



Monthly Environmental Monitoring Report

Yancoal Mount Thorley Warkworth
August 2018

CONTENTS

1.0	INTRODUCTION	4
	AIR QUALITY	
2.1	Meteorological Monitoring	
	1.1 Rainfall	
	1.2 Wind Speed and Direction	
2.2	Depositional Dust	
2.3	Suspended Particulates	
	3.1 HVAS PM ₁₀ Results	
	3.2 TSP Results	
	3.3 Real Time PM ₁₀ Results	
	3.4 Real Time Alarms for Air Quality	
	WATER QUALITY	
3.1	Surface Water	
	Groundwater Monitoring	
	3 HRSTS Discharge	
	BLAST MONITORING	
4.1	Blast Monitoring Results	
	NOISE	
5.1	Attended Noise Monitoring Results	
5.1.	1 WML Noise Assessment	. 13
5.1.3	3 MTO Noise Assessment	. 14
5.1.4	4 NPfl Low Frequency Assessment	. 15
5.2	Noise Management Measures	. 18
6.0	OPERATIONAL DOWNTIME	. 18
7.0 RE	HABILITATION	. 19
8.0 EN	VIRONMENTAL INCIDENTS	. 19
9.0 CO	MPLAINTS	. 19
Appen	dix A: Meteorological Data	. 20

Figures

Figure 1: Rainfall Trend YTD	4
Figure 2: Charlton Ridge Wind Rose – August 2018	4
Figure 3: Air Quality Monitoring Locations	5
Figure 4: Depositional Dust – August 2018	6
Figure 5: Individual PM10 Results – August 2018	7
Figure 6: Annual Average PM ₁₀ – August 2018	7
Figure 7: Annual Average Total Suspended Particulates – August 2018	7
Figure 8: Real Time PM ₁₀ daily 24hr average (line graphs) and YTD annual average (column graphs) – August 2018	9
Figure 9: Abbey Green Blast Monitoring Results – August 2018	10
Figure 10: Bulga Village Blast Monitoring Results – August 2018	10
Figure 11: MTIE Blast Monitoring Results – August 2018	11
Figure 12: Wollemi Peak Road Blast Monitoring Results – August 2018	11
Figure 13: Wambo Road Blast Monitoring Results – August 2018	11
Figure 14: Warkworth Blast Monitoring Results – August 2018	11
Figure 15: MTW Blast Monitoring Location Plan	12
Figure 16: Noise Monitoring Location Plan	17
Figure 17: Operational Downtime by Equipment Type – August 2018	18
Figure 18: Rehabilitation YTD – August 2018	19
Tables	
Table 1: Monthly Rainfall MTW	4
Table 2: Blasting Limits	10
Table 3: L _{Aeq, 15 minute} Warkworth Impact Assessment Criteria – August 2018	13
Table 4: LA1, 1 minute Warkworth - Impact Assessment Criteria – August 2018	14
Table 5: L _{Aeq, 15minute} Mount Thorley - Impact Assessment Criteria — August 2018	14
Table 6: L _{A1, 1Minute} Mount Thorley - Impact Assessment Criteria – August 2018	15
Table 7: Low Frequency Noise Modifying Factor Assessment – August 2018	16
Table 8: Supplementary Attended Noise Monitoring Data – August 2018	18
Table 9: Complaints Summary YTD	19
Table 10: Meteorological Data – Charlton Ridge Meteorological Station – August 2018	21

Revision History

Version No.	Person Responsible	Document Status	Date
1.0	Environmental Advisor	Draft	02/10/2018
1.1	Site Environmental Advisor	Final	08/10/2018

1.0 INTRODUCTION

This report has been compiled to provide a monthly summary of environmental monitoring results for Mount Thorley Warkworth (MTW). This report includes all monitoring data collected for the period 1st August to 31st August 2018.

2.0 AIR QUALITY

2.1 Meteorological Monitoring

Meteorological data is collected at MTW's 'Charlton Ridge' meteorological station (refer to **Figure 3**: Air Quality Monitoring Locations).

2.1.1 Rainfall

Rainfall for the period is summarised in **Table 1**, the year-to-date trend and historical trend are shown in **Figure 1**.

Table 1: Monthly Rainfall MTW

2018	Monthly Rainfall (mm)	Cumulative Rainfall (mm)
August	17.4	175

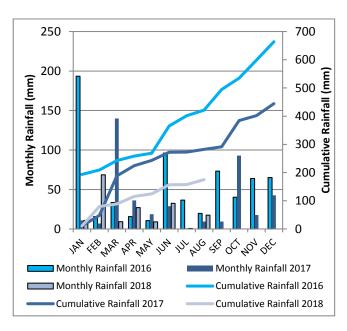


Figure 1: Rainfall Trend YTD

2.1.2 Wind Speed and Direction

Winds from the northwest were dominant throughout the reporting period as shown in **Figure 2.**

