



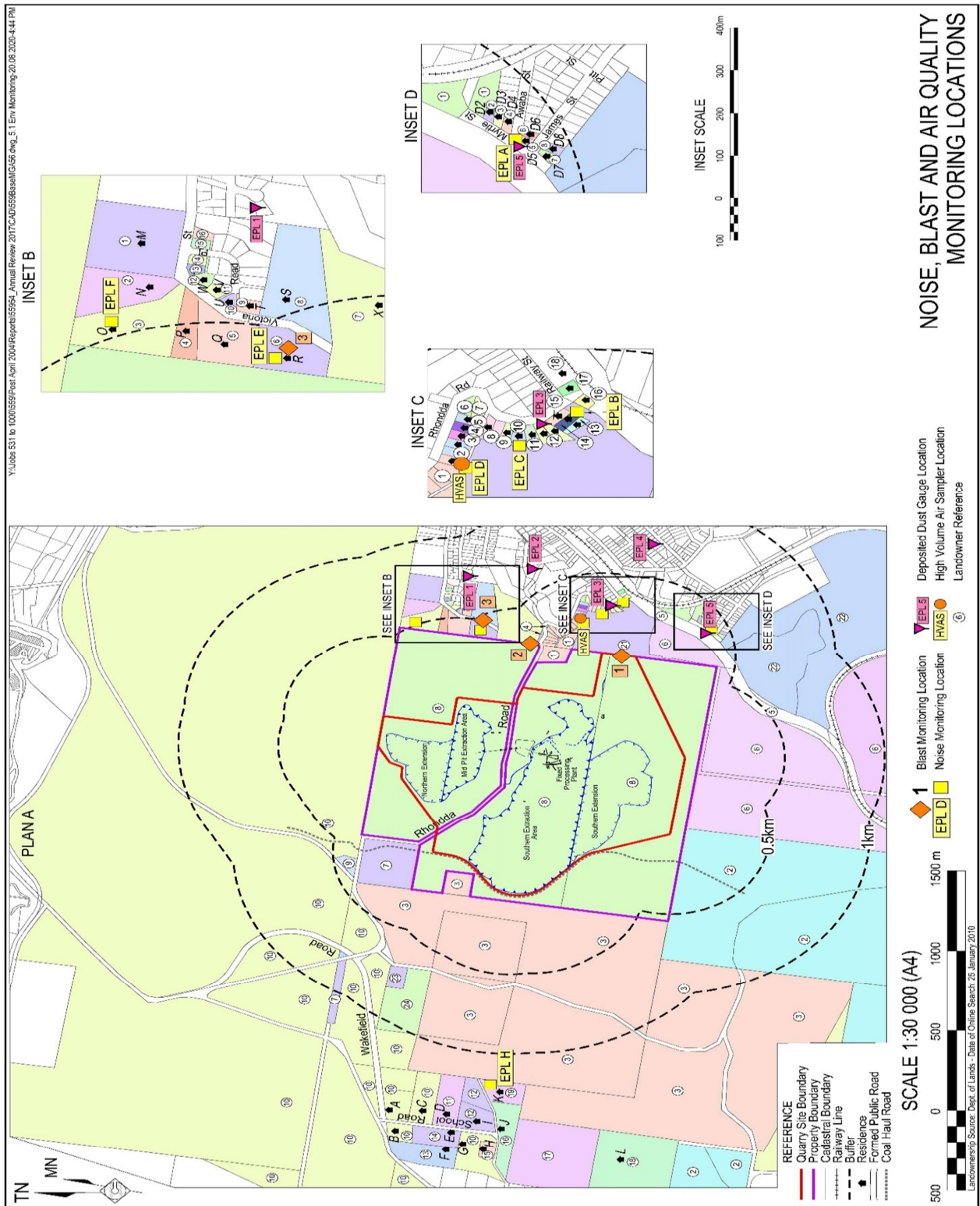
Teralba Quarry Environmental Monitoring Summary

October 2020

Environmental Protection Licence (EPL):	536
Licensee:	Metromix Pty Limited
Licensee Address:	PO Box 1295 Parramatta, NSW 2124
Premises:	Metromix Pty Limited Teralba Quarry Rhondra 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:	October 2020
Data Last Data Received	11 November 2020
Date of Report	18 November 2020

