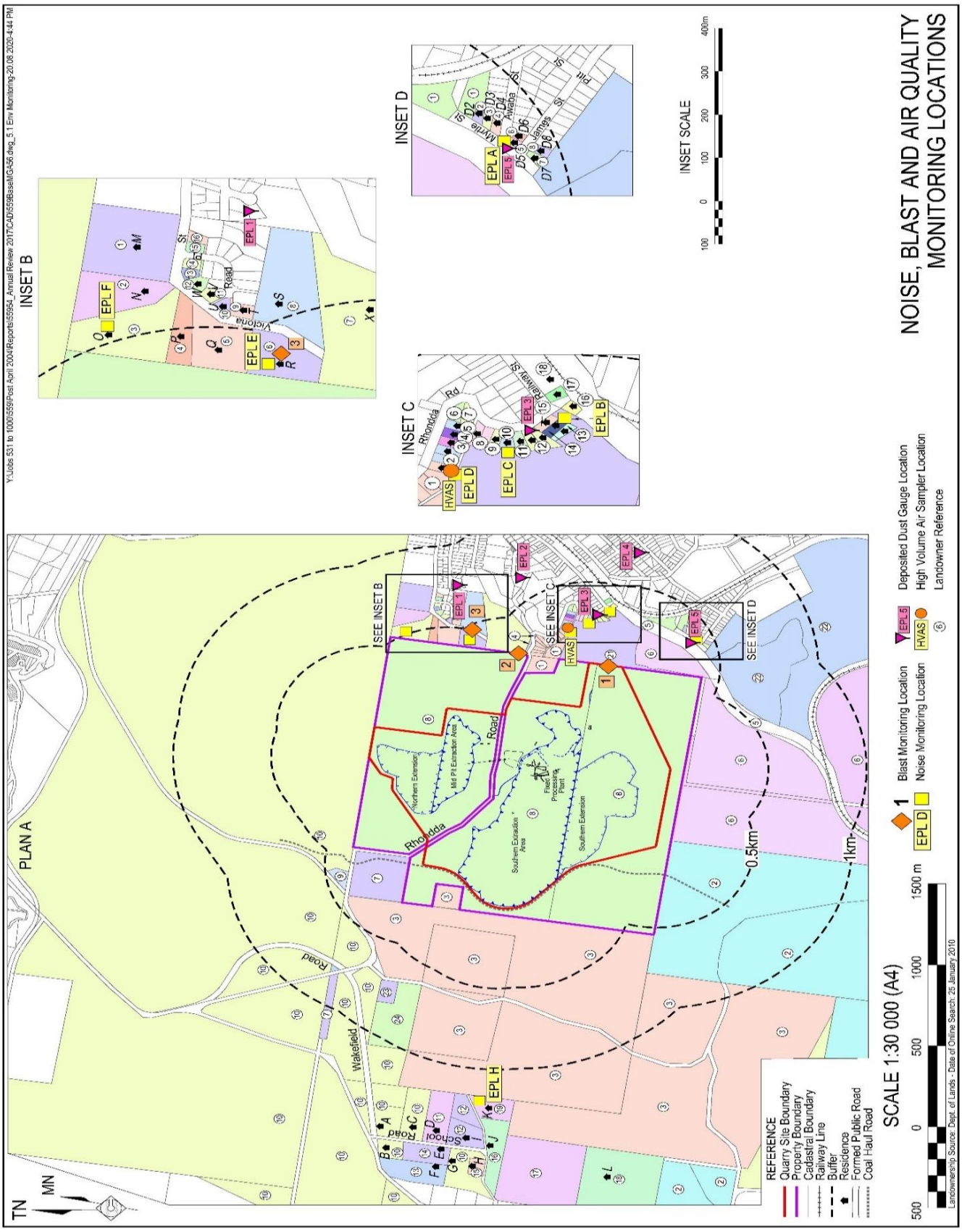
Teralba Quarry
Environmental Monitoring Summary

February 2023

Environmental Protection Licence (EPL):	536
Licensee:	Metromix Pty Limited
Licensee Address:	PO Box 1295 Parramatta, NSW 2124
Premises:	Metromix Pty Limited Teralba Quarry Rhondda Road Teralba, NSW 2284
Licensee Website:	https://www.metromix.com.au/
Licensee Website - Monitoring Results:	https://www.metromix.com.au/resources/#quarry
EPA Public Register:	https://www.epa.nsw.gov.au/licensing-and-regulation/public-registers
Prepared by:	R. W. Corkery & Co.
Sample Period:	February 2023
Data Last Data Received	23 March 2023
Date of Report	23 March 2023