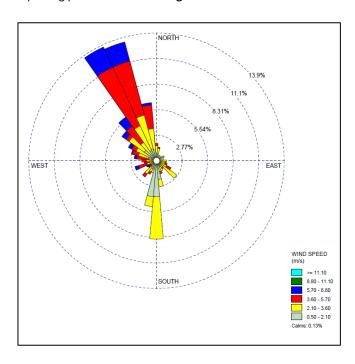


Figure 2: Charlton Ridge Wind Rose - August 2018

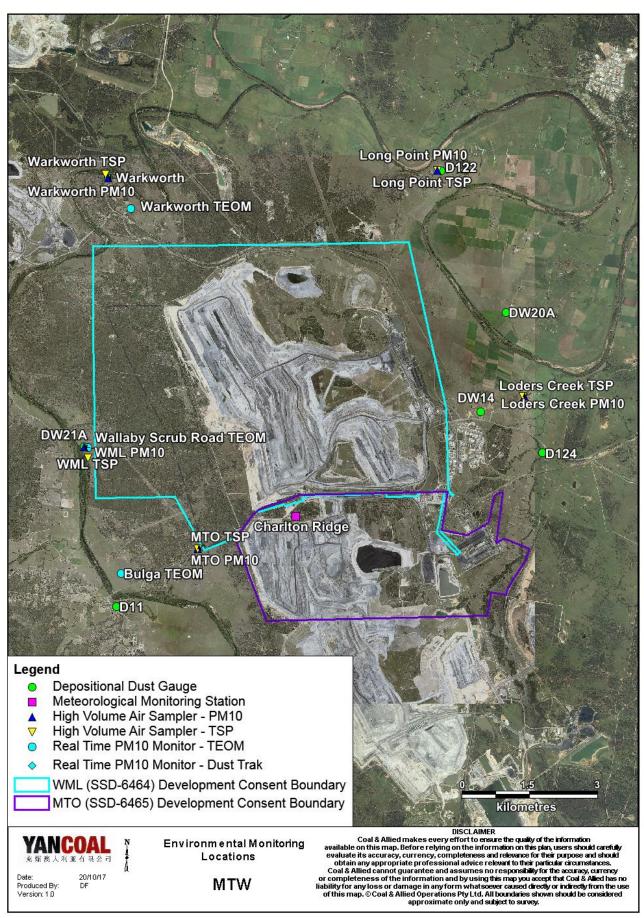


Figure 3: Air Quality Monitoring Locations

2.2 Depositional Dust

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

Figure 4 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 DW14, D124 and Warkworth monitors recorded monthly results above the long term impact assessment criteria of 4.0 g/m² per month. Field notes associated with DW14 and D124 confirm the presence of vegetation and/or insects. As such the results are considered contaminated and will be excluded from calculation of the annual average. There is no evidence to suggest that the Warkworth result is contaminated. Accordingly, the result will be included in the annual average calculation.

An annual assessment of MTW's compliance with the Long Term Impact Assessment Criteria will be provided in the 2018 Annual Review Report.

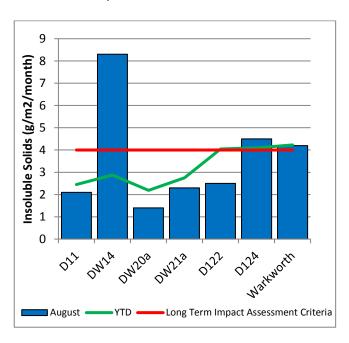


Figure 4: Depositional Dust – August 2018

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 <10 μ m (PM₁₀). The location of these monitors can be found in Figure 3. Each HVAS

was run for 24 hours on a six-day cycle in accordance with EPA requirements.

2.3.1 HVAS PM₁₀ Results

Figure 5 shows the individual PM_{10} results at each monitoring station against the short term impact assessment criteria of $50\mu g/m^3$.

On 5th August 2018 the Long Point HVAS PM₁₀ unit recorded a result of 53 μ g/m³ which is greater than the short term (24hr) PM₁₀ impact assessment criteria.

Investigation indicates that the likely MTW contribution to the result at Long Point on the 5th August is less than 59%. Accordingly, no further action is required (as per approved Air Quality Monitoring Programme).

On 11^{th} and 17^{th} August 2018 the Loders Creek HVAS unit recorded results of 55 $\mu g/m^3$ and 69 $\mu g/m^3$ respectively which are greater than the short term (24hr) PM₁₀ impact assessment criteria.

Investigations indicate that the likely MTW contribution to the results at Loders Creek on the 11th and 17th August is less than 46% and 53% respectively. Accordingly, no further action is required (as per approved Air Quality Monitoring Programme).

On 17^{th} August 2018 the MTO HVAS PM $_{10}$ unit recorded a result of 87 $\mu g/m^3$ which is greater than the short term (24hr) PM $_{10}$ impact assessment criteria.

Investigation indicates that the likely MTW contribution to the result at MTO on the 17^{th} August is less than 50%. Accordingly, no further action is required (as per approved Air Quality Monitoring Programme).

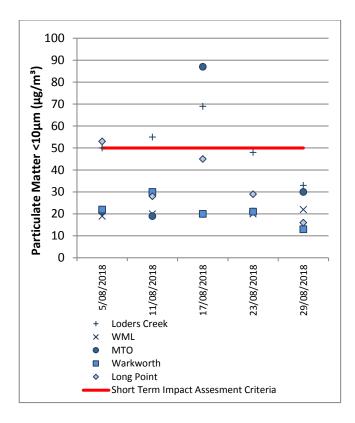


Figure 5: Individual PM10 Results - August 2018

Figure 6 shows the annual average PM10 results against the long term impact assessment criteria.

