



**AIR, WATER, NOISE AND METEOROLOGICAL MONITORING
AUGUST 2021**

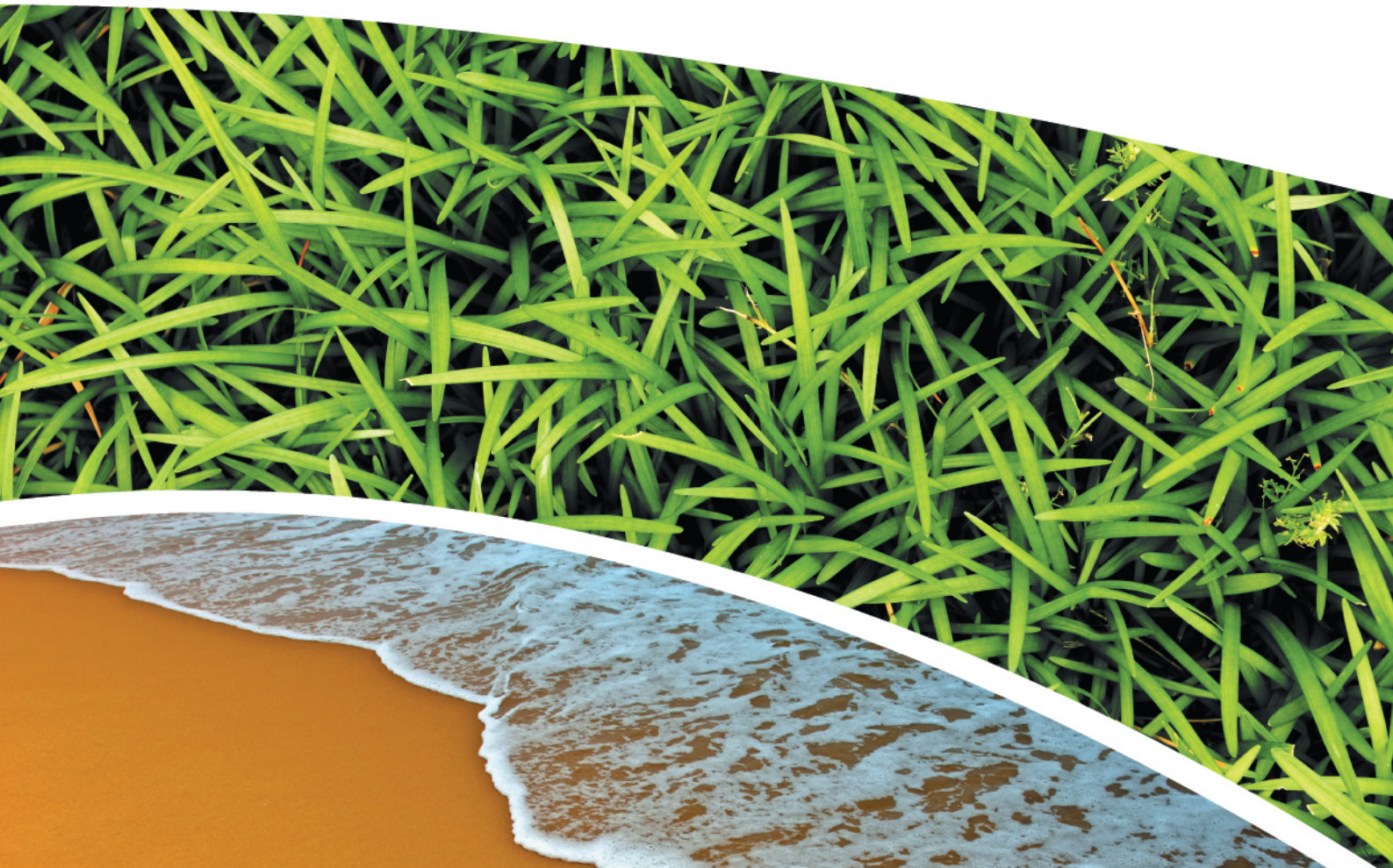
PINE DALE MINE, BLACKMANS FLAT

Prepared for Pine Dale Mine Community Consultative Committee

Prepared by RCA Australia

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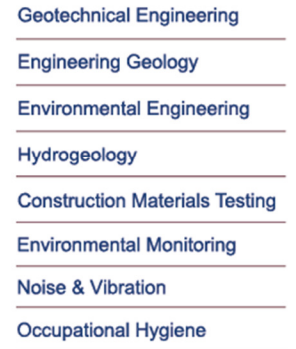
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27 September 2021

Enhance Place Pty Ltd
PO Box 202
WALLERWANG NSW 2845

Attention: Mr Graham Goodwin



**REPORT COMPILED FOR COMMUNITY CONSULTATIVE COMMITTEE
DETAILING AIR, WATER AND METEOROLOGICAL MONITORING AT PINE DALE
AUGUST 2021**

1 INTRODUCTION

This report presents the results of air, water, noise and meteorological monitoring undertaken at Pine Dale Mine, Blackmans Flat during the month of August 2021.

Air and water samples were collected by RCA Laboratories – Environmental staff. Meteorological data was obtained from the Mount Piper Power Station weather station due to an internal battery failure of the site weather station.

This report satisfies the requirements to monitor environmental parameters as presented in the Pine Dale Mine Environmental Protection Licence (EPL 4911).

2 ANALYTICAL PROCEDURES

The analytical procedures used by RCA Laboratories – Environmental (NATA Accreditation number 9811) are based on established internationally recognised procedures such as APHA and Australian Standards. Analytical test methods are detailed in **Table 1**.

