

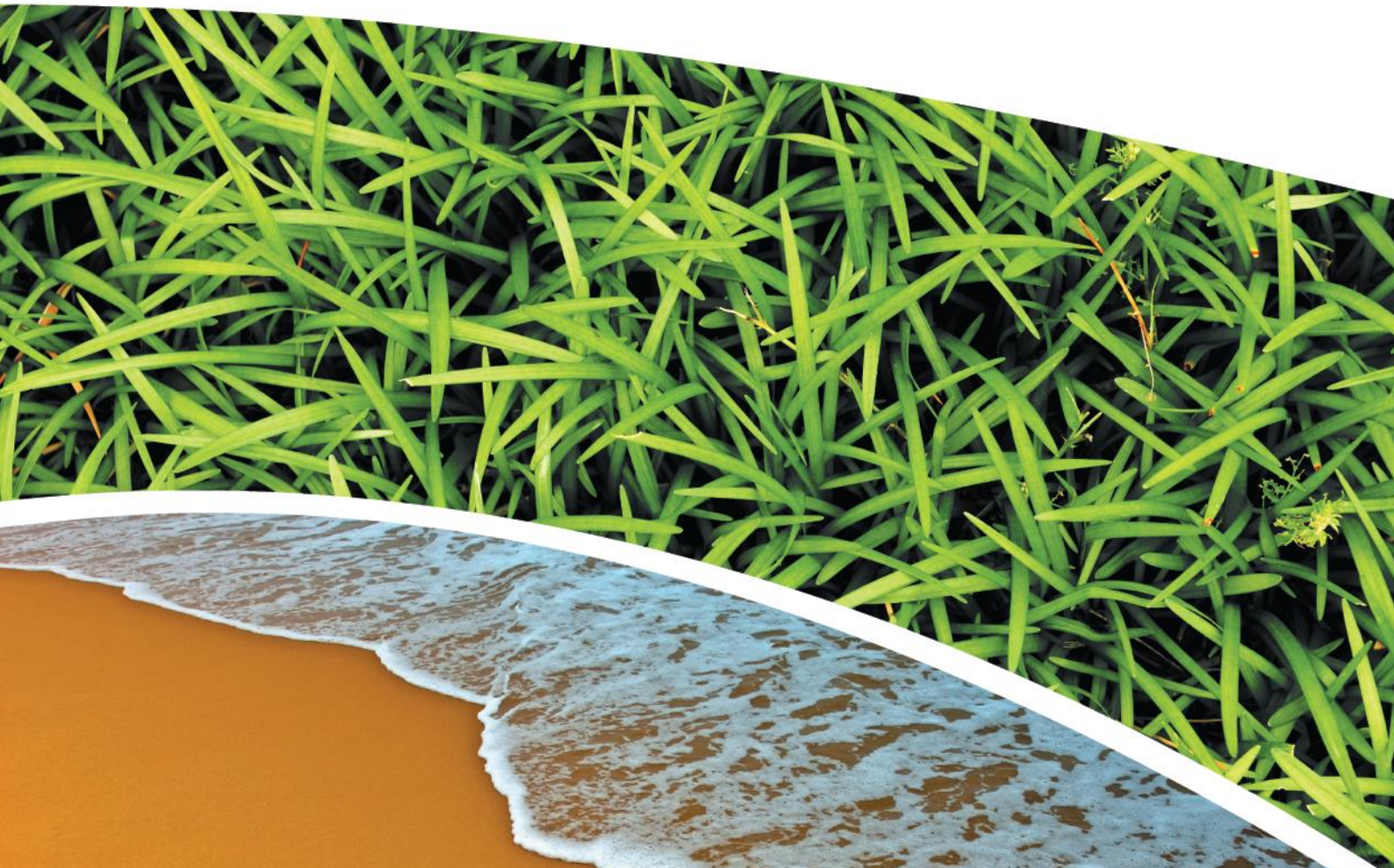
**AIR, WATER, NOISE AND METEOROLOGICAL MONITORING –  
FEBRUARY 2021**

**PINE DALE MINE, BLACKMANS FLAT**

**Prepared for Pine Dale Mine Community Consultative Committee**

**Prepared by RCA Australia**

**RCA ref 6880-1848/0**



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RCA ref 6880-1848/0

18 March 2021

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

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## **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 February 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*

