



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

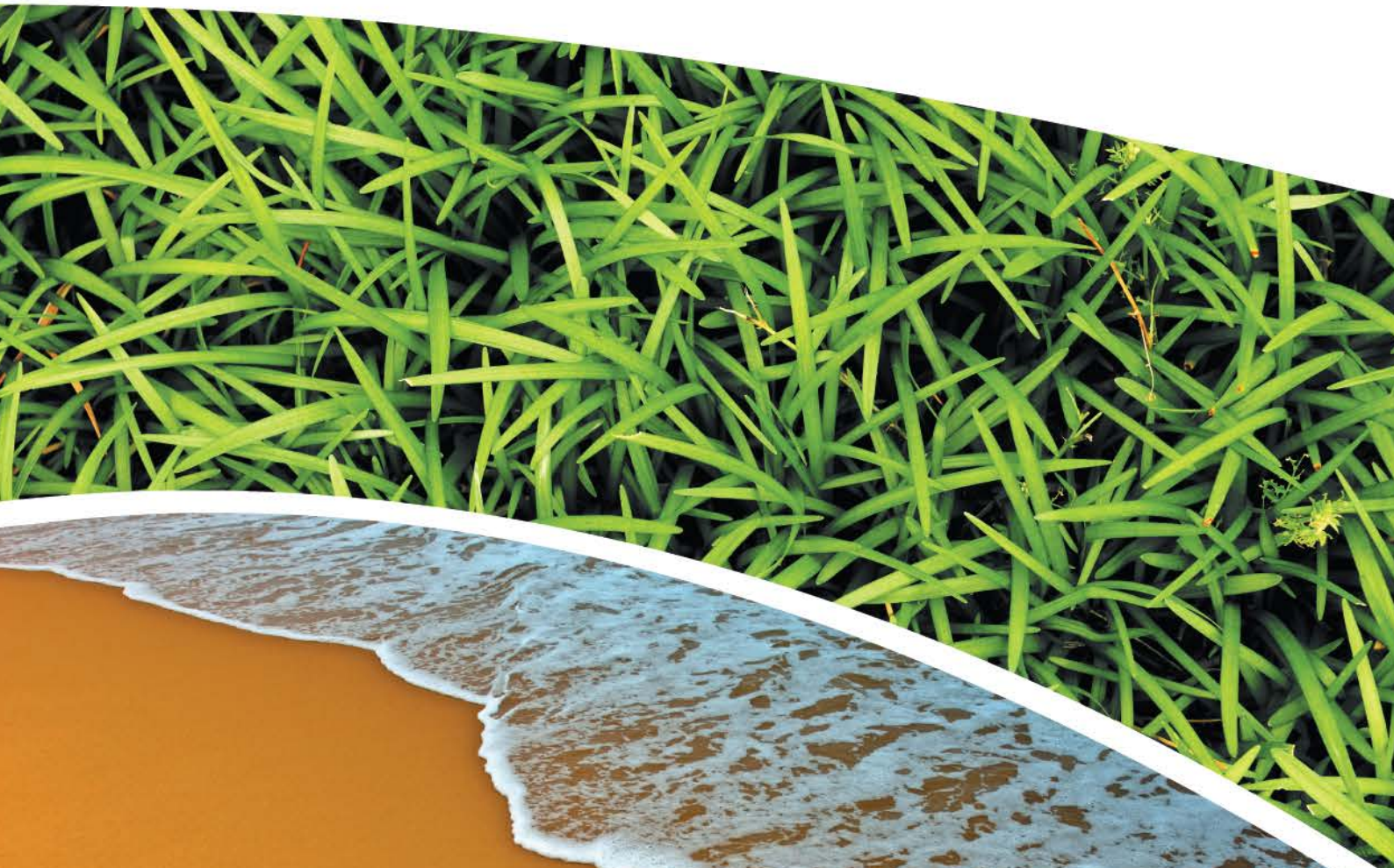
PINE DALE MINE, BLACKMANS FLAT

Prepared for Pine Dale Mine Community Consultative Committee

Prepared by RCA Australia

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JUNE 2021



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RCA ref 6880-1855/0



16 June 2021

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Attention: Mr Graham Goodwin