Table 1 Analytical Test Methods

Analysis	Method	Units	Analysing Laboratory	NATA Accreditation Status
Determination of Suspended Particulate Matter	ENV-LAB003	µg/m ³	RCA Laboratories – Environmental	NATA Analysis
Determination of Particulate Matter – Deposited Matter	ENV-LAB004	g/m ² per month	RCA Laboratories – Environmental	NATA Analysis
pH	ENV-LAB006	pH	RCA Laboratories – Environmental	NATA Analysis
Conductivity	ENV-LAB010	µS/cm	RCA Laboratories – Environmental	NATA Analysis
Total Suspended Solids	ENV-LAB009	mg/L	RCA Laboratories – Environmental	NATA Analysis
Turbidity	ENV-LAB037	NTU	RCA Laboratories - Environmental	NATA Analysis
Oil and Grease	ENV-LAB022	mg/L	RCA Laboratories - Environmental	Non-NATA Analysis
Major Anions (Alkalinity, Cl, SO ₄)	ED037, ED041, ED045	mg/L	ALS	NATA Analysis
Major Cations (Ca, Mg, Na, K)	ED093	mg/L	ALS	NATA Analysis
Dissolved Metals	EG020F	mg/L	ALS	NATA Analysis

ALS Environmental has been used to obtain analysis of anions, cations and dissolved metals (NATA Accreditation number 825).

3 WATER MONITORING RESULTS

3.1 GROUNDWATER

A total of two (2) groundwater samples were collected from within the Pine Dale Mine site during August 2021. Water quality analysis results are shown in **Table 2**. Groundwater monitoring locations are shown in **Appendix A**.