An assessment of MTW's contribution to the long term assessment criteria will be reported in the 2018 Annual Review Report.

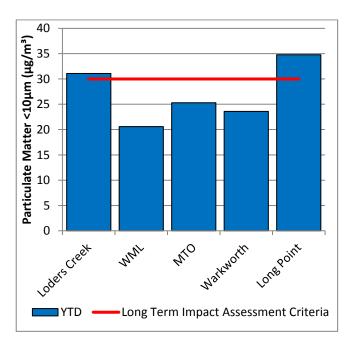


Figure 6: Annual Average PM₁₀ - August 2018

2.3.2 TSP Results

Figure 7 shows the annual average TSP results compared against the long-term impact assessment criteria of 90μg/m³.

An assessment of MTW's contribution to the long-term assessment criteria will be reported in the 2018 Annual Review Report.

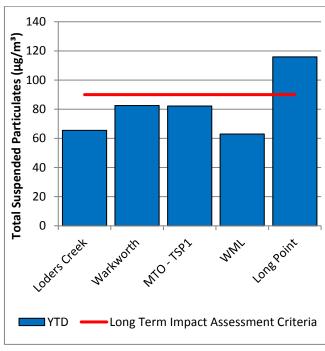


Figure 7: Annual Average Total Suspended Particulates – August 2018

2.3.3 Real Time PM₁₀ Results

MTW 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 for real time dust sampling are shown in **Figure 8**, including the daily 24-hour average PM_{10} result and the annual PM_{10} average.

One result recorded elevated levels at the Warkworth TEOM (51 μ g/m³) which exceeded the short term (24hr) criteria on 4th August 2018. This measurement was assessed for MTW's maximum potential contribution based on meteorological conditions on this day resulting in a maximum estimated contribution of <3 μ g/m³ from the direction of MTW.

2.3.4 Real Time Alarms for Air Quality

During August, the real time monitoring system generated 95 automated air quality related alerts, including 22 alerts for adverse meteorological conditions and 73 alerts for elevated PM_{10} levels.

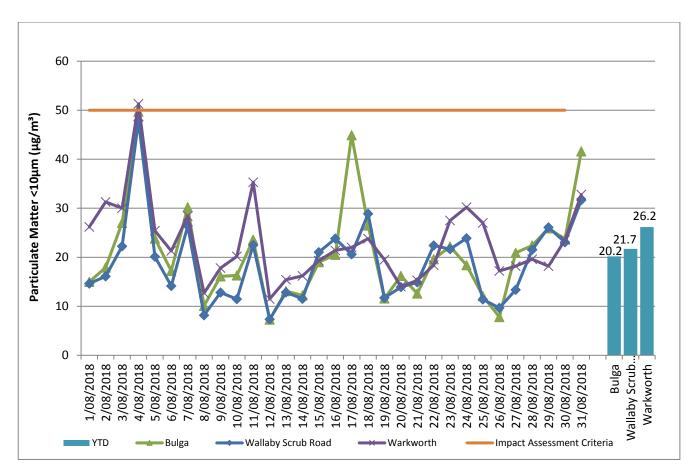


Figure 8: Real Time PM $_{10}$ daily 24hr average (line graphs) and YTD annual average (column graphs) – August 2018

3.0 WATER QUALITY

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

3.1 Surface Water

Monitoring is conducted at mine site dams and surrounding natural watercourses.

Surface water courses are sampled on a monthly or quarterly sampling regime. Water quality is evaluated through the parameters of pH, Electrical Conductivity (EC) and Total Suspended Solids (TSS). The Hunter River and the Wollombi Brook are sampled both upstream and downstream of mining operations, to monitor the potential impact of mining on the river system. Other Hunter River tributaries are also monitored.

Results of monitoring are reported quarterly, next available in the September 2018 report.

3.2 Groundwater Monitoring

Groundwater monitoring is undertaken on a quarterly basis in accordance with the MTW Groundwater Monitoring Programme.

Groundwater results are reported quarterly, next available in the September 2018 report.

3.3 HRSTS Discharge

MTW participates in the Hunter River Salinity Trading Scheme (HRSTS), allowing discharge from licensed discharge points located at Dam 1N and Dam 9S. Discharges can only take place subject to HRSTS regulations.

During the reporting period no water was discharged under the HRSTS.

4.0 BLAST MONITORING

MTW have a network of six 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.

4.1 Blast Monitoring Results

During August 2018, 24 blasts were initiated at MTW. Figure 9 to Figure 14 show the blast monitoring results for the reporting period against the impact assessment criteria. The criteria are summarised in Table 2.

Table 2: Blasting Limits

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

During the reporting period one blast exceeded the 115 dB(L) threshold for airblast overpressure at the Wollemi Peak Road blast monitor on 14 August 2018 at 13:23. No blast exceeded the 5mm/s criteria for ground vibration.

