



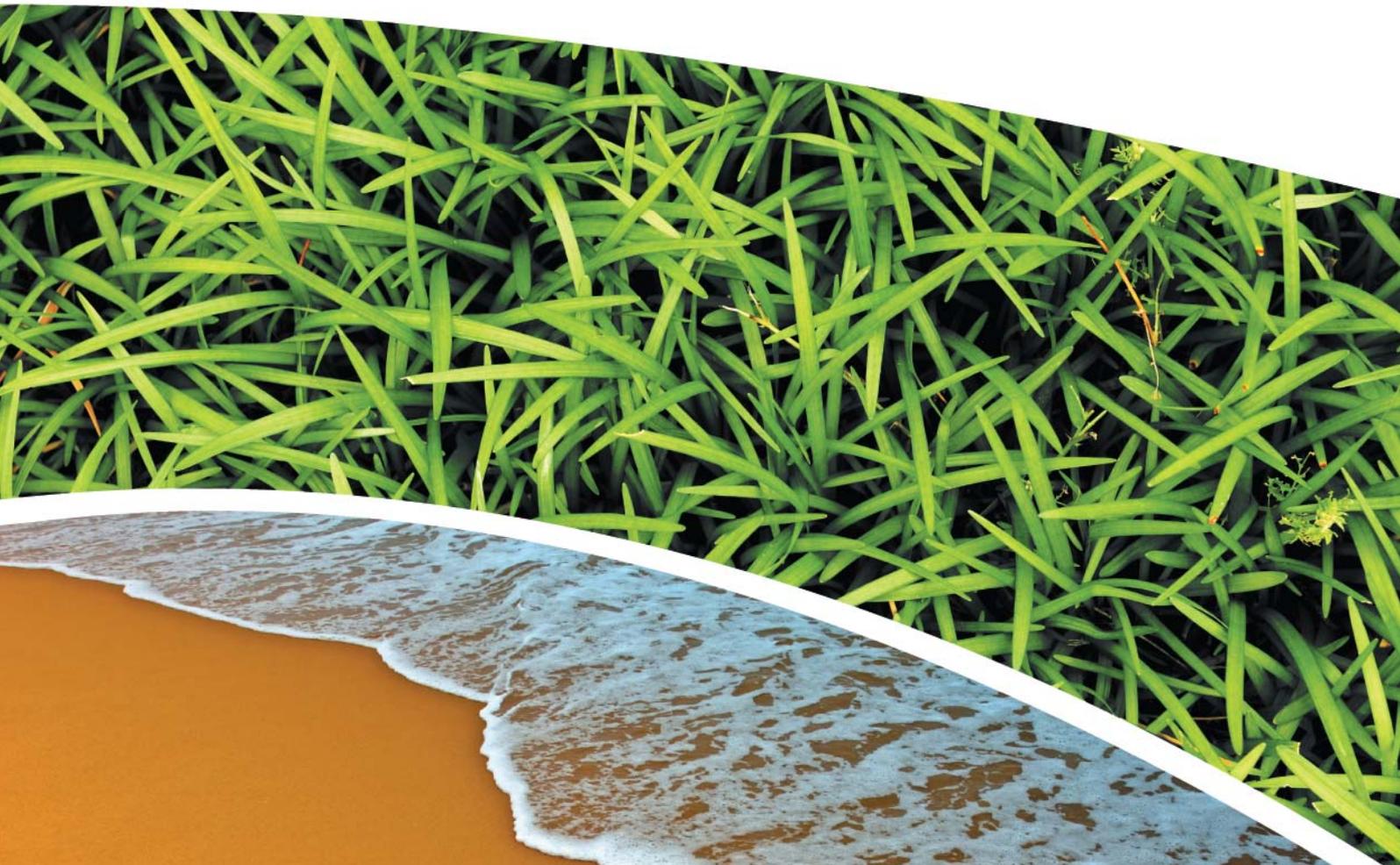
**AIR, WATER, NOISE AND METEOROLOGICAL MONITORING –  
MARCH 2021**

**PINE DALE MINE, BLACKMANS FLAT**

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

**Prepared by RCA Australia**

**RCA ref 6880-1850/1**



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RCA ref 6880-1850/1

20 April 2021

Enhance Place Pty Ltd  
PO Box 202  
WALLERWANG NSW 2845

Attention: Mr Graham Goodwin

Geotechnical Engineering

Engineering Geology

Environmental Engineering

Hydrogeology

Construction Materials Testing

Environmental Monitoring

Sound & Vibration

Occupational Hygiene

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**REPORT COMPILED FOR COMMUNITY CONSULTATIVE COMMITTEE  
DETAILING AIR, WATER AND METEOROLOGICAL MONITORING AT PINE DALE  
MARCH 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 March 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 March 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                               | -     | 03216880009 | 03216880010        |
| Date Sampled                                | -     | 09/03/21    | 09/03/21           |
| Time Sampled                                | -     | 7:29        | 10:08              |
| Depth to Water from Surface                 | m     | 22.75       | 5.54               |
| Water Level (AHD)                           | m     | 894.20      | 888.86             |
| Temperature                                 | °C    | 14.6        | 17.4               |
| pH  | pH    | <b>5.99</b> | <b><u>6.19</u></b> |
| Conductivity                                | µS/cm | <b>1590</b> | 791                |
| Turbidity                                   | NTU   | 19          |                    |
| Dissolved Oxygen                            | mg/L  | 6.2         |                    |
| Total Suspended Solids                      | mg/L  | 32          |                    |
| Oil and Grease                              | mg/L  | <5          |                    |
| Bicarbonate Alkalinity (CaCO <sub>3</sub> ) | mg/L  | 68          |                    |
| Total Alkalinity (CaCO <sub>3</sub> )       | mg/L  | 68          |                    |
| Sulphate (as SO <sub>4</sub> )              | mg/L  | 621         |                    |
| Chloride                                    | mg/L  | 54          |                    |
| Calcium                                     | mg/L  | 166         |                    |
| Magnesium                                   | mg/L  | 70          |                    |
| Sodium                                      | mg/L  | 80          |                    |
| Potassium                                   | mg/L  | 22          |                    |
| Cobalt (dissolved)                          | mg/L  | 0.049       |                    |
| Manganese (dissolved)                       | mg/L  | 2.8         |                    |
| Nickel (dissolved)                          | mg/L  | 0.1         |                    |