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Deposited Dust

Sample Period Start: 1/10/2020
Sample Period End: 1/11/2020
Sample Frequency: 30 ± 2 days
Sample Collected By: Metromix - JA
Date Received by Laboratory: 1/10/2020
Date Results Received by Metromix: 13/09/2020

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	0.8	0.3	38
8	Rodgers Street	4.0	0.5	0.2	40
9	Rhondda Road	4.0	1.0	0.4	40
11	Myrtle Street	4.0	1.5	0.7	47
23	York Street	4.0	1.5	0.9	60

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		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
February		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
March		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
April		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
May		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
June		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
July		1.1	0.4	36	0.4	0.2	50	2.0	1.6	80	0.3	0.2	67	0.9	0.5	56
August		0.7	0.6	86	0.3	0.3	100	0.4	0.3	75	0.4	0.2	50	0.5	0.5	100
September		0.9	0.6	67.0	1.5	0.7	47.0	0.9	0.6	67.0	0.7	0.5	71.0	1.0	0.7	70.0
October		1.0	4.0	38.0	1.5	0.7	47.0	0.8	0.3	38.0	0.5	0.2	40.0	1.5	0.9	60.0
November																
December																
Annual Average		1.0	0.9	49.6	1.0	0.6	60.4	2.9	2.1	66.2	0.9	0.6	60.3	1.2	0.8	68.0
Annual Maximum		2.6	4.0	86.0	2.5	2.1	100.0	8.7	7.5	86.2	3.3	2.6	78.8	2.9	2.3	100.0
Annual Minimum		0.5	0.2	28.6	0.3	0.2	35.7	0.4	0.2	38.0	0.3	0.2	40.0	0.5	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)
5/10/2020	CBased - LK	9/10/2020	23	50	
11/10/2020	CBased - LK	16/10/2020	14	50	
17/10/2020	CBased - LK	27/10/2020	25	50	
23/10/2020	CBased - LK	28/10/2020	15	50	
29/10/2020	CBased - MB	9/11/2020	7	50	
Monthly Average			16.8		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/m ³)	Monthly Average (µg/m ³)	Year to Date Average (µg/m ³)	24-Hr Criteria (µg/m ³)
3/01/2020	NR		NR	50
9/01/2020	NR		NR	50
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	49.5	50
2/02/2020	37		47.0	50
5/02/2020	9		40.7	50
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	16.8	29.9	50
3/03/2020	7		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	11.4	23.7	50
2/04/2020	13		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	15.8	21.8	50
2/05/2020	9		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	12.2	19.8	50
1/06/2020	13		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	10.8	18.3	50
1/07/2020	13		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	11.0	17.1	50
6/08/2020	11		16.9	50
12/08/2020	8		16.7	50
18/08/2020	4		16.4	50
24/08/2020	8		16.2	50
30/08/2020	26	11.4	16.4	50
5/09/2020	9		16.2	50
11/09/2020	6		16.0	50
17/09/2020	23		16.2	50
23/09/2020	17		16.2	50
29/09/2020	13	13.6	16.1	50
5/10/2020	23		16.3	50
11/10/2020	14		16.2	50
17/10/2020	25		16.4	50
23/10/2020	15		16.4	50
29/10/2020	7	16.8	16.2	50
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				

Comments

Time stamp glitch - machine did not run. Make up run conducted on 22 January 2020.

Did not run on scheduled run date. Make up run conducted on 5th February 2020

Minimum	4
Maximum	72
Average	16.2
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	-	
12/10/2020	12:00pm	Metromix - MY	19/10/2020		7.13	1960	<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		
26/10/2020	9:00am	Metromix - MY	2/11/2020		7.54	1150	<5	<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