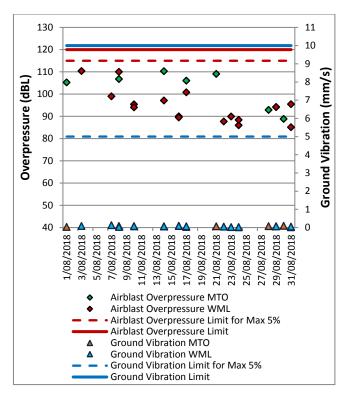


Figure 9: Abbey Green Blast Monitoring Results - August 2018

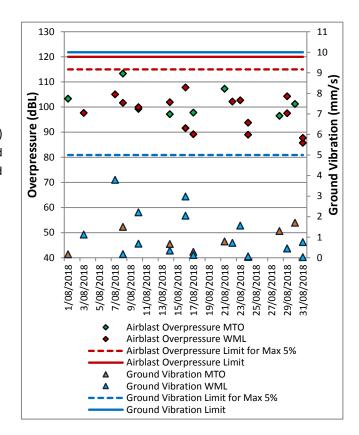


Figure 10: Bulga Village Blast Monitoring Results - August 2018

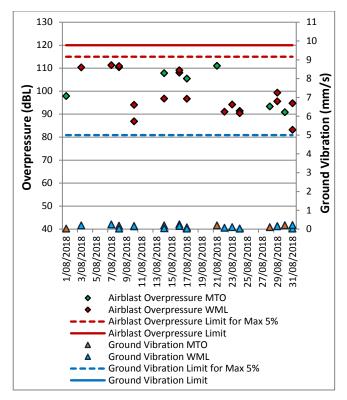


Figure 11: MTIE Blast Monitoring Results - August 2018

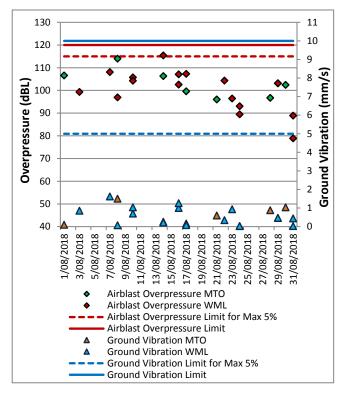


Figure 12: Wollemi Peak Road Blast Monitoring Results – August 2018

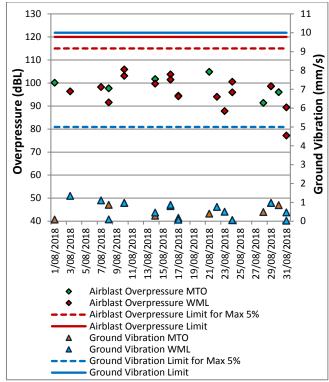


Figure 13: Wambo Road Blast Monitoring Results - August 2018

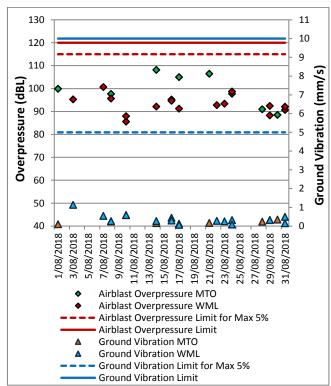


Figure 14: Warkworth Blast Monitoring Results – August 2018

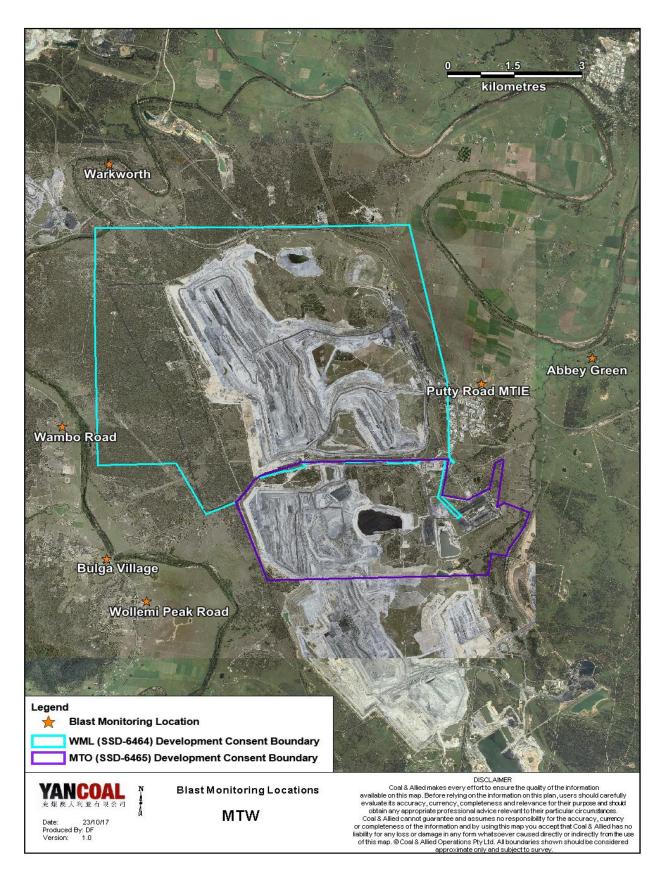


Figure 15: MTW Blast Monitoring Location Plan

5.0 NOISE

Routine attended noise monitoring is carried out in accordance with the MTW Noise Management Plan. A review against EIS predictions will be reported in the Annual Review Report. The purpose of the noise surveys is to quantify and describe the acoustic environment around the site and compare results with specified limits. Real time noise monitoring also occurs at five sites surrounding MTW. Noise monitoring locations are displayed in **Figure 16**.

