



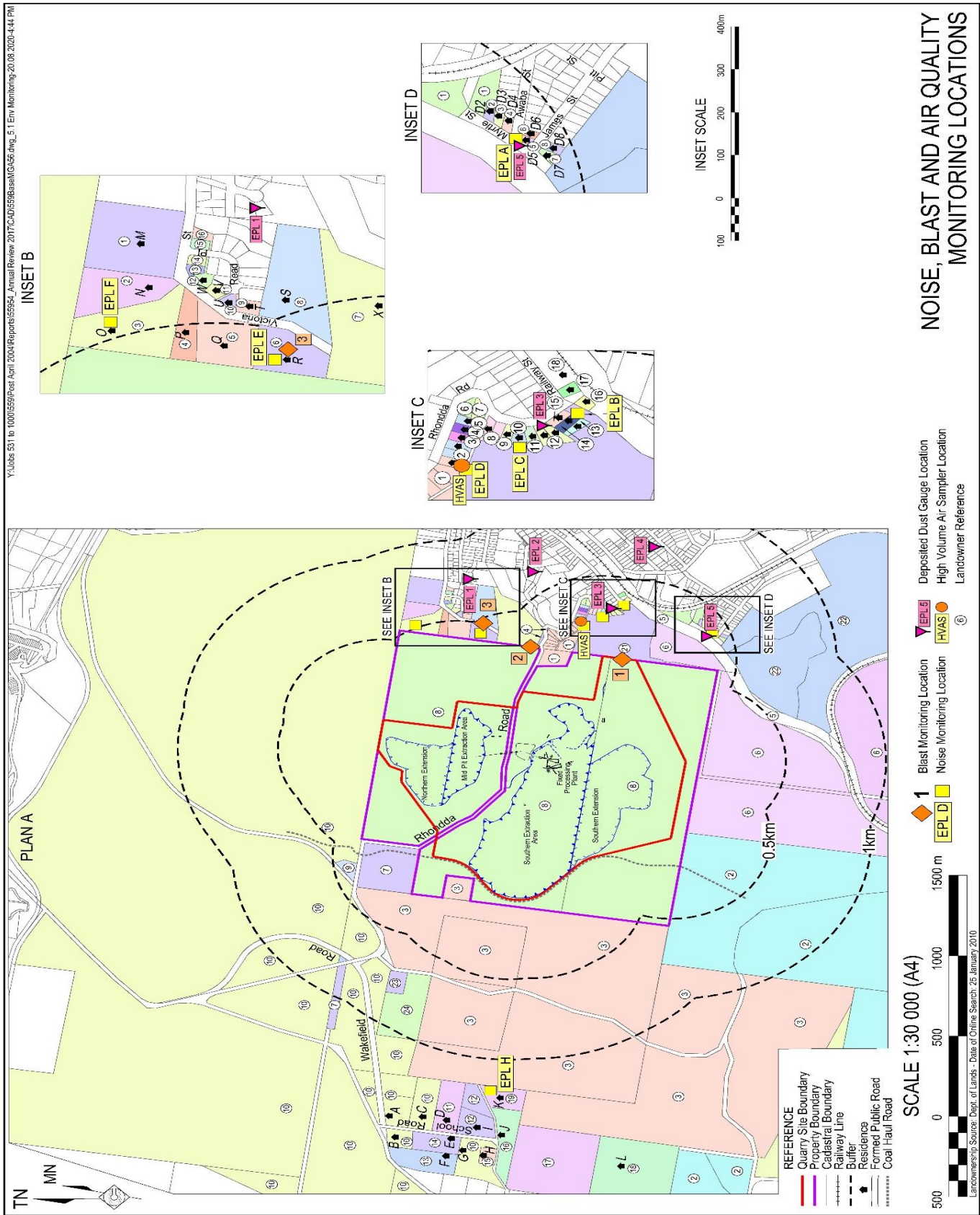
Teralba Quarry Environmental Monitoring Summary

July 2020

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:	July 2020
Data Last Data Received	12 August 2020
Date of Report	21 August 2020

Contents

- 1 Deposited Dust
- 2 Particulate Matter (PM₁₀)
- 3 Water
- 4 Meteorological Conditions
- 5 Blasting
- 6 Noise (August only)
- 7 Waste



**NOISE, BLAST AND AIR QUALITY
MONITORING LOCATIONS**

Deposited Dust

Sample Period Start:1/07/2020

Sample Period End:2/08/2020

Sample Frequency:30 ± 2 days

Sample Collected By:Metromix - JA

Date Received by Laboratory:3/08/2020

Date Results Received by Metromix:12/08/2020

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	2.0	1.6	80.0
8	Rodgers Street	4.0	0.3	0.2	66.7
9	Rhondda Road	4.0	1.1	0.4	36.4
11	Myrtle Street	4.0	0.4	0.2	50.0
23	York Street	4.0	0.9	0.5	55.6

Comments

All deposited dust results remained below the approved criteria for the sample period.

