Boral Cement Marulan
POELA Act 2011 Monitoring Data
February 2024 Report

BORAL CEMENT LIMITED

Marulan South Limestone Mine and Lime Plant

Hume Street,

Marulan South, NSW 2579

Environmental Protection Licence No. 944

https://www.boral.com.au/sites/default/files/media/field_document/230314%20EPL%20944.pdf

Explanation of units of measure:
mg/m^3 = milligrams per cubic metre
g/m2/month = grams per square metre per month
µg/m^3 = micrograms per cubic metre
mg/L = milligrams per litre

Record updated on 11/02/2024

Compliance Summary: **The site is currently compliant with the Licence limits.**

1. Annual Stack Monitoring

Assessable Parameter (mg/m^3)	Licence Limit	**2019-20**	**2020-21**	**2021-22**	**2022-23**
Emission Source: Kiln Stack (EPA identification Number: 11)					
Solid Particulates	**100 mg/m3**	86	39	8.4	43
Nitrogen Oxides	**2,000 mg/m3**	470	240	370	300
Emission Source: Hydrator Stack (EPA identification Number: 12)					
Solid Particles	**100 mg/m3**	9.7	<2.0	<2.0	<2.0

Compliance summary: Marulan plant is compliant with the Licence stack emission limits. The latest Annual Stack Monitoring was undertaken in March 2023.

2. *Ambient air monitoring*

2.1 **Dust Deposition Gauges:** Total Insoluble Matter (g/m^{2}·month)

This test measures the levels of the coarse dust (generated mostly from unsealed roads, raw material handling, open stockpiles, etc.). It is a measure of dust *nuisance* (dust on cars, washing, window panes) in the immediate vicinity of the source, as the heavy dust settles quickly and doesn't travel far. It is not an indication of potential health problems as it doesn't penetrate into the respiratory system due to a large size of dust particles.

Licence limit: Not specified.
The NSW State guideline of 4 g/m^2/month (presented as 12-month rolling average) was adopted as an internal indicator of site performance.

Month	Report received on	Dust Deposition Gauges (g/m2/month 12-month rolling average)		
		EPA ID No. 16 (Stores Paddock Hill)	EPA ID No. 18 (Freddy's Hill)	EPA ID No. 17 (Sub Station)
Jan 2019	20/02/19	13.81	5.45	
Feb 2019	18/03/19	12.86	5.16	
Mar 2019	02/05/19	13.37	4.94	
Apr 2019	29/05/19	13.43	4.41	
May 2019	29/06/19	14.40	4.38	
Jun 2019	26/7/19	14.71	4.52	
July 2019		14.49	4.57	
Aug 2019	20/9/19	14.56	4.61	
Sep 2019	24/10/19	12.15	5.07	
Oct 2019	28/11/19	13.02	4.83	
Nov 2019	23/12/19	11.59	4.38	
Dec 2019	29/1/20	11.66	4.61	
Jan 2020	28/2/20	13.25	4.27	
Feb 2020	31/3/20	13.29	5.85	
Mar 2020	29/4/20	12.75	5.67	
Apr 2020	27/5/20	12.78	5.87	
May 2020	26/6/20	11.94	6.23	
Jun 2020	26/6/20	11.56	7.23	
Jul 2020	27/8/20	11.31	6.85	
Aug 2020	27/9/20	10.93	6.55	
Sep 2020	27/10/20	10.73	7.22	
Oct 2020	30/11/20	9.53	7.56	
Nov 2020	27/1/21	11.07	7.76	
Dec 2020	10/2/21	10.34	7.32	
Jan 2021	17/3/21	8.33	6.87	
Feb 2021	21/4/21	7.47	6.54	

Month	Report received on	Dust Deposition Gauges (g/m2/month 12-month rolling average)		
		EPA ID No. 16 (Stores Paddock Hill)	EPA ID No. 18 (Freddy's Hill)	EPA ID No. 17 (Sub Station)
Mar 2021	28/4/21	7.34	6.57	
April 2021	21/6/21	7.28	6.56	
May 2021	30/6/21	6.91	6.43	
June 2021	11/8/21	6.94	5.71	
July 2021	7/9/21	6.88	5.59	
Aug 21	22/9/21	6.88	5.53	
Sep 21	12/11/21	6.93	5.16	
Oct 21	26/11/21	6.97	5.06	
Nov 21	22/12/21	4.40	6.75	
Dec 21	25/1/22	4.09	6.61	
Jan 22	1/3/22	3.72	6.72	
Feb 22	4/4/22	3.74	5.90	
Mar 22	19/5/22	3.67	5.57	
April 22	11/6/22	3.42	6.05	
May 22	7/7/22	3.39	5.92	
June 22	29/7/22	3.27	5.59	
July 22	2/9/22	3.17	5.54	
Aug 22	28/9/22	2.88	5.40	
Sep 2022	17/11/22	2.75	4.77	
Oct 2022	15/12/22	2.63	4.52	
Nov 2022	09/02/23	2.42	2.66	
Dec 2022	10/02/23	2.29	2.56	
Jan 2023	06/03/23	2.37	2.40	1.41
Feb 2023	12/04/23	2.22	2.19	1.26
Mar 2023	08/05/23	2.46	2.52	1.94
April 2023	29/05/23	2.65	2.28	2.02
May 2023	22/06/23	2.59	2.19	1.96
June 2023	20/07/23	2.77	2.19	1.95
July 2023	22/08/23	2.86	2.15	2.09
Aug 2023	26/09/23	3.00	2.16	2.16
Sep 2023	30/10/23	2.98	1.97	2.26
Oct 2023	20/11/23	3.33	1.88	2.32
Nov 2023	08/01/23	3.60	1.84	2.36
Dec 2023	06/02/24	3.79	2.36	2.32

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Compliance Summary: The site does not have a compliance limit for dust deposition. Elevated results at the two licenced points is generally reflective of their proximity to operations or activities in the surrounding paddocks. The nearest residence monitoring point is now company owned.