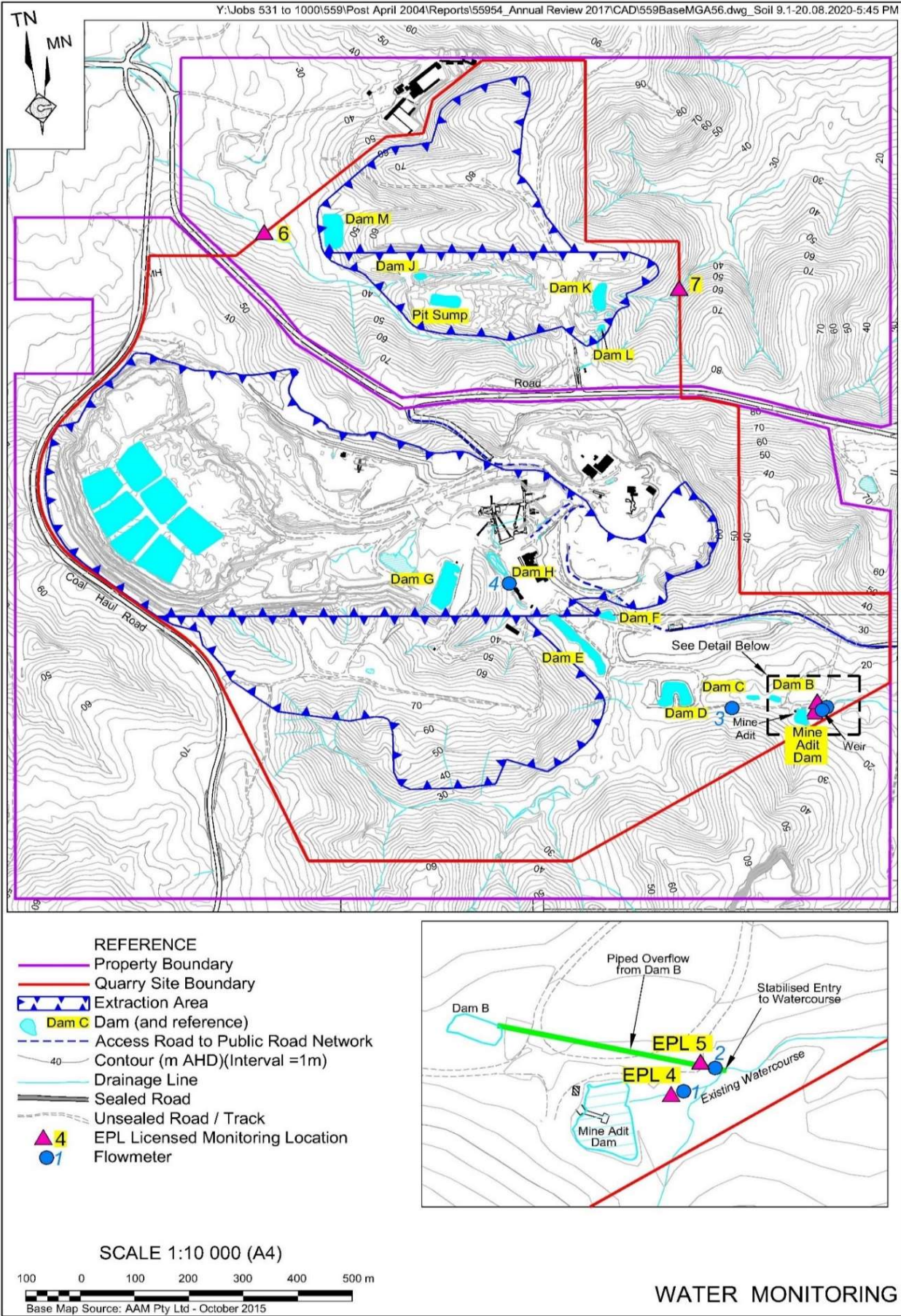
Date	Time	Sampled By	Date Results Received		pH	EC	TSS	Oil & Grease	Comments
				Units	pH Units	µS/cm	mg/L	mg/L	
				EPL Criterion*	6.5-8.5	NA	<50	10	
				ANZECC Water Quality Limits	6.5-8.5	125-2200	<50	-	
No discharge occurred at this location and therefore no monitoring was required									

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)	1/10/20 to 2/11/20	2.27	70.42
5	Dam B	Discharge from Dam B (from Quarry)	1/10/20 to 2/11/20	N/A	0
4	Adit Dam	Water pumped from Adit Dam to Dam G (processing use)	1/10/20 to 2/11/20	N/A	77.2

Comments

All water monitoring results remained within the approved criteria levels during the monitoring period.



