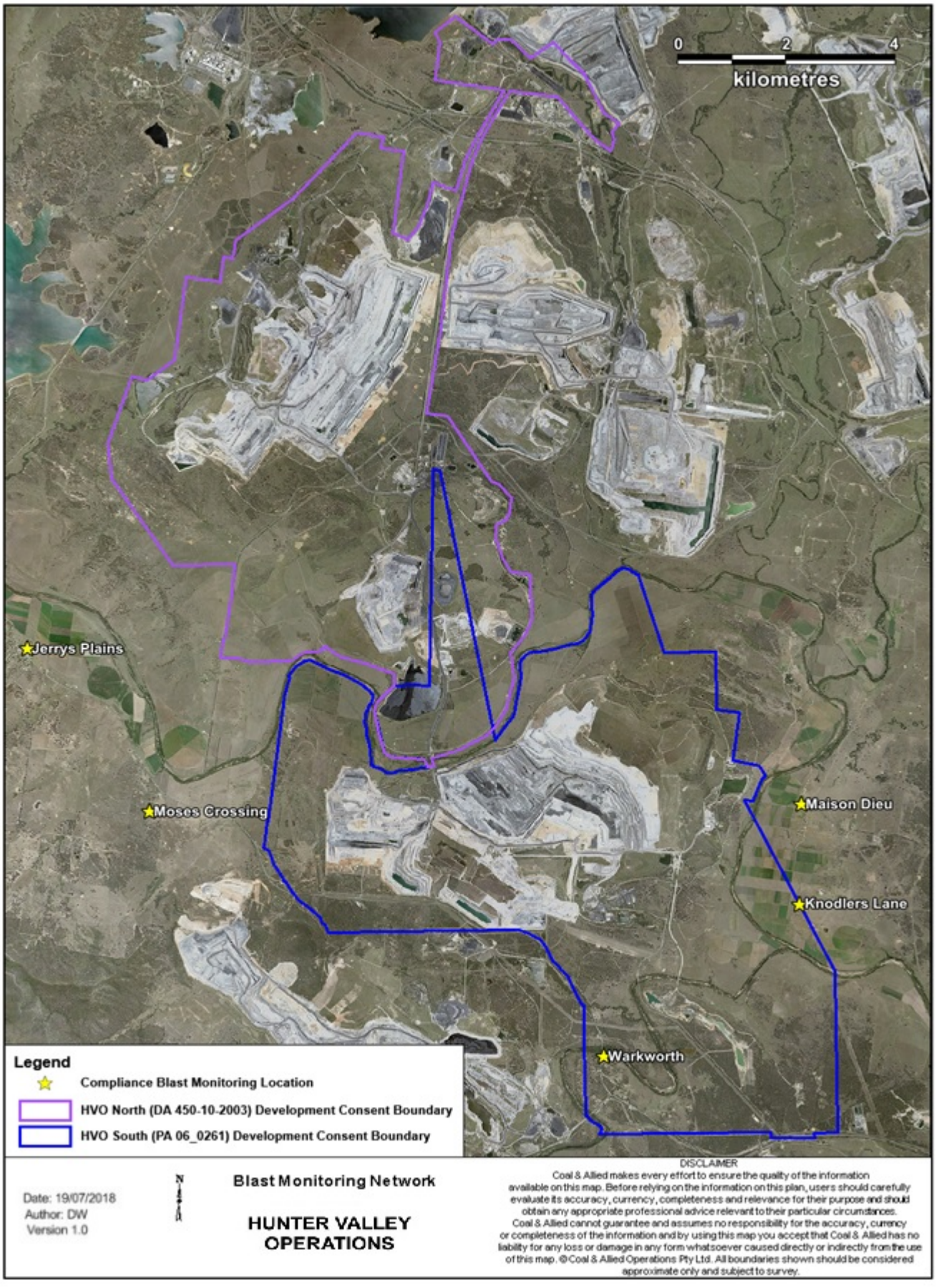

Figure 15: Blast Monitoring Location Plan

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 9 July 2018. Monitoring for additional frequency requirements of the HVO North Consent where conducted on the night of 4 July 2018. Monitoring results are detailed in Table 4 to Table 9 .