The stores paddock hill gauge is located on the limestone premises and is used as an indicator to manage dust from operations. Further analysis of the dust has revealed that the majority of material was organic and likely to have been from windblown paddock grasses and bird depositions.

Nearest Residence monitoring station damaged in extreme weather on the 15/2/2020. No sample was taken for that month. Reading given in any month is an average of the prior 12 months where data available.

2.2 High Volume Air Sampling: PM10 dust fraction (ug/m^3 24 hrs)

This test measures the levels of the fine dust suspended in the air (generated mostly from stack emissions). It is a measure of potential *health effects* (irritation of the respiratory tract) as the small particles can penetrate into the airways and the lungs. Fine dust can persist in the atmosphere for days or even months before it settles and can travel some distance.

Annual Criteria is 25 uq/m^3 and twenty-four hour criteria is 50 uq/m^3

Sampling date	13/12/18	19/12/18	25/12/18	31/12/18	12/01/19	15/01/19	30/01/19	5/02/19
Report date	14/01/18	14/01/18	14/01/18	14/01/18	12/02/19	12/02/19	12/02/19	12/02/19
PM10 (µg/m3)	15.32	22.41	19.62	46.78	18.21	40.30	39.31	27.77

Sampling date	11/02/19	13/02/19	17/02/19	23/02/19	1/03/19	7/03/19	13/03/19	19/03/19
Report date	11/03/19	11/03/19	11/03/19	11/03/19	11/03/19	30/04/19	30/04/19	30/04/19
PM10 (µg/m3)	9.60	20.23	32.06	76.20	18.30	56.73	53.22	6.86

Sampling date	25/03/19	31/03/19	06/04/19	12/04/19	18/04/19	24/04/19	30/04/19	06/05/19
Report date	30/04/19	30/04/19	30/04/19	20/05/19	20/05/19	20/05/19	20/05/19	20/05/19
PM10 (µg/m3)	4.58	0.34	12.81	33.58	21.05	24.74	49.05	6.74

Sampling date	12/04/19	18/04/19	24/04/19	30/04/19	05/06/19	11/06/19	17/06/19	23/06/19
Report date	19/06/19	19/06/19	19/06/19	19/06/19	19/06/19	19/06/19	19/07/19	19/07/19
PM10 (µg/m3)	1.18	19.92	11.27	1.42	3.36	16.75	70.1	8.87

Sampling date	29/06/19	05/07/19	11/07/19	17/07/19	23/07/19	29/07/19	04/08/19	10/08/19
Report date	19/07/19	19/07/19	29/09/19	29/09/19	29/09/19	29/09/19	29/09/19	29/09/19
PM10 (µg/m3)	14.68	10.20	21.49	21.42	21.45	21.26	20.69	20.50

Sampling date	16/08/19	22/08/19	28/08/19	03/09/19	09/09/19	15/09/09	21/09/19	27/09/19
Report date	29/09/19	30/10/19	30/10/19	30/10/19	30/10/19	30/10/19	30/10/19	30/10/19
PM10 (µg/m3)	22.03	22.04	21.72	21.51	21.43	21.36	21.80	21.84

Sampling date	03/10/19	09/10/19	15/10/19	21/10/19	27/10/19	2/11/19	8/11/19	14/11/19
Report date	30/10/19	30/10/19	14/1/20	14/1/20	14/1/20	14/1/20	14/1/20	14/1/20
PM10 (µg/m3)	21.52	21.35	21.93	21.85	21.81	21.39	20.94	19.69

Sampling date	20/11/19	26/11/19	02/12/19	08/12/19	14/12/19	20/12/19	26/12/19	1/1/20
Report date	14/1/20	14/1/20	14/1/20	14/1/20	14/1/20	14/1/20	14/1/20	14/1/20
PM10 (µg/m3)	19.61	20.80	20.75	20.56	21.35	23.04	24.64	29.38

Sampling date	7/1/20	13/1/20	19/1/20	25/1/20	31/1/20	6/2/20	12/2/20	18/2/20
Report date	12/2/20	12/2/20	12/2/20	12/2/20	12/2/20	24/3/20	24/3/20	24/3/20
PM10 (µg/m3)	31.22	32.53	32.42	32.39	32.46	38.18	19.41	52.58

Sampling date	24/2/20	1/3/20	7/3/20	13/3/20	19/3/20	24/3/20	31/3/20	6/4/20
Report date	24/3/20	24/3/20	24/3/20	24/3/20	30/4/20	30/4/20	30/4/20	30/4/20
PM10 (µg/m3)	47.42	54.44	48.15	104.76	15.18	34.91	8.22	7.86

Sampling date	12/4/20	18/4/20	24/4/20	27/4/20	30/4/20	1/5/20	4/5/20	6/5/20
Report date	30/4/20	30/4/20	25/5/20	25/5/20	25/5/20	25/5/20	25/5/20	22/6/20
PM10 (µg/m3)	17.61	16.81	12.30	102.64	1.81	1.07	1.64	9.00

Sampling date	12/5/20	18/5/20	24/5/20	30/5/20	5/6/20	11/6/20	17/6/20	23/6/20
Report date	22/6/20	22/6/20	22/6/20	22/6/20	22/6/20	22/6/20	16/7/20	16/7/20
PM10 (µg/m3)	13.33	15.51	0.13	3.45	4.68	3.72	8.11	0.50

Sampling date	29/6/20	5/7/20	11/7/20	20/7/20	21/7/20	23/7/20	29/7/20	4/8/20
Report date	16/7/20	16/7/20	3/9/20	3/9/20	3/9/20	3/9/20	3/9/20	3/9/20
PM10 (µg/m3)	6.51	1.12	31.05	10.14	26.53	8.32	1.88	9.21