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	6.79	849	<5	<5	-
September	7.12	1900	<5	<5	-
October	7.13	1960	<5	<5	-
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	-
31/07/2020	6.89	809	40	<5	-
14/08/2020	6.9	870	<5	<5	-
17/08/2020	6.84	874	<5	<5	-
18/08/2020	6.81	866	<5	<5	-
19/08/2020	7.21	1670	13	<5	-
21/08/2020	6.8	833	<5	<5	-
24/08/2020	6.88	826	<5	<5	-
25/08/2020	6.88	843	<5	<5	-
26/08/2020	6.86	852	<5	<5	-
27/08/2020	6.86	926	<5	<5	-
28/08/2020	6.88	832	<5	<5	-
31/08/2020	6.82	928	<5	<5	-
1/09/2020	6.98	909	<5	<5	-
2/09/2020	6.93	877	5	<5	-
3/09/2020	6.91	867	<5	<5	-
4/09/2020	6.97	809	<5	<5	-
7/09/2020	7.62	863	<5	<5	-
8/09/2020	7.03	852	5	<5	-
9/09/2020	6.95	846	<5	<5	-
10/09/2020	7.1	856	<5	<5	-
11/09/2020	7.2	826	<5	<5	-
26/10/2020	7.54	1150	<5	<5	-

Flow Meter Records

EPA Identifier	Location	Description	Date	Monthly Total
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
			1/09/2020	56.0
			1/10/2020	80.8
			2/11/2020	70.4

EPA Identified	Location	Description	Date	Monthly Total
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
			1/09/2020	4.0
			1/10/2020	0.0
			2/11/2020	0.0

EPA Identified	Location	Description	Date	Monthly Total
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
			1/09/2020	89.7
			1/10/2020	71.2
			2/11/2020	77.2