Contents


NOISE, BLAST AND AIR QUALITY MONITORING LOCATIONS
PLAN A
INSET B
INSET C
INSET D
INSET SCALE
SEE INSET B
SEE INSET C
SEE INSET D
EPL 1
EPL 2
EPL 3
EPL 4
EPL 5
EPL 6
EPL A
EPL B
EPL C
EPL D
EPL E
EPL F
EPL H
HVAS
Rhondda Road
Wakefield Road
School Road
Victoria Road
Railway St
Northern Extension
Mid Pit Extraction Area
Southern Extraction Area
Southern Extension
Fines Processing Plant
0.5km
1km
Blast Monitoring Location
Noise Monitoring Location
Deposited Dust Gauge Location
High Volume Air Sampler Location
Landowner Reference
REFERENCE
Quarry Site Boundary
Property Boundary
Cadastral Boundary
Railway Line
Buffer
Residence
Formed Public Road
Coal Haul Road
SCALE 1:30 000 (A4)
Landownership Source: Dept. of Lands - Date of Online Search: 25 January 2010
TN
MN

Deposited Dust

Sample Period Start:	1/02/2023
Sample Period End:	1/03/2023
Sample Frequency:	30 ± 2 days
Sample Collected By:	Metromix - JJ
Date Received by Laboratory	1/03/2023
Date Results Received by Metromix:	10/03/2023

EPA Identification No.	Location	Criteria ($g/m^2/month$)	Insoluble Solids ($g/m^2/month$)	Ash Fraction ($g/m^2/month$)	% Ash Fraction
1	Hillside Crescent	4.0	0.5	0.1	20
8	Rodgers Street	4.0	0.4	0.2	50
9	Rhondda Road	4.0	5.2	4.5	87
11	Myrtle Street	4.0	0.4	0.1	25
23	York Street	4.0	0.8	0.2	25

Comments

All deposited dust results remained below the approved criteria for the sample period. It is noted that the landowner adjacent to the dust gauge located at Rhondda Road (EPA 9) had mowed the lawn shortly before sample collection, resulting in elevated levels of insoluble solids being recorded.

Deposited Dust - Year to Date

	Rhondda Road			Myrtle Street			Hillside Crescent			Rodgers Street			York Street		
	Total Insoluble Solids	Ash Fraction	% Ash	Total Insoluble Solids	Ash Fraction	% Ash	Total Insoluble Solids	Ash Fraction	% Ash	Total Insoluble Solids	Ash Fraction	% Ash	Total Insoluble Solids	Ash Fraction	% Ash
Units	**g/m^2/month**	**g/m^2/month**		**g/m^2/month**	**g/m^2/month**		**g/m^2/month**	**g/m^2/month**		**g/m^2/month**	**g/m^2/month**		**g/m^2/month**	**g/m^2/month**	
EPA Approved Level	**4.0**			**4.0**			**4.0**			**4.0**			**4.0**		
January	0.2	0.2	100	0.5	0.4	80	0.3	0.3	100	0.4	0.2	50	0.8	0.6	75
February	5.2	4.5	87	0.4	0.1	25	0.5	0.1	20	0.4	0.2	50	0.8	0.2	25
March															
April															
May															
June															
July															
August															
September															
October															
November															
December															
Annual Average	**2.7**	2.4	93.3	**0.5**	0.3	52.5	**0.4**	0.2	60.0	**0.4**	0.2	50.0	**0.8**	0.4	50.0
Annual Maximum	**5.2**	4.5	100.0	**0.5**	0.4	80.0	**0.5**	0.3	100.0	**0.4**	0.2	50.0	**0.8**	0.6	75.0
Annual Minimum	**0.2**	0.2	86.5	**0.4**	0.1	25.0	**0.3**	0.1	20.0	**0.4**	0.2	50.0	**0.8**	0.2	25.0

Particulate Matter (PM_{10})

Sample Location: EPA 3 - Rodgers Street
Sample Frequency: 6 days

Date Sample Taken (24-hr)	Collected by	Date Results Received	PM_{10} $\mu g/m^3$	Monthly Average Criteria ($\mu g/m^3$)	Annual Average Criteria ($\mu g/m^{3)}$
4/02/2023	CBased - AH	14/02/2023	11.5	50	
10/02/2023	CBased - TD	21/02/2023	12.8	50	
16/02/2023	CBased - TD	27/02/2023	23.6	50	
22/02/2023	CBased - AH	3/03/2023	12	50	
28/02/2023	CBased - AH	7/03/2023	14.4	50	
Monthly Average			14.86		25/30*