Table 2 Groundwater Analysis Results

ANALYSIS	UNITS	P6	P7
Sample Number	-	08216880012	08216880013
Date Sampled	-	02/08/21	02/08/21
Time Sampled	-	15:00	15:57
Depth to Water from Surface	m	23.05	5.49
Water Level (AHD)	m	893.90	888.91
Temperature	°C	14.2	13.7
pH	pH	6.63	6.44
Conductivity	µS/cm	1460	812
Turbidity	NTU	66	
Dissolved Oxygen	mg/L	2.6	
Total Suspended Solids	mg/L	54.0	
Oil and Grease	mg/L	<5	
Bicarbonate Alkalinity (CaCO ₃)	mg/L	103	230
Total Alkalinity (CaCO ₃)	mg/L	103	230
Sulphate (as SO ₄)	mg/L	624	73
Chloride	mg/L	44	85
Calcium	mg/L	126	44
Magnesium	mg/L	58	46
Sodium	mg/L	60	46
Potassium	mg/L	20	7
Cobalt (dissolved)	mg/L	0.046	
Manganese (dissolved)	mg/L	2.24	
Nickel (dissolved)	mg/L	0.084	
Zinc (dissolved)	mg/L	0.028	
Iron (dissolved)	mg/L	28.4	0.12
Trigger Values			
pH trigger level ^a	pH	6.2 – 8.0	6.3 – 8.0
Conductivity trigger level	µS/cm	1180	852
Water Level (AHD) ^b	m	887.90	883.28
Revised Trigger Values^c			
pH trigger level ^d	pH	5.6	6.3
Water Level (AHD) ^b	M	887.9	--

■ Indicates analysis was not required.

^a pH trigger value is exceeded if the pH is outside the nominated range.

^b Water Level trigger is exceeded if the AHD water level drops below the nominated trigger level.

^c Proposed trigger values to be used alongside the currently approved trigger values.

^d pH trigger value is exceeded if pH is below the nominated value.

Results shown in **bold** indicates exceedance of trigger value.

Results shown in underline indicates exceedance of revised trigger value.

3.2 SURFACE WATER MONITORING

Quarterly ambient surface water monitoring undertaken during August 2021. Results are shown in **Table 3**. There were no discharges from Pine Dale Mine during August 2021.

Table 3 Quarterly Surface Water Results

Analysis	Units	EPA Point 2 Neubeck's Ck Upstream	EPA Point 3 Neubeck's Ck Downstream	EPA Point 14 Cox's River Downstream
Sample Number	-	082168800010	08216880004	08216880011
Date Sampled	-	02/08/21	02/08/21	02/08/21
Time Sampled	-	14:30	16:15	16:25
Temperature	°C	10.49	10.65	10.08
pH	pH	6.56	7.83	7.58
Conductivity	µS/cm	537	2210	759
Sulfate	NTU	168	998	283
Dissolved Iron	mg/L	<0.05	0.34	0.06
Total Suspended Solids	mg/L	<5	<5	<5
Turbidity	mg/L	2.0	3.9	2.7
Trigger Values				
pH ^a	pH	7.1 – 8.0	6.4 – 8.0	7.5 – 8.0
Conductivity	µS/cm	2055	2223	1166
Total Suspended Solids	mg/L	30	30	30
Proposed Trigger Values^c				
pH trigger level ^a	pH	6.5 – 8.0	6.5 – 8.0	6.5 – 8.0
Electrical conductivity (µS/cm)	µS/cm	5592	5592	5592
TSS (mg/L)	mg/L	25	25	25

Results shown in **bold** indicates exceedance of trigger value

Results shown in underline indicates exceedance of revised trigger value.

^c Proposed trigger values to be used alongside the currently approved trigger values.

4 AIR QUALITY RESULTS

4.1 DEPOSITIONAL DUST MONITORING

The depositional dust monitoring exposure period for August was 2 July to 3 August 2021. Depositional dust gauges at this facility conform to AS/NZS 3580.10.1:2016 and AS/NZS 3580.1.1:2016. The August 2021 exposure period was 32 days which is within the 30 ± 2 days dust exposure period stipulated in AS/NZS 3508.10.1:2016. Depositional dust monitoring results are shown in **Table 4**. Depositional dust monitoring locations are shown in **Appendix A**.