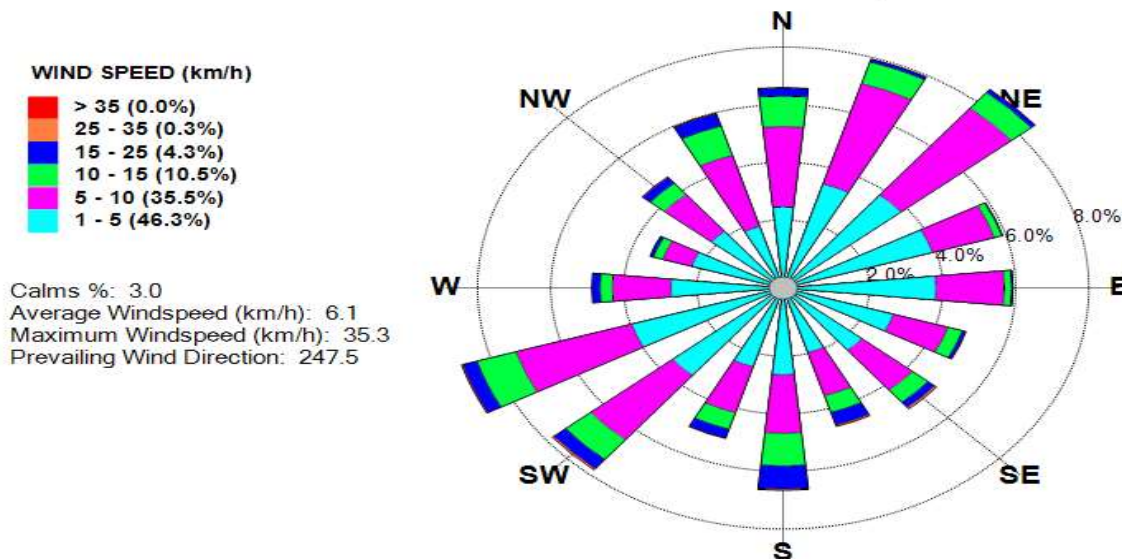
Meteorological Conditions

Monitoring Location: Mid-Pit Entrance
Monitoring Frequency: Continuous

Windrose

Metromix Teralba - Windrose

00:00 1 October 2020 to 23:55, 31 October 2020



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
01/10/20	204	6.7	0.2	40.0	26.8	13.6
02/10/20	175	5.0	0	25.3	27.8	12.2
03/10/20	75	5.3	0	23.4	29.6	11.2
04/10/20	126	7.4	0	24.6	32.4	14.2
05/10/20	172	8.6	0	26.3	32.5	15.6
06/10/20	190	6.5	0	36.6	20.8	16.2
07/10/20	174	3.5	0	35.6	22.4	16.0
08/10/20	210	6.7	0	35.0	31.8	15.6
09/10/20	254	8.2	0	27.3	23.8	14.0
10/10/20	196	4.3	0	31.3	26.8	11.0
11/10/20	198	5.5	0	25.6	28.4	14.0
12/10/20	144	5.3	0	32.7	26.6	15.6
13/10/20	158	4.1	0	28.3	30.0	13.6
14/10/20	180	6.1	0	38.4	23.4	15.4
15/10/20	148	5.2	0	25.3	30.0	14.8
16/10/20	183	7.9	0	33.6	23.4	16.6
17/10/20	135	6.3	0	26.6	31.4	16.2
18/10/20	251	7.9	34.8	34.4	24.0	15.2
19/10/20	168	4.9	8.4	33.7	20.0	14.6
20/10/20	144	4.1	4.2	28.7	22.0	13.6
21/10/20	82	5.6	0	27.7	25.2	13.2
22/10/20	156	4.1	0	30.0	26.8	13.6
23/10/20	110	5.1	0	26.6	28.8	15.4
24/10/20	142	6.5	34	22.9	23.0	16.6
25/10/20	203	10.2	25	32.3	18.4	12.4
26/10/20	181	11.9	52.2	35.8	16.0	13.0
27/10/20	204	8.8	1.8	33.5	20.7	12.4
28/10/20	193	4.3	8	35.8	19.4	12.2
29/10/20	197	4.2	1.2	33.8	21.4	12.6
30/10/20	157	4.2	1.4	30.7	22.8	10.0
31/10/20	185	5.9	1.4	35.9	27.4	13.2

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	46.0	29.4	172.6			
Average Minimum Temperature (°C) at 2m	20.4	19.1	16.8	14.7	11.0	9.4	9.2	8.6	7.6	10.0			
Average Maximum Temperature (°C) at 2m	31.1	28.7	25.9	24.8	19.6	18.2	17.4	18.8	30.0	32.5			
Average Minimum Temperature (°C) at 10m	20.6	19.5	17.3	15.3	11.8	10.2	10.0	9.1	7.8	11.2			
Average Maximum Temperature (°C) at 10m	30.2	27.6	24.9	23.9	19.0	17.6	16.9	18.0	29.0	31.3			
Average Sigma Theta	32.1	30.2	29.5	28.2	26.0	27.1	25.0	29.9	28.3	30.9			
Average Solar Radiation (W/m ²)	190.0	169.0	152.0	132.0	101.0	90.4	88.1	131.9	167.9	186.0			
Average Relative Humidity (%)	71.6	74.0	75.6	65.1	69.0	73.0	72.2	59.9	61.0	70.0			

Blasting

Monitoring Frequency:
Blast Monitoring Completed By:

Each Blast
Orica (Blast 1 to 12)
MAXAM (Blast 13)

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	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 exceedence 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 exceedence 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	NM	Exceeded the overpressure criteria by 0.7 dB(L). Causes of the exceedence 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	
13	18	August	12:47:00	Stage 2A	NT	NT	NT	NT	NM	NM	
14A & 14B	1	September	12:27:00	Stage 2A	NT	NT	NT	NT	NM	NM	The trigger parameters for the blast monitors were reduced to 100dB(L) and 0.13mm/s to assist in obtaining a reading. An additional monitor was placed halfway inbetween Blast monitor 1 (McEwen St) and the blast. This monitor recorded 108.2dB(L) overpressure and 0.28mm/s vibration. None of the mandatory blast monitors triggered.
15A & 15B	22	September	14:23:00	Stage 2A	82.3	0.6	NT	NT	NM	NM	
16	23	October	15:23:00	Stage 2A	111.8	0.26	106.6	0.79	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 (dB(L))	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 with one blast not triggering the monitor.

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	1	1	2		
Paper & Cardboard Bin (3m ³)	2	1	2	1	1	2	1	2	1	2		
Shredded Paper Bin (240L)			3				1					
Co Mingled Recycling (2 x 240 L)	4	4		4	4	4	4	4	4	4		
Tonner Cartridges	23											
Waste Oil (L)		1700		500		1600	1200		1100			
Scrap Steel (t)												
Timber (m ³)												
Engine Coolant (L)												
Oil Filters (240L bin)		2							1			
Batteries												
Oily Rags (240L bin)					125							
Aerosols (120L bin)												
Tyres												
Other												
Oily Water (L)						162						
Grease Waste (L)												