Sampling date	5/8/20	10/8/20	16/8/20	22/8/20	28/8/20	3/9/20	9/9/20	15/9/20
Report date	3/9/20	17/9/20	17/9/20	17/9/20	17/9/20	17/9/20	21/10/20	21/10/20
PM10 (µg/m3)	2.56	4.31	2.50	2.20	7.19	22.77	9.64	10.82

Sampling date	12/9/20	27/9/20	3/10/20	7/10/20	9/10/20	15/10/20	21/10/20	27/10/20
Report date	21/10/20	21/10/20	21/10/20	21/10/20	27/11/20	27/11/20	27/11/20	27/11/20
PM10 (µg/m3)	13.71	4.22	11.59	4.25	1.88	32.18	39.59	3.92

Sampling date	2/11/20	8/11/20	14/11/20	20/11/20	26/11/20	2/12/20	4/12/20	8/12/20
Report date	27/11/20	27/11/20	27/11/20	27/11/20	23/12/20	23/12/20	23/12/20	23/12/20
PM10 (µg/m3)	8.22	7.18	8.97	15.71	26.56	20.13	5.79	3.69

Sampling date	14/12/20	20/12/20	22/12/20	26/12/20	1/01/21	5/01/21	7/01/21	13/01/21
Report date	23/12/20	7/1/21	7/1/21	7/1/21	7/1/21	7/1/21	4/3/21	4/3/21
PM10 (µg/m3)	4.13	9.46	7.08	9.96	6.33	8.65	5.23	15.66

Sampling date	19/01/21	25/01/21 to 19/04/21 Results missing due to PM10 unit mechanical failure*.						
Report date	4/3/21							
PM10 (µg/m3)	47.14							

Sampling date	25/04/21	1/05/21	7/05/21	13/05/21	19/05/21	25/05/21	31/05/21	6/6/21
Report date	21/05/21	21/05/21	21/05/21	23/06/21	23/06/21	23/06/21	23/06/21	23/06/21

PM10 (µg/m3)	11.54	27.07	3.86	4.89	13.65	14.99	Failed*	4.78

Sampling date	12/06/21	18/06/21	24/06/21	30/06/21	2/07/21	6/07/21	12/07/21	18/07/21
Report date	3/08/21	3/08/21	3/08/21	3/08/21	3/08/21	3/08/21	3/08/21	17/08/21
PM10 (µg/m3)	1.32	2.26	3.33	7.46	2.14	1.19	4.72	1.48

Sampling date	24/07/21	30/07/21	5/08/21	11/08/21	17/08/21	23/08/21	29/08/21	4/09/21
Report date	17/08/21	17/08/21	17/08/21	21/09/21	21/09/21	21/09/21	21/09/21	21/09/21
PM10 (µg/m3)	2.78	3.54	1.28	0.34	1.73	0.76	4.33	2.12

Sampling date	10/09/21	16/09/21	22/09/21	2/10/21	4/10/21	10/10/21	16/10/21	22/10/21
Report date	26/10/21	26/10/21	26/10/21	26/10/21	26/10/21	12/11/21	12/11/21	12/11/21
PM10 (µg/m3)	3.63	3.20	1.14	0.21	3.09	20.16	12.92	27.57

Sampling date	28/10/21	3/11/21	9/11/21	15/11/21	21/11/21	27/11/21	3/12/21	9/12/21
Report date	12/11/21	12/11/21	15/12/21	15/12/21	15/12/21	15/12/21	15/12/21	5/1/22
PM10 (µg/m3)	30.36	51.97	9.22	5.75	4.00	2.65	17.81	8.64

Sampling date	15/12/21	21/12/21	8/1/22	14/1/22	18/1/22	20/1/22	24/1/22	26/1/22
Report date	5/1/22	5/1/22	17/2/22	17/2/22	17/2/22	17/2/22	17/2/22	17/2/22
PM10 (µg/m3)	24.04	23.42	9.14	25.65	14.05	6.73	17.31	23.68

Sampling date	1/2/22	4/2/22	13/2/22	19/2/22	25/2/22	3/3/22	9/3/22	15/3/22
Report date	17/2/22	17/2/22	15/3/22	15/3/22	15/3/22	15/3/22	28/4/22	28/4/22
PM10 (µg/m3)	26.39	6.01	14.15	13.56	5.85	4.40	4.25	16.07

Sampling date	21/3/22	27/3/22	2/4/22	8/4/22	14/4/22	20/4/22	26/4/22	2/5/22
Report date	28/4/22	28/4/22	28/4/22	11/5/22	11/5/22	11/5/22	11/5/22	21/6/22
PM10 (µg/m3)	20.12	9.11	5.66	3.96	7.89	2.07	9.73	11.00

Sampling date	8/5/22	14/5/22	20/5/22	26/5/22	1/6/22	7/6/22	13/06/22	19/6/22
Report date	21/6/22	21/6/22	21/6/22	21/6/22	21/6/22	21/6/22	13/7/22	13/7/22
PM10 (µg/m3)	1.72	6.59	2.92	11.49	0.72	0.51	0.19	4.93

Sampling date	25/6/22	1/7/22	7/7/22	13/7/22	19/7/22	25/7/22	6/08/22	8/08/22
Report date	13/7/22	13/7/22	10/8/22	10/8/22	10/8/22	10/8/22	20/9/22	20/9/22
PM10 (µg/m3)	0.26	0.26	0.80	0.59	0.45	0.13	0.13	0.13

Sampling date	12/08/22	18/08/22	24/08/22	30/08/22	5/09/22	11/09/22	17/09/22	23/09/22
Report date	20/9/22	20/9/22	20/9/22	20/9/22	20/9/22	10/10/22	10/10/22	10/10/22
PM10 (µg/m3)	0.86	0.20	0.32	2.69	2.83	5.46	6.21	19.55