Geotechnical Engineering
Engineering Geology
Environmental Engineering
Hydrogeology
Construction Materials Testing
Environmental Monitoring
Noise & Vibration
Occupational Hygiene

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

Air and water samples were collected by RCA Laboratories – Environmental staff. Meteorological data was obtained from 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 May 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 | - | 05216880012 | 05216880013 |
| Date Sampled | - | 6/05/2021 | 6/05/2021 |
| Time Sampled | - | 12:30 | 13:31 |
| Depth to Water from Surface | m | 23.02 | 6.16 |
| Water Level (AHD) | m | 894.59 | 889.20 |
| Temperature | °C | 15.5 | 15.4 |
| pH | pH | 6.31 | 6.40 |
| Conductivity | µS/cm | 1580 | 828 |
| Turbidity | NTU | 18.0 | |
| Dissolved Oxygen | mg/L | 6.4 | |
| Total Suspended Solids | mg/L | 24 | |
| Oil and Grease | mg/L | <5 | |
| Bicarbonate Alkalinity (CaCO ₃) | mg/L | 98 | 252 |
| Total Alkalinity (CaCO ₃) | mg/L | 98 | 252 |
| Sulphate (as SO ₄) | mg/L | 736 | 75 |
| Chloride | mg/L | 55 | 89 |
| Calcium | mg/L | 160 | 53 |
| Magnesium | mg/L | 70 | 53 |
| Sodium | mg/L | 79 | 53 |
| Potassium | mg/L | 22 | 8 |
| Cobalt (dissolved) | mg/L | 0.049 | |
| Manganese (dissolved) | mg/L | 2.76 | |
| Nickel (dissolved) | mg/L | 0.096 | |
| Zinc (dissolved) | mg/L | 0.015 | |
| Iron (dissolved) | mg/L | 40.1 | 0.13 |
| 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 May 2021. Results are shown in **Table 3**. There were no discharges from Pine Dale Mine during May 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 | - | 052168800010 | 05216880004 | 05216880011 |
| Date Sampled | - | 6/05/2021 | 6/05/2021 | 6/05/2021 |
| Time Sampled | - | 12:01 | 13:46 | 14:00 |
| Temperature | °C | 13.8 | 14.6 | 14.3 |
| pH | pH | 7.39 | 7.45 | 7.49 |
| Conductivity | µS/cm | 905 | 1990 | 764 |
| Sulfate | NTU | 248 | 775 | 277 |
| Dissolved Iron | mg/L | 0.05 | 0.18 | <0.05 |
| Total Suspended Solids | mg/L | <5 | <5 | <5 |
| Turbidity | mg/L | 4.6 | 2.3 | 3.0 |
| 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 May was 7 April – 5 May 2021. Depositional dust gauges at this facility conform to AS/NZS 3580.10.1:2016 and AS/NZS 3580.1.1:2016. The May 2021 exposure period was 28 days which is within the 30 ± 2 days dust exposure period stipulated in AS/NZS 3580.10.1:2016. 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 | 28 | IT | 1 | 0.4 | 0.6 |
| D3 | 28 | I | 1.1 | 0.8 | 0.3 |
| D4 | 28 | I | 0.8 | 0.4 | 0.4 |
| D5 | 28 | I | 0.9 | 0.3 | 0.6 |
| D6 | 28 | I | 0.4 | 0.1 | 0.3 |

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 (June 2020 – May 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 1.0g/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. Details of the weather data recorded during the period 1 to 31 May 2021 are shown in **Appendix C**.

Data availability during this period was 100%.

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 undertaken at Pine Dale on 20th May 2021. Results are contained within the Pine Dale Mine Environmental Noise Survey Report (RCA Report reference 13856-412). There was no measured noise contribution from Pine Dale Mine identified during the noise survey.