Table 4: $L_{Aeq,\ 15\ minute}$ HVO South - Impact Assessment Criteria – July 2018

Location	Date and Time	Wind Speed (m/s)[5]	VTG °C/100m[1]	Criterion dB (A)	Criterion Applies?[2]	HVO South L_{Aeq} dB[3,4]	Exceedance[4,5]
Knodlers Lane	9/07/2018 21:00	2.2	0.5	37	Yes	IA	Nil
Maison Dieu	9/07/2018 21:53	0.6	3	37	No	IA	NA
Shearers Lane	9/07/2018 21:27	1.8	0.5	41	Yes	IA	Nil
Kilburnie South	9/07/2018 23:18	2.1	0.5	36	Yes	32	Nil
Jerrys Plains Village	9/07/2018 21:21	2	0.5	35	Yes	IA	Nil
Jerrys Plains East	9/07/2018 21:00	2.2	0.5	35	Yes	<30	Nil
HVGC	9/07/2018 22:47	0.6	0.5	35	Yes	IA	Nil
Long Point	9/07/2018 23:55	0.7	3	55	No	<30	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; and
6. LF modifying factor applied (see Table 4.2)

Table 5: $L_{Aeq,\ 15\ minute}$ HVO South - Land Acquisition Criteria – July 2018

Location	Date and Time	Wind Speed (m/s)[5]	VTG °C/100m[1]	Criterion dB (A)	Criterion Applies?[2]	HVO South L_{Aeq} dB[3,4]	Exceedance[4,5]
Knodlers Lane	9/07/2018 21:00	2.2	0.5	41	Yes	IA	Nil
Maison Dieu	9/07/2018 21:53	0.6	3	41	No	IA	NA
Shearers Lane	9/07/2018 21:27	1.8	0.5	41	Yes	IA	Nil
Kilburnie South	9/07/2018 23:18	2.1	0.5	41	Yes	32	Nil
Jerrys Plains Village	9/07/2018 21:21	2	0.5	40	Yes	IA	Nil
Jerrys Plains East	9/07/2018 21:00	2.2	0.5	40	Yes	<30	Nil
HVGC	9/07/2018 22:47	0.6	0.5	40	Yes	IA	Nil
Long Point	9/07/2018 23:55	0.7	3	NA	NA	<30	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. 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: $L_{A1,\ 1minute}$ HVO South - Impact Assessment Criteria – July 2018

Location	Date and Time	Wind Speed (m/s)[5]	VTG °C/100m[1]	Criterion dB (A)	Criterion Applies?[2]	HVO South $L_{A1,\ 1min}$ dB[3,4]	Exceedance[4,5]
Knodlers Lane	9/07/2018 21:00	2.2	0.5	45	Yes	IA	Nil
Maison Dieu	9/07/2018 21:53	0.6	3	45	No	IA	NA
Shearers Lane	9/07/2018 21:27	1.8	0.5	45	Yes	IA	Nil
Kilburnie South	9/07/2018 23:18	2.1	0.5	45	Yes	39	Nil
Jerrys Plains Village	9/07/2018 21:21	2	0.5	45	Yes	IA	Nil
Jerrys Plains East	9/07/2018 21:00	2.2	0.5	45	Yes	30	Nil
HVGC	9/07/2018 22:47	0.6	0.5	45	Yes	IA	Nil
Long Point	9/07/2018 23:55	0.7	3	NA	NA	39	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; and
5. NA in exceedance column means atmospheric conditions outside specified in approval and so criterion is not applicable.