Sampling date	29/09/22	05/10/22	11/10/22	17/10/22	23/10/22	29/10/22	04/11/22	14/11/22
Report date	10/10/22	10/10/22	09/11/22	09/11/22	09/11/22	09/11/22	14/12/22	14/12/22
PM10 (µg/m3)	6.97	21.02	10.69	12.56	2.06	0.48	9.69	12.94

Sampling date	16/11/22	22/11/22	28/11/22	04/12/22	10/12/22	16/12/22	22/12/22	
Report date	14/12/22	14/12/22	14/12/22	14/12/22	16/1/23	16/1/23	16/1/23	
PM10 (µg/m3)	1.15	0.47	0.41	8.48	21.08	12.15	16.75	

Sampling date	3/1/23	10/1/23	15/1/23	21/01/23	27/01/23	2/02/23	8/2/23	14/02/23

Report date	16/1/23	16/1/23	17/2/23	17/2/23	17/2/23	17/2/23	17/2/23	14/3/23
PM10 (µg/m3)	8.00	27.48	27.65	18.09	14.73	34.08	7.52	33.92

Sampling date	20/02/23	26/02/23	04/03/23	10/03/23	16/03/23	22/03/23	28/03/23	03/04/23
Report date	14/3/23	14/3/23	14/3/23	26/04/23	26/04/23	26/04/23	26/04/23	15/05/23
PM10 (µg/m3)	43.24	27.41	30.29	34.43	37.46	27.22	28.43	9.77

Sampling date	09/04/23	15/04/23	21/04/23	27/04/23	03/05/23	09/05/23	15/05/23	21/05/23
Report date	15/05/23	15/05/23	15/05/23	15/05/23	15/05/23	16/06/23	16/06/23	16/06/23
PM10 (µg/m3)	5.51	17.05	15.70	16.82	9.28	1.09	14.96	2.26

Sampling date	27/05/23	02/06/23	08/06/23	14/06/23	20/06/23	26/06/23	02/07/23	08/07/23
Report date	16/06/23	16/06/23	12/07/23	12/07/23	12/07/23	12/07/23	12/07/23	16/07/23
PM10 (µg/m3)	6.22	15.98	10.57	3.91	0.67	0.96	3.21	4.11

Sampling date	14/07/23	20/07/23	26/07/23	01/08/23	07/08/23	13/08/23	19/08/23	25/09/23
Report date	16/07/23	16/07/23	16/07/23	16/07/23	27/08/23	27/08/23	27/08/23	27/08/23
PM10 (µg/m3)	4.72	9.51	3.55	1.36	6.82	6.68	0.14	6.67

Sampling date	31/08/23	06/09/23	12/09/23	18/09/23	24/09/23	30/09/23	06/10/23	12/10/23
Report date	27/08/23	27/08/23	28/10/23	28/10/23	28/10/23	28/10/23	20/11/23	20/11/23
PM10 (µg/m3)	2.20	4.06	9.47	41.67	13.69	9.23	9.84	31.98

Sampling date	18/10/23	24/10/23	30/10/23	5/11/23	11/11/23	17/11/23	23/11/23	29/11/23
Report date	20/11/23	20/11/23	20/11/23	15/12/23	15/12/23	15/12/23	15/12/23	15/12/23
PM10 (µg/m3)	9.60	32.06	45.49	19.42	23.01	24.34	14.20	12.37

Sampling date	05/12/23	11/12/23	17/12/23	23/12/23	29/12/23	04/01/24		
Report date	15/12/23	25/01/24	25/01/24	25/01/24	25/01/24	25/01/24		
PM10 (µg/m3)	26.28	27.04	26.26	16.08	10.91	12.60		

Compliance Summary: The plant does not have a Licence limit for air-suspended particulate. Sampling is programmed to run every six days, however on occasion the sampler can fail to run which is beyond the control of the site. Where reasonably practicable addition sample runs are undertaken to make up any missed samples. Elevated levels against guidelines are typically the result of adverse events such as dust storms and bushfires.

February 17/02/19 till 23/02/19 a large dust storm coming from a south westerly direction during the sampling period.

March 2019 first half of the month was affected by dust storms and drier conditions.

January 2021 Breakdown of Hi Volume PM10 monitoring station. First sample with new unit 21/5/2021. Samples for PM2.5 and TSP taken during this period.

31/5/21 Machine failed to operate. Frequency to be increased to make up average samples to in every 6 days.

2.3 **High Volume Air Sampling:** PM2.5 dust fraction (ug/m^3 24 hrs)

Annual criteria is 8 uq/m^3 and twenty-four hour criteria is 25 uq/m^3

Sampling date	3/1/23	9/1/23	15/1/23	21/01/23	27/01/23	2/02/23	8/2/23	14/02/23
Report date	16/1/23	16/1/23	17/2/23	17/2/23	17/2/23	17/2/23	17/2/23	14/3/23
PM2.5 (µg/m3)	14.20	18.80	17.67	6.61	3.89	14.80	3.02	7.46

Sampling date	20/02/23	26/02/23	04/03/23	10/03/23	16/03/23	22/03/23	28/03/23	03/04/23
Report date	14/3/23	14/3/23	14/3/23	26/04/23	26/04/23	26/04/23	26/04/23	15/05/23
PM2.5 (µg/m3)	18.31	18.75	6.07	12.68	11.77	6.64	5.24	3.20

Sampling date	09/04/23	15/04/23	21/04/23	27/04/23	03/05/23	09/05/23	15/05/23	21/05/23
Report date	15/05/23	15/05/23	15/05/23	15/05/23	15/05/23	16/06/23	16/06/23	16/06/23
PM2.5 (µg/m3)	2.09	7.31	4.37	6.59	3.74	2.65	12.58	3.36