<b>Analysis</b>	<b>Method</b>	<b>Units</b>	<b>Analysing Laboratory</b>	<b>NATA Accreditation Status</b>
Determination of Suspended Particulate Matter	ENV-LAB003	µg/m <sup>3</sup>	RCA Laboratories – Environmental	NATA Analysis
Determination of Particulate Matter – Deposited Matter	ENV-LAB004	g/m <sup>2</sup> 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 <sub>4</sub> )	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 February 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	-	022168800011	02216880012
Date Sampled	-	05/02/2021	05/02/2021
Time Sampled	-	6:45	8:50
Depth to Water from Surface	m	22.42	5.26
Water Level (AHD)	m	894.53	889.14
Temperature	°C	16.9	16.4
pH	pH	6.33	<b><u>6.18</u></b>
Conductivity	µS/cm	<b>1630</b>	821
Turbidity	NTU	19	
Dissolved Oxygen	mg/L	<1	
Total Suspended Solids	mg/L	49	
Oil and Grease	mg/L	<5	
Bicarbonate Alkalinity (CaCO <sub>3</sub> )	mg/L	112	253
Total Alkalinity (CaCO <sub>3</sub> )	mg/L	112	253
Sulphate (as SO <sub>4</sub> )	mg/L	686	75
Chloride	mg/L	57	84
Calcium	mg/L	138	46
Magnesium	mg/L	68	50
Sodium	mg/L	79	50
Potassium	mg/L	19	7
Cobalt (dissolved)	mg/L	0.045	
Manganese (dissolved)	mg/L	2.59	
Nickel (dissolved)	mg/L	0.091	
Zinc (dissolved)	mg/L	0.014	
Iron (dissolved)	mg/L	39.4	0.06
<b>Trigger Values</b>			
pH trigger level <sup>a</sup>	pH	6.2 – 8.0	6.3 – 8.0
Conductivity trigger level	µS/cm	1180	852
Water Level (AHD) <sup>b</sup>	m	887.90	883.28
<b>Revised Trigger Values<sup>c</sup></b>			
pH trigger level <sup>d</sup>	pH	5.6	6.3
Water Level (AHD) <sup>b</sup>	M	887.9	--

■ Indicates analysis was not required.

<sup>a</sup> pH trigger value is exceeded if the pH is outside the nominated range.

<sup>b</sup> Water Level trigger is exceeded if the AHD water level drops below the nominated trigger level.

<sup>c</sup> Proposed trigger values to be used alongside the currently approved trigger values.

<sup>d</sup> 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 February 2021. Results are shown in **Table 3**. There were no discharges from Pine Dale Mine during February 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	-	02216880009	02216880004	02216880010
Date Sampled	-	4/02/2021	4/02/2021	5/02/2021
Time Sampled	-	16:15	16:25	8:12
Temperature	°C	23.6	23.6	20.5
pH	pH	7.25	7.29	<b>6.93</b>
Conductivity	µS/cm	375	1640	922
Sulfate	NTU	102	676	348
Dissolved Iron	mg/L	0.06	0.08	0.07
Total Suspended Solids	mg/L	<5	5	<5
Turbidity	mg/L	6.6	9.0	5.1
<b>Trigger Values</b>				
pH <sup>a</sup>	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
<b>Proposed Trigger Values<sup>c</sup></b>				
pH trigger level <sup>a</sup>	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.