Table 7: $L_{Aeq,\ 15minute}$ HVO North – Impact Assessment Criteria – July 2018

Location	Date and Time	Wind Speed (m/s)[1]	VTG °C/100m[1]	Criterion dB (A)	Criterion Applies?[2]	HVO North L_{Aeq} dB[3,4]	Exceedance[4,5]
Kilburnie South	4/07/2018 00:59	1.1	0.5	39	Yes	32	Nil
Jerrys Plains Village	4/07/2018 00:33	0.3	3.0	36	Yes	34	Nil
Jerrys Plains East	4/07/2018 00:11	0.6	-1.0	39	Yes	IA	Nil
Knodlers Lane	9/07/2018 21:00	0.9	-1	35	Yes	IA	Nil
Maison Dieu	9/07/2018 21:53	0.7	0.5	35	Yes	IA	Nil
Shearers Lane	9/07/2018 21:27	0.6	3	35	Yes	IA	Nil
Kilburnie South	9/07/2018 23:18	0.8	0.5	39	Yes	<25	Nil
Jerrys Plains Village	9/07/2018 21:21	0.8	0.5	36	Yes	31	Nil
Jerrys Plains East	9/07/2018 21:00	0.9	-1	39	Yes	28	Nil
HVGC	9/07/2018 22:47	0.1	3	35	Yes	IA	Nil
Long Point	9/07/2018 23:55	1.1	0.5	NA	NA	<30	NA

Notes:
1. Atmospheric data is sourced from the HVO Corporate 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; and
5. NA in exceedance column means atmospheric conditions outside specified in approval and so criterion is not applicable.

Table 8: $L_{Aeq,15minute}$ HVO North - Land Acquisition Criteria – July 2018

Location	Date and Time	Wind Speed (m/s)[5]	VTG[5]	Criterion dB (A)	Criterion Applies?[1,6]	HVO North L_{Aeq} dB[2,4]	Exceedance[3]
Kilburnie South	4/07/2018 00:59	1.1	0.5	41	Yes	32	Nil
Jerrys Plains Village	4/07/2018 00:33	0.3	3.0	41	Yes	34	Nil
Jerrys Plains East	4/07/2018 00:11	0.6	-1.0	41	Yes	IA	Nil
Knodlers Lane	9/07/2018 21:00	0.9	-1	41	Yes	IA	Nil
Maison Dieu	9/07/2018 21:53	0.7	0.5	41	Yes	IA	Nil
Shearers Lane	9/07/2018 21:27	0.6	3	41	Yes	IA	Nil
Kilburnie South	9/07/2018 23:18	0.8	0.5	41	Yes	<25	Nil
Jerrys Plains Village	9/07/2018 21:21	0.8	0.5	41	Yes	31	Nil
Jerrys Plains East	9/07/2018 21:00	0.9	-1	41	Yes	28	Nil
HVGC	9/07/2018 22:47	0.1	3	41	Yes	IA	Nil
Long Point	9/07/2018 23:55	1.1	0.5	NA	NA	<30	NA

Notes:
1. Atmospheric data is sourced from the HVO Corporate 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