Sampling date	27/05/23	02/06/23	08/06/23	14/06/23	20/06/23	26/06/23	02/07/23	08/07/23
Report date	16/06/23	16/06/23	12/07/23	12/07/23	12/07/23	12/07/23	12/07/23	16/07/23
PM2.5 (µg/m3)	4.13	4.38	6.72	4.53	1.21	0.27	1.94	0.55

Sampling date	14/07/23	20/07/23	26/07/23	01/08/23	07/08/23	13/08/23	19/08/23	25/09/23
Report date	16/07/23	16/07/23	16/07/23	16/07/23	27/08/23	27/08/23	27/08/23	27/08/23
PM2.5 (µg/m3)	1.44	1.62	8.00	1.16	0.40	0.96	0.21	1.64

Sampling date	31/08/23	06/09/23	12/09/23	18/09/23	24/09/23	30/09/23	06/10/23	12/10/23
Report date	27/08/23	27/08/23	28/10/23	28/10/23	28/10/23	28/10/23	20/11/23	20/11/23
PM2.5 (µg/m3)	0.76	3.03	5.77	19.87	9.40	5.68	5.82	17.25

Sampling date	18/10/23	24/10/23	30/10/23	5/11/23	11/11/23	17/11/23	23/11/23	29/11/23
Report date	20/11/23	20/11/23	20/11/23	15/12/23	15/12/23	15/12/23	15/12/23	15/12/23
PM2.5 (µg/m3)	6.33	18.69	34.43	6.89	15.36	11.77	6.72	6.27

Sampling date	05/12/23	11/12/23	17/12/23	23/12/23	29/12/23	04/01/24		
Report date	15/12/23	25/01/24	25/01/24	25/01/24	25/01/24	25/01/24		
PM2.5 (µg/m3)	14.98	14.26	10.95	7.86	4.56	5.95		

2.4 **High Volume Air Sampling:** TSP dust fraction (ug/m^3 24 hrs)

Annual criteria is 90 uq/m^3

Sampling date	3/1/23	9/1/23	15/1/23	21/01/23	27/01/23	2/02/23	8/2/23	14/02/23
Report date	16/1/23	16/1/23	17/2/23	17/2/23	17/2/23	17/2/23	17/2/23	14/3/23
TSP (µg/m3)	27.91	24.06	43.04	34.98	31.98	34.49	13.79	68.27

Sampling date	20/02/23	26/02/23	04/03/23	10/03/23	16/03/23	22/03/23	28/03/23	12/04/23
Report date	14/3/23	14/3/23	14/3/23	26/04/23	26/04/23	26/04/23	26/04/23	15/05/23
TSP0 (µg/m3)	68.01	46.39	57.11	91.30	52.22	69.89	44.82	7.64

Sampling date	13/04/23	15/04/23	21/04/23	27/04/23	03/05/23	11/05/23	15/05/23	21/05/23
Report date	15/05/23	15/05/23	15/05/23	15/05/23	15/05/23	16/06/23	16/06/23	16/06/23
TSP (µg/m3)	8.95	39.42	35.59	47.19	16.91	25.67	16.07	5.60

Sampling date	27/05/23	02/06/23	08/06/23	14/06/23	20/06/23	26/06/23	02/07/23	08/07/23
Report date	16/06/23	16/06/23	12/07/23	12/07/23	12/07/23	12/07/23	12/07/23	16/07/23
TSP (µg/m3)	3.94	38.75	49.76	0.69	1.69	7.18	31.83	6.62

Sampling date	14/07/23	20/07/23	26/07/23	01/08/23	07/08/23	13/08/23	19/08/23	25/09/23
Report date	16/07/23	16/07/23	16/07/23	16/07/23	27/08/23	27/08/23	27/08/23	27/08/23
TSP (µg/m3)	13.03	20.85	11.88	6.03	5.58	2.99	0.12	35.68

Sampling date	31/08/23	06/09/23	12/09/23	18/09/23	24/09/23	30/09/23	06/10/23	12/10/23
Report date	27/08/23	27/08/23	28/10/23	28/10/23	28/10/23	28/10/23	20/11/23	20/11/23
TSP (µg/m3)	6.27	11.03	18.94	23.19	19.28	13.79	13.79	78.47

Sampling date	18/10/23	24/10/23	30/10/23	5/11/23	11/11/23	17/11/23	23/11/23	29/11/23
Report date	20/11/23	20/11/23	20/11/23	15/12/23	15/12/23	15/12/23	15/12/23	15/12/23
TSP (µg/m3)	25.52	3.73	5.93	5.08	6.91	6.92	5.31	8.36

Sampling date	05/12/23	11/12/23	17/12/23	23/12/23	29/12/23	04/01/24		
Report date	15/12/23	25/01/24	25/01/24	25/01/24	25/01/24	25/01/24		
TSP (µg/m3)	4.13	1.86	3.02	3.61	23.23	18.40		

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3. *Blast monitoring*:

Limits:
* The overpressure level from blasting operations at the premises must not exceed 120dB (Lin Peak) at any time
* The overpressure level from blasting operations at the premises must not exceed 115dB (Lin Peak) for more than 5% of the total number of blasts over each reporting period
* Ground vibration peak particle vector from the blasting operations at the premises must not exceed 10mm/sec at any time
* Ground vibration peak particle vector from the blasting operations at the premises must not exceed 5mm/sec for more than 5% of the total number of blasts over each reporting period
* Blast monitoring overpressure and ground vibration is measured at the 2 locations. – 643 Marulan South Rd and the Substation.