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

- The electrical conductivity at groundwater bore P6 was greater than site-specific trigger value.
- pH at surface water EPA Point 14 was marginally below the lower site-specific trigger value.

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 14 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 undertaken for the entire month of May with 100% data capture.

Quarterly noise monitoring was undertaken during May 2021; noise monitoring survey results shows no noise contribution from Pine Dale Mine.

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

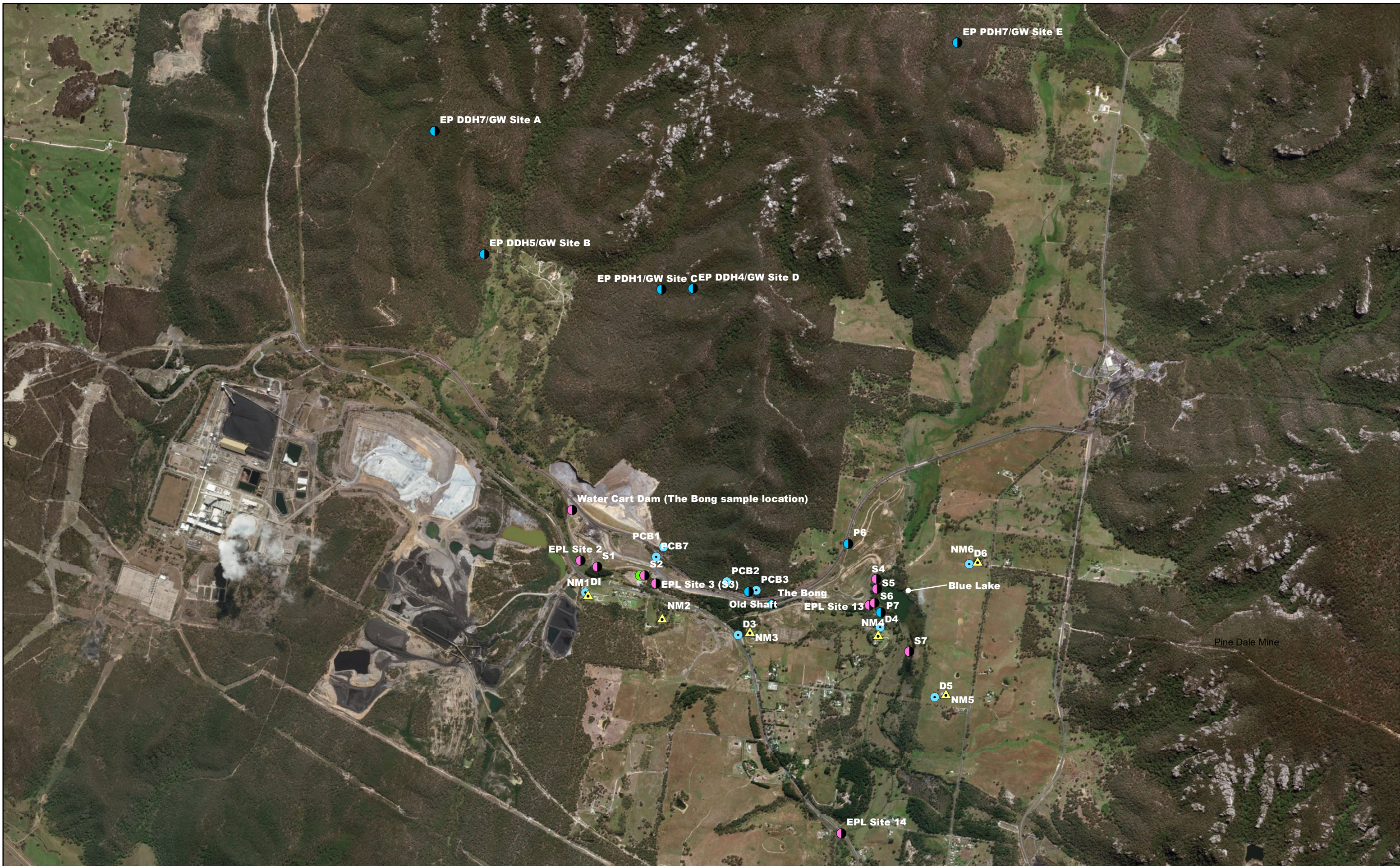
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Fiona Brooker
Manager of Environmental Services

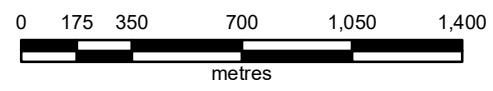
Appendix A

Monitoring Locations



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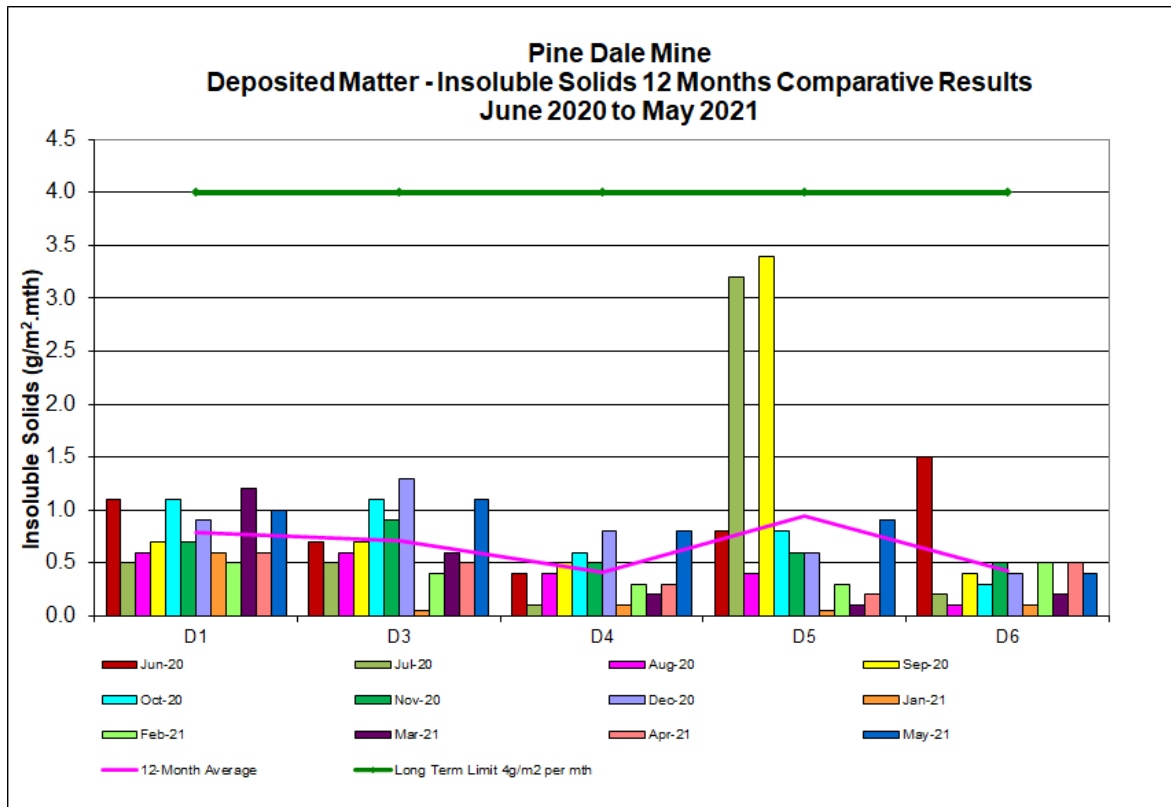
- Noise Monitoring Location
- Depositional Dust Monitoring Location
- Groundwater Monitoring Location
- High Volume Air Sampling Location
- Meteorological Monitoring Location
- Surface Water Monitoring Location



**PINE DALE MINE
ENVIRONMENTAL MONITORING
LOCATION PLAN**

Appendix B

Depositional Dust Graph



Appendix C

Meteorological Data