Table 9: $L_{A1,\ 1Minute}$ HVO North - Impact Assessment Criteria – July 2018

Location	Date and Time	Wind Speed (m/s)[5]	VTG[5]	Criterion dB (A)	Criterion Applies?[1,6]	HVO North $L_{A1,\ 1min}$ dB[2,4]	Exceedance[3]
Kilburnie South	4/07/2018 00:59	1.1	0.5	46	Yes	33	Nil
Jerrys Plains Village	4/07/2018 00:33	0.3	3.0	46	Yes	38	Nil
Jerrys Plains East	4/07/2018 00:11	0.6	-1.0	46	Yes	IA	Nil
Knodlers Lane	9/07/2018 21:00	0.9	-1	46	Yes	IA	Nil
Maison Dieu	9/07/2018 21:53	0.7	0.5	46	Yes	IA	Nil
Shearers Lane	9/07/2018 21:27	0.6	3	46	Yes	IA	Nil
Kilburnie South	9/07/2018 23:18	0.8	0.5	46	Yes	<25	Nil
Jerrys Plains Village	9/07/2018 21:21	0.8	0.5	46	Yes	36	Nil
Jerrys Plains East	9/07/2018 21:00	0.9	-1	46	Yes	34	Nil
HVGC	9/07/2018 22:47	0.1	3	46	Yes	IA	Nil
Long Point	9/07/2018 23:55	1.1	0.5	NA	NA	37	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 July 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 - July 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)
Kilburnie South	4/07/2018 00:59	IA/32	NA/NA	NA/NA	NA/0	NA/0	NA/NA
Jerrys Plains Village	4/07/2018 00:33	IA/34	NA/56	NA/22	NA/0	NA/0	NA/34
Jerrys Plains East	4/07/2018 00:11	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Knodlers Lane	9/07/2018 21:00	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Maison Dieu	9/07/2018 21:53	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Shearers Lane	9/07/2018 21:27	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Kilburnie South	9/07/2018 23:18	32/<25	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Jerrys Plains Village	9/07/2018 21:21	IA/31	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Jerrys Plains East	9/07/2018 21:00	<30/28	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
HVGC	9/07/2018 22:47	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA/NA
Long Point	9/07/2018 23:55	<30/<30	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 NPfI, if LCeq – LAeq ≥ 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.