Date	Time	Airblast Overpressure Substation	Ground Vibration Substation	Airblast Overpressure 643 Marulan South Rd	Ground Vibration 643 Marulan South Rd	Compliant
		dB(Lin Peak)	*(mm/s)*	*dB(Lin Peak)*	*(mm/s)*	
11-Jan-23	14:37	No trigger	No trigger	97.9	0.13	Yes
12-Jan-23	13:50	No trigger	No trigger	97.9	0.17	Yes
16-Jan-23	14:55	No trigger	No trigger	103.8	0.39	Yes
23-Jan-23	15:37	91.5	0.14	95.8	0.17	Yes
25-Jan-23	13:16	98.9	0.19	97.4	0.35	Yes
13-Feb-23	3.40PM	No trigger	No trigger	98.8	0.16	Yes
17-Feb-23	9.54AM	91.3	0.16	No trigger	No trigger	Yes
20-Feb-23	1.01PM	94	0.19	92.1	0.28	Yes
22-Feb-23	3.35PM	101.9	0.13	102.7	0.13	Yes
01-Mar-23	1.16PM	102.8	0.14	96.4	0.21	Yes
02-Mar-23	3.43PM	94	0.22	101.9	0.26	Yes
08-Mar-23	2.12PM	104.9	0.21	107.4	0.12	Yes
13-Mar-23	12.59PM	95.9	0.22	94.7	0.2	Yes
15-Mar-23	12.08PM	88	0.22	101.9	0.2	Yes
20-Mar-23	1.57PM	91.5	0.17	103.4	0.14	Yes
30-Mar-23	3.20PM	103.5	0.24	94.9	0.34	Yes
03-Apr-23	2.05PM	105.9	0.31	102.6	0.24	Yes
13-Apr-23	1.42PM	105.2	0.26	102.5	0.2	Yes
17-Apr-23	1.01PM	101.7	No trigger	No trigger	No trigger	Yes
19-Apr-23	1.36PM	101.7	0.19	96.1	0.17	Yes
20-Apr-23	1.31PM	100.7	0.21	No trigger	No trigger	Yes

26-Apr-23	12.41PM	106.7	No trigger	No trigger	No trigger	Yes
01-May-23	3.39PM	98.2	0.15	No trigger	No trigger	Yes
03-May-23	1.24PM	104.2	0.19	104.6	0.16	Yes
08-May-23	2.53PM	104.6	0.19	105.4	0.27	Yes
09-May-23	2.55PM	97.4	0.13	No trigger	No trigger	Yes
11-May-23	11.49AM	93.5	0.15	No trigger	No trigger	Yes
15-May-23	1.59PM	94.7	0.13	99.5	0.17	Yes
17-May-23	12.34PM	95.7	0.13	No trigger	No trigger	Yes
22-May-23	10.16AM	96.6	0.13	96.9	0.13	Yes
25-May-23	2.04PM	113.4	0.13	98.7	0.27	Yes
29-May-23	3.37PM	106.4	0.22	101.8	0.18	Yes
01-Jun-23	1.18PM	108.9	0.13	100.8	0.22	Yes
05-Jun-23	10.43AM	104.6	0.24	100	0.22	Yes
08-Jun-23	12.28PM	88.6	0.12	NO TRIGGER	NO TRIGGER	Yes
14-Jun-23	1.33PM	108.6	0.14	92.6	0.19	Yes
15-Jun-23	4.06PM	97.4	0.13	97	0.45	Yes
20-Jun-23	11.46AM	96.6	0.14	99.6	0.17	Yes
22-Jun-23	4.40PM	88.6	0.12	91.1	0.17	Yes
26-Jun-23	1.10PM	118.5	0.24	119.1	0.28	Yes
29-Jun-23	2.00PM	102.6	0.13	94.9	0.17	Yes
03-Jul-23	11.12AM	99.5	0.21	98.1	0.19	Yes
06-Jul-23	3.32PM	97.4	0.13	No trigger	No trigger	Yes
10-Jul-23	1.15PM	108	0.13	104.9	0.28	Yes
12-Jul-23	11.13AM	100.7	0.13	No trigger	No trigger	Yes
13-Jul-23	11.26AM	102.2	0.13	No trigger	No trigger	Yes
19-Jul-23	2.35PM	104.9	0.25	96.9	0.23	Yes
20-Jul-23	1.40PM	105.2	0.19	96.2	0.17	Yes
24-Jul-23	2.33PM	90.6	0.13	94.3	0.19	Yes
27-Jul-23	11.35AM	103.5	0.24	95.9	0.29	Yes
28-Jul-23	11.35AM	103.5	0.24	95.9	0.29	Yes
02-Aug-23	11.53AM	102.2	0.27	99.2	0.19	Yes
03-Aug-23	12.04PM	104.6	0.16	97.6	0.24	Yes
09-Aug-23	12.36PM	97.4	0.13	93.2	0.2	Yes
10-Aug-23	4.12PM	110.1	0.19	107	0.3	Yes
14-Aug-23	3.09PM	101.2	0.22	94.8	0.15	Yes
16-Aug-23	12.40PM	88.6	0.13	96.8	0.31	Yes
21-Aug-23	3.31PM	98.2	0.16	92.3	0.13	Yes
23-Aug-23	12.48PM	103.5	0.3	101.5	0.28	Yes
24-Aug-23	12.48PM	103.5	0.3	101.5	0.28	Yes
28-Aug-23	1.44PM	94.7	0.27	99.9	0.2	Yes
30-Aug-23	12.44PM	103.5	0.24	103.1	0.21	Yes
31-Aug-23	12.35PM	102.6	0.45	100.8	0.56	Yes
06-Sep-23	3.35PM	100.7	0.14	No trigger	No trigger	Yes
11-Sep-23	12.31PM	90.6	0.28	99.2	0.39	Yes
13-Sep-23	11.17AM	90.6	0.14	No trigger	No trigger	Yes
18-Sep-23	12.10PM	0.06	0.15	No trigger	No trigger	Yes
20-Sep-23	12.26PM	0.05	0.14	No trigger	No trigger	Yes
25-Sep-23	1.01PM	0.05	0.14	94.7	0.2	Yes
26-Sep-23	12.43PM	0.05	0.14	No trigger	No trigger	Yes
27-Sep-23	12.43PM	0.05	0.14	No trigger	No trigger	Yes