*Project Approval (PA 10_0183) outlines the annual average PM_{10} criteria to be 30µg/m^3. However, EPL 536 Condition R4.5a) requires that the air quality monitoring data is assessed against the Air Impact Assessment Criteria outlined in EPA's *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* . The most up to date version of this guideline was published in 2017 and outlines the annual average PM_{10} criteria to be 25µg/m^3. Metromix has considered both criteria for its review of particulate matter monitoring.

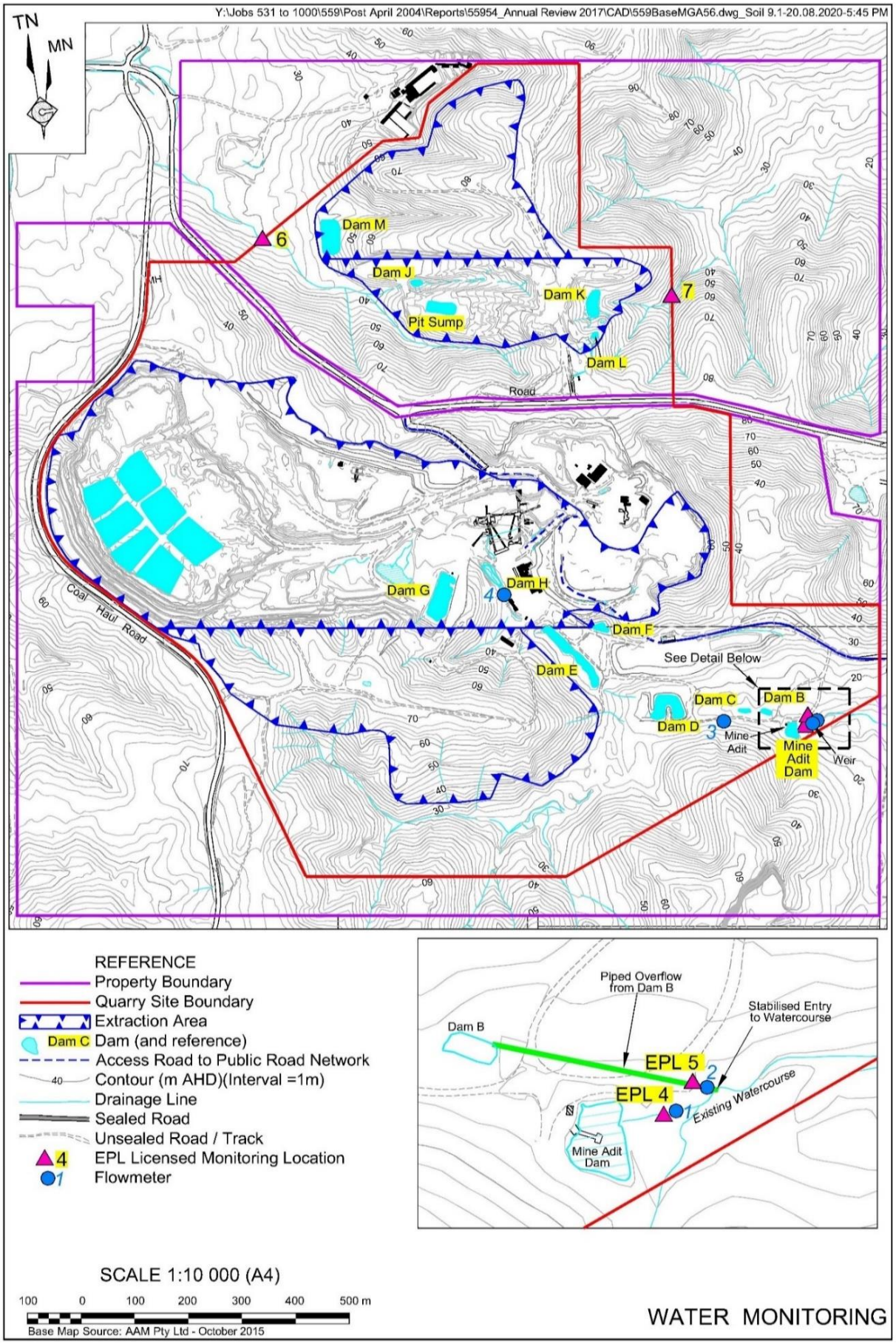
Comments

All PM_{10} results remained below the approved criteria for the sample period.