| Zinc (dissolved)                            | mg/L  | 0.034       |                    |
| Iron (dissolved)                            | mg/L  | 35.9        |                    |
| <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 surface water monitoring was not required to be undertaken during March 2021.

## 4 AIR QUALITY RESULTS

### 4.1 HIGH VOLUME AIR SAMPLERS (HVAS)

Monitoring for TSP and PM<sub>10</sub> using HVAS was removed from Environment Protection Licence 4911 in November 2020. The Pine Dale Mine Air Quality and Greenhouse Gas Management Plan (AQGGMP) was reviewed and updated to reflect this change. The updated AQGGMP was submitted to the Department of Planning, Industry and Environment (DPIE) for endorsement. The AQGGMP was endorsed by DPIE on 4 December 2020 and was subsequently uploaded onto the Pine Dale Mine website.

### 4.2 DEPOSITIONAL DUST MONITORING

The depositional dust monitoring exposure period for March 2021 was 4 February 2021 – 8 March 2021. Depositional dust gauges at this facility conform to AS/NZS 3580.10.1:2016 and AS/NZS 3580.1.1:2016. The March 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 3**. Depositional dust monitoring locations are shown in **Appendix A**.

**Table 3** *Depositional Dust Monitoring*

| Deposit Gauge | Number of Days | Notes | Insoluble Solids | Ash  | Combustible Matter |
|---------------|----------------|-------|------------------|------|--------------------|
| D1            | 32             | IT    | 1.2              | 0.7  | 0.5                |
| D3            | 32             | I     | 0.6              | 0.4  | 0.2                |
| D4            | 32             | I     | 0.2              | <0.1 | 0.2                |
| D5            | 32             | I     | 0.1              | 0.1  | <0.1               |
| D6            | 32             | I     | 0.2              | 0.1  | 0.1                |

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

I – Insects (eg, Ants, Spiders)

T – Tree litter (leaves, gumnuts)

#### 4.2.1 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 (April 2020 – March 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/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 31 March 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 the 25<sup>th</sup> and 26<sup>th</sup> March 2021. Results are contained within the Pine Dale Mine Environmental Noise Survey Report (RCA Report 13856-411/0). 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 March 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 bores P6 and P7 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. The pH at P6 was above the revised trigger value and is therefore also compliant. The pH at P7 remained below the revised trigger value and is non 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 March with 100% data capture.

Quarterly noise monitoring was undertaken during March 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

**RCA AUSTRALIA**

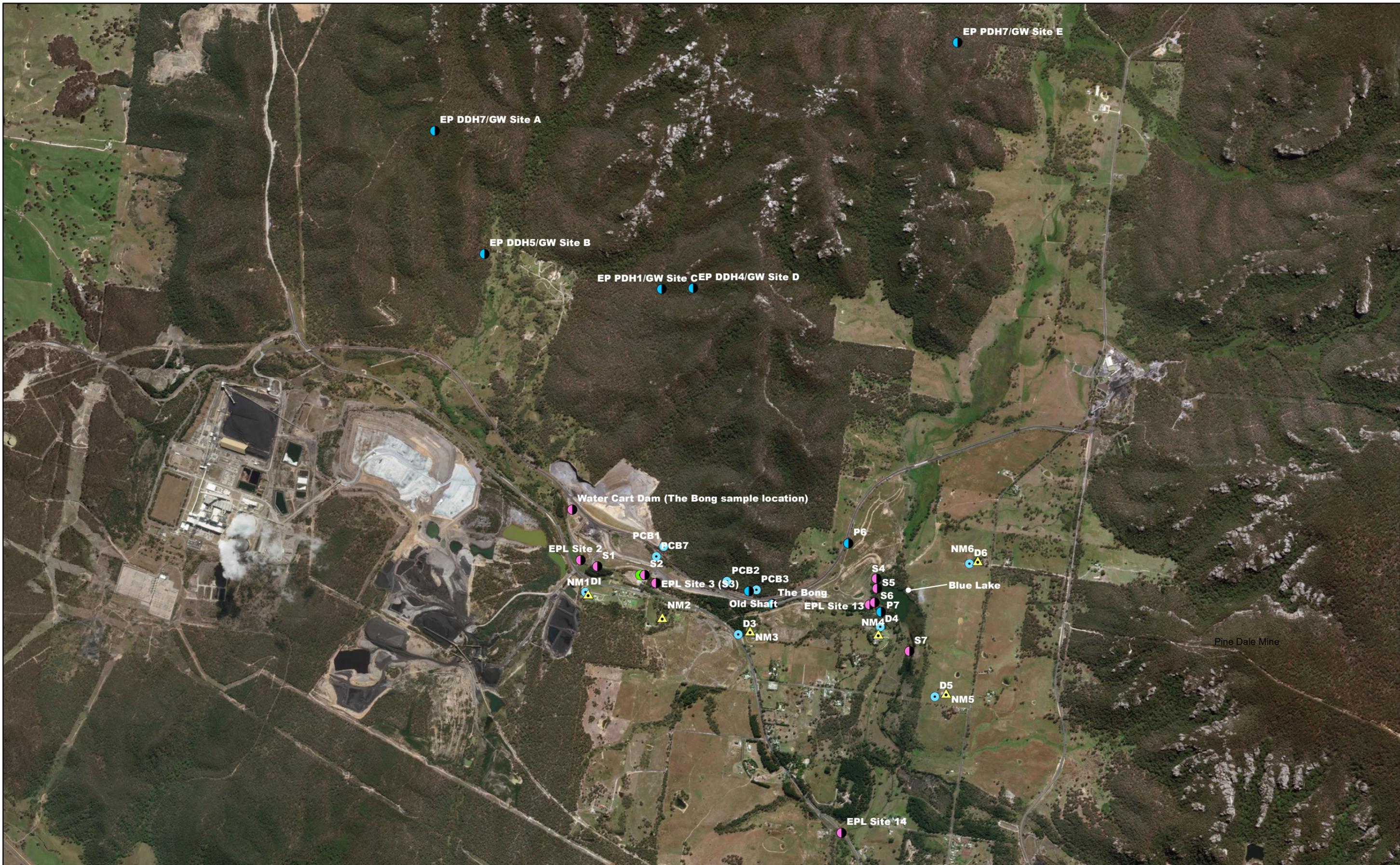


Kirsty Nealon  
Senior Environmental Scientist

# Appendix A

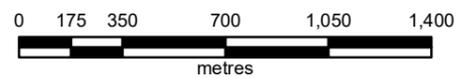
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## Monitoring Locations



**LEGEND**

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



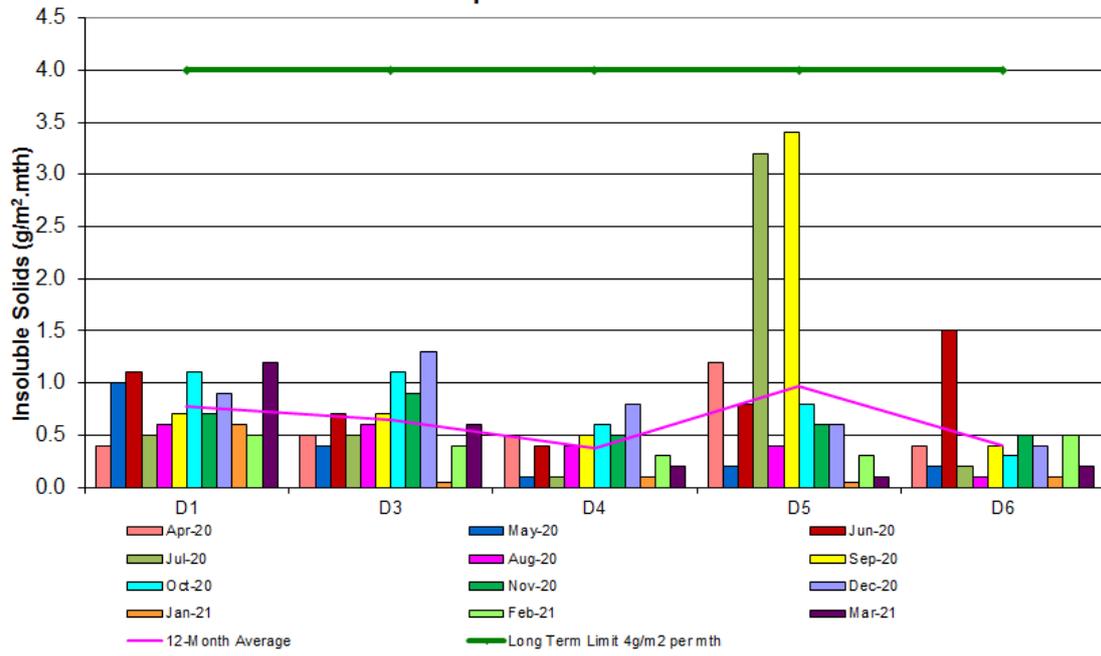
**PINE DALE MINE  
ENVIRONMENTAL MONITORING  
LOCATION PLAN**

# Appendix B

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## Depositional Dust Graphs

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

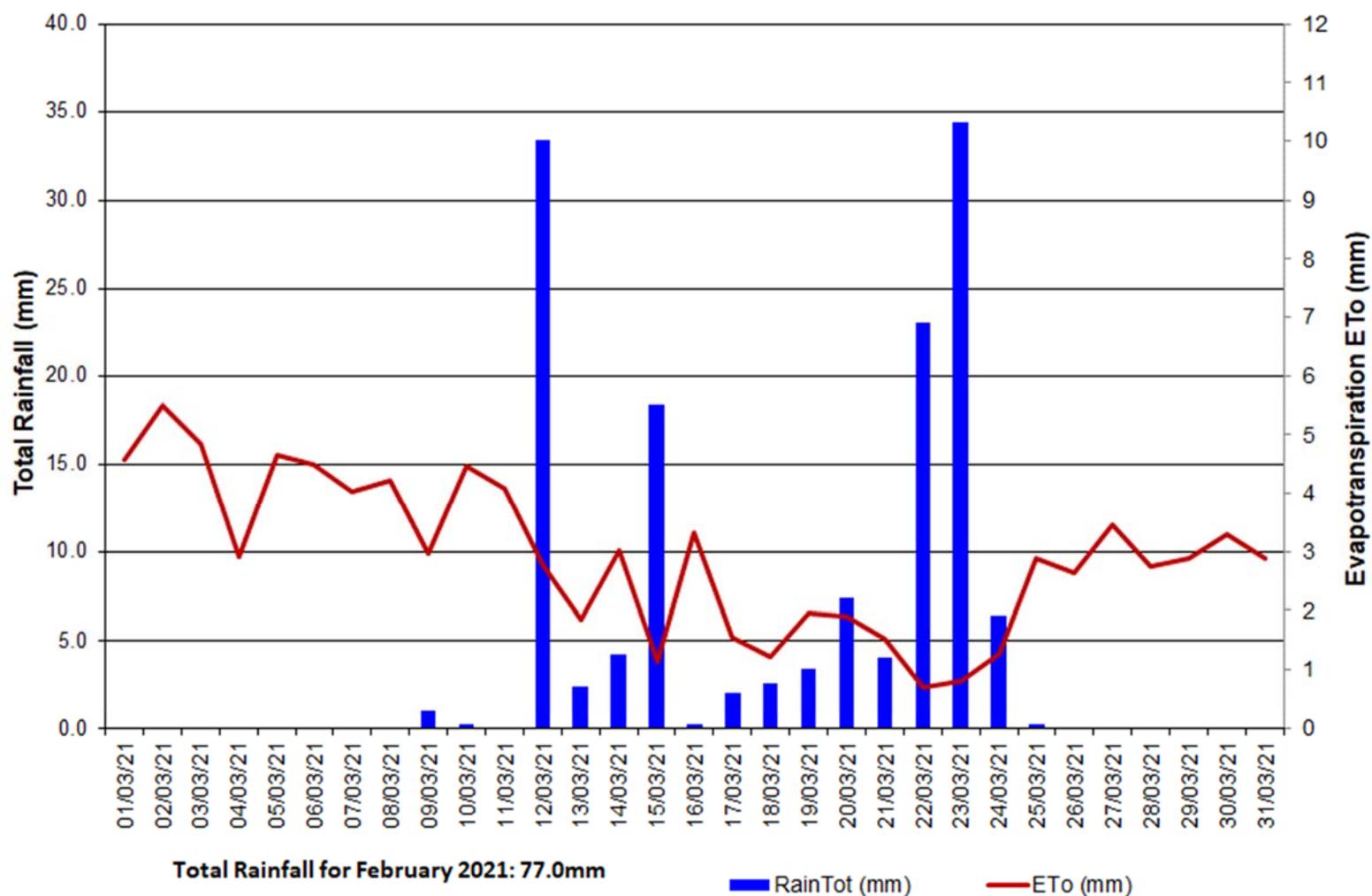


# Appendix C

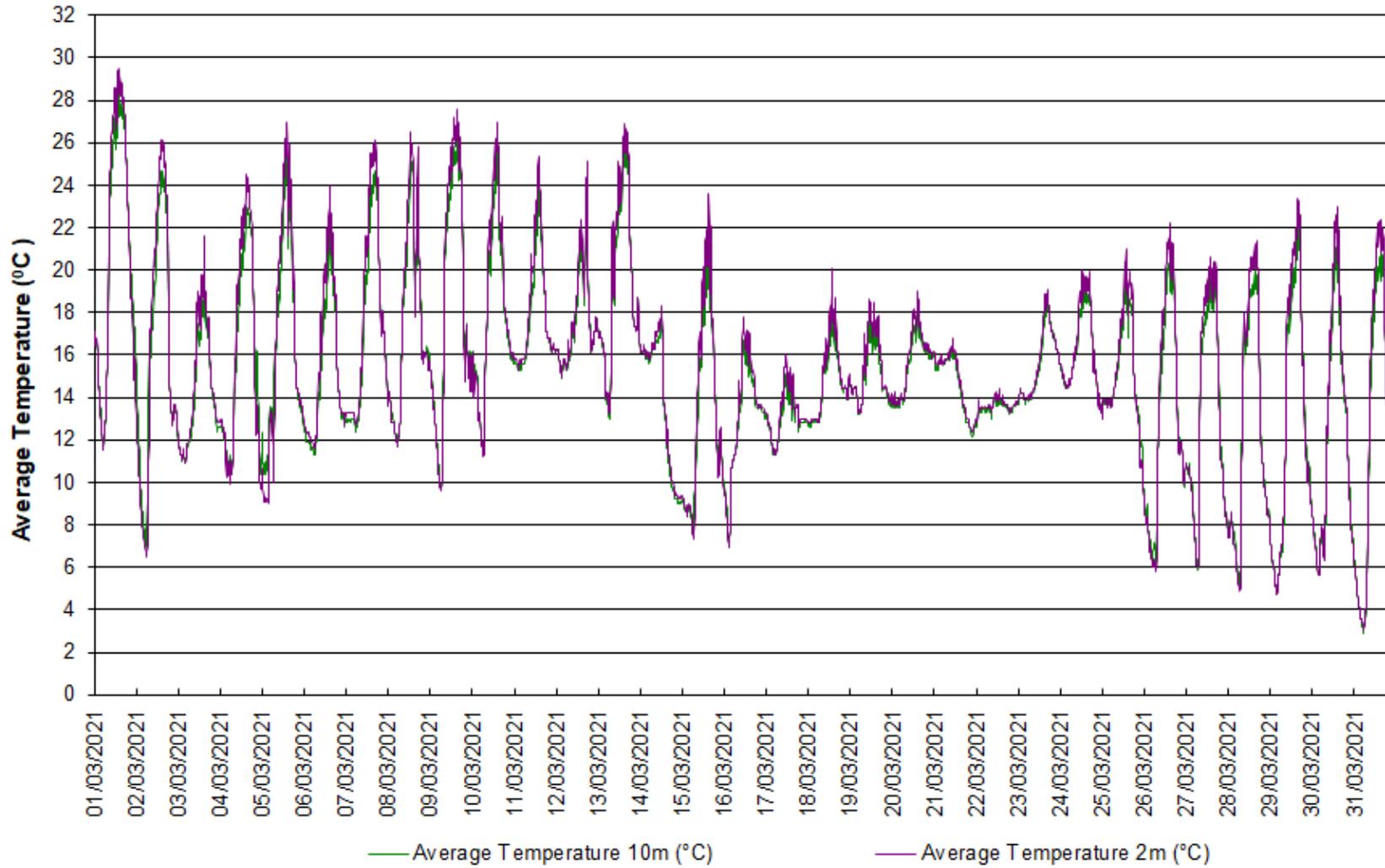
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## Meteorological Data

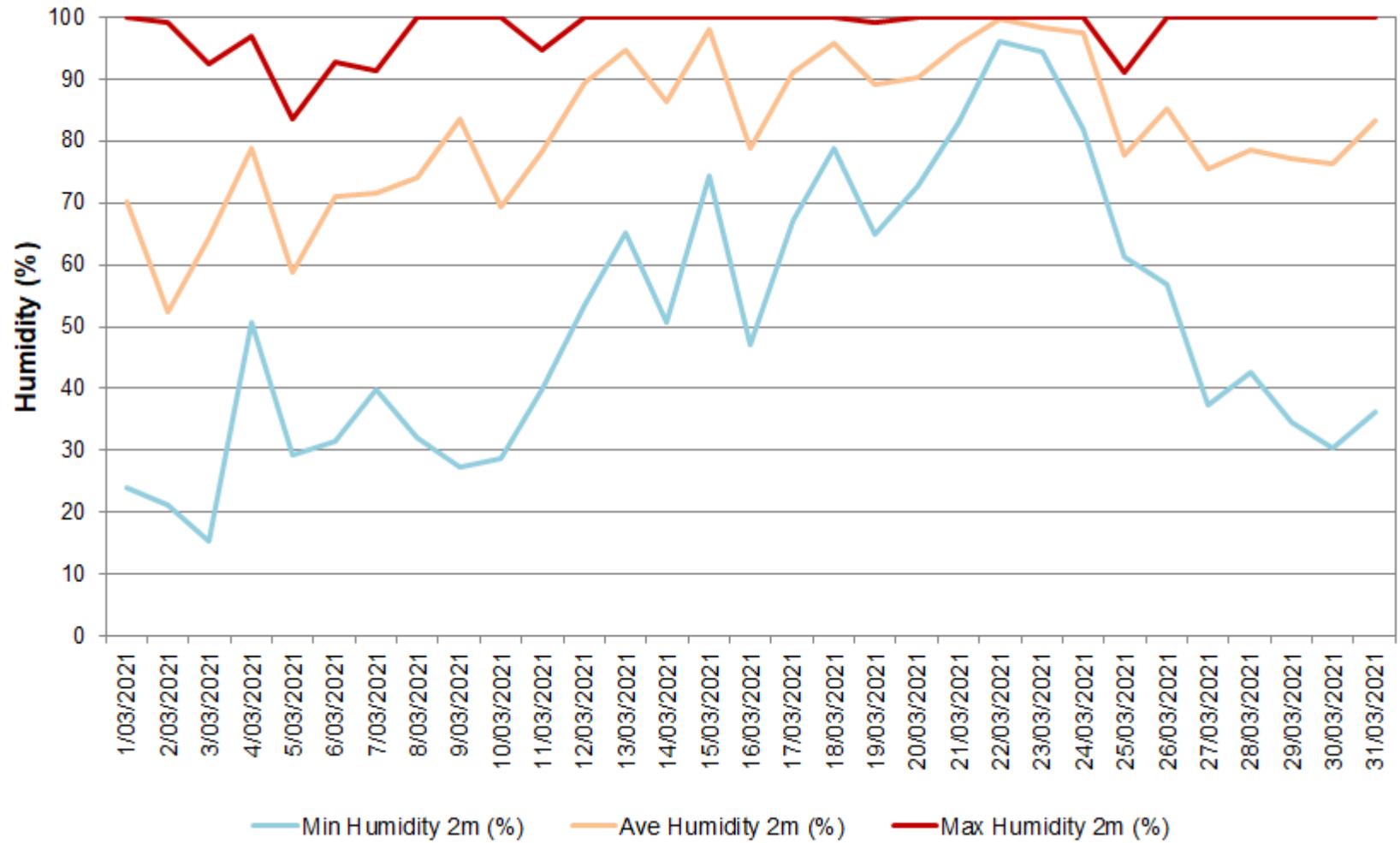
**Blackmans Flat NSW**  
**Total Rainfall & Evapotranspiration**  
**Period: 1/03/2021 to 31/03/2021**



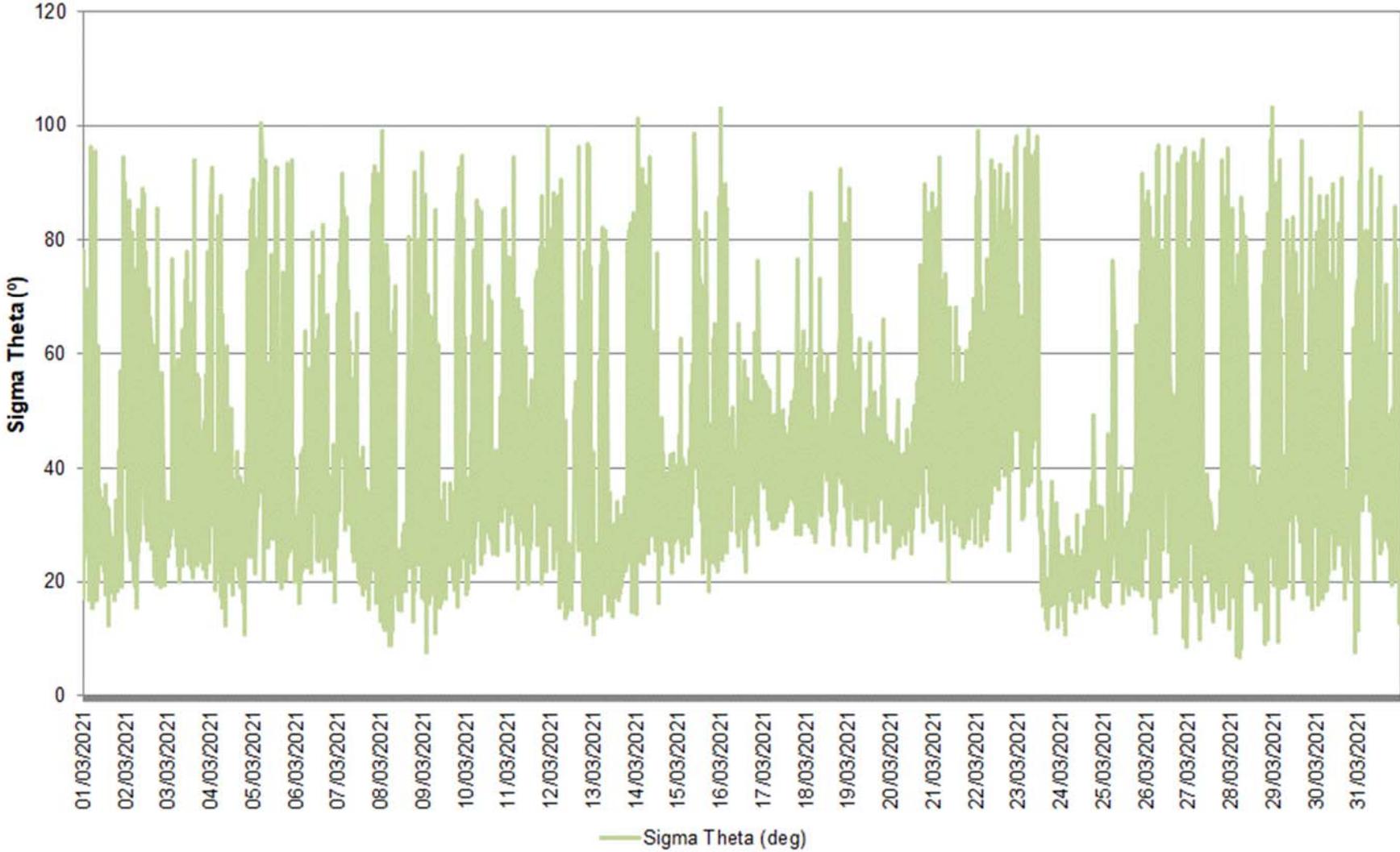
**Blackmans Flat NSW**  
**Average Air Temperature - Period: 1/03/2021 to 31/03/2021**



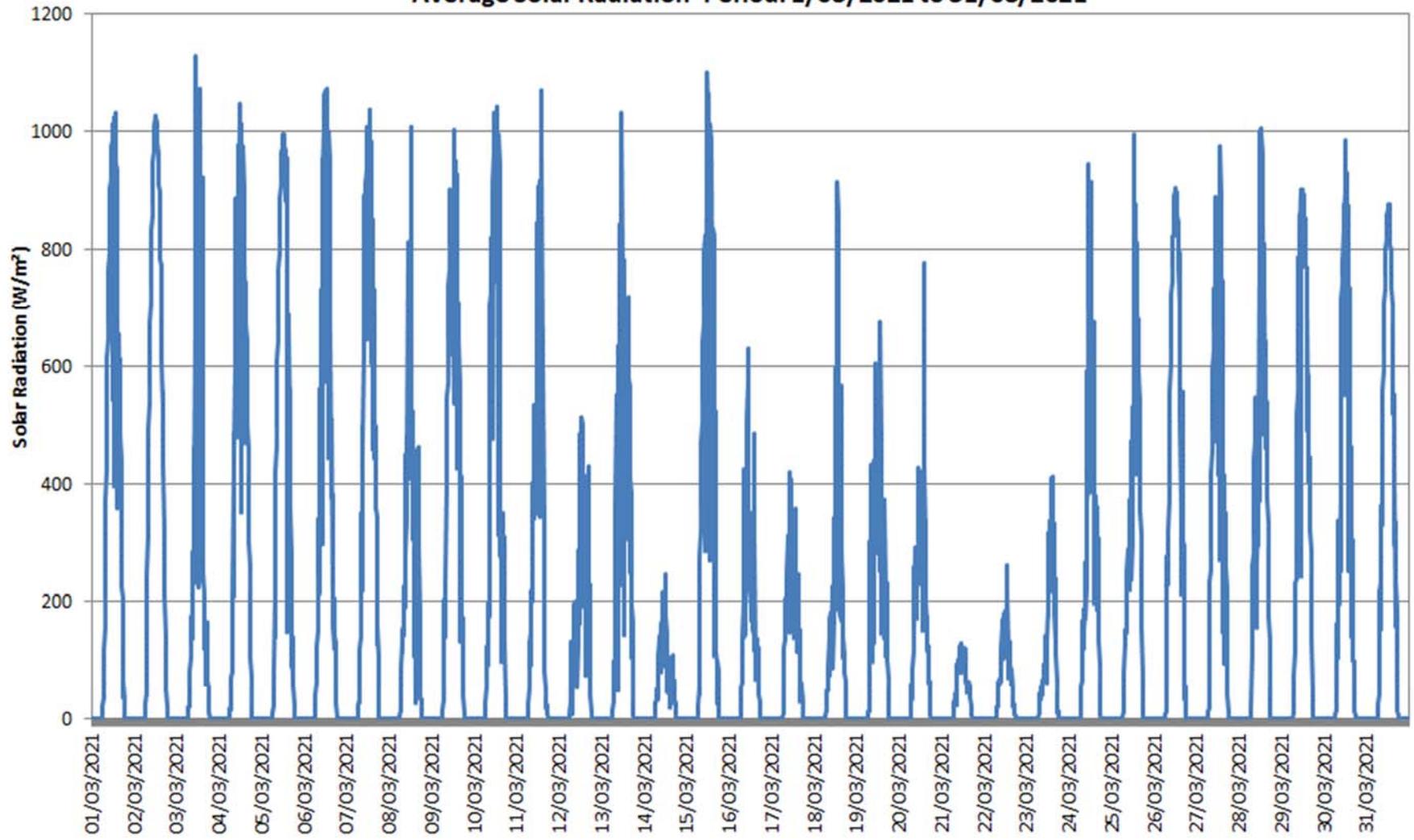
### Blackmans Flat NSW Daily Humidity Variations - Period: 1/03/2021 to 31/03/2021



**Blackmans Flat NSW**  
**Sigma Theta Variations - Period: 1/03/2021 to 31/03/2021**



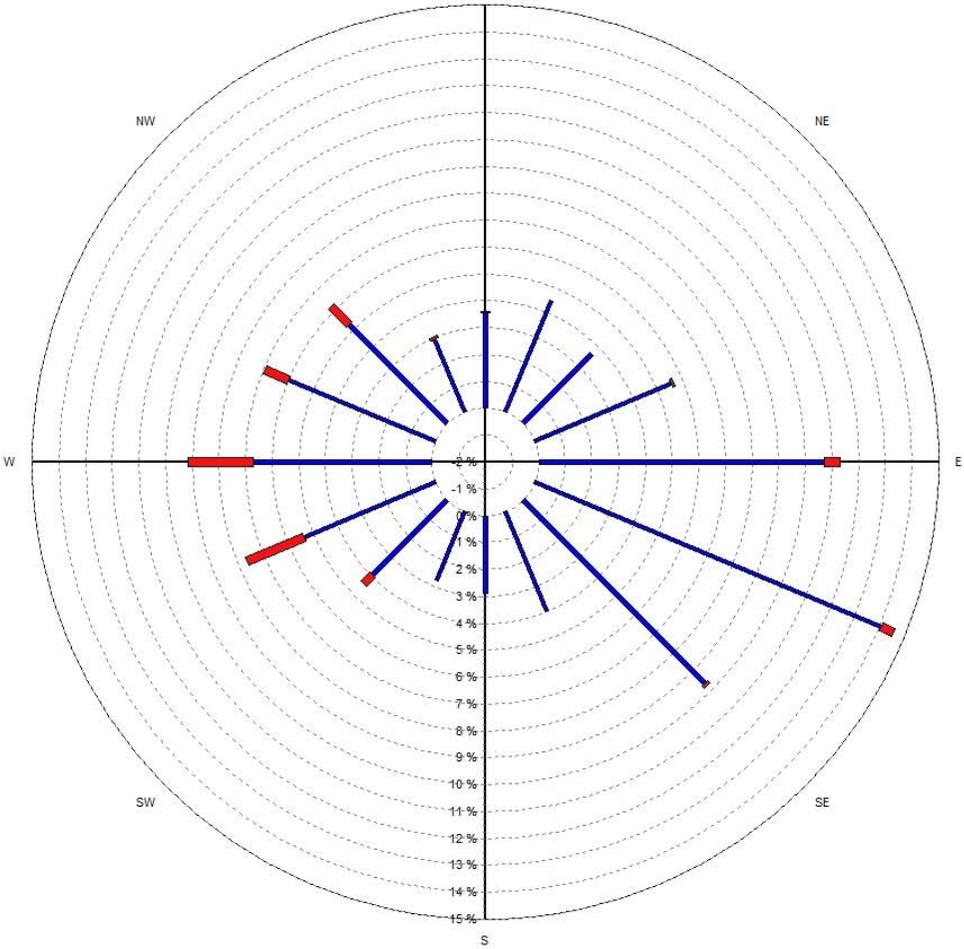
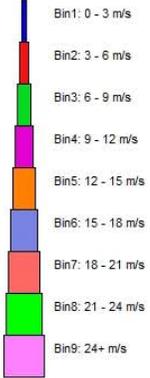
**Blackmans Flat NSW**  
**Average Solar Radiation- Period: 1/03/2021 to 31/03/2021**



PineDale.SCM

1/03/2021 to 1/04/2021

N



Source data:  
PineDale.SCM  
10 minutely data - Ave WndDir (deg)  
10 minutely data - Ave WndSpd (m/sec)