5.1 Attended Noise Monitoring Results

Attended monitoring was conducted at receiver locations surrounding MTW on the nights of 9 and 13 August 2018. All measurements complied with the relevant criteria, with the exception of WML levels at Bulga Village. Results are detailed in **Table 3 to Table 6.**

An exceedance of the WML Impact Assessment criteria was recorded at the Bulga Village monitoring location on 9 August 2018 at 23:14. A general mining continuum from WML was audible throughout the measurement, generating the site only L_{Aeq} of 39 dB. WML levels exceeded the L_{Aeq} ,15minute criteria by 3 dB with the inclusion of a 2 dB low frequency penalty. MTW undertook actions in response to the elevated measurement, including the parking up of some exploration drills and trucks. A subsequent measurement was taken on 10 August 2018 at 00:23. The re-measure confirmed compliance was achieved with the L_{Aeq} ,15minute criteria. Follow up monitoring was conducted at Bulga Village on the night of 13 August 2018. MTW complied with the L_{Aeq} ,15minute criteria and no further action was required.

The Department of Planning and Environment was notified in writing of the exceedance measurements on 10 August 2018.

5.1.1 WML Noise Assessment

Compliance assessments undertaken against the WML noise criteria are presented in Tables 3 and 4.

Table 3: L_{Aeq, 15 minute} Warkworth Impact Assessment Criteria – August 2018

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB(A)	Criterion Applies? ¹	WML L_{Aeq} dB ^{2,3}	Exceedance ^{3,4}
Bulga RFS	9/08/2018 21:38	1.5	D	37	Yes	37	Nil
Bulga Village	9/08/2018 23:14	1.5	D	38	Yes	41 ⁵	3
Bulga Village ⁶	10/08/2018 0:23	1.8	E	38	Yes	32	Nil
Bulga Village ⁷	13/08/2018 21:39	2.6	D	38	Yes	<20	Nil
Gouldsville	10/08/2018 0:35	2.1	E	38	Yes	IA	Nil
Inlet Rd	9/08/2018 21:21	1.4	F	37	Yes	34	Nil
Inlet Rd West	9/08/2018 21:00	1.2	F	35	Yes	<30	Nil
Long Point	10/08/2018 0:10	1.8	E	35	Yes	IA	Nil
South Bulga	9/08/2018 21:00	1.2	F	35	Yes	NM	Nil
Wambo Road	9/08/2018 22:51	1.5	D	38	Yes	33	Nil
Long Point South Bulga	10/08/2018 0:10 9/08/2018 21:00	1.8 1.2	E F	35 35	Yes Yes	IA NM	Nil Nil

Notes

^{1.} Noise emission limits apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; or stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values;

Estimated or measured LAeq,15minute attributed to WML;

^{3.} Bold results in red are possible exceedances of relevant criteria;

^{4.} NA means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable;

^{5.} Includes low frequency penalty;

^{6.} Re-measure; and

^{7.} Follow-up measurement

Table 4: LA1, 1 minute Warkworth - Impact Assessment Criteria - August 2018

Location	Location Date and Time		Stability Class	Criterion dB(A)	Criterion Applies? ¹	WML L _{A1, 1min} dB ^{2,3}	Exceedance ^{3,4}
Bulga RFS	9/08/2018 21:38	1.5	D	47	Yes	40	Nil
Bulga Village	9/08/2018 23:14	1.5	D	48	Yes	42	Nil
Bulga Village6	10/08/2018 0:23	1.8	E	48	Yes	38	Nil
Bulga Village7	13/08/2018 21:39	2.6	D	48	Yes	<25	Nil
Gouldsville	10/08/2018 0:35	2.1	E	48	Yes	IA	Nil
Inlet Rd	9/08/2018 21:21	1.4	F	47	Yes	37	Nil
Inlet Rd West	9/08/2018 21:00	1.2	F	45	Yes	<30	Nil
Long Point	10/08/2018 0:10	1.8	Е	45	Yes	IA	Nil
South Bulga	9/08/2018 21:00	1.2	F	45	Yes	NM	Nil
Wambo Road	9/08/2018 22:51	1.5	D	48	Yes	35	Nil

5.1.3 MTO Noise Assessment

Compliance assessments undertaken against the MTO noise criteria are presented in Table 5 and 6.

Table 5: L_{Aeq, 15minute} Mount Thorley - Impact Assessment Criteria – August 2018