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	1.5	1.2	80	2.1	1.4	67	1.3	0.5	38	2.1	1.6	76	1.3	0.9	69
February	2.6	2.0	77	2.5	2.1	84	4.2	2.9	69	3.3	2.6	79	2.9	2.3	79
March	1.0	0.4	40	0.8	0.4	50	2.7	1.7	63	0.9	0.6	67	1.4	0.9	64
April	0.7	0.3	43	0.6	0.4	67	4.1	2.4	59	1.1	0.7	64	1.2	0.8	67
May	0.5	0.2	40	0.7	0.4	57	5.2	3.9	75	0.8	0.4	50	0.9	0.5	56
June	0.7	0.2	29	1.4	0.5	36	8.7	7.5	86	0.4	0.2	50	0.7	0.4	57
July	0.5	0.2	40	0.3	0.2	67	0.4	0.2	50	0.3	0.2	67	0.7	0.5	71
August	1.1	0.4	36	0.4	0.2	50	2.0	1.6	80		0.2	67	0.9	0.5	56
September															
October															
November															
December															
Annual Average	1.1	0.6	48.1	1.1	0.7	59.6	3.6	2.6	65.0	1.3	0.8	64.8	1.3	0.9	64.9
Annual Maximum	2.6	2.0	80.0	2.5	2.1	84.0	8.7	7.5	86.2	3.3	2.6	78.8	2.9	2.3	79.3
Annual Minimum	0.5	0.2	28.6	0.3	0.2	35.7	0.4	0.2	38.5	0.3	0.2	50.0	0.7	0.4	55.6

Particulate Matter (PM₁₀)

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

Date Sample Taken (24-hr)	Collected by	Date Results Received	PM ₁₀ µg/m ³	Monthly Average Criteria (µg/m ³)	Annual Average Criteria (µg/m ³)
1/07/2020	CBased - MB	10/07/2020	13	50	
7/07/2020	CBased - MB	10/07/2020	6	50	
13/07/2020	CBased - MB	16/07/2020	4	50	
19/07/2020	CBased - MB	27/07/2020	12	50	
25/07/2020	CBased - MB	30/07/2020	11	50	
31/07/2020	CBased - MB	6/08/2020	20	50	
Monthly Average			11		25

Comments

All PM₁₀ results remained below the approved criteria for the sample period.

Particulate Matter (PM₁₀) - Year to Date - 2020

Date	PM ₁₀ (µg/m³)	Monthly Average (µg/m³)	Year to Date Average (µg/m³)	24-Hr Criteria (µg/m³)	Comments
3/01/2020	NR	49.5	NR	50	Time stamp glitch - machine did not run. Make up run conducted on 22 January 2020.
9/01/2020	NR		NR	50	Did not run on scheduled run date. Make up run conducted on 5th February 2020
15/01/2020	15		15.0	50	
21/01/2020	72		43.5	50	
22/01/2020	71		52.7	50	
27/01/2020	40		49.5	50	
2/02/2020	37	16.8	47.0	50	
5/02/2020	9		40.7		
8/02/2020	14		36.9	50	
14/02/2020	12		33.8	50	
20/02/2020	14		31.6	50	
26/02/2020	15		29.9	50	
3/03/2020	7	11.4	27.8	50	
9/03/2020	7		26.1	50	
15/03/2020	8		24.7	50	
21/03/2020	24		24.6	50	
27/03/2020	11		23.7	50	
2/04/2020	13	15.8	23.1	50	
8/04/2020	5		22.0	50	
14/04/2020	17		21.7	50	
20/04/2020	16		21.4	50	
26/04/2020	28		21.8	50	
2/05/2020	9	12.2	21.1	50	
8/05/2020	15		20.9	50	
14/05/2020	12		20.5	50	
20/05/2020	14		20.2	50	
26/05/2020	11		19.8	50	
1/06/2020	13	10.8	19.6	50	
7/06/2020	13		19.3	50	
13/06/2020	14		19.1	50	
19/06/2020	8		18.8	50	
25/06/2020	6		18.3	50	
1/07/2020	13	11.0	18.2	50	
7/07/2020	6		17.8	50	
13/07/2020	4		17.4	50	
19/07/2020	12		17.2	50	
25/07/2020	11		17.0	50	
31/07/2020	20		17.1	50	
6/08/2020					
12/08/2020					
18/08/2020					
24/08/2020					
30/08/2020					
5/09/2020					
11/09/2020					
17/09/2020					
23/09/2020					
29/09/2020					
5/10/2020					
11/10/2020					
17/10/2020					
23/10/2020					
29/10/2020					
4/11/2020					
10/11/2020					
16/11/2020					
22/11/2020					
28/11/2020					
4/12/2020					
10/12/2020					
16/12/2020					
22/12/2020					
28/12/2020					