04-Oct-23	3.25PM	0.01	0.06	No trigger	No trigger	Yes
05-Oct-23	12.36PM	97.4	0.09	No trigger	No trigger	Yes
09-Oct-23	1.54PM	90.6	0.12	92.1	0.16	Yes
11-Oct-23	12.53PM	90.6	0.11	No trigger	No trigger	Yes
12-Oct-23	12.53PM	90.6	0.11	No trigger	No trigger	Yes
16-Oct-23	2.26PM	111.1	0.05	94.2	0.13	Yes
18-Oct-23	01.16PM	92.2	0.12	NO TRIGGER	NO TRIGGER	Yes
23-Oct-23	2.41PM	98.2	0.14	99.2	0.13	Yes
25-Oct-23	10.35AM	113.9	0.16	NO TRIGGER	NO TRIGGER	Yes
30-Oct-23	1.31PM	120.1	0.18	107.6	0.17	Yes
01-Nov-23	11.54AM	90.6	0.15	NO TRIGGER	NO TRIGGER	Yes
02-Nov-23	11.55AM	90.6	0.17	96.2	0.23	Yes
06-Nov-23	2:40PM	90.6	0.06	93.5	0.14	Yes
08-Nov-23	1:59PM	90.6	0.06	NO TRIGGER	NO TRIGGER	Yes
13-Nov-23	2:08pm	NO TRIGGER	NO TRIGGER	NO TRIGGER	NO TRIGGER	Yes
15-Nov-23	2:06pm	NO TRIGGER	NO TRIGGER	NO TRIGGER	NO TRIGGER	Yes
16-Nov-23	1:30pm	NO TRIGGER	NO TRIGGER	NO TRIGGER	NO TRIGGER	Yes
20-Nov-23	4.35PM	NO TRIGGER	NO TRIGGER	NO TRIGGER	NO TRIGGER	Yes
23-Nov-23	1.02PM	NO TRIGGER	NO TRIGGER	NO TRIGGER	NO TRIGGER	Yes
27-Nov-23	3.39pm	NO TRIGGER	NO TRIGGER	NO TRIGGER	NO TRIGGER	Yes
30-Nov-23	1.40PM	101.1	0.2	NO TRIGGER	NO TRIGGER	Yes
04-Dec-23	3:03pm	NO TRIGGER	NO TRIGGER	NO TRIGGER	NO TRIGGER	Yes
06-Dec-23	2:35pm	97.6	0.11	NO TRIGGER	NO TRIGGER	Yes
11-Dec-23	1:01pm	105.3	0.15	NO TRIGGER	NO TRIGGER	Yes
14-Dec-23	1.02pm	96	0.14	NO TRIGGER	NO TRIGGER	Yes
18-Dec-23	12:36pm	91.6	0.1	NO TRIGGER	NO TRIGGER	Yes
20-Dec-23	3:38pm	NO TRIGGER	NO TRIGGER	NO TRIGGER	NO TRIGGER	Yes
21-Dec-23	12.32pm	98.3	0.08	NO TRIGGER	NO TRIGGER	Yes
10-Jan-24	3:40pm	94.1	0.11	98.8	0.17	Yes
11-Jan-24	12:06pm	101.1	0.14	97.7	0.14	Yes
15-Jan-24	12:12pm	97.3	0.18	103.6	0.09	Yes
18-Jan-24	3.27pm	88.1	0.18	106.4	0.17	Yes
22-Jan-24	1:28pm	NO TRIGGER	NO TRIGGER	92.9	0.1	Yes
25-Jan-24	12:43pm	88.1	0.9	90.1	0.15	Yes
01-Feb-24	1:00pm	101.6	0.15	NO TRIGGER	NO TRIGGER	Yes
07-Feb-24	1:15pm	108.9	0.19	103	0.2	Yes
08-Feb-24	11:20am	100.6	0.17	NO TRIGGER	NO TRIGGER	Yes
09-Feb-24	11:20am	100.6	0.17	NO TRIGGER	NO TRIGGER	Yes

4. *Water monitoring*: *North Pit Bore*

Current Licence requirements cover quarterly monitoring of groundwater quality in the North Pit Bore until March 2020 and Then WM05 Bore, (both bores were/are now EPA Identification No. 13).

Licence limits: Not specified.
The NSW State guidelines: Typical discharge limits are as follows:
Oil and Grease: 10 milligrams per litre
Total Suspended Solids: 30-50 milligrams per litre.

Sampling date	Report received on	Report published on	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)
12/03/19	29/03/19		<1	4
26/06/19	04/09/19	04/09/19	<5	21
23/10/19	12/11/19	04/11/19	<5	54
17/12/19	7/2/20	14/1/20	<5	28
24/3/20	7/4/20	7/4/20	<5	5
Note: North Pit Bore is no longer operational as of the 24/3/2020. Replaced in EPL by Ground Water Monitoring Point labelled “WM05” on map “EPL 944 Ground Water Monitoring Point Location Change – December 2020” (DOC20/1014984)				
29/9/20	8/10/20	8/10/20	<5	<5
9/12/20	18/12/20	18/12/20	<5	11
31/3/21	22/6/21	9/04/21	<5	<5
15/6/21	5/7/21	5/7/21	<5	14
30/9/21	11/10/21	11/10/21	<5	11
13/12/21	10/1/22	23/12/21	<5	15
24/3/22	1/6/22	31/3/22	<5	11
8/6/22	26/7/22	20/6/22	<5	14
13/09/22	26/09/22	26/09/22	<5	18
21/12/22	06/01/23	11/1/23	5	48
29/03/23	29/3/23	09/04/23	<5	10
21/06/23	22/6/23	07/07/23	<5	10
6/09/23	15/09/23	04/09/23	<5	23
4/12/23	18/12/23	18/12/23	<5	26

Compliance Summary: The plant does not have Licence limits for water parameters. It is however compliant with the adopted NSW guideline values.