Particulate Matter (PM_{10}) - Year to Date

Date	PM_{10} ($\mu g/m^3$)	Monthly Average ($\mu g/m^3$)	Year to Date Average ($\mu g/m^3$)	24-Hr Criteria ($\mu g/m^3$)	Comments
5/01/2023	15	12.5	15.0	50	
11/01/2023	11.4		13.2	50	
17/01/2023	10.5		12.3	50	
23/01/2023	9.6		11.6	50	
29/01/2023	16.1		12.5	50	
4/02/2023	11.5	14.9	15.0	50	
10/02/2023	12.8		12.4	50	
16/02/2023	23.6		13.8	50	
22/02/2023	12		13.6	50	
28/02/2023	14.4		13.7	50	

Minimum	9.6
Maximum	23.6
Average	13.69
Standard Deviation	4.04
24-hr Criteria	50
Number of Exceedences	0
Annual Average Criteria	25/30*
Annual Average Criteria Exceeded	No
*See explanation on previous page.	


Y:\Jobs 531 to 1000\559\Post April 2004\Reports\55954_Annual Review 2017\CAD\559BaseMGA56.dwg_Soil 9.1-20.08.2020-5:45 PM
TN
MN
Dam M
Dam J
Dam K
Pit Sump
Dam L
Road
Dam G
Dam H
Dam F
Dam E
Coal Haul Road
See Detail Below
Dam C
Dam B
Dam D
Mine Adit
Mine Adit Dam
Weir
REFERENCE
Property Boundary
Quarry Site Boundary
Extraction Area
Dam C Dam (and reference)
Access Road to Public Road Network
Contour (m AHD)(Interval =1m)
Drainage Line
Sealed Road
Unsealed Road / Track
EPL Licensed Monitoring Location
Flowmeter
Piped Overflow from Dam B
Stabilised Entry to Watercourse
EPL 5
EPL 4
Existing Watercourse
Mine Adit Dam
SCALE 1:10 000 (A4)
100 0 100 200 300 400 500 m
Base Map Source: AAM Pty Ltd - October 2015
WATER MONITORING

Water

Water Monitoring

EPL Point 4 - Monthly Monitoring

Date	Time	Sampled By	Date Results Received		pH	EC	TSS	Oil & Grease	Comments
				Units	pH Units	µS/cm	mg/L	mg/L	
				EPL Criterion*	6.5-8.5	NA	<50	10	
				ANZECC Water Quality Limits	6.5-8.5	125-2200	<50	-	
7/02/2023	08:30am	Metromix - JJ	14/02/2023		7.2	1740	<5	<5	

EPL Point 5 - Monitoring Daily During Discharge

Date	Time	Sampled By	Date Results Received		pH	EC	TSS	Oil & Grease	Comments
				Units	pH Units	µS/cm	mg/L	mg/L	
				EPL Criterion*	6.5-8.5	NA	<50	10	
				ANZECC Water Quality Limits	6.5-8.5	125-2200	<50	-	
23/02/2023	02:00pm	Metromix - DB	2/03/2023		7.2	332	95	<5	TSS exceedance due to significant rainfall

EPL Point 6 - Monthly Monitoring

Date	Time	Sampled By	Date Results Received		pH	EC	TSS	Oil & Grease	Comments
				Units	pH Units	µS/cm	mg/L	mg/L	
				EPL Criterion*	6.5-8.5	NA	<50	10	
				ANZECC Water Quality Limits	6.5-8.5	125-2200	<50	-	
No discharge occurred at this location and therefore no monitoring was required									

EPL Point 7 - Monthly Monitoring

Date	Time	Sampled By	Date Results Received		pH	EC	TSS	Oil & Grease	Comments
				Units	pH Units	µS/cm	mg/L	mg/L	
				EPL Criterion*	6.5-8.5	NA	<50	10	
				ANZECC Water Quality Limits	6.5-8.5	125-2200	<50	-	
No discharge occurred at this location and therefore no monitoring was required									