Minimum	4
Maximum	72
Average	17.1
Standard Deviation	15.5
24-hr Criteria	50
Number of Exceedences	2
Annual Average Criteria	25
Annual Average Criteria Exceeded	No

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	-	
14/07/2020	12:00pm	Metromix - JA	20/07/2020		7.35	2010	<5	<5	None

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		
27/07/2020	N/A	Metromix - JA	3/08/2020		6.91	792	71	10	TSS exceedance due to significant rainfall. Oil and grease on criteria
28/07/2020	12:15pm	Metromix - JA	4/08/2020		6.93	701	60	7	TSS exceedance due to significant
29/07/2020	10:00am	Metromix - JA	5/08/2020		6.90	692	55	<5	TSS exceedance due to significant
30/07/2020	10:00am	Metromix - JA	6/08/2020		6.92	730	41	<5	None
31/07/2020	N/A	Metromix - JA	7/08/2020		6.89	809	40	<5	None

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)	06/07/20 to 5/08/20	0.016	0.48
5	Dam B	Discharge from Dam B (from Quarry)	06/07/20 to 5/08/20	N/A	10

4	Adit Dam	Water pumped from Adit Dam to Dam G (processing use)	06/07/20 to 5/08/20	N/A	30.8
---	----------	--	---------------------	-----	------

Comments

A significant rainfall event between 26 July and 28 July 2020 (161.4mm) caused Dam B to discharge water from the Quarry. Monitoring results indicate that sediment levels exceeded the criteria on three days. Given the large volume of rainfall experienced, the design capacity of dams was exceeded. Further monitoring indicated a return to acceptable levels once the rainfall had ceased. The incident was notified to the EPA and DPIE.

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	<5	-
January	7.23	2140	9	<5	-
February	7.19	1990	<5	<5	-
March	7.36	2030	29	<5	-
April	7.22	2060	17	<5	-
May	7.16	2140	<5	<5	-
June	7.10	1990	6	<5	-
July	7.35	2010	<5	<5	-
August					
September					
October					
November					
December					