<sup>c</sup> 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 February was 5 January – 4 February 2021. Depositional dust gauges at this facility conform to AS/NZS 3580.10.1:2016 and AS/NZS 3580.1.1:2016. The February exposure period was 30 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	30	IT	0.5	<0.1	0.5
D3	30	Nil	0.4	0.1	0.3
D4	30	IT	0.3	0.1	0.2
D5	30	Nil	0.3	0.1	0.2
D6	30	T	0.5	0.2	0.3

All units are g/m<sup>2</sup>/month

I – Insects (eg, 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/m<sup>2</sup> per month. The rolling annual average depositional dust results for all sites within the period (March 2020 – February 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 1.1g/m<sup>2</sup> 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 28 February 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 not undertaken at Pine Dale during February 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 February 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 groundwater bore P7 and EPA Point 14 were 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 bore P7 remains below the revised trigger value while 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/m<sup>2</sup>.month based upon a rolling average of the past 12 months.

Meteorological monitoring was undertaken for the entire month of February with 100% data capture.

Quarterly noise monitoring was not undertaken during February 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

**RCA AUSTRALIA**



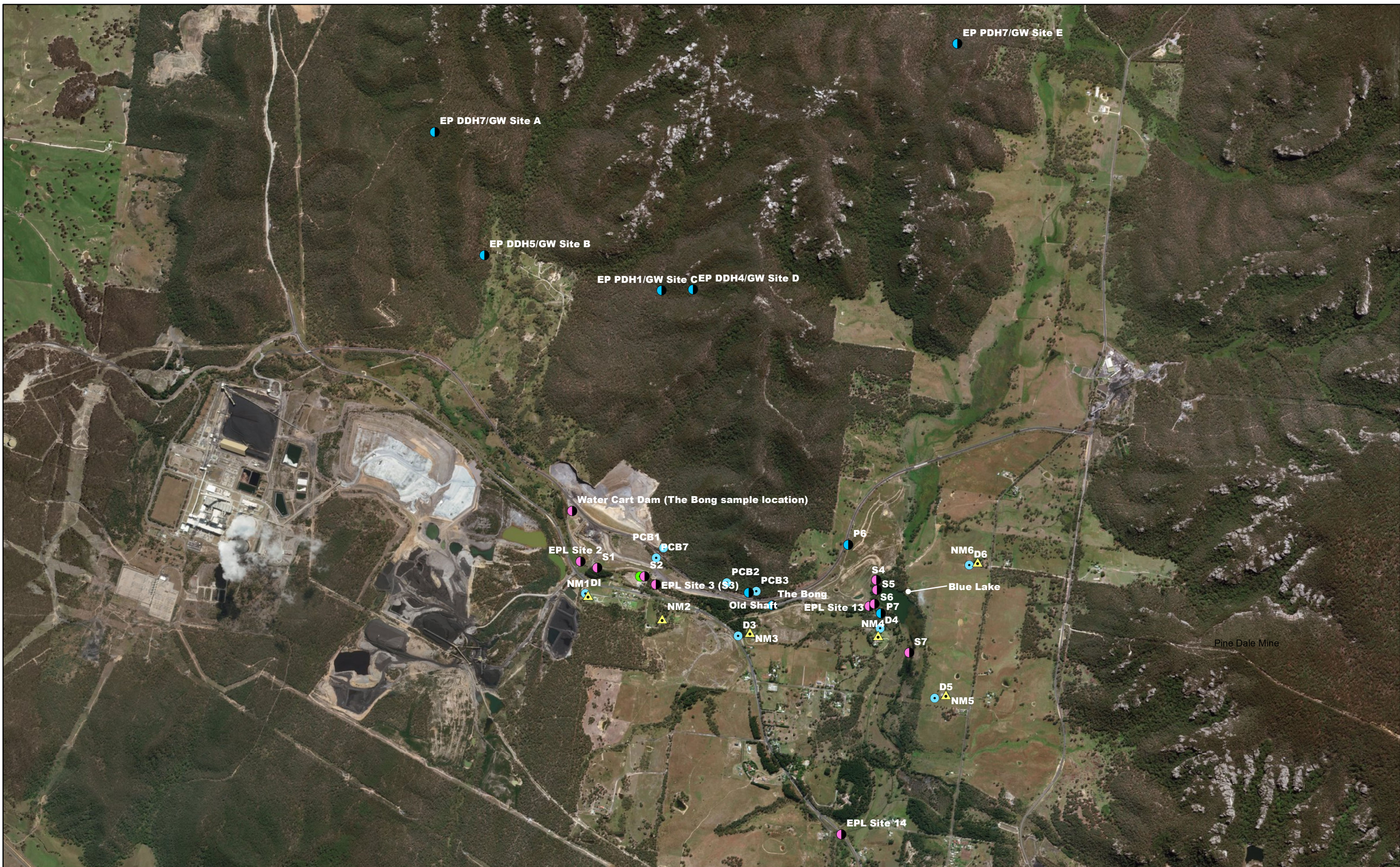
Carmen Rocher  
Environmental Engineer

# Appendix A

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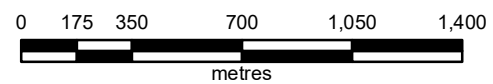
## Monitoring Locations