Bulga RFS 9/08/2018 21:38 1.5 D 37 Yes 33 Nil Bulga Village 9/08/2018 23:14 1.5 D 38 Yes IA Nil Bulga Village ⁶ 10/08/2018 0:23 1.8 E 38 Yes IA Nil Bulga Village ⁷ 13/08/2018 21:39 2.6 D 38 Yes IA Nil Gouldsville 10/08/2018 0:35 2.1 E 35 Yes IA Nil Inlet Rd 9/08/2018 21:21 1.4 F 37 Yes IA Nil Long Point 10/08/2018 21:00 1.2 F 35 Yes IA Nil South Bulga 9/08/2018 21:00 1.2 F 36 Yes 35 Nil	Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB	Criterion Applies? ¹	MTO L _{Aeq} dB ^{2,3}	Exceedance ^{3,4}
Bulga Village ⁶ 10/08/2018 0:23 1.8 E 38 Yes IA Nil Bulga Village ⁷ 13/08/2018 21:39 2.6 D 38 Yes IA Nil Gouldsville 10/08/2018 0:35 2.1 E 35 Yes IA Nil Inlet Rd 9/08/2018 21:21 1.4 F 37 Yes IA Nil Inlet Rd West 9/08/2018 21:00 1.2 F 35 Yes NM Nil Long Point 10/08/2018 0:10 1.8 E 35 Yes IA Nil South Bulga 9/08/2018 21:00 1.2 F 36 Yes 35 Nil	Bulga RFS	9/08/2018 21:38	1.5	D	37	Yes	33	Nil
Bulga Village ⁷ 13/08/2018 21:39 2.6 D 38 Yes IA Nil Gouldsville 10/08/2018 0:35 2.1 E 35 Yes IA Nil Inlet Rd 9/08/2018 21:21 1.4 F 37 Yes IA Nil Inlet Rd West 9/08/2018 21:00 1.2 F 35 Yes NM Nil Long Point 10/08/2018 0:10 1.8 E 35 Yes IA Nil South Bulga 9/08/2018 21:00 1.2 F 36 Yes 35 Nil	Bulga Village	9/08/2018 23:14	1.5	D	38	Yes	IA	Nil
Gouldsville 10/08/2018 0:35 2.1 E 35 Yes IA Nil Inlet Rd 9/08/2018 21:21 1.4 F 37 Yes IA Nil Inlet Rd West 9/08/2018 21:00 1.2 F 35 Yes NM Nil Long Point 10/08/2018 0:10 1.8 E 35 Yes IA Nil South Bulga 9/08/2018 21:00 1.2 F 36 Yes 35 Nil	Bulga Village ⁶	10/08/2018 0:23	1.8	E	38	Yes	IA	Nil
Inlet Rd 9/08/2018 21:21 1.4 F 37 Yes IA Nil Inlet Rd West 9/08/2018 21:00 1.2 F 35 Yes NM Nil Long Point 10/08/2018 0:10 1.8 E 35 Yes IA Nil South Bulga 9/08/2018 21:00 1.2 F 36 Yes 35 Nil	Bulga Village ⁷	13/08/2018 21:39	2.6	D	38	Yes	IA	Nil
Inlet Rd West 9/08/2018 21:00 1.2 F 35 Yes NM Nil Long Point 10/08/2018 0:10 1.8 E 35 Yes IA Nil South Bulga 9/08/2018 21:00 1.2 F 36 Yes 35 Nil	Gouldsville	10/08/2018 0:35	2.1	E	35	Yes	IA	Nil
Long Point 10/08/2018 0:10 1.8 E 35 Yes IA Nil South Bulga 9/08/2018 21:00 1.2 F 36 Yes 35 Nil	Inlet Rd	9/08/2018 21:21	1.4	F	37	Yes	IA	Nil
South Bulga 9/08/2018 21:00 1.2 F 36 Yes 35 Nil	Inlet Rd West	9/08/2018 21:00	1.2	F	35	Yes	NM	Nil
	Long Point	10/08/2018 0:10	1.8	E	35	Yes	IA	Nil
Wamho Road 9/08/2018 22:51 1.5 D 38 Yes NM Nil	South Bulga	9/08/2018 21:00	1.2	F	36	Yes	35	Nil
Wallist Road Stock Edit 113 D 30 Tes Mill	Wambo Road	9/08/2018 22:51	1.5	D	38	Yes	NM	Nil

Noise emission limits apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values; 2. Estimated or measured LAeq,15minute attributed to MTO;

^{1.} Noise emission limits apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values; 2. Estimated or measured LA1,1minute attributed to WML;

^{3.} Bold results in red are possible exceedances of relevant criteria;

^{4.} NA in exceedance column means atmospheric conditions outside conditions specifed in development consent and so criterion is not applicable;

^{5.} Re-measure; and

^{6.} Follow-up measurement.

^{3.} Bold results in red are possible exceedances of relevant criteria;

^{4.} NA in exceedance column means atmospheric conditions outside conditions specifed in project approval and so criterion is not applicable; 5. Re-measure; and

^{6.} Follow-up measurement.

Table 6: LA1, 1Minute Mount Thorley - Impact Assessment Criteria - August 2018

Location	Date and Time	Wind Speed (m/s)	Stability Class	Criterion dB	Criterion Applies? ¹	MTO $L_{A1, 1min}$ $dB^{2,3}$	Exceedance ^{3,4}
Bulga RFS	9/08/2018 21:38	1.5	D	47	Yes	35	Nil
Bulga Village	9/08/2018 23:14	1.5	D	48	Yes	IA	Nil
Bulga Village ⁶	10/08/2018 0:23	1.8	E	48	Yes	IA	Nil
Bulga Village ⁷	13/08/2018 21:39	2.6	D	48	Yes	IA	Nil
Gouldsville	10/08/2018 0:35	2.1	E	45	Yes	IA	Nil
Inlet Rd	9/08/2018 21:21	1.4	F	47	Yes	IA	Nil
Inlet Rd West	9/08/2018 21:00	1.2	F	45	Yes	NM	Nil
Long Point	10/08/2018 0:10	1.8	E	45	Yes	IA	Nil
South Bulga	9/08/2018 21:00	1.2	F	46	Yes	39	Nil
Wambo Road	9/08/2018 22:51	1.5	D	48	Yes	NM	Nil

5.1.4 NPfl 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. This resulted in the application of a 2 dB penalty to the site only LAEQ for the measurement taken at Bulga Village on 9 August 2018 at 23:14.