EPL Point 5 : Monitoring Daily During Discharge

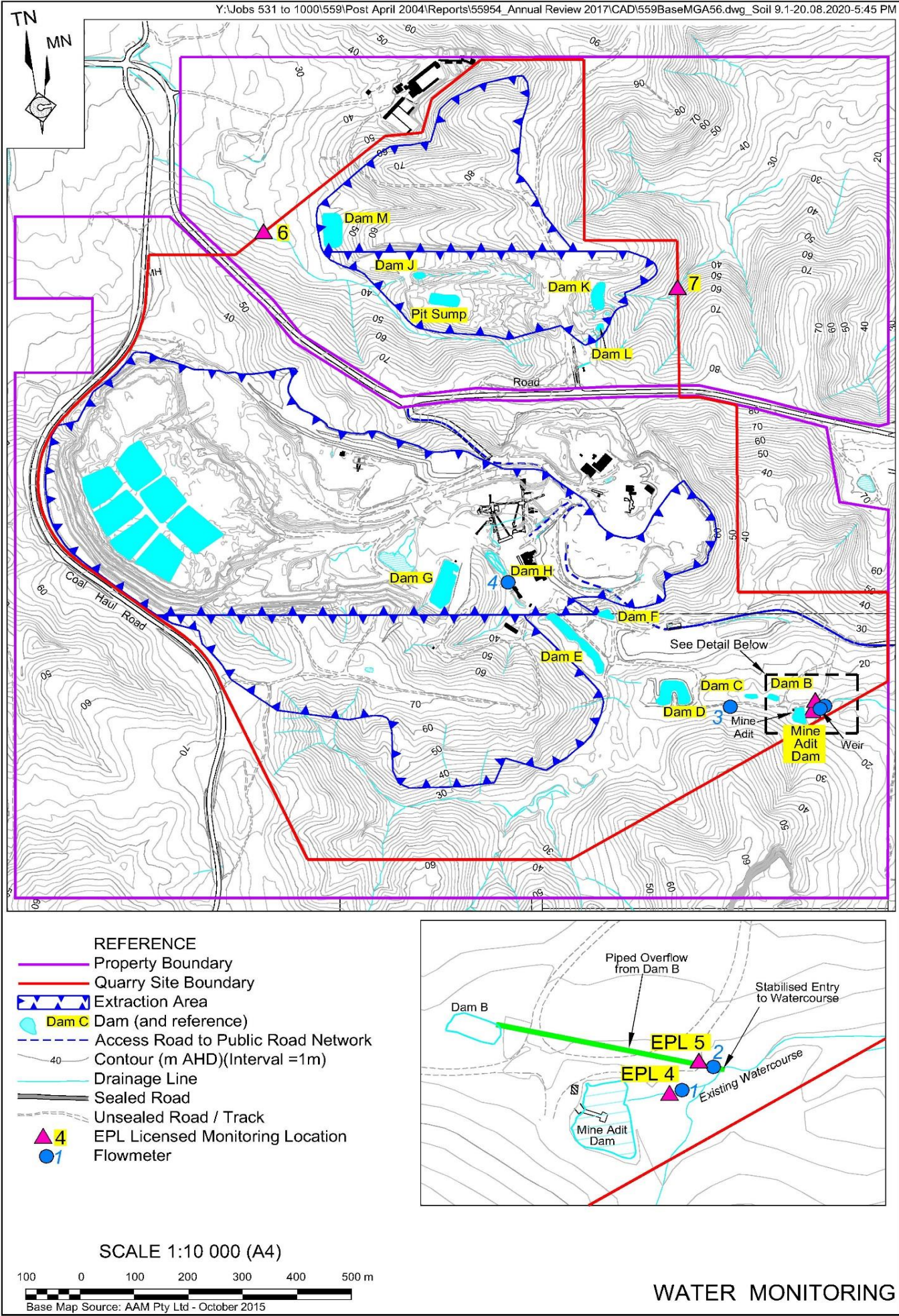
	pH	EC	TSS	Oil & Grease	Comments
Units	pH Units	µS/cm	mg/L	mg/L	-
EPL Criterion*	6.5-8.5	NA	<50	10	-
ANZECC Water Quality Limits	6.5-8.5	125-2200	<50		-
10/03/2020	7.11	1050	<5	<5	-
11/03/2020	7.10	1010	<5	<5	-
16/03/2020	6.93	1180	<5	<5	-
17/03/2020	6.99	1140	<5	<5	-
19/03/2020	7.07	1140	<5	<5	-
20/03/2020	7.17	1140	<5	<5	-
23/03/2020	7.22	1150	<5	<5	-
25/03/2020	7.09	1130	<5	<5	-
26/03/2020	7.16	934	<5	<5	-
27/03/2020	7.01	1020	<5	<5	-
30/03/2020	6.85	1140	<5	<5	-
31/03/2020	6.75	1190	<5	<5	-
1/04/2020	6.78	1160	<5	<5	-
2/04/2020	6.80	1150	<5	<5	-
3/04/2020	6.94	1150	<5	<5	-
6/04/2020	7.37	1170	<5	<5	-
7/04/2020	7.19	1170	<5	<5	-
8/04/2020	6.91	1170	<5	<5	-
9/04/2020	6.95	1050	<5	<5	-
14/04/2020	6.93	1020	8	<5	-
15/04/2020	6.93	1080	5	<5	-
16/04/2020	6.96	1010	<5	<5	-
17/04/2020	6.74	1100	<5	<5	-
20/04/2020	6.76	1130	<5	<5	-
21/04/2020	6.86	1160	<5	<5	-
22/04/2020	6.88	1120	<5	<5	-
23/04/2020	6.99	1130	<5	<5	-
24/04/2020	7.02	1130	<5	<5	-
27/04/2020	6.95	1180	<5	<5	-
27/07/2020	6.91	792	71	10	TSS exceedance due to significant rainfall. Oil and grease at but not over criteria
28/07/2020	6.93	701	60	7	TSS exceedance due to significant rainfall.
29/07/2020	6.90	692	55	<5	TSS exceedance due to significant rainfall.
30/07/2020	6.92	730	41	<5	None
31/07/2020	6.89	809	40	<5	None