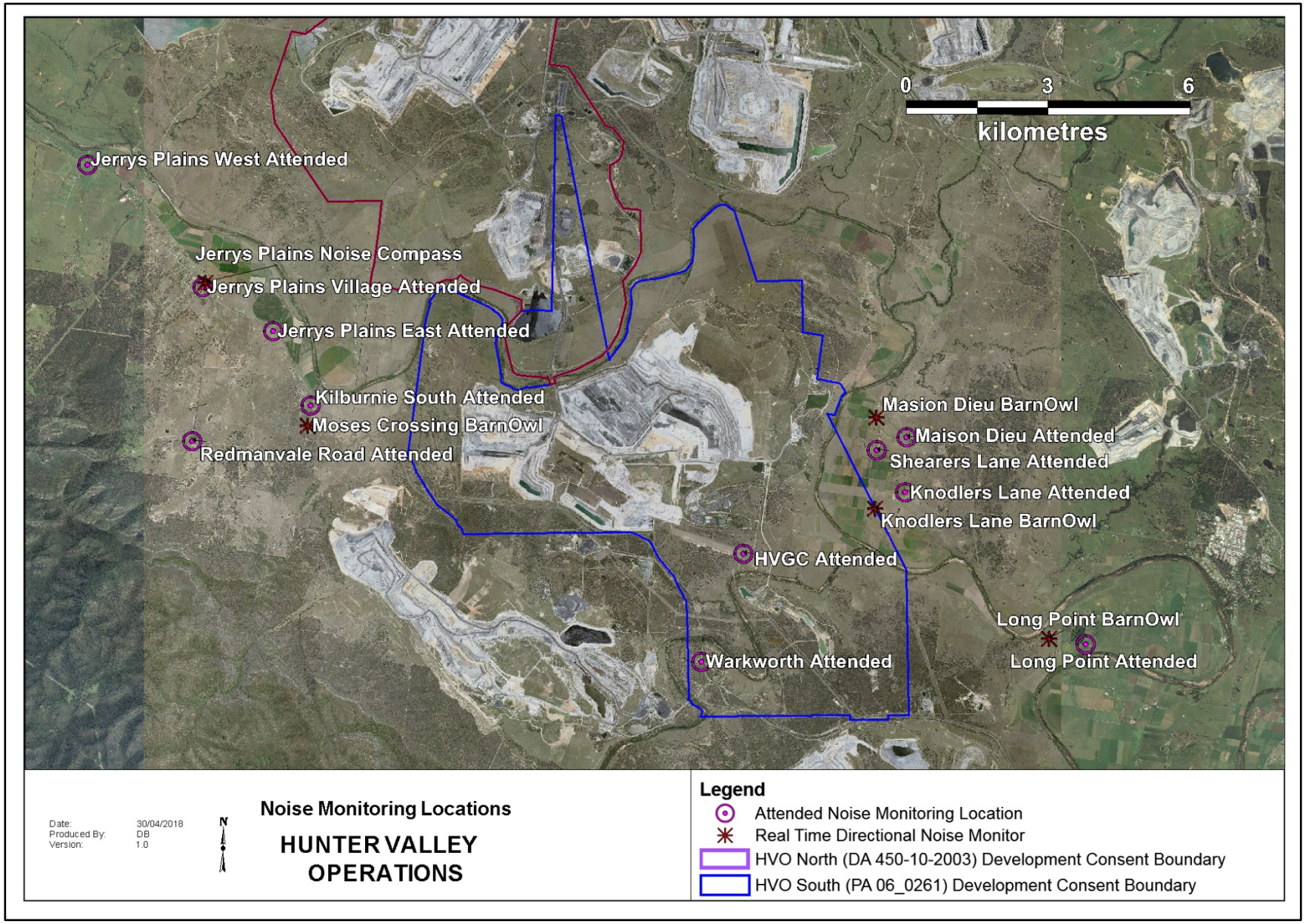

Figure 16: Noise Monitoring Location Plan

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 July, a total of 444 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.

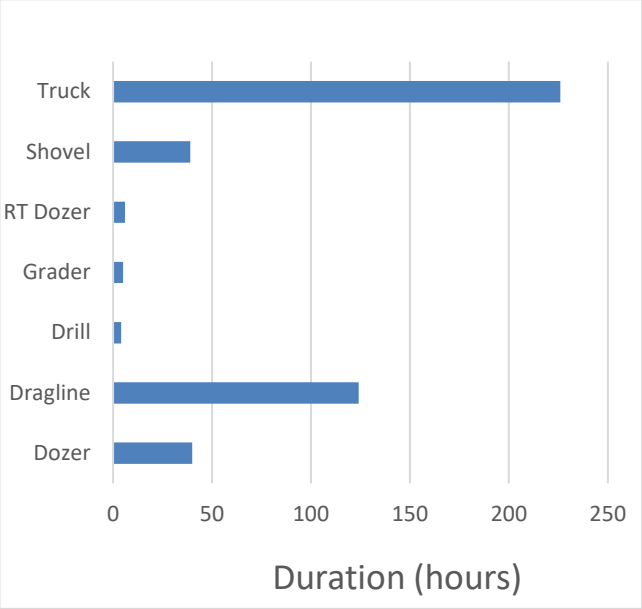

Figure 17: Operational Downtime by Equipment Type – July 2018

7.0 REHABILITATION

During July 5.6 Ha of land was released, 8.3 Ha of land was bulk shaped and 14.5 Ha of land was rehabilitated. Year to date progress can be viewed in Figure 18.

