



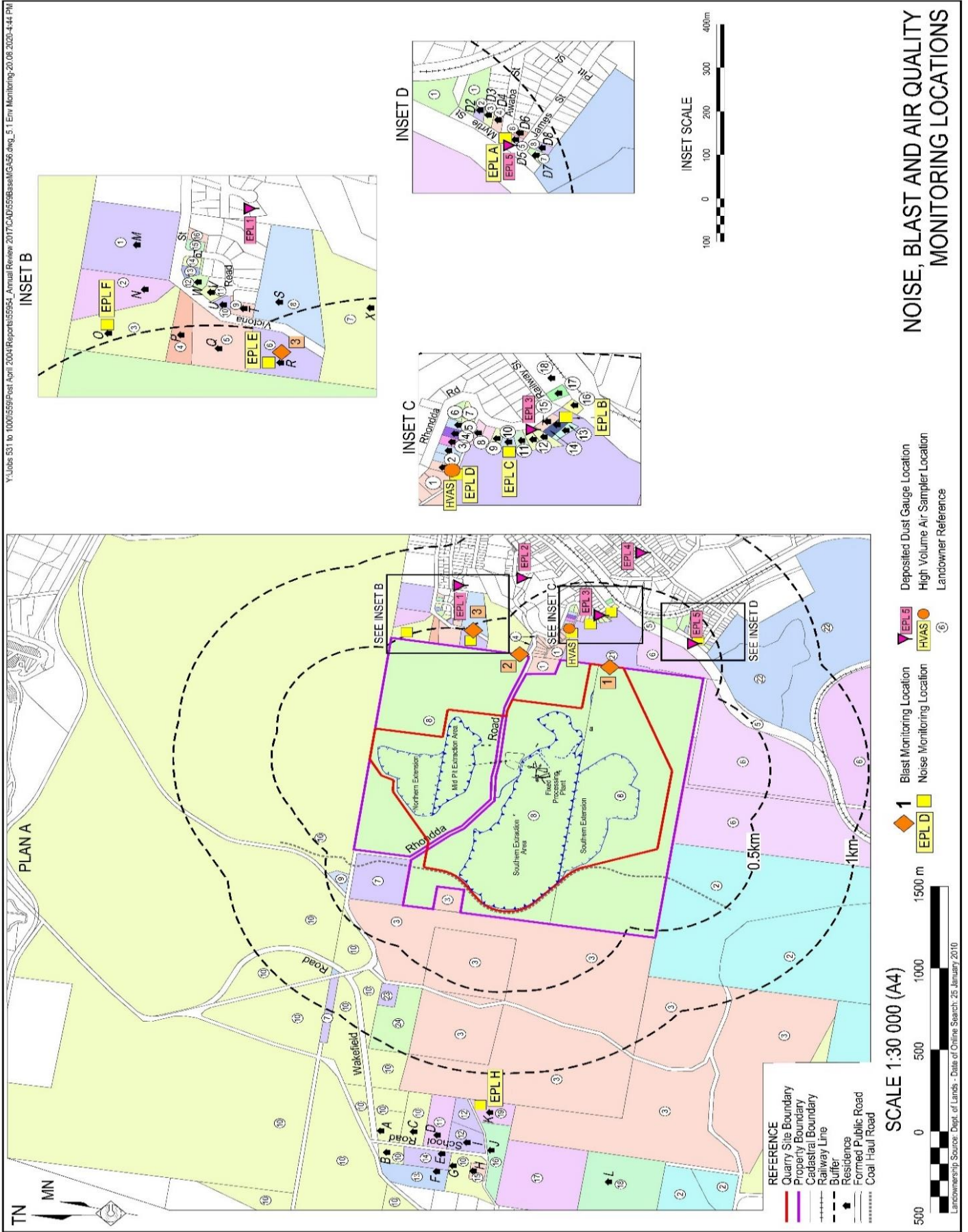
Teralba Quarry Environmental Monitoring Summary

November 2022

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:	November 2022
Date Last Data Received	13 December 2022
Date of Report	19 December 2022

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Deposited Dust

Sample Period Start: 1/11/2022
Sample Period End: 1/12/2022
Sample Frequency: 30 ± 2 days
Sample Collected By: Metromix - JJ
'Date Results Received by Lab: 1/12/2022
Date Results Received by Metromix: 12/12/2022