Flow Meter Records

EPA Identified Point	Location	Description	Sample Period	Daily Average Flow ML	Monthly Total Flow ML
4	Adit Dam	Adit Dam to Creek (off site)	2/02/2023 to 01/03/2023	1.34	37.6
5	Dam B	Discharge from Dam B (from Quarry)	2/02/2023 to 01/03/2023	0.18	5.1
4	Adit Dam	Water pumped from Adit Dam to Dam G (processing use)	2/02/2023 to 01/03/2023	3.53	98.9

Comments

A significant rainfall event on 22 February 2023 (195.8mm) caused Dam B to discharge water from the Quarry. Monitoring results indicate that TSS levels exceeded the criteria on one day (23 February 2023). Given the large volume of rainfall experienced, the design capacity of the dam was exceeded. Further monitoring indicated a return to acceptable levels once the rainfall had ceased. The incident was notified to the EPA

Water - Year to Date

EPL Point 4 : Monthly Monitoring

	pH	EC	TSS	Oil & Grease	Comments
Units	pH Units	µS/cm	mg/L	mg/L	-
EPL Criterion*	6.5-8.5	NA	<50	10	-
ANZECC Water Quality Limits	6.5-8.5	125-2200	<50	-	-
January	7.26	2090	<5	6	-
February	7.15	1740	<5	<5	-
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					

EPL Point 5 : Monitoring During Discharge

	pH	EC	TSS	Oil & Grease	Comments
Units	pH Units	µS/cm	mg/L	mg/L	-
EPL Criterion*	6.5-8.5	NA	<50	10	-
ANZECC Water Quality Limits	6.5-8.5	125-2200	<50	-	-
23 February	7.2	332	95	<5	TSS exceedance due to significant rainfall

Flow Meter Records

EPA Identifier	Location	Description	Date	Monthly
4	Adit Dam	Water pumped from Adit Dam to Dam G (processing use)	3/01/2023 - 01/02/2023	0.2
			1/02/2023 - 01/03/2023	98.9

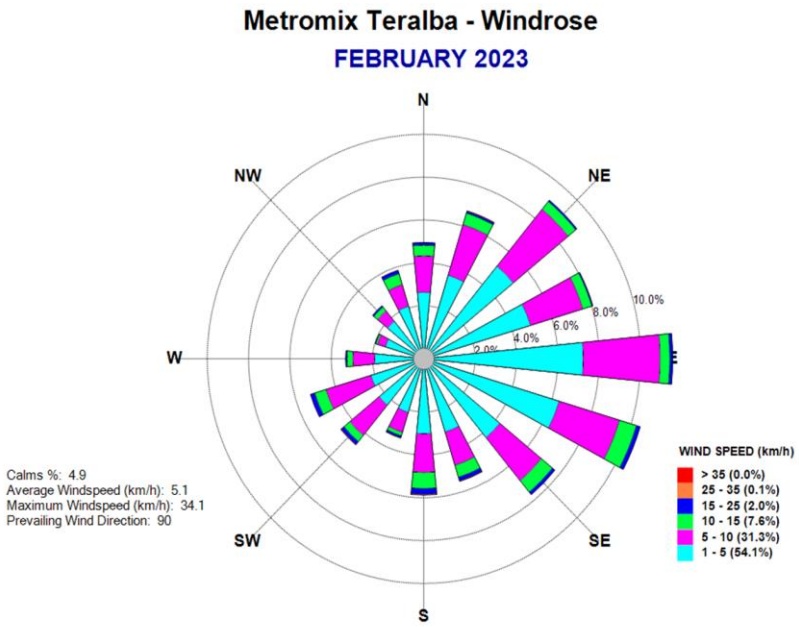
EPA Identified	Location	Description	Date	Monthly
5	Dam B	Discharge from Dam B (from Quarry)	3/01/2023 - 2/02/2023	0.0
			1/02/2023 - 01/03/2023	5.1

EPA Identified	Location	Description	Date	Monthly
4	Adit Dam	Adit Dam to Creek (off site)	3/01/2023 - 02/02/2023	20.3
			1/02/2023 - 01/03/2023	37.6