Table 4 *Depositional Dust Monitoring*

Deposit Gauge	Number of Days	Notes	Insoluble Solids	Ash	Combustible Matter
D1	32	IT	0.4	0.2	0.2
D3	32	I	0.5	0.3	0.2
D4	32	I	0.1	<0.1	0.1
D5	32	I	0.2	<0.1	0.2
D6	32	Nil	0.1	0.1	<0.1

All units are g/m²/month

I – Insects (e.g., Ants, Spiders)

T – Tree litter (leaves, gumnuts)

Nil – no foreign material

4.1.1 ALLOWABLE DEPOSITIONAL DUST LIMITS

The EPA long term (annual average) deposited dust limit is 4g/m² per month. The rolling annual average depositional dust results for all sites within the period (September 2020 – August 2021) are in compliance with consent conditions. The annual average for dust gauges D1, D3, D4, D5 and D6 are all less than or equal to 0.7g/m² per month. Annual averages are shown in the depositional dust gauge graphs provided in **Appendix B**.

5 METEOROLOGICAL MONITORING

Pine Dale Mine records meteorological data continuously via an onsite weather station. The system battery on the Pine Dale weather station failed on the 7th July and no weather data has been able to be obtained from that date until replacement of the battery and reset of the system on the 19 August. Weather data for the month of August has been obtained from the Mount Piper Power Station (MPPS) weather station which is located 3.2km to the west of the Pine Dale weather station. For continuity in the data set, the Mount Piper data has been used for the whole month.

Details of the weather data recorded by the MPPS weather station during the period 1 to 31 August are shown in **Appendix C**.

Wind speeds observed during the month of August 2021 were predominantly between 0.5m/s and 2.1m/s; with the predominant wind direction from the south westerly aspect. Total rainfall recorded at the MPPS weather station was 80.8mm which was slightly less than the amount recorded at Lithgow (Cooerwull) BOM Station (86.5mm).

6 BLASTING RESULTS

No blasting was undertaken during this month as mining operations have ceased since the end of March 2014.

7 NOISE MONITORING RESULTS

Quarterly noise monitoring was not undertaken during August 2021; the next monitoring round is due before the end of September 2021.

8 OPERATIONAL ACTIVITIES

All of the approved minable reserves at the Pine Dale Mine have now been exhausted. Operational mining and the last coal sales ceased as of the end of March 2014.

Pine Dale Mine has been placed in care and maintenance since April 2014. All former operators have been made redundant; however, some statutory positions still remain.

9 SUMMARY

During the month of August 2021 environmental monitoring results were found to be generally in compliance with stipulated criteria with the exception of:

- The electrical conductivity at onsite groundwater location P6 was above the site-specific trigger value.
- pH at EPA Point 2 was below the lower site-specific trigger values.

The revised trigger values do not have a limit for electrical conductivity, as such P6 would be compliant. Under the revised trigger values the pH at EPA Point 2 is compliant.

All depositional dust gauge results are well below the EPA Long Term (annual average) criteria of 4g/m².month based upon a rolling average of the past 12 months.

Meteorological monitoring was not undertaken between 1 and 18 August due to system battery failure on the weather station. Data was not able to be obtained until the battery was replaced and system reset. Weather data from the nearby MPPS has been used for presentation of meteorological conditions.

Quarterly noise monitoring was not undertaken during August 2021; the next monitoring round is due before the end of September 2021.

Pine Dale Mine ceased operation in March 2014 and therefore no blasting occurred at the site.

10 LIMITATIONS

This report has been prepared for Enhance Place Pty Ltd in accordance with an agreement with RCA Australia (RCA). The services performed by RCA have been conducted in a manner consistent with that generally exercised by members of its profession and consulting practice.

This report has been prepared for the sole use of Enhance Place. The report may not contain sufficient information for purposes of other uses or for parties other than Enhance Place. This report shall only be presented in full and may not be used to support objectives other than those stated in the report without written permission from RCA Australia.

The information in this report is considered accurate at the date of issue with regard to the current conditions of the site. Conditions can vary across any site that cannot be explicitly defined by investigation.

Environmental conditions including contaminant concentrations can change in a limited period of time. This should be considered if the report is used following a significant period of time after the date of issue.