Flow Meter Records

EPA Identifier Point	Location	Description	Date	Monthly Total (ML)
4	Adit Dam	Water pumped from Adit Dam to Dam G (processing use)	4/01/2020	61.5
			4/02/2020	74.6
			2/03/2020	78.4
			1/04/2020	94.4
			2/05/2020	92.0
			1/06/2020	0.0
			6/07/2020	0.0
			28/07/2020	16.0
			5/08/2020	14.8

EPA Identified Point	Location	Description	Date	Monthly Total (ML)
5	Dam B	Discharge from Dam B (from Quarry)	6/01/2020	0.0
			4/02/2020	0.0
			2/03/2020	0.0
			1/04/2020	0.2
			2/05/2020	0.1
			1/06/2020	0.0
			6/07/2020	0.0
			5/08/2020	10.0

EPA Identified Point	Location	Description	Date	Monthly Total (ML)
4	Adit Dam	Adit Dam to Creek (off site)	6/01/2020	7.3
			4/02/2020	1.1
			2/03/2020	0.7
			1/04/2020	0.0
			2/05/2020	0.0
			1/06/2020	0.0
			6/07/2020	0.0
			5/08/2020	0.5

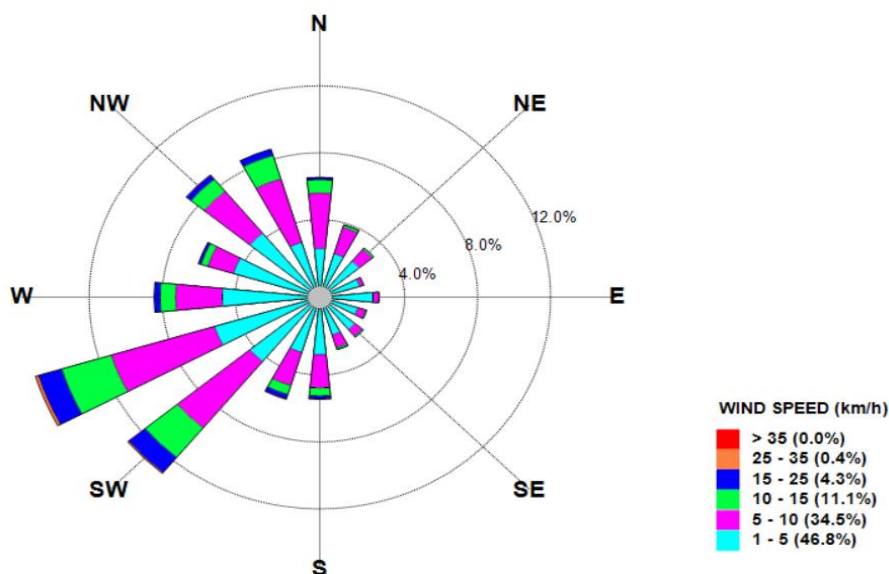


Meteorological Conditions

Monitoring Location: Mid-Pit Entrance
Monitoring Frequency: Continuous

Windrose

Calms %: 2.88
Average Windspeed (km/h): 6.1
Maximum Windspeed (km/h): 37.4
Prevailing Wind Direction: 247.5



Monthly Summary

Date	Mean Wind Direction (°)	Mean Wind Speed (km/h)	Daily Rainfall (mm)	Max Temperature (°C) at 2m	Min Temperature (°C) at 2m
01/07/20	237	8.2	0.0	20.2	10.4
02/07/20	176	9.8	0.0	23.0	10.6
03/07/20	229	4.9	0.0	19.0	10.8
04/07/20	258	7.3	0.2	15.4	6.4
05/07/20	272	6.1	0.0	18.0	6.0
06/07/20	235	4.0	0.0	17.6	7.2
07/07/20	210	4.7	1.4	18.0	8.6
08/07/20	207	3.9	0.2	17.2	9.8
09/07/20	155	3.5	0.0	19.0	8.4
10/07/20	187	3.2	0.2	17.2	10.6
11/07/20	241	3.9	2.0	17.0	11.8
12/07/20	226	5.4	17.2	19.6	9.4
13/07/20	249	3.2	0.0	15.2	6.8
14/07/20	236	13.1	22.6	14.8	8.0
15/07/20	233	11.8	0.0	15.6	11.0
16/07/20	230	10.9	0.0	16.2	10.0
17/07/20	218	9.1	1.8	15.6	11.2
18/07/20	212	5.1	0.6	16.4	10.0
19/07/20	231	7.5	0.2	19.2	8.2
20/07/20	251	7.4	0.0	18.2	8.8
21/07/20	222	4.8	0.0	16.4	5.6
22/07/20	222	4.2	0.0	17.0	8.0
23/07/20	195	3.1	0.0	19.3	7.6
24/07/20	155	3.2	0.0	18.0	8.2
25/07/20	168	3.2	2.2	18.0	8.6
26/07/20	228	7.0	129.4	14.6	11.6
27/07/20	267	8.7	15.4	14.8	10.6
28/07/20	277	7.0	16.6	15.0	10.4
29/07/20	221	5.0	0.2	19.4	11.0
30/07/20	212	6.2	0.0	18.0	10.2
31/07/20	215	5.4	0.0	16.4	9.0