EPA Identification No.	Location	Criteria (g/m²/month)	Insoluble Solids (g/m²/month)	Ash Fraction (g/m²/month)	% Ash Fraction
1	Hillside Crescent	4.0	0.7	0.3	43
8	Rodgers Street	4.0	0.6	0.3	50
9	Rhondda Road	4.0	1.1	0.3	27
11	Myrtle Street	4.0	0.6	0.5	83
23	York Street	4.0	1.4	0.9	64

Comments

No exceedances of the approved criteria were detected during 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	0.3	0.2	67	1.8	1.0	56	0.4	0.3	75	0.4	0.2	50	0.7	0.5	71
February	0.8	0.4	50	4.9	3.6	73	0.9	0.3	33	0.8	0.3	38	1.2	0.5	42
March	0.6	0.2	67	5.3	4.1	77	0.5	0.1	20	0.3	0.1	33	0.3	0.2	67
April	10.5	9.1	87	1.7	1.0	59	0.4	0.1	25	0.3	0.1	33	1.1	0.6	55
May	1.5	1.2	80	1.1	0.5	45	0.2	0.1	50	0.2	0.2	100	0.5	0.3	60
June	0.8	0.6	75	0.7	0.5	71	0.1	0.1	100	0.3	0.2	67	0.7	0.4	57
July	0.5	0.2	40	2.5	0.6	24	0.3	0.1	33	0.3	0.1	33	0.5	0.2	40
August	1.2	0.8	67	1.8	0.9	50	0.3	0.3	100	0.2	0.2	100	1.3	0.6	46
September	0.7	0.4	57	1.1	0.5	45	0.8	0.2	25	0.4	0.2	50	0.6	0.4	67
October	0.7	0.2	29	0.5	0.3	60	0.5	0.2	40	1.8	0.7	39	0.4	0.3	75
November	1.1	0.3	27	0.6	0.5	83	0.7	0.3	43	0.6	0.3	50	1.4	0.9	64
December															
Annual Average	1.7	1.2	59	2.0	1.2	59	0.5	0.2	49	0.5	0.2	54	0.8	0.4	59
Annual Maximum	10.5	9.1	87	5.3	4.1	83	0.9	0.3	100	1.8	0.7	100	1.4	0.9	75
Annual Minimum	0.3	0.2	27	0.5	0.3	24	0.1	0.1	20	0.2	0.1	33	0.3	0.2	40

Particulate Matter (PM₁₀)

Sample Location: EPA 3 - Rodgers Street
 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)
6/11/2022	CBased - MB	14/11/2022	9.1	50	
12/11/2022	CBased - TD	22/11/2022	10.4	50	
18/11/2022	CBased - TD	30/11/2022	10	50	
24/11/2022	CBased - TD	5/12/2022	13.4	50	
30/11/2022	CBased - LK	8/12/2022	23	50	
Monthly Average			13.2		25/30*

*Project Approval (PA 10_0183) outlines the annual average PM₁₀ criteria to be 30µg/m³. 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 PM₁₀ criteria to be 25µg/m³. Metromix has considered both criteria for its review of particulate matter monitoring.