Yours faithfully

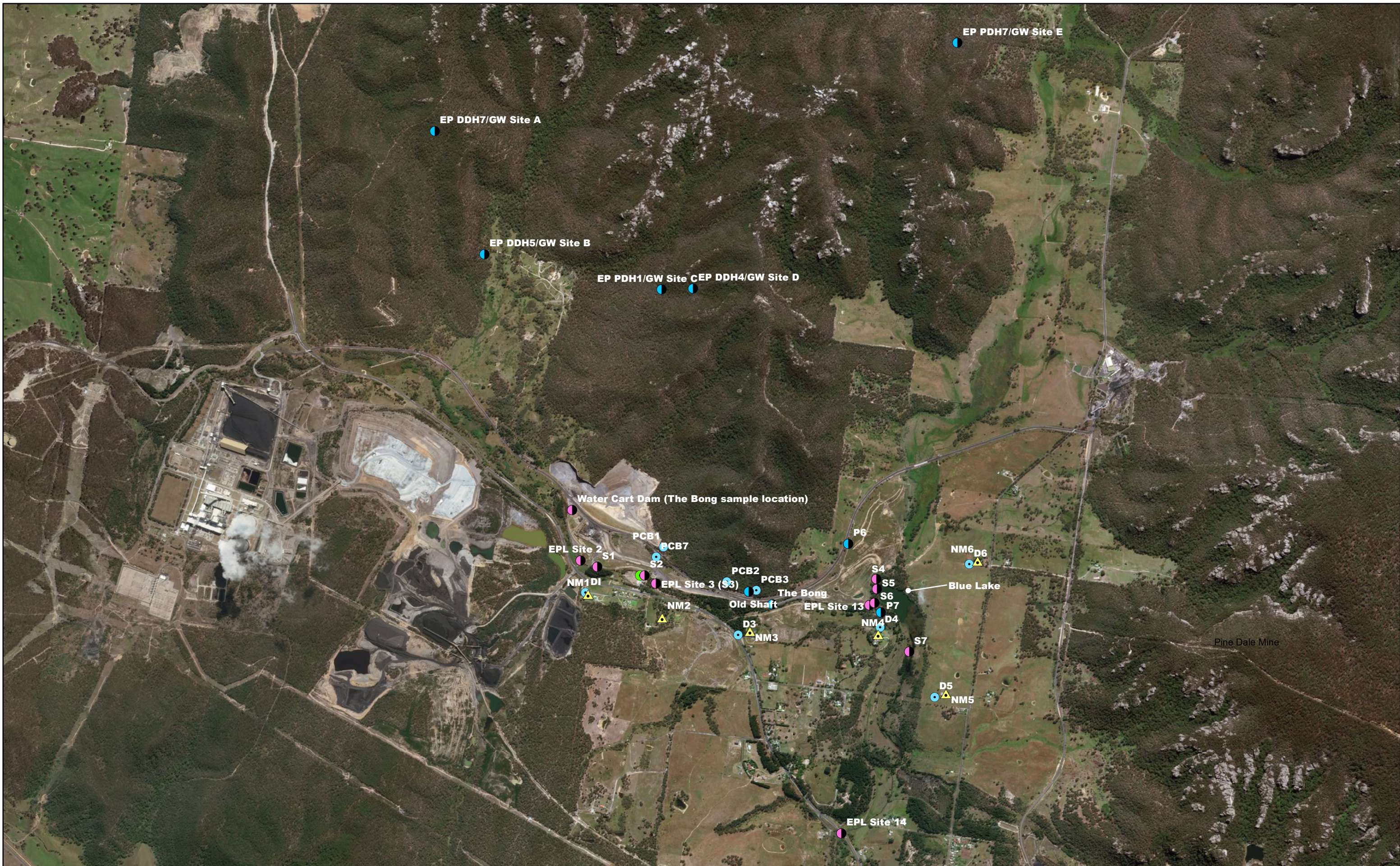
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Kirsty Nealon
Senior Environmental Scientist