Resulting L_{Aeq} noise levels exceed the WML impact assessment criteria at Bulga Village by 3 dB.

The result has been reported to the Department of Planning and Environment.

The assessment for low frequency noise is shown in **Table 7**.

^{1.} Noise emission limits apply during all meteorological conditions except the following: during periods of rain or hail; average wind speed at microphone height exceeds 5 m/s; wind speeds greater than 3 m/s measured at 10 metres above ground level; stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or stability category G temperature inversion conditions. Criterion may or may not apply due to rounding of meteorological data values; 2. Estimated or measured LA1,1minute attributed to MTO;

^{3.} Bold results in red are possible exceedances of relevant criteria;
4. NA in exceedance column means atmospheric conditions outside conditions specifed in project approval and so criterion is not applicable;

^{5.} Re-measure; and

^{6.} Follow-up measurement.

Table 7: Low Frequency Noise Modifying Factor Assessment – August 2018

Location	Date and Time	Measured Site Only LA _{eq} dB (WML/MTO)	Site Only L _{Ceq} dB ¹ (WML/MTO)	Site Only LCeq – LAeq dB ^{1,2} (WML/MTO)	Result Max exceedance of ref spectrum dB (WML/MTO)	Penalty dB(A)¹	Exceedance
Bulga RFS	9/08/2018 21:38	37/33	NA/NA	NA/NA	NA/NA	NA/NA	NA
Bulga Village	9/08/2018 23:14	39/IA	56/NA	17/NA	2/NA	2/NA	Yes
Bulga Village ⁴	10/08/2018 0:23	32/IA	50/NA	18/NA	0/NA	Nil/NA	NA
Bulga Village⁵	13/08/2018 21:39	<20/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
Gouldsville	10/08/2018 0:35	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
Inlet Rd	9/08/2018 21:21	34/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
Inlet Rd West	9/08/2018 21:00	<30/NM	NA/NA	NA/NA	NA/NA	NA/NA	NA
Long Point	10/08/2018 0:10	IA/IA	NA/NA	NA/NA	NA/NA	NA/NA	NA
South Bulga	9/08/2018 21:00	NM/35	NA/52	NA/17	NA/0	NA/Nil	NA
Wambo Road	9/08/2018 22:51	33/NM	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;

^{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.

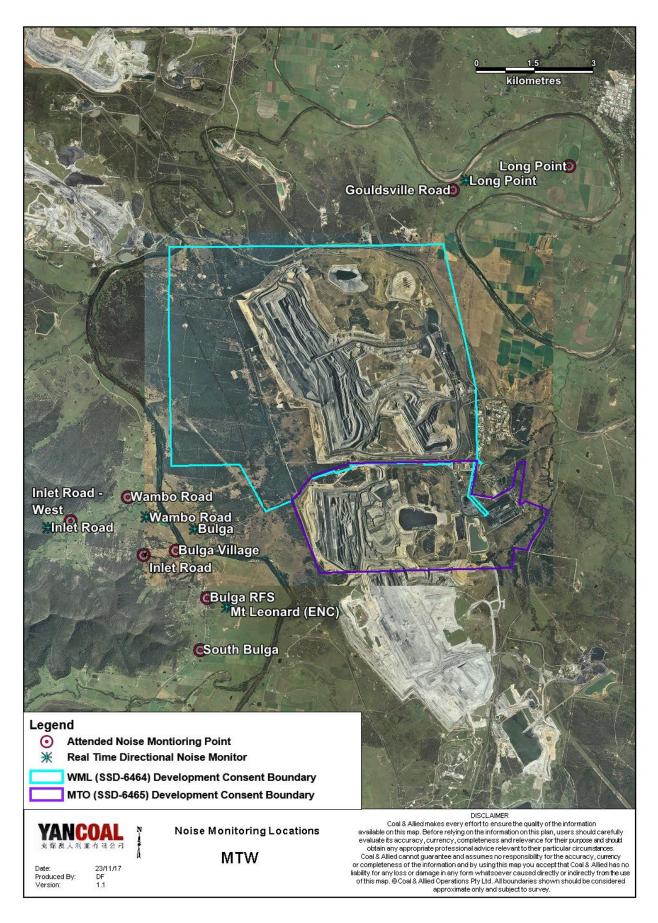


Figure 16: Noise Monitoring Location Plan

5.2 Noise Management Measures

A program of targeted supplementary attended noise monitoring is in place at MTW, supported by the real-time directional monitoring network and ensuring the highest level of noise management is maintained. The supplementary program is undertaken by MTW personnel and involves:

- Routine inspections from both inside and outside the mine boundary;
- Routine and as-required handheld noise assessments (undertaken in response to noise alarm and/or community complaint), comparing measured levels against consent noise limits; and
- Validation monitoring following operational modifications to assess the adequacy of the modifications.