**LEGEND**

- |  |  |
|--|--|
|  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**

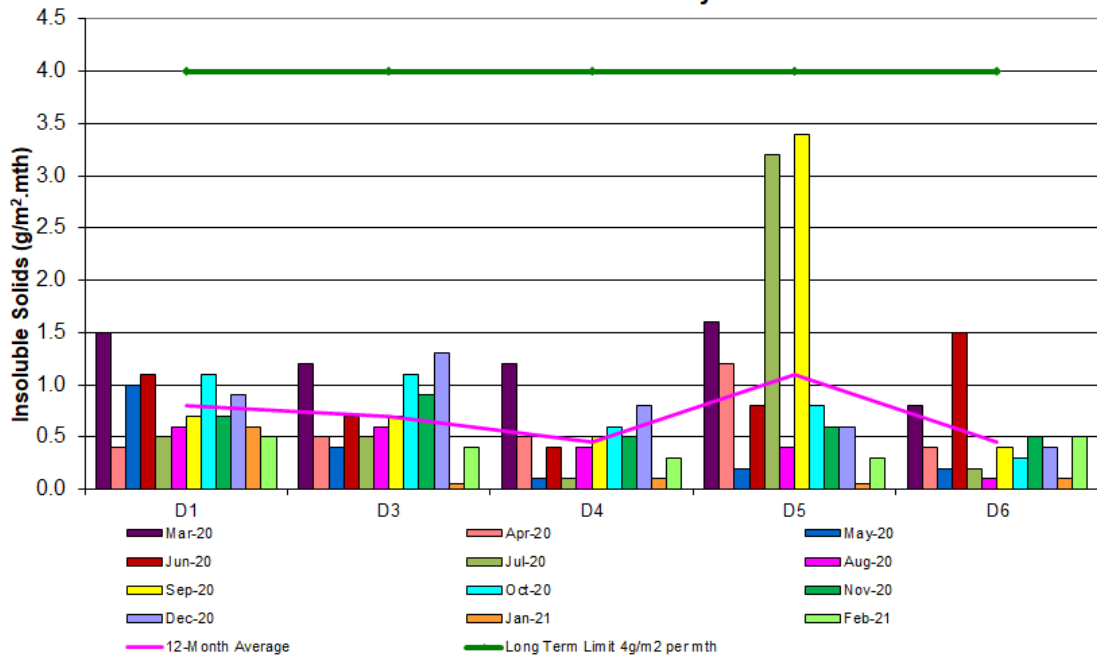


# Appendix B

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