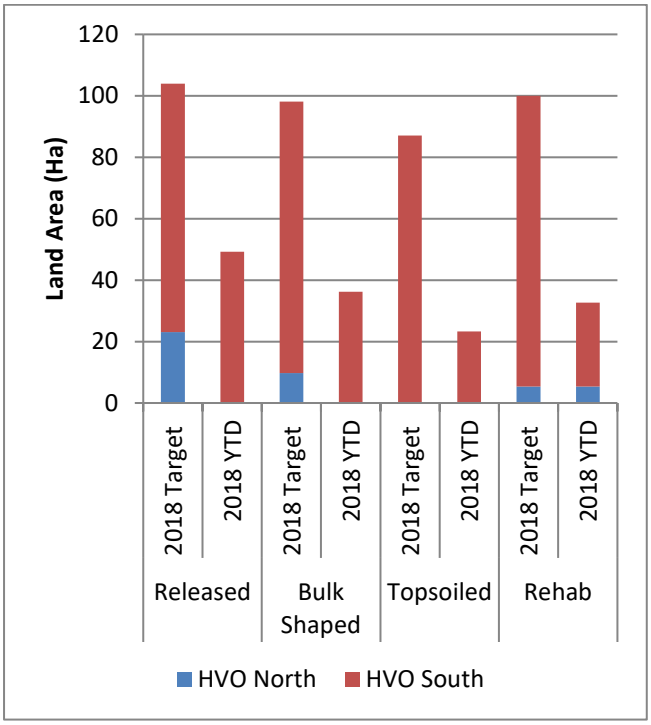

Figure 18: Rehabilitation YTD – July 2018

8.0 COMPLAINTS

Two 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	1	-	1	-	1	3
July	-	-	2	-	-	2
August	-	-	-	-	-	-
September	-	-	-	-	-	-
October	-	-	-	-	-	-
November	-	-	-	-	-	-
December	-	-	-	-	-	-
Total	6	3	10	-	2	21

9.0 ENVIRONMENTAL INCIDENTS

During the reporting period there was one recordable environmental incident.

On 21 July 2018, a minor spill of oil (~20L) from mechanical seal on electric pump at Cumnock return water dam. A negligible amount of oil (<5L) leaked down the dam liner and into the dam. The spill contained within the mine water system.

Dry sorb was used to contain spill before being cleaned up. The pump was shut down, isolated and then reported internally.

Appendix A: Meteorological Data

Table 12: Meteorological Data - HVO Corporate Meteorological Station – July 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)
1/07/2018	14	-1	91	44	648	161	1.8	0.0
2/07/2018	14	6	100	63	465	117	2.5	0.0
3/07/2018	16	4	100	63	682	138	0.9	0.0
4/07/2018	18	4	100	63	772	204	1.1	0.2
5/07/2018	24	8	100	40	507	279	2.8	0.0
6/07/2018	24	12	74	31	688	280	6.6	0.0
7/07/2018	16	7	72	32	677	278	5.8	0.0
8/07/2018	13	4	69	46	564	289	6.7	0.0
9/07/2018	16	1	77	28	543	146	1.5	0.0
10/07/2018	16	-1	85	40	646	172	1.3	0.0
11/07/2018	18	-1	100	32	531	205	1.0	0.0
12/07/2018	18	-1	98	21	591	265	2.3	0.0
13/07/2018	16	2	60	23	537	277	3.5	0.0
14/07/2018	16	-1	77	22	539	287	2.8	0.0
15/07/2018	17	-3	70	12	559	280	3.2	0.0
16/07/2018	15	-2	58	11	556	273	3.8	0.0
17/07/2018	20	1	41	8	545	282	4.9	0.0
18/07/2018	21	6	42	14	549	270	3.8	0.0
19/07/2018	23	1	62	9	560	270	2.8	0.0
20/07/2018	18	4	53	15	734	273	5.7	0.0
21/07/2018	16	0	64	17	574	255	2.8	0.0
22/07/2018	17	-3	73	18	569	216	1.2	0.0
23/07/2018	19	-2	72	10	579	278	2.6	0.0
24/07/2018	23	3	32	8	596	269	4.5	0.0
25/07/2018	21	5	37	12	591	262	3.3	0.0
26/07/2018	21	2	73	17	584	253	2.6	0.0
27/07/2018	21	1	84	18	576	182	0.9	0.0
28/07/2018	22	3	71	19	830	-	0.8	0.0
29/07/2018	21	6	78	30	583	272	5.4	0.2
30/07/2018	17	3	56	19	599	279	4.7	0.0
31/07/2018	19	1	60	17	625	276	4.6	0.0

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