Where a noise assessment identifies noise emissions which are exceeding the relevant noise limit(s) for any particular residence, modifications will be made so as to ensure that the noise event is resolved within 75 minutes of identification. The actions taken are commensurate with the nature and severity of the noise event, but can include:

- Changing the haul route to a less noise sensitive haul:
- Changing dump locations (in-pit or less exposed dump option);
- Reducing equipment numbers;
- Shut down of task; or
- Site shut down.
- A summary of these assessments undertaken during August are provided in Table 8.

Table 8: Supplementary Attended Noise Monitoring Data – August 2018

No. of	No. of	No. of nights	%
assessments	s assessments >	where	greater
	trigger	assessments	than
		> trigger	trigger

Note: Measurements are taken under all meteorological conditions, including conditions under which the consent noise criteria do not apply.

6.0 OPERATIONAL DOWNTIME

During August, a total of 622 hours of equipment downtime was logged in response to environmental events such as dust, noise and adverse meteorological conditions. Operational downtime by equipment type is shown in **Figure 17**.

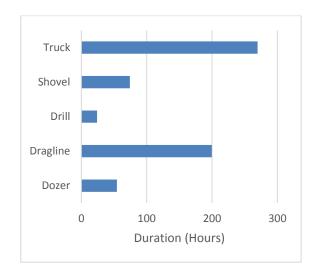


Figure 17: Operational Downtime by Equipment Type – August 2018

.

7.0 REHABILITATION

During August 2018, 10.3 Ha of land was released for rehabilitation, 2.3 Ha of land was bulk shaped, 4.1 Ha of land was topsoiled, 4.0 Ha of land was composted and 7.0 Ha of land was rehabilitated.

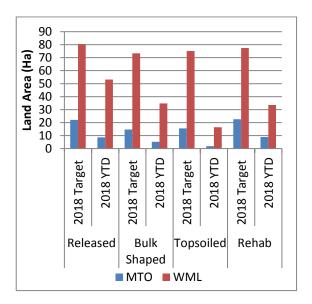


Figure 18: Rehabilitation YTD - August 2018

Table 9: Complaints Summary YTD

	Noise	Dust	Blast	Lighting	Other	Total
January	9	6	15	1	0	31
February	7	4	3	3	0	17
March	24	0	0	3	0	27
April	8	3	9	3	2	25
May	13	11	3	3	0	30
June	14	2	8	0	0	24
July	9	12	8	0	0	29
August	22	13	5	3	0	43
September						
October						
November						
December						
Total	106	51	51	16	2	226

Note: The method of capturing complaints was amended in July 2018 and backdated to the start of the year. As a result, the monthly complaint data and YTD figures have been adjusted when compared to previous reports.

8.0 ENVIRONMENTAL INCIDENTS

There were no reportable environmental incidents recorded during the reporting period.

9.0 COMPLAINTS

During the reporting period 43 complaints were received. Details of these complaints are shown in **Table 9** below.

Appendix A: Meteorological Data

Table 10: Meteorological Data – Charlton Ridge 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	21	8	51	18	674	261	3.1	0.0
2/08/2018	19	6	84	36	773	147	2.4	0.0
3/08/2018	23	4	94	25	633	245	2.7	0.0
4/08/2018	18	7	81	31	734	301	4.2	0.0
5/08/2018	22	2	83	22	704	239	2.3	0.0
6/08/2018	15	4	94	41	776	266	3.5	6.0
7/08/2018	17	6	71	27	985	302	4.6	0.0
8/08/2018	18	5	63	24	786	298	4.2	0.0
9/08/2018	20	5	81	27	726	209	2.0	0.0
10/08/2018	22	3	92	20	732	219	2.1	0.0
11/08/2018	24	4	66	19	708	275	3.6	0.0
12/08/2018	16	6	62	21	960	255	3.6	0.0
13/08/2018	19	3	63	27	744	291	4.0	0.0
14/08/2018	22	4	76	22	754	304	3.9	0.0
15/08/2018	23	9	57	7	757	309	5.8	0.0
16/08/2018	25	8	61	12	778	261	4.4	0.0
17/08/2018	19	6	68	19	765	241	2.1	0.0
18/08/2018	21	4	53	16	771	292	4.4	0.0
19/08/2018	17	6	49	18	887	269	4.6	0.0
20/08/2018	17	4	50	14	795	251	2.6	0.0
21/08/2018	19	5	51	23	769	294	4.2	0.0
22/08/2018	17	5	71	30	1066	217	2.9	0.0
23/08/2018	19	4	84	25	928	160	2.1	0.0
24/08/2018	21	7	91	30	796	158	2.6	0.0
25/08/2018	19	10	81	44	816	164	2.0	0.0
26/08/2018	17	9	96	61	1015	192	1.3	7.4
27/08/2018	17	9	93	53	1078	197	2.3	0.2
28/08/2018	17	5	75	34	632	159	2.2	0.0
29/08/2018	18	2	89	20	838	184	2.0	0.0
30/08/2018	19	0	84	14	844	163	1.8	0.0
31/08/2018	16	5	89	42	942	223	2.4	3.8

[&]quot;-" Indicates that data was not available due to technical issues.