5. *Noise monitoring*

Quarterly noise monitoring is conducted as per condition L4 of EPL 944.

Date Sampled: 28/03/23
Date Received: 29/05/23
Meteorological Conditions: Wind speeds up to 6.5m/s at 10m above ground level representative of noise enhancing meteorological conditions

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 15 minute (dB(A))**	**Daytime**	
R6	28/03/23	<35	40	yes
R8	28/03/23	<35	40	yes
R9	28/03/23	<35	40	yes
R12	28/03/23	<35	40	yes
R17	28/03/23	<35	40	yes

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 15 minute (dB(A))**	**Evening**	
R6	28/03/23	<35	35	yes
R8	28/03/23	<35	35	yes
R9	28/03/23	<35	36	yes
R12	28/03/23	31	35	yes
R17	28/03/23	<35	35	yes

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 15 minute (dB(A))**	**Night**	
R6	28/03/23	<35	35	yes
R8	28/03/23	<35	35	yes
R9	28/03/23	<35	36	yes
R12	28/03/23	30	35	yes
R17	28/03/23	<35	35	yes

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 1 minute (dB(A))**	**Night**	
R6	28/03/23	<45	52	yes
R8	28/03/23	<52	52	yes
R9	28/03/23	<52	52	yes
R12	28/03/23	<45	52	yes
R17	28/03/23	<45	52	yes

Date Sampled: 07/06/23
Date Received: 30/06/23
Meteorological Conditions: Wind speeds up to 6.2m/s at 10m above ground level representative of noise enhancing meteorological conditions

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 15 minute (dB(A))**	**Daytime**	
R6	07/06/23	<35	40	yes
R8	07/06/23	<35	40	yes
R9	07/06/23	<35	40	yes
R12	07/06/23	<35	40	yes
R17	07/06/23	<30	40	yes

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 15 minute (dB(A))**	**Evening**	
R6	07/06/23	<35	35	yes
R8	07/06/23	<35	35	yes
R9	07/06/23	<35	36	yes
R12	07/06/23	<30	35	yes
R17	07/06/23	<30	35	yes

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 15 minute (dB(A))**	**Night**	
R6	07/06/23	<35	35	yes
R8	07/06/23	<35	35	yes
R9	07/06/23	<35	36	yes
R12	07/06/23	<35	35	yes
R17	07/06/23	<30	35	yes

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 1 minute (dB(A))**	**Night**	
R6	07/06/23	<52	52	yes
R8	07/06/23	<52	52	yes
R9	07/06/23	<52	52	yes
R12	07/06/23	<52	52	yes
R17	07/06/23	<52	52	yes

Date Sampled: 27/09/23-28/09/23
Date Received: 25/10/23
Meteorological Conditions: Wind speeds up to 3.2m/s at 10m above ground level representative of noise enhancing meteorological conditions

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 15 minute (dB(A))**	**Daytime**	
R6	27/09/23	<40	40	yes
R8	27/09/23	<40	40	yes
R9	27/09/23	<40	40	yes
R12	27/09/23	<40	40	yes
R17	27/09/23	<40	40	yes

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 15 minute (dB(A))**	**Evening**	
R6	27/09/23	<35	35	yes
R8	27/09/23	<35	35	yes
R9	27/09/23	<36	36	yes
R12	27/09/23	<35	35	yes
R17	27/09/23	<35	35	yes

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 15 minute (dB(A))**	**Night**	
R6	28/09/23	<35	35	yes
R8	27/09/23	<35	35	yes
R9	27/09/23	<36	36	yes
R12	28/09/23	<35	35	yes
R17	27/09/23	<35	35	yes

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 1 minute (dB(A))**	**Night**	
R6	28/09/23	<52	52	yes
R8	27/09/23	<52	52	yes
R9	27/09/23	<52	52	yes
R12	28/09/23	<52	52	yes
R17	27/09/23	<52	52	yes

Date Sampled: 12/12/23-13/12/23
Date Received: 21/12/23
Meteorological Conditions: Wind speeds up to 4.3 m/s at 10m above ground level representative of noise enhancing meteorological conditions

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 15 minute (dB(A))**	**Daytime**	
R6	12/12/23	<40	40	yes
R8	12/12/23	<40	40	yes
R9	12/12/23	<40	40	yes
R12	12/12/23	<40	40	yes
R17	12/12/23	<40	40	yes

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 15 minute (dB(A))**	**Evening**	
R6	12/12/23	<35	35	yes
R8	12/12/23	<35	35	yes
R9	12/12/23	<36	36	yes
R12	12/12/23	<35	35	yes
R17	12/12/23	<35	35	yes

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 15 minute (dB(A))**	**Night**	
R6	13/12/23	<35	35	yes
R8	13/12/23	<35	35	yes
R9	13/12/23	<36	36	yes
R12	13/12/23	<35	35	yes
R17	13/12/23	<35	35	yes

Receiver	***Date***	***Site Noise Level Contribution***	***Operational Criteria (dB(A))***	***Compliant***
EPL ID		**LAeq, 1 minute (dB(A))**	**Night**	
R6	13/12/23	<52	52	yes
R8	13/12/23	<52	52	yes
R9	13/12/23	<52	52	yes
R12	13/12/23	<52	52	yes
R17	13/12/23	<52	52	yes

REPORT ENDS