Meteorological Conditions - Year to Date

Monitored Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total Rainfall (mm)	39.0	236.8	194.0	50.8	72.8	101.8	217.0						
Average Minimum Temperature (°C) at 2m	20.4	19.1	16.8	14.7	11.0	9.4	9.2						
Average Maximum Temperature (°C) at 2m	31.1	28.7	25.9	24.8	19.6	18.2	17.4						
Average Minimum Temperature (°C) at 10m	20.6	19.5	17.3	15.3	11.8	10.2	10.0						
Average Maximum Temperature (°C) at 10m	30.2	27.6	24.9	23.9	19.0	17.6	16.9						
Average Sigma Theta	32.1	30.2	29.5	28.2	26.0	27.1	25.0						
Average Solar Radiation (W/m ²)	190.0	169.0	152.0	132.0	101.0	90.4	88.1						
Average Relative Humidity (%)	71.6	74.0	75.6	65.1	69.0	73.0	72.2						

Blasting

Monitoring Frequency: Each Blast
 Blast Monitoring Completed By: Orica

Shot #	Day	Month	Time	Location	Location 1		Location 2		Location 3		Comments
					Overpressure dB(L)	Vibration mm/s	Overpressure dB(L)	Vibration mm/s	Overpressure dB(L)	Vibration mm/s	
1	20	January	13:02:02	Stage 1A	108	0.9	104	0.2	NM	NM	
2	13	February	11:21:20	Stage 2A	122.3	0.4	109.2	0.2	NM	NM	Exceeded the maximum overpressure criteria by 2.3 dB(L). Causes of the exceedance was blast design parameters and overcast low cloud conditions.
3	5	February	11:17:16	Stage 1A	104.9	0.2	NT	NT	NM	NM	
4	16	March	14:32:16	Stage 2A	116.3	0.3	110	0.1	NM	NM	Exceeded the overpressure criteria by 1.3 dB(L). Causes of the exceedance was blast design parameters.
5	11	March	10:57:50	Stage 1A	101	0.2	104	0.2	NM	NM	
6	25	March	14:57:07	Stage 1B	115.7	0.2	112.6	0.2	NM		Exceeded the overpressure criteria by 0.7 dB(L). Causes of the exceedance was blast design parameters.
7	7	April	11:05:00	Stage 1A	NT	NT	NT	NT	NM	NM	
8	22	April	11:50:29	Stage 2A	104.1	0.2	NT	NT	NM	NM	
9	3	June	11:37:14	Stage 2A	100.1	0.3	NT	NT	NM	NM	
10	11	June	12:02:55	Stage 2A	102	0.2	81.97	0.5	NM	NM	
11	1	July	11:00:08	Stage 2A	104.7	0.2	100.6	0.1	NM	NM	
12 & 12B	3	August	14:19:48	Stage 2A	106.6	0.2	103.3	0.2	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

A single blast occurred on 1 July 2020 and complied with the blasting 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 (6m ³)												
General Waste Bin (20m ³)		1		1	1	1	1					
Paper & Cardboard Bin (3m ³)	2	1	2	1	1	2	1					
Shredded Paper Bin (240L)			3				1					
Co Mingled Recycling (2 x 240 L)	4	4		4	4	4	4					
Tonner Cartridges	23											
Waste Oil (L)		1700		500		1600	1200					
Scrap Steel (t)												
Timber (m ³)												
Engine Coolant (L)												
Oil Filters (240L bin)		2										
Batteries												
Oily Rags (240L bin)					125							
Aerosols (120L bin)												
Tyres												
Other												
Oily Water (L)						162						
Grease Waste (L)												

* ETS pruned and removed some over growth vegetation in