Comments

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

Particulate Matter (PM₁₀) - Year to Date

Date	PM ₁₀ (µg/m ³)	Monthly Average (µg/m ³)	Year to Date Average (µg/m ³)	24-Hr Criteria (µg/m ³)	Comments
4/01/2022	9.3		9.3	50	
10/01/2022	14.5		11.9	50	
16/01/2022	15.4		13.1	50	
22/01/2022	8.0		11.8	50	
28/01/2022	11.4	11.7	11.7	50	
3/02/2022	16.1		12.5	50	
9/02/2022	13.1		12.5	50	
15/02/2022	21.2		13.6	50	
21/02/2022	15.4		13.8	50	
27/02/2022	7.7	14.7	13.2	50	
5/03/2022	11.2		13.0	50	
11/03/2022	14.0		13.1	50	
17/03/2022	13.1		13.1	50	
23/03/2022	14.8		13.2	50	
29/03/2022	8.0	12.2	12.9	50	
4/04/2022	9.8		12.7	50	
10/04/2022	11.2		12.6	50	
16/04/2022	8.6		12.4	50	
22/04/2022	4.6		12.0	50	
28/04/2022	5.0	7.8	11.6	50	
4/05/2022	7.7		11.4	50	
10/05/2022	3.7		11.1	50	
16/05/2022	6.3		10.9	50	
22/05/2022	4.4		10.6	50	
28/05/2022	6.0	5.6	10.4	50	
3/06/2022	10.0		10.4	50	
9/06/2022	3.1		10.1	50	
15/06/2022	8.4		10.1	50	
21/06/2022	13.1		10.2	50	
27/06/2022	11.3	9.2	10.2	50	
3/07/2022	8.8		10.2	50	
9/07/2022	2.9		9.9	50	
15/07/2022	5.6		9.8	50	
21/07/2022	6.9		9.7	50	
27/07/2022	7.4	6.3	9.7	50	
2/08/2022	5.6		9.5	50	
8/08/2022	7.8		9.5	50	
14/08/2022	2.2		9.3	50	
20/08/2022	7.1		9.2	50	
26/08/2022	6.2	5.8	9.2	50	
1/09/2022	11.4		9.2	50	
7/09/2022	5.8		9.1	50	
13/09/2022	4.5		9.0	50	
19/09/2022	6.9		9.0	50	
25/09/2022	7.5	7.2	9.0	50	
1/10/2022	7.9		8.9	50	
7/10/2022	5.6		8.9	50	
13/10/2022	9.1		8.9	50	
19/10/2022	13.5		9.0	50	
25/10/2022	10.9		9.0	50	
31/10/2022	10.2	9.4	9.0	50	
6/11/2022	9.1		9.0	50	
12/11/2022	10.4		9.1	50	
18/11/2022	10.0		9.1	50	

24/11/2022	13.4		9.1	50	
30/11/2022	23.0	13.2	9.4	50	

Minimum	2.2
Maximum	23.0
Average	9.4
Standard Deviation	4.3
24-hr Criteria	50
Number of Exceedences	0
Annual Average Criteria	25/30*
Annual Average Criteria Exceeded	No
*See explanation on previous page.	

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	-	
1/11/2022	8.30am	Metromix - JJ	8/11/2022		6.96	1700	16	<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	-	
1/11/2022	8.30am	Metromix - JJ	8/11/2022		7.53	77	<5	<5	-