Meteorological Conditions

Monitoring Location: Mid-Pit Entrance
Monitoring Frequency: Continuous

Windrose



Monthly Summary

Date	Mean Wind Direction (°)	Mean Wind Speed (km/h)	Daily Rainfall (mm)	Mean Sigma Theta	Max Temperature (°C) at 2m	Min Temperature (°C) at 2m
01/02/23	182	6.2	0.0	30.8	28.4	20.4
02/02/23	152	5.2	0.0	33.5	35.0	20.4
03/02/23	204	6.8	0.0	40.3	33.6	21.2
04/02/23	249	8.3	0.0	25.3	29.2	17.8
05/02/23	175	4.8	0.0	31.1	28.8	17.4
06/02/23	97	4.5	0.0	31.3	30.4	20.4
07/02/23	91	4.4	0.0	32.0	30.8	20.2
08/02/23	91	5.2	0.0	30.0	30.2	20.0
09/02/23	115	4.3	0.4	30.0	25.6	20.6
10/02/23	155	4.4	0.0	28.5	30.8	17.2
11/02/23	143	5.3	0.0	27.6	37.6	17.8
12/02/23	160	7.2	0.0	33.7	31.2	20.2
13/02/23	144	6.2	0.6	40.2	26.0	20.8
14/02/23	147	4.5	9.2	32.2	24.6	18.6
15/02/23	128	4.0	0.8	29.7	28.0	17.8
16/02/23	134	4.0	0.0	31.7	30.8	16.4
17/02/23	115	3.6	0.0	30.9	32.4	18.0
18/02/23	134	5.7	6.8	29.1	36.8	18.4
19/02/23	172	5.9	0.0	33.2	29.8	19.2
20/02/23	113	4.5	0.0	31.1	33.4	20.4
21/02/23	138	4.4	0.0	32.4	31.0	19.2
22/02/23	160	6.9	195.8	38.7	21.8	16.4
23/02/23	138	5.0	3.4	34.4	24.0	16.6
24/02/23	145	3.7	0.0	30.0	26.6	16.8
25/02/23	138	4.5	0.0	26.5	27.0	16.2
26/02/23	150	5.9	0.0	27.0	33.8	16.6
27/02/23	150	5.8	0.0	35.3	28.4	20.8
28/02/23	140	3.6	0.0	35.7	27.8	19.8

Meteorological Conditions - Year to Date

Monitored Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total Rainfall (mm)	120.0	217.0											
Average Minimum Temperature (°C) at 2m	14.8	16.2											
Average Maximum Temperature (°C) at 2m	35.6	37.6											
Average Minimum Temperature (°C) at 10m	14.9	16.7											
Average Maximum Temperature (°C) at 10m	34.9	36.4											
Average Sigma Theta	33.6	31.9											
Average Solar Radiation (W/m^2)	215.6	222.6											
Average Relative Humidity (%)	73.0	65.0											

Blasting

Monitoring Frequency: Each Blast
Blast Monitoring Completed By: MAXAM

Shot #	Day	Month	Time	Location	Location 1		Location 2		Location 3		Comments
					Overpressure	Vibration	Overpressure	Vibration	Overpressure	Vibration	
					dB(L)	mm/s	dB(L)	mm/s	dB(L)	mm/s	
1	19	January	13:39:30	Stage 1C	104.7	0.6	100.8	0.1	NM	NM	Nil Trigger on monitor at bottom wheel wash
2	8	February	13:52:29	Stage 2B-3	104.9	0.37	NT	NT	NM	NM	
3	22	February	12:03:50	Stage 2B-2	104.7	0.3	101.7	0.14	NM	NM	

NT Not Triggered
NM Not Monitored

Blasting Criteria

Parameter	Units of Measure	Limit	
		95% of blasts per year	100% of blasts
Airblast Overpressure (Linear Peak)	decibels (dBL)	115	120
Ground Vibration (Peak Particle Velocity)	millimeters per second (mm/s)	5	10

Comments

Two blasting events occurred during the monitoring period. All blast monitoring results were within the approved criteria.

Waste Management

Waste Removal Summary

Month	January	February	March	April	May	June	July	August	September	October	November	December
Items	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity
General Waste Bin (10m^3)	-	-										
General Waste Bin (4.5m^3)	-	-										
General Waste Bin (6m3)	-	-										
General Waste Bin (20m^3)	1	1										
Paper & Cardboard Bin (3m^3)	2	1										
Shredded Paper Bin (240L)	-	-										
Co Mingled Recycling (2 x 240 L)	4	4										
Tonner Cartridges	-	-										
Waste Oil (L)	-	-										
Scrap Steel (t)	-	-										
Timber (m^3)	-	-										
Engine Coolant (L)	-	-										
Oil Filters (240L bin)	-	-										
Batteries	-	-										
Oily Rags (240L bin)	-	-										
Aerosols (120L bin)	-	-										
Tyres	-	-										
Other	-	-										
Oily Water (L)	-	-										
Grease Waste (L)	-	-										