

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

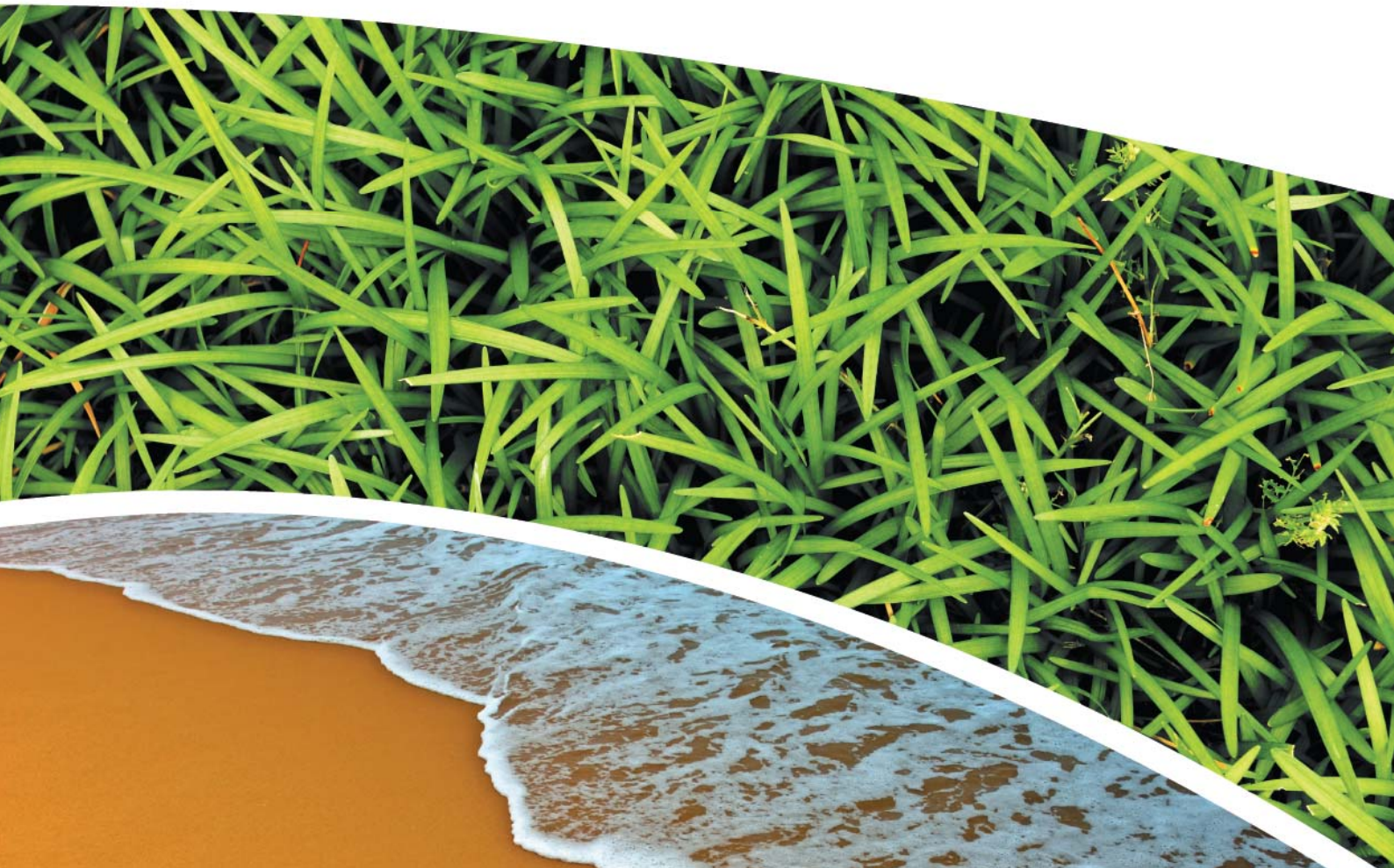
**PINE DALE MINE, BLACKMANS FLAT**

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

**Prepared by RCA Australia**

**RCA ref 6880-1868/1**

**DECEMBER 2021**



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RCA ref 6880-1868/1



17 December 2021

Enhance Place Pty Ltd  
PO Box 202  
WALLERWANG NSW 2845

Attention: Mr Graham Goodwin



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**REPORT COMPILED FOR COMMUNITY CONSULTATIVE COMMITTEE  
DETAILING AIR, WATER AND METEOROLOGICAL MONITORING AT PINE DALE  
UNDERTAKEN IN NOVEMBER 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 November 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 <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 November 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	-	11216880012	11216880013
Date Sampled	-	22/11/21	22/11/21
Time Sampled	-	9:25	10:26
Depth to Water from Surface	m	22.31	4.76
Water Level (AHD)	m	895.30	889.64
Temperature	°C	15.0	14.0
pH	pH	6.70	7.51
Conductivity	µS/cm	<b>1260</b>	796
Turbidity	NTU	27	245
Dissolved Oxygen	mg/L	1.9	245
Total Suspended Solids	mg/L	58.0	76
Oil and Grease	mg/L	<5	90
Bicarbonate Alkalinity (CaCO <sub>3</sub> )	mg/L	74	45
Total Alkalinity (CaCO <sub>3</sub> )	mg/L	74	46
Sulphate (as SO <sub>4</sub> )	mg/L	548	47
Chloride	mg/L	51	8
Calcium	mg/L	117	14.0
Magnesium	mg/L	53	7.51
Sodium	mg/L	57	796
Potassium	mg/L	20	245
Cobalt (dissolved)	mg/L	0.05	
Manganese (dissolved)	mg/L	2.18	
Nickel (dissolved)	mg/L	0.089	
Zinc (dissolved)	mg/L	0.072	
Iron (dissolved)	mg/L	18.1	<0.05
<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 italics*** 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 was undertaken during November 2021.

A new ambient surface water monitoring site, referred to as EPA point 16, was sampled during November 2021. The new site was included on the EPL on 10th November 2021 and is located at the exit to the old Wallerawang underground Colliery workings, adjacent mine access road, approximately 1km east of the Main Office area.

Results are shown in **Table 3**. There were no discharges from Pine Dale Mine during November 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	EPA point 16 Wallerawang Underground
Sample Number	-	112168800010	11216880004	11216880011	112168800016
Date Sampled	-	22/11/2021	22/11/2021	22/11/2021	22/11/21
Time Sampled	-	08:50	10:40	10:55	9:15
pH	pH	7.39	7.18	7.02	6.47
Conductivity	µS/cm	482	925	514	1520
Sulfate	NTU	130	326	163	706
Dissolved Iron	mg/L	0.1	0.19	0.21	20.2
Total Suspended Solids	mg/L	<5	<5	<5	6
Turbidity	mg/L	<1	<1	<1	<1
<b>Trigger Values</b>					
pH	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	pH	6.5 – 8.0	6.5 – 8.0	6.5 – 8.0	--
Conductivity	µS/cm	5592	5592	5592	--
Total Suspended Solids	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 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 November 2021 was 5 October 2021 – 4 November 2021. Depositional dust gauges at this facility conform to AS/NZS 3580.10.1:2016 and AS/NZS 3580.1.1:2016. The November 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	<0.1	<0.1	<0.1
D3	30	T	0.3	0.1	0.2
D4	30	IT	0.1	<0.1	0.1
D5	30	IT	0.4	0.1	0.3
D6	30	I	0.2	<0.1	0.2

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 (December 2020 – November 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/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 30 November 2021 are shown in **Appendix C**.

10 minute data availability during this period was 100%.



As of 10 November 2021, as authorised via an approved variation to the EPL, the location of the meteorological monitoring has been moved to the weather station situated at Mt Piper power station. Details of the weather data recorded during the period 1 to 30 November 2021 are shown in **Appendix D**: data capture was 99.77%. From December 2021, only the Mt Piper data will be utilised.

## 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 November 2021; the next monitoring round is due before the end of December 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 November 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.

The pH at P6 and P7 were both above the respective revised lower site-specific trigger value and is therefore compliant; there is no limit for electrical conductivity as part of the revised trigger values and the electrical conductivity concentration at P7 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 November with 100% data capture at the on-site weather station and 99.77% for the Mt Piper Weather Station which will be used in accordance to the EPL.

Quarterly noise monitoring was not undertaken during November 2021; the next monitoring round is due before the end of December 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**



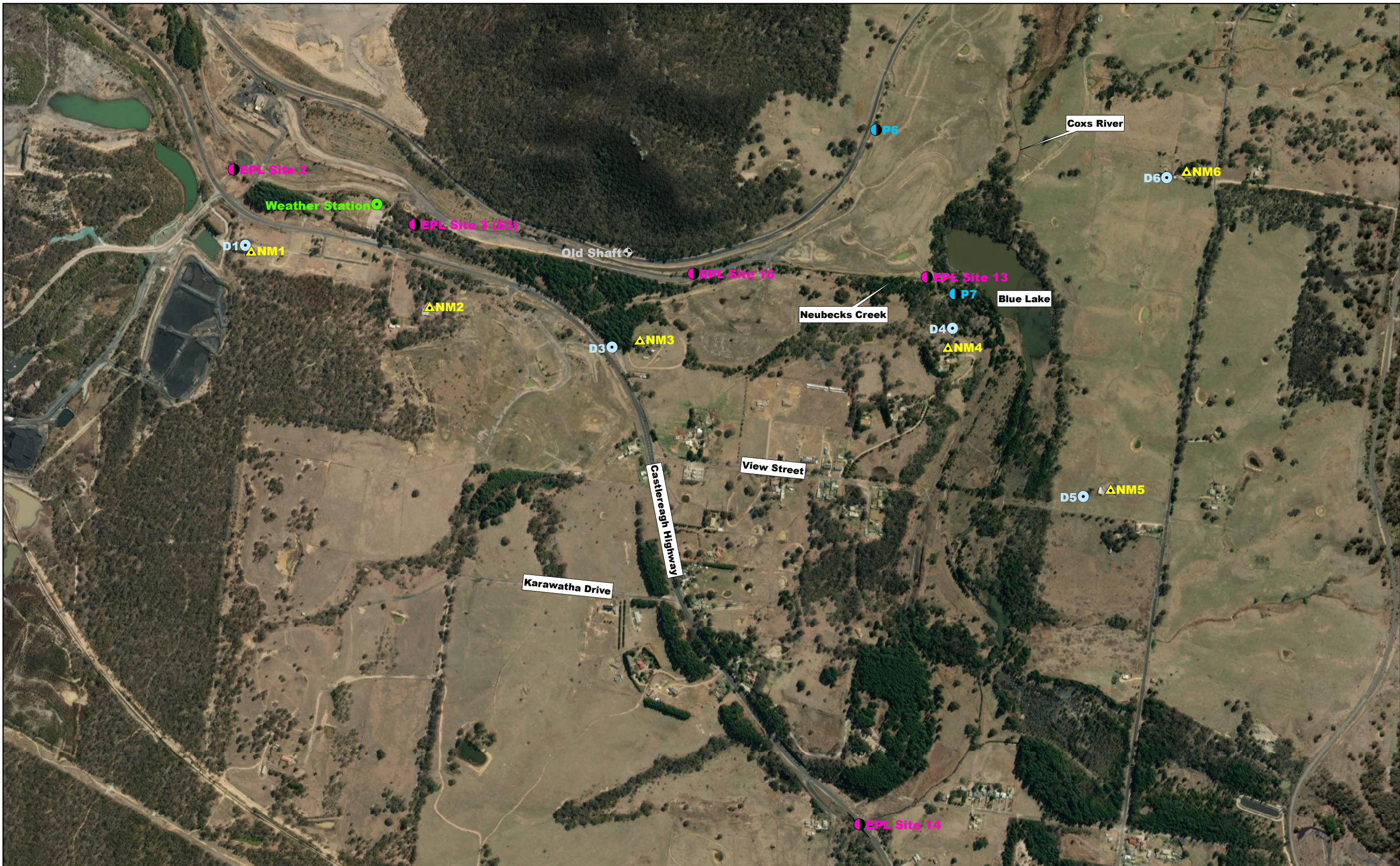
Fiona Brooker  
Manager of Environmental Services  
RCA Australia

# Appendix A

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## Monitoring Locations



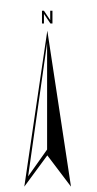


**LEGEND**

Noise Monitoring Location	Meteorological Monitoring Location
Depositional Dust Monitoring Location	Surface Water Monitoring Location
Groundwater Monitoring Location	Historical groundwater monitoring location

Note: Aerial taken from ArcGis Base Map, September 10 2018

0 62.5 125 250 375 500  
 1:10000 (metres)



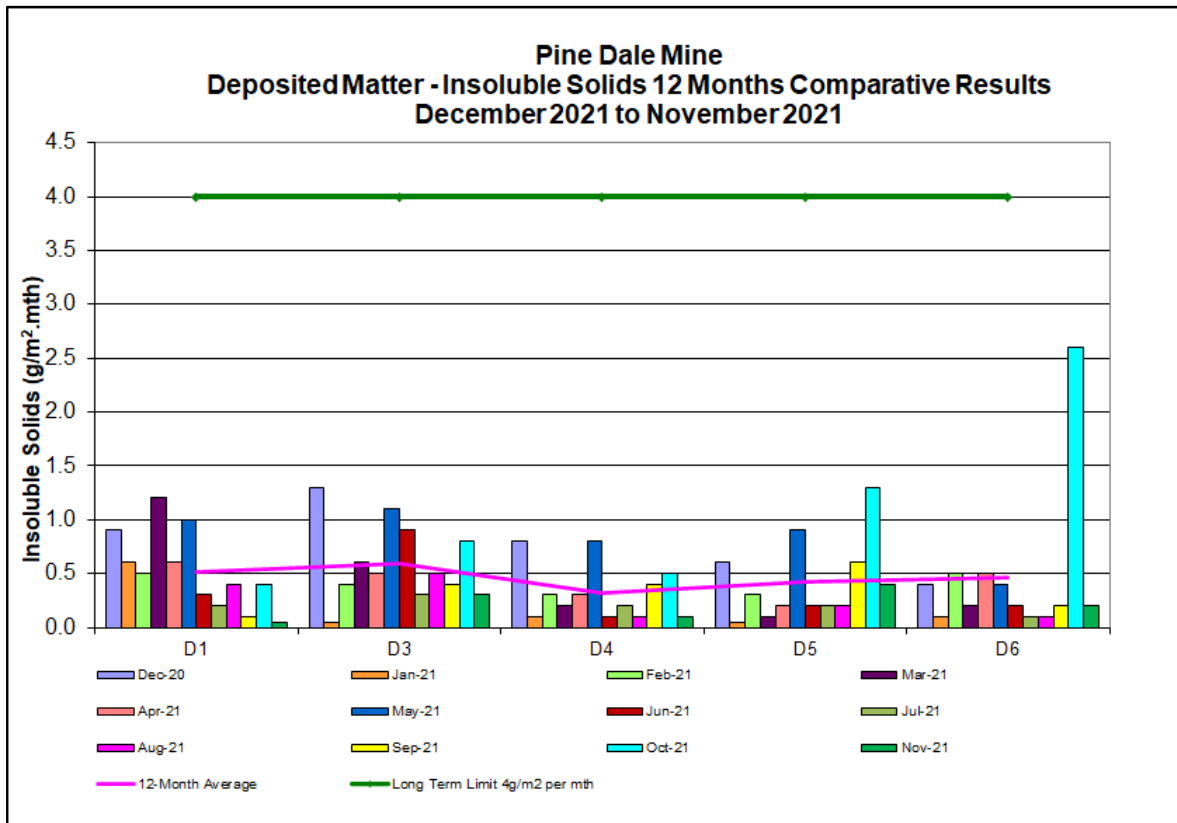
PINE DALE MINE  
 ENVIRONMENTAL MONITORING  
 LOCATION PLAN



# Appendix B

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Depositional Dust Graph

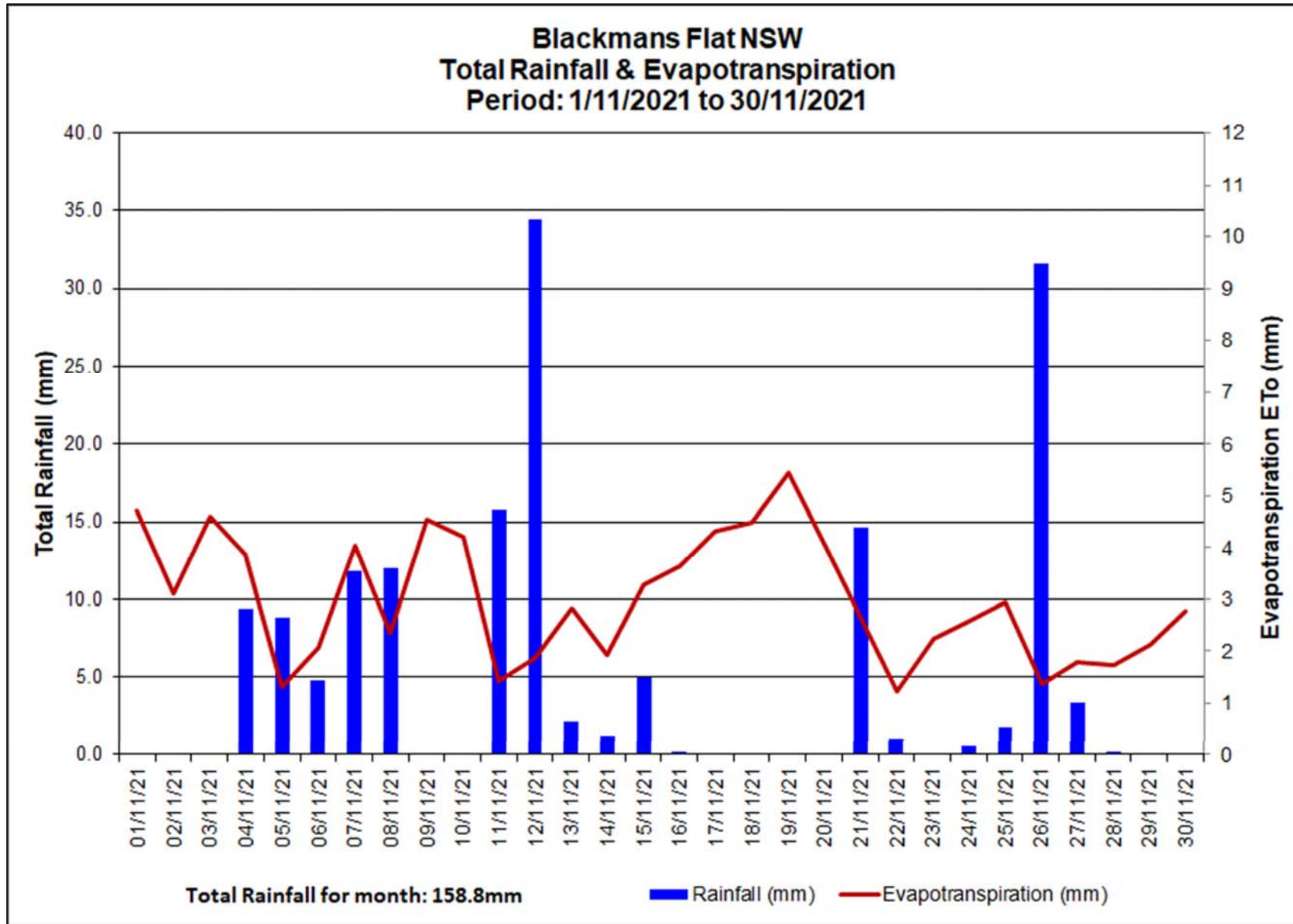


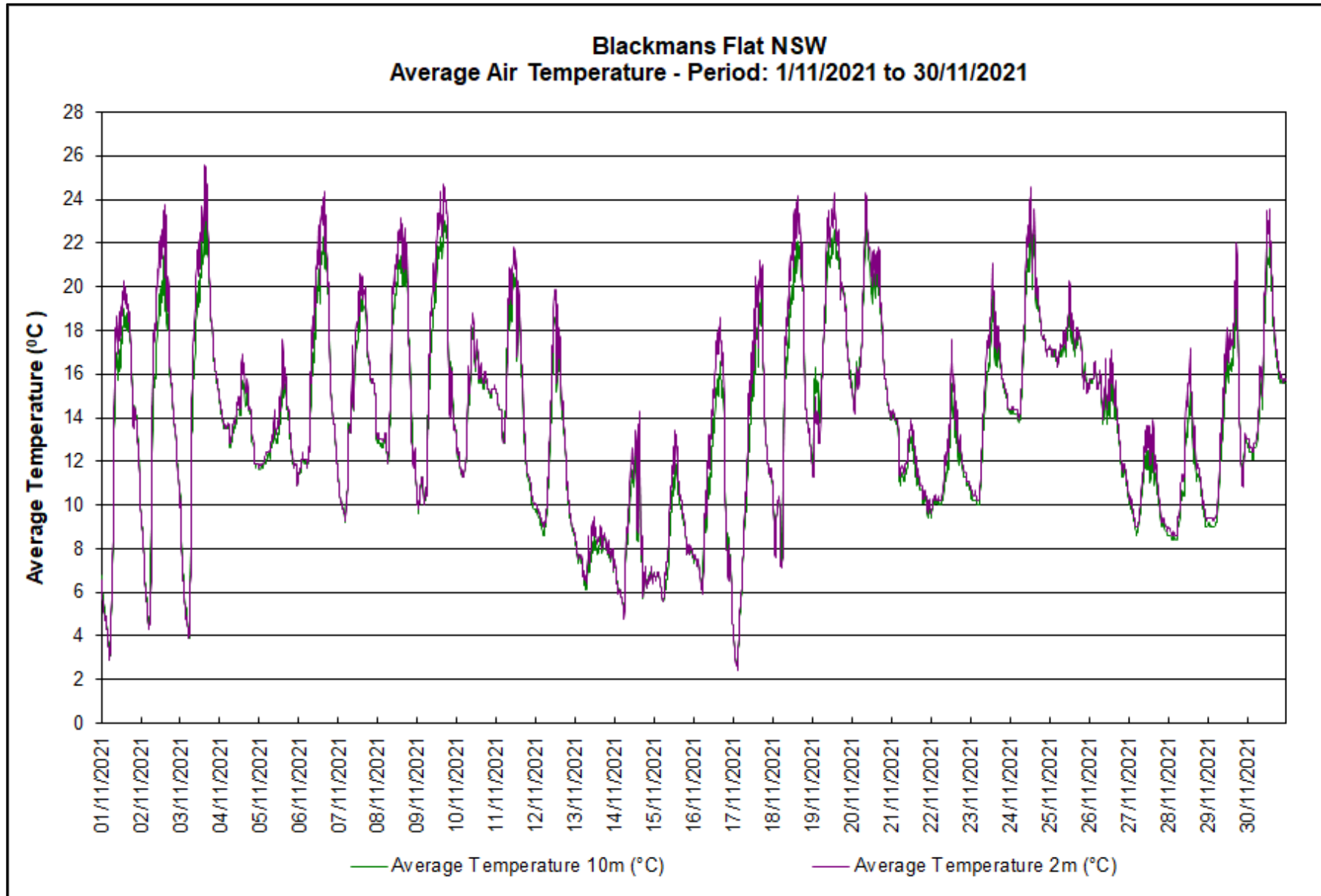


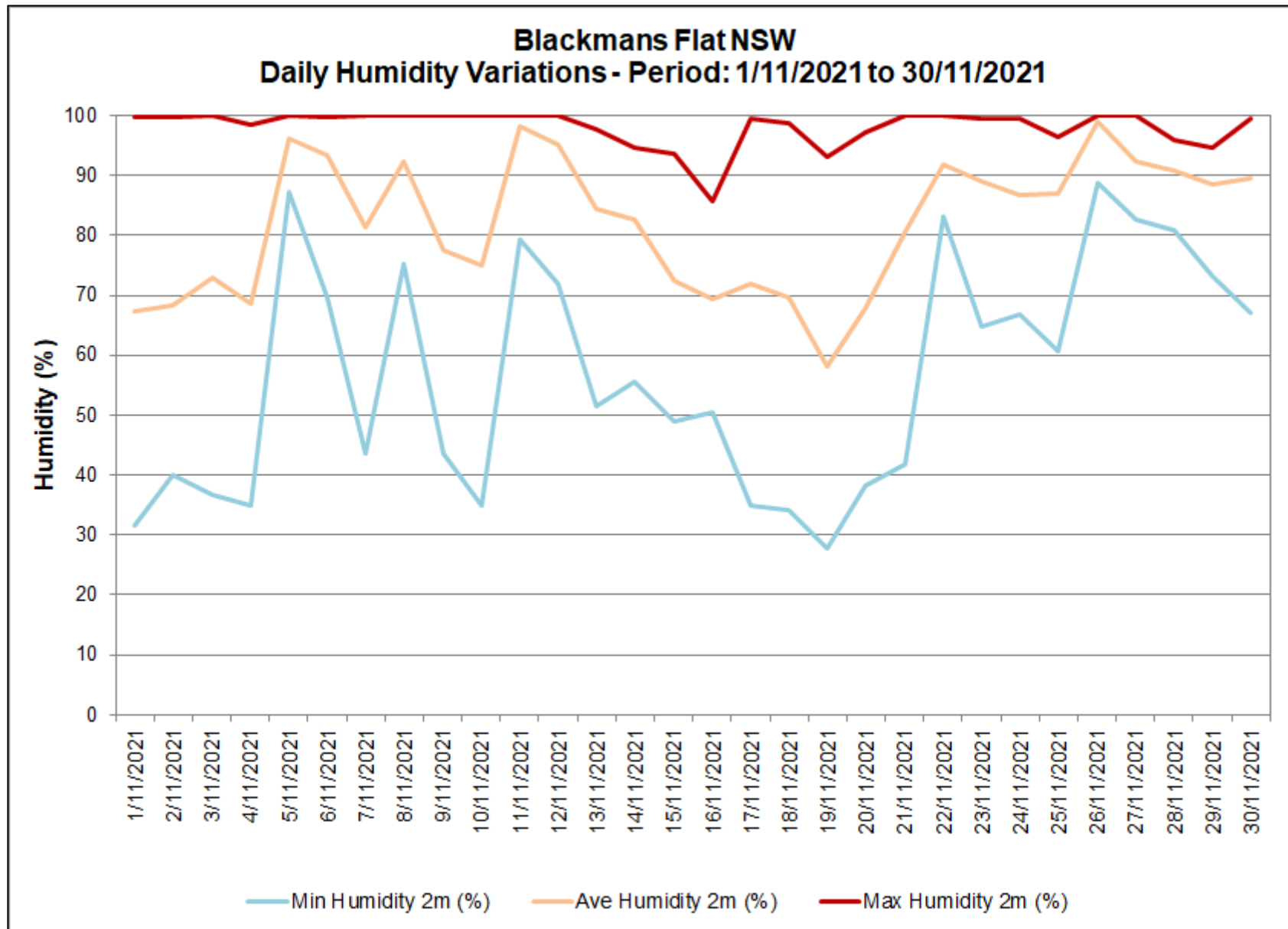
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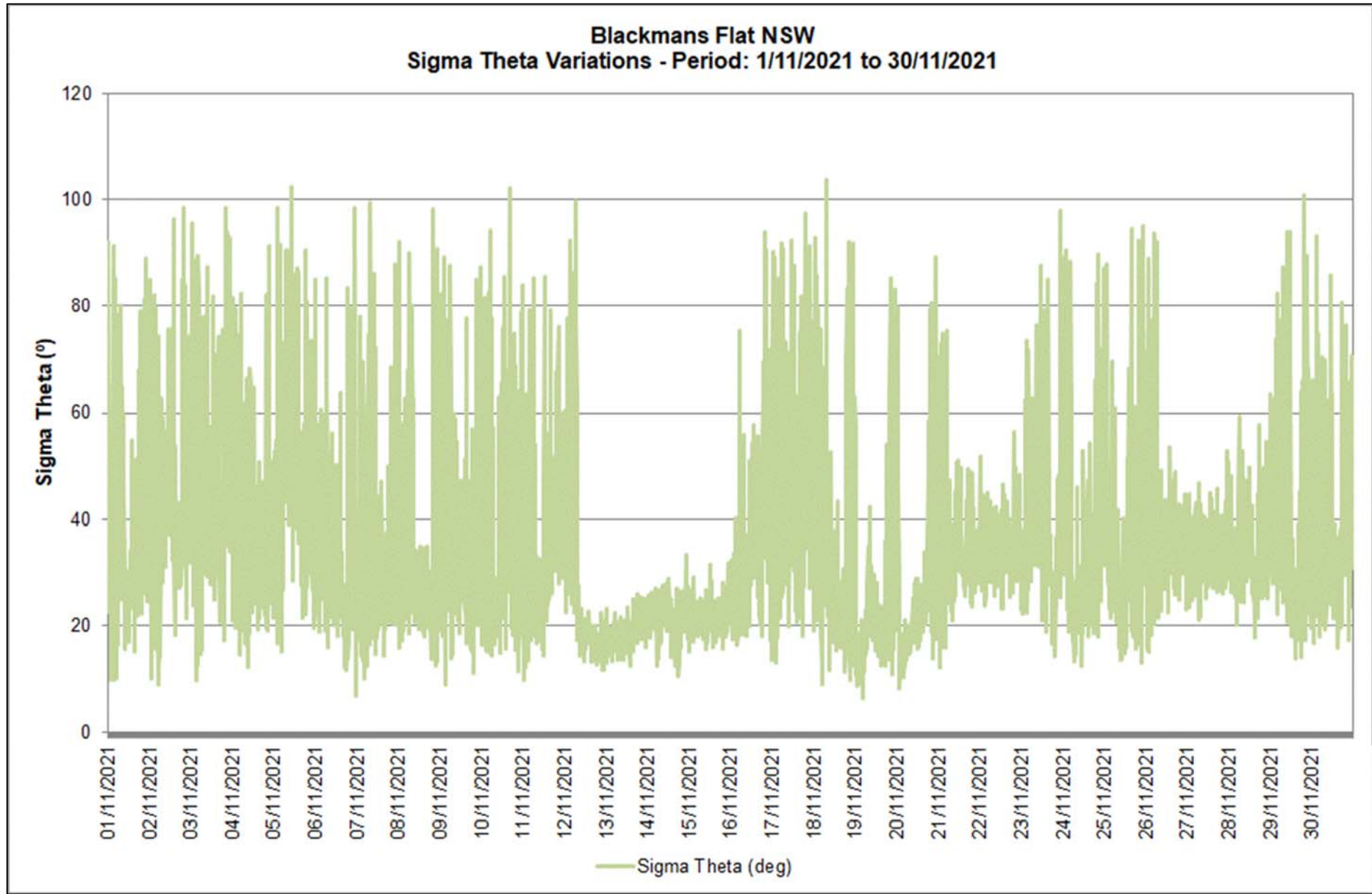
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