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

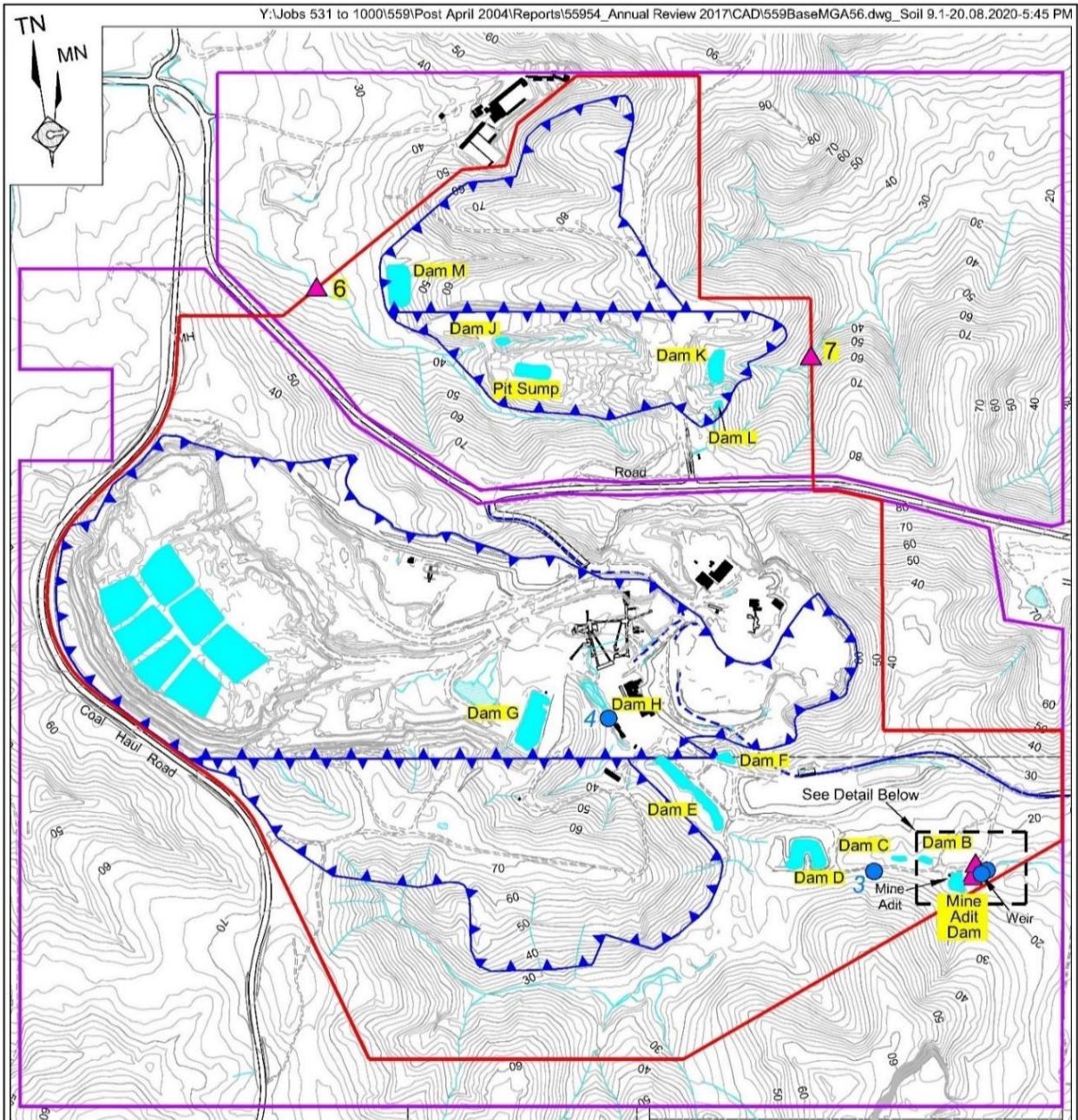
Date	Time	Sampled By	Date Results Received		pH	EC	TSS	Oil & Grease	Comments
				Units	pH Units	µS/cm	mg/L	mg/L	
				EPL Criterion*	6.5-8.5	NA	<50	10	
				ANZECC Water Quality Limits	6.5-8.5	125-2200	<50	-	
No discharge occurred at this location and therefore no monitoring was required									

Flow Meter Records

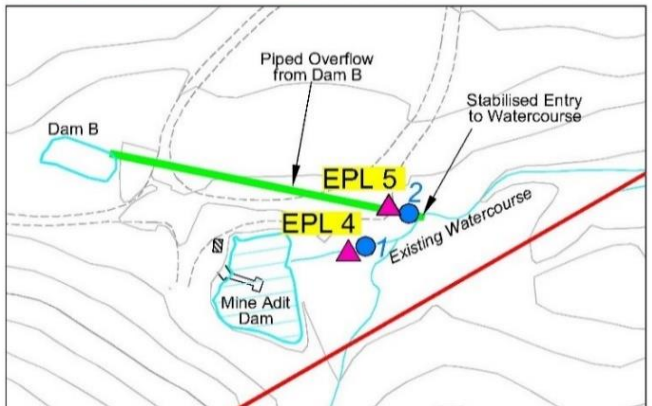
EPA Identified	Location	Description	Sample Period	Daily Average Flow	Monthly Total Flow ML
4	Adit Dam	Adit Dam to Creek (off site)	1/11/2022 to 1/12/2022	1.53	47.3
5	Dam B	Discharge from Dam B (from Quarry)	1/11/2022 to 1/12/2022	0.00	0
4	Adit Dam	Water pumped from Adit Dam to Dam G (processing use)	1/11/2022 to 1/12/2022	2.88	89.3

Comments

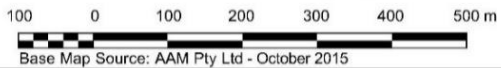
All water monitoring results remained within the approved criteria levels during the monitoring period.