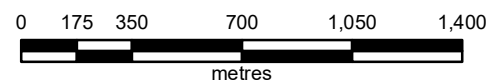
Appendix A

Monitoring Locations



LEGEND

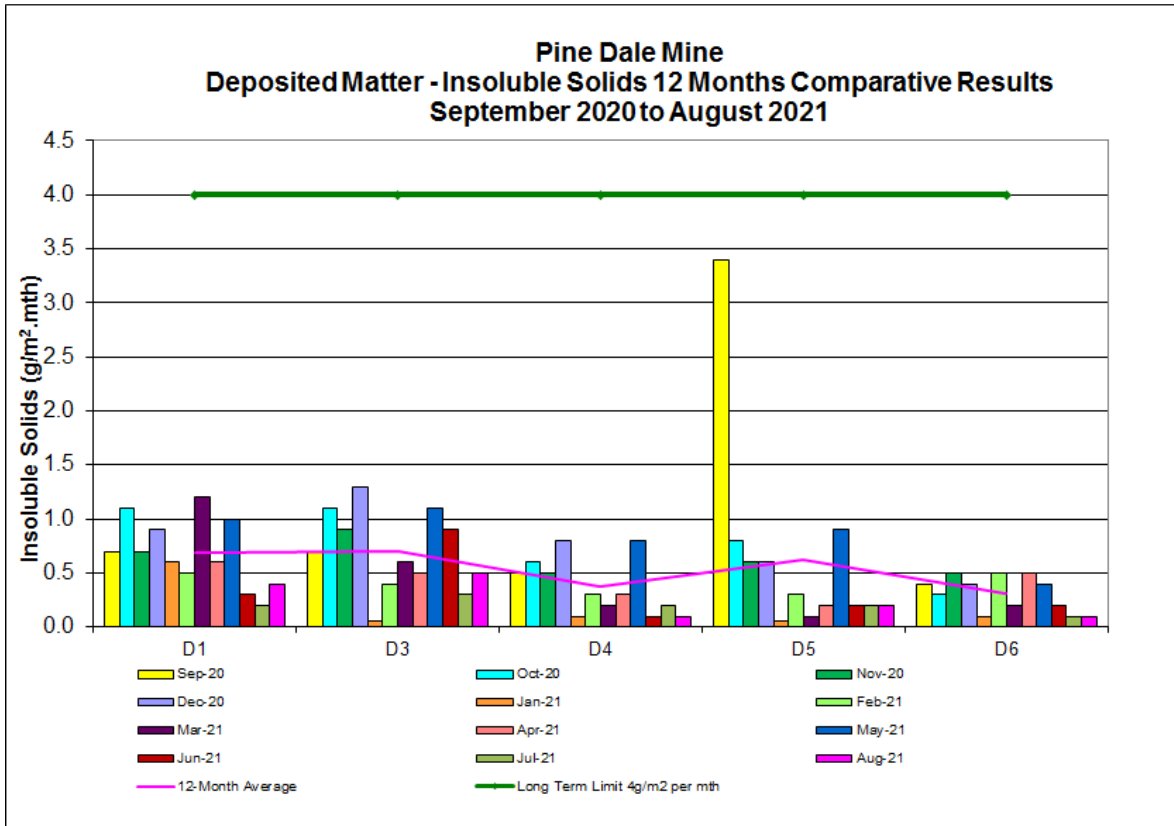
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|--|--|
|  Noise Monitoring Location |  High Volume Air Sampling Location |
|  Depositional Dust Monitoring Location |  Meteorological Monitoring Location |
|  Groundwater Monitoring Location |  Surface Water Monitoring Location |



**PINE DALE MINE
ENVIRONMENTAL MONITORING
LOCATION PLAN**

Appendix B

Depositional Dust Graph



Appendix C

Meteorological Data