## Depositional Dust Graph

**Pine Dale Mine  
Deposited Matter - Insoluble Solids 12 Months Comparative Results  
March 2020 to February 2021**



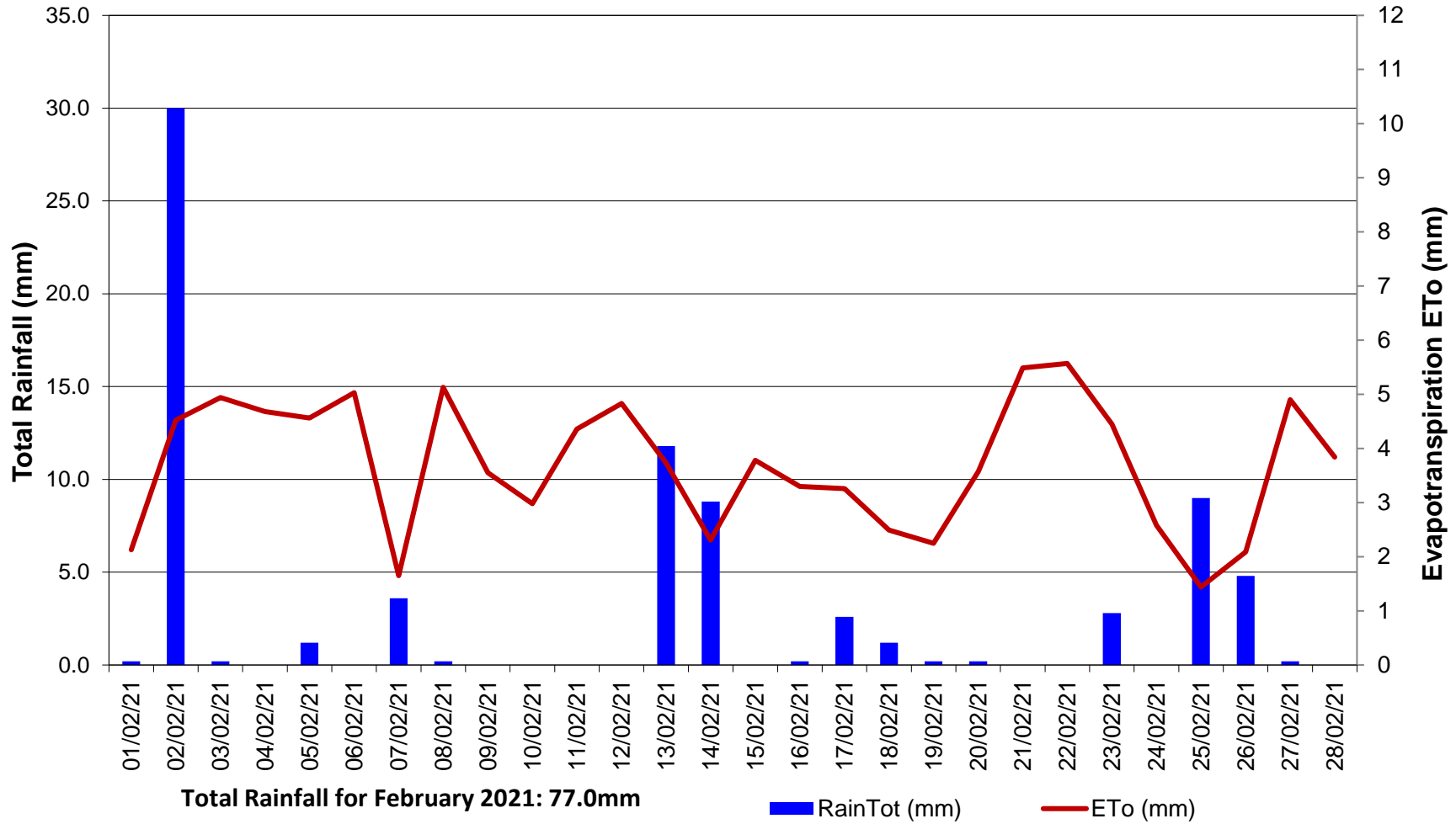


# Appendix C

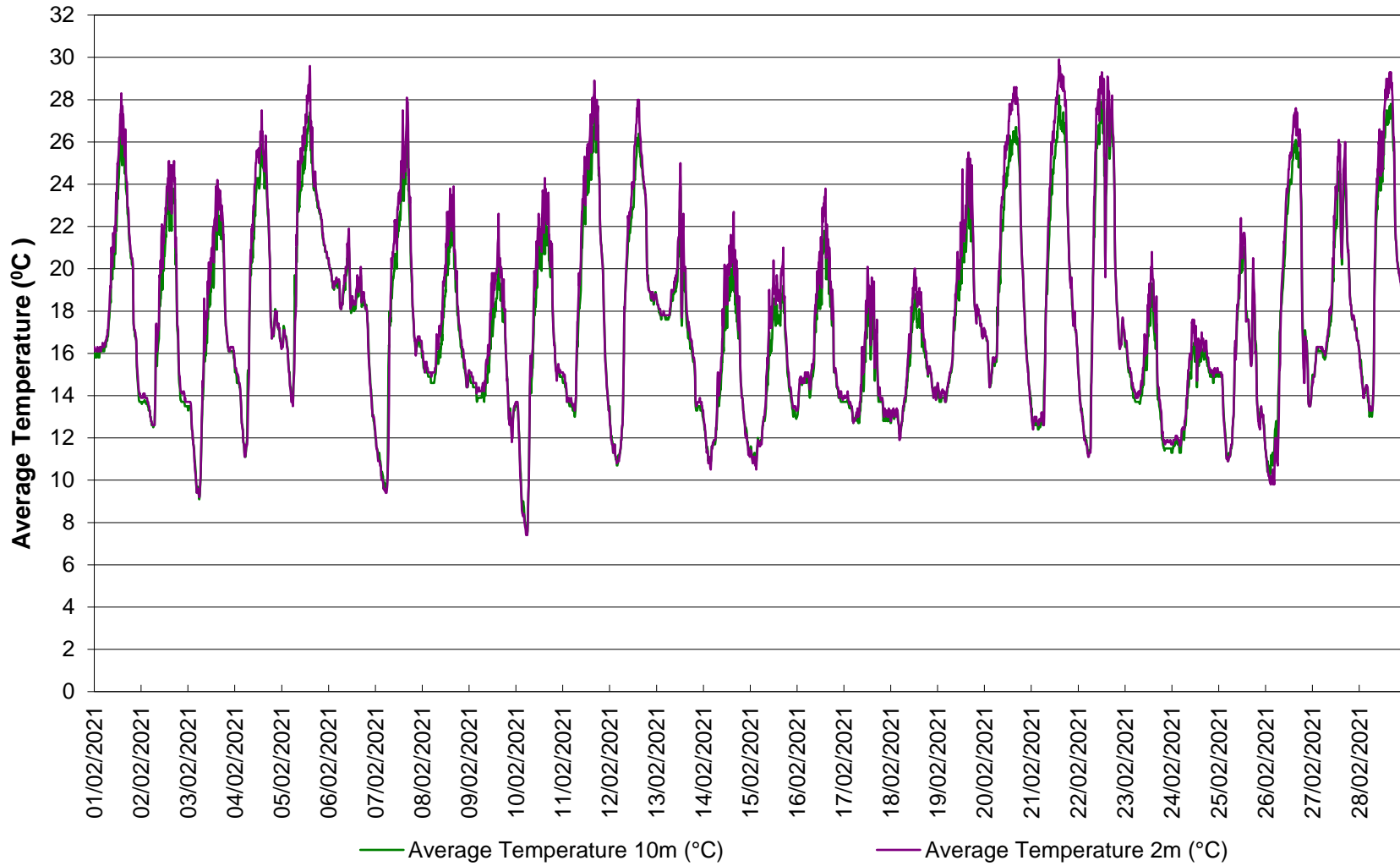
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## Meteorological Data