- 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
 - ▲ 4 EPL Licensed Monitoring Location
 - 1 Flowmeter



SCALE 1:10 000 (A4)



Base Map Source: AAM Pty Ltd - October 2015

WATER MONITORING

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	7.13	1830	<5	<5	-
February	7.10	2010	6	<5	-
March	6.96	1360	6	<5	-
April	7.27	1550	23	<5	-
May	7.68	1750	<5	<5	-
June	7.12	1710	7	<5	-
July	7.16	1620	12	<5	-
August	7.15	1530	10	<5	-
September	7.33	1740	16	<5	-
October	7.31	1560	27	<5	-
November	6.96	1700	16	<5	-
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	-	-
8 March	6.78	664	10	<5	-
4 April	6.88	758	<5	<5	-
2 May	7.10	746	<5	<5	-
1 June	6.85	774	<5	<5	-
4 July	7.00	638	<5	<5	-
1 August	6.79	587	<5	<5	-
5 September	7.86	649	<5	<5	-
10 October	6.92	539	22	6	-
1 November	7.53	77	<5	<5	-

Flow Meter Records

EPA Identifier	Location		Date	Monthly
4	Adit Dam	Water pumped from Adit Dam to Dam G (processing use)	4/01/2022 - 1/02/2022	100.8
			1/02/2022 - 1/03/2022	107.5
			1/03/2022 - 1/04/2022	86.5
			1/04/2022 - 2/05/2022	67.4
			2/05/2022 - 1/06/2022	100.2
			1/06/2022 - 5/07/2022	98.5
			5/07/2022 - 1/08/2022	185.1
			1/08/2022 - 1/09/2022	12.8
			1/09/2022 - 4/10/2022	94.9
			4/10/2022 - 1/11/2022	136.6
			1/11/2022 - 1/12/2022	89.3

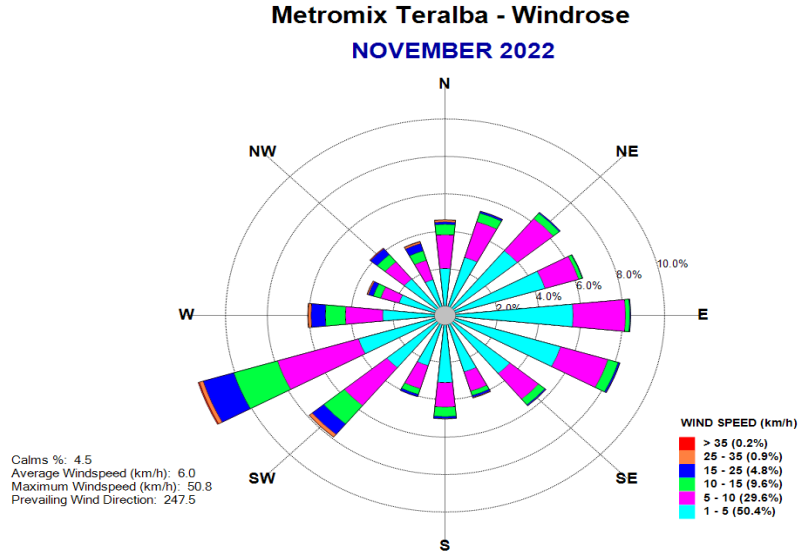
EPA Identified Point	Location	Description	Date	Monthly Total (ML)
5	Dam B	Discharge from Dam B (from Quarry)	4/01/2022 - 1/02/2022	2.1
			1/02/2022 - 1/03/2022	0.0
			1/03/2022 - 1/04/2022	2.5
			1/04/2022 - 2/05/2022	13.4
			2/05/2022 - 1/06/2022	1.6
			1/06/2022 - 5/07/2022	0.2
			5/07/2022 - 1/08/2022	34.1
			1/08/2022 - 1/09/2022	1.9
			1/09/2022 - 4/10/2022	0.8
			4/10/2022 - 1/11/2022	1.3
			1/11/2022 - 1/12/2022	0.0

EPA Identified Point	Location	Description	Date	Monthly Total (ML)
4	Adit Dam	Adit Dam to Creek (off site)	4/01/2022 - 1/02/2022	36.9
			1/02/2022 - 1/03/2022	39.8
			1/03/2022 - 1/04/2022	64.1
			1/04/2022 - 2/05/2022	169.1
			2/05/2022 - 1/06/2022	47.8
			1/06/2022 - 5/07/2022	51.4
			5/07/2022 - 1/08/2022	321.6
			1/08/2022 - 1/09/2022	84.5
			1/09/2022 - 4/10/2022	59.0
			4/10/2022 - 1/11/2022	55.2
			1/11/2022 - 1/12/2022	47.3

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
01/11/22	264	14.4	2.0	43.2	23.2	13.3
02/11/22	247	11.2	0.0	36.5	20.2	10.4
03/11/22	202	4.9	8.0	38.2	21.0	9.2
04/11/22	144	3.2	6.2	29.5	20.8	12.4
05/11/22	142	4.0	0.0	30.1	23.2	12.4
06/11/22	125	4.0	0.0	34.3	24.2	12.8
07/11/22	110	4.5	0.0	28.5	24.8	14.4
08/11/22	93	3.9	0.0	30.2	24.8	14.8
09/11/22	130	3.9	0.0	28.2	24.4	13.0
10/11/22	126	4.2	0.0	28.3	24.0	13.0
11/11/22	170	3.9	1.4	29.7	27.8	12.2
12/11/22	161	5.0	3.4	30.4	28.8	15.2
13/11/22	150	4.2	22.2	29.8	23.4	16.6
14/11/22	183	8.3	10.6	31.2	28.4	19.2
15/11/22	210	5.1	0.0	36.9	24.8	15.2
16/11/22	226	7.5	0.0	31.7	20.2	10.4
17/11/22	190	7.4	0.0	33.2	20.4	11.0
18/11/22	194	6.4	0.0	32.6	21.4	12.2
19/11/22	132	4.6	0.0	28.3	26.4	11.8
20/11/22	202	11.3	0.0	25.5	29.2	17.0
21/11/22	243	10.5	0.0	37.5	26.8	15.0
22/11/22	238	9.7	0.0	28.7	24.2	11.8
23/11/22	212	5.5	0.0	38.7	28.2	12.6
24/11/22	163	4.6	0.0	31.4	25.8	14.4
25/11/22	150	3.7	0.0	37.5	26.7	16.6
26/11/22	149	4.9	0.0	34.3	22.8	16.0
27/11/22	145	6.0	2.0	30.3	34.0	14.4
28/11/22	159	4.2	8.0	39.3	22.8	16.8
29/11/22	163	5.6	0.0	39.8	24.2	15.4
30/11/22	106	4.0	0.0	30.1	22.8	13.8

Meteorological Conditions - Year to Date

Monitored Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Total Rainfall (mm)	98.2	131.2	353.4	166.2	111.6	16.8	383.6	45.2	122.8	166.4	63.8		
Average Minimum Temperature (°C) at 2m	16.8	18.2	17.7	15.1	12.1	5.6	9.1	6.6	8.8	7.6	9.2		
Average Maximum Temperature (°C) at 2m	33.0	27.8	25.2	23.6	20.3	20.2	16.6	22.8	23.8	28.8	34		
Average Minimum Temperature (°C) at 10m	17.1	18.5	18.1	15.7	12.8	6.2	9.7	6.9	9.6	8.3	9.7		
Average Maximum Temperature (°C) at 10m	31.9	26.7	24.4	23.0	19.8	19.9	16.3	22.3	23.0	28.2	33.4		
Average Sigma Theta	34.6	34.8	33.5	30.5	31.1	33.8	30.8	30.0	31.9	30.8	32.8		
Average Solar Radiation (W/m ²)	207.9	181.7	129.8	123.0	93.6	97.7	85.4	116.6	138.3	155.8	240.4		
Average Relative Humidity (%)	75.0	73.0	80.0	76.2	75.0	62.9	73.0	66.0	71.0	71.0	61.0		

Blasting

Monitoring Frequency: Each Blast

Blast Monitoring Completed By: Orica (Blast 1 to 12)

MAXAM (Blast 13 onwards)

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	0.60	100.8	0.06	NM	NM	Nil Trigger on monitor at bottom wheel wash
2A & 2B	1	February	15:55:00	Stage 2A	103.9	0.70	101.4	0.06	NM	NM	
3	14	February	14:31:01	Stage 1C	NT	NT	109.8	0.18	NM	NM	
4	28	February	15:54:47	Stage 2A	NT	NT	NT	NT	NM	NM	Nil trigger on any blast monitors
5	3	March	14:27:00	Stage 1C	106.0	0.08	NT	NT	NM	NM	
6	23	March	15:05:00	Stage 2A	102.2	1.01	NT	NT	NM	NM	
7	12	April	14:35:53	Stage 2B1	107.6	0.16	NT	NT	NM	NM	
8	27	April	15:48:12	Stage 2A	104.2	0.94	NT	NT	NM	NM	
9	9	May	14:39:03	Stage 1C	NT	NT	99.2	0.30	NM	NM	
10	6	June	14:52:32	Stage 1C	NT	NT	91.6	NT	NM	NM	
11	22	June	13:42:18	Stage 1C	NT	NT	103.2	0.28	NM	NM	
12	15	July	14:00:00	Stage 1C	NT	NT	NT	NT	NM	NM	Nil trigger on any blast monitors
13	29	July	12:04:28	Stage 1C	102.7	0.08	NT	NT	NM	NM	
14	18	August	1:20:00	Stage 2B-2	NT	NT	NT	NT	NM	NM	Nil trigger on any blast monitors
15	31	August	12:31:00	Stage 1C	NT	NT	NT	NT	NM	NM	Nil trigger on any blast monitors
16A/B	15	September	1:17:00	Stage 1C	NT	NT	NT	NT	NM	NM	Nil trigger on any blast monitors
17	21	September	12:23:00	Stage 2B3	NT	NT	NT	NT	NM	NM	Nil trigger on any blast monitors
18	5	October	12:49:56	Stage 1C	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 between Blast monitor 1 (McEwen St) and the blast. This monitor recorded 103.6dB(L) overpressure and 0.43mm/s vibration. None of the mandatory blast monitors triggered.

19	10	October	13:00:42	Stage 2B1	NT	NT	NT	NT	NM	NM	The trigger parameters for the blast monitors were reduced to 100dBL and 0.13mm/s to assist in obtaining a reading. An additional monitor was placed halfway between Blast monitor 1 (McEwen St) and the blast. This monitor recorded 107.1dBL overpressure and 0.23mm/s vibration. None of the mandatory blast monitors triggered.
20	18	October	14:33:12	Stage 2B1	97.5	0.34	94.0	0.18	NM	NM	The trigger parameters for the blast monitors were reduced to 100dBL and 0.13mm/s to assist in obtaining a reading. An additional monitor was placed halfway between Blast monitor 1 (McEwen St) and the blast. This monitor recorded 101.9dBL overpressure and 0.72mm/s vibration. None of the mandatory blast monitors triggered.
21	28	October	10:41:13	Stage 2A	103.5	0.33	NT	NT	NM	NM	The trigger parameters for the blast monitors were reduced to 100dBL and 0.13mm/s to assist in obtaining a reading. An additional monitor was placed halfway between Blast monitor 1 (McEwen St) and the blast. This monitor recorded 107.9dBL overpressure and 0.78mm/s vibration. None of the mandatory blast monitors triggered.
22	3	November	14:57:36	Stage 2A	106.1	0.42	103.2	0.26	NM	NM	
23	16	November	15:13:00	Stage 2A	111.8	0.31	110.6	0.28	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	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
October 2022	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)		1		1								
General Waste Bin (20m ³)	1	1	1	1	1		1	1		1	1	
Paper & Cardboard Bin (3m ³)	1	1	2	1	1	2	1	1	2	1		
Shredded Paper Bin (240L)	2		1						3			
Co Mingled Recycling (2 x 240 L)	4	4	4	4	4	4	4	4	4	4	4	
Tonner Cartridges												
Waste Oil (L)	2100					3000						
Scrap Steel (t)												
Timber (m ³)												
Engine Coolant (L)												
Oil Filters (240L bin)		3										
Batteries											18	
Oily Rags (240L bin)												
Aerosols (120L bin)												
Tyres												
Other												
Oily Water (L)							7.3					
Grease Waste (L)												