**Blackmans Flat NSW**  
**Total Rainfall & Evapotranspiration**  
**Period: 1/02/2021 to 28/02/2021**

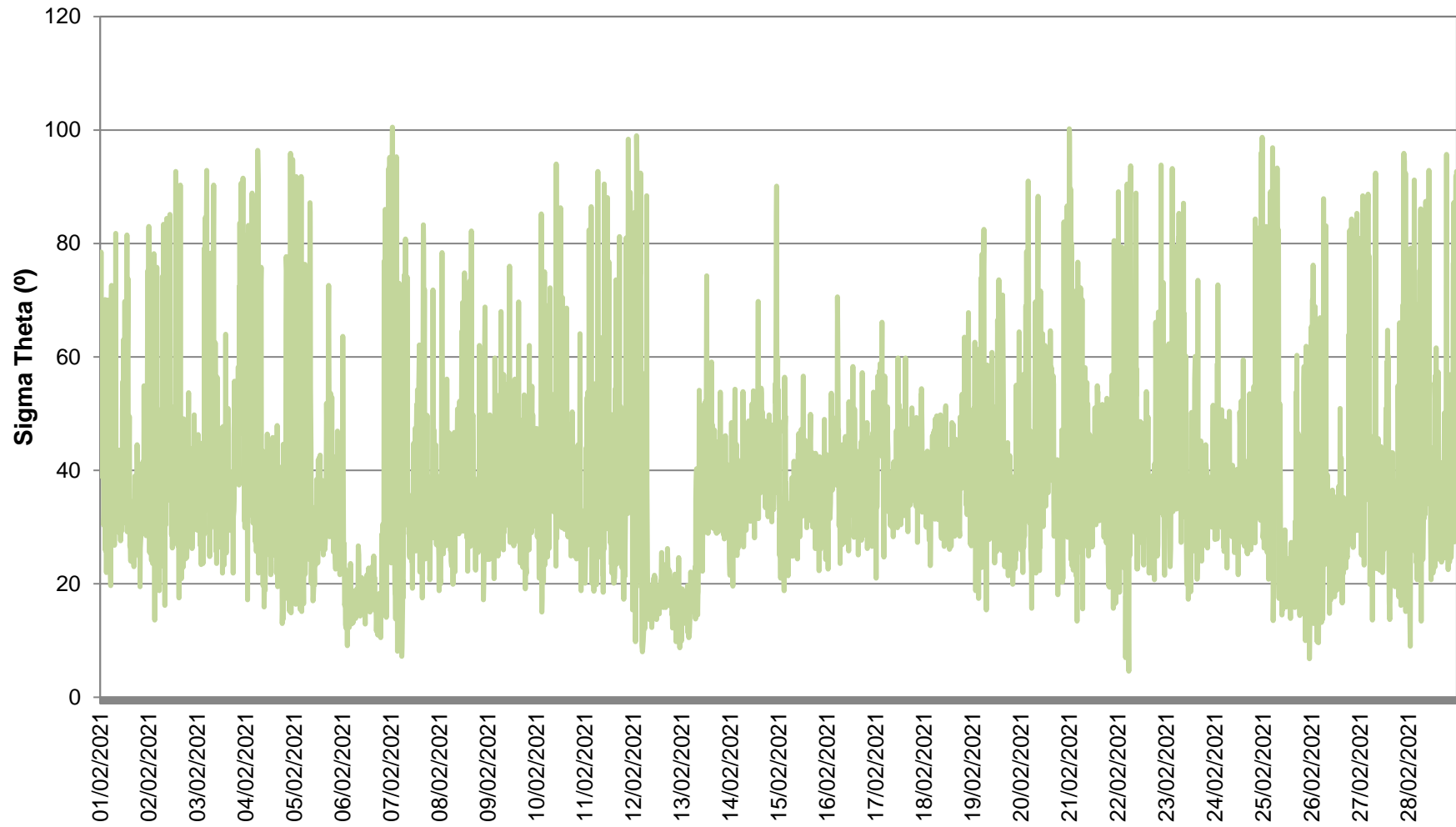


**Blackmans Flat NSW**  
**Average Air Temperature - Period: 1/02/2021 to 28/02/2021**





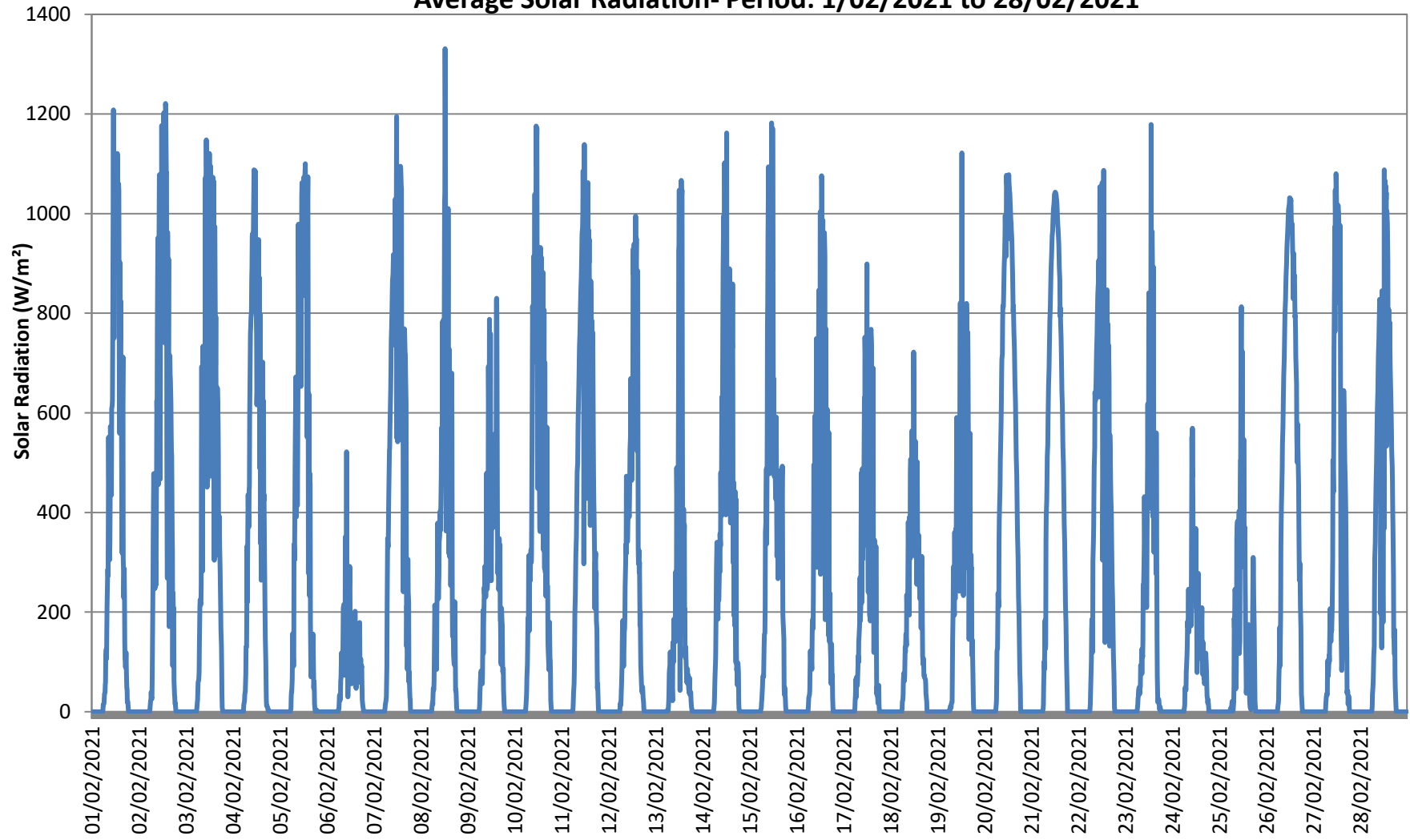
**Blackmans Flat NSW**  
**Sigma Theta Variations - Period: 1/02/2021 to 28/02/2021**



— Sigma Theta (deg)

### Blackmans Flat NSW

Average Solar Radiation- Period: 1/02/2021 to 28/02/2021





**Blackmans Flat NSW**  
**Daily Humidity Variations - Period: 1/02/2021 to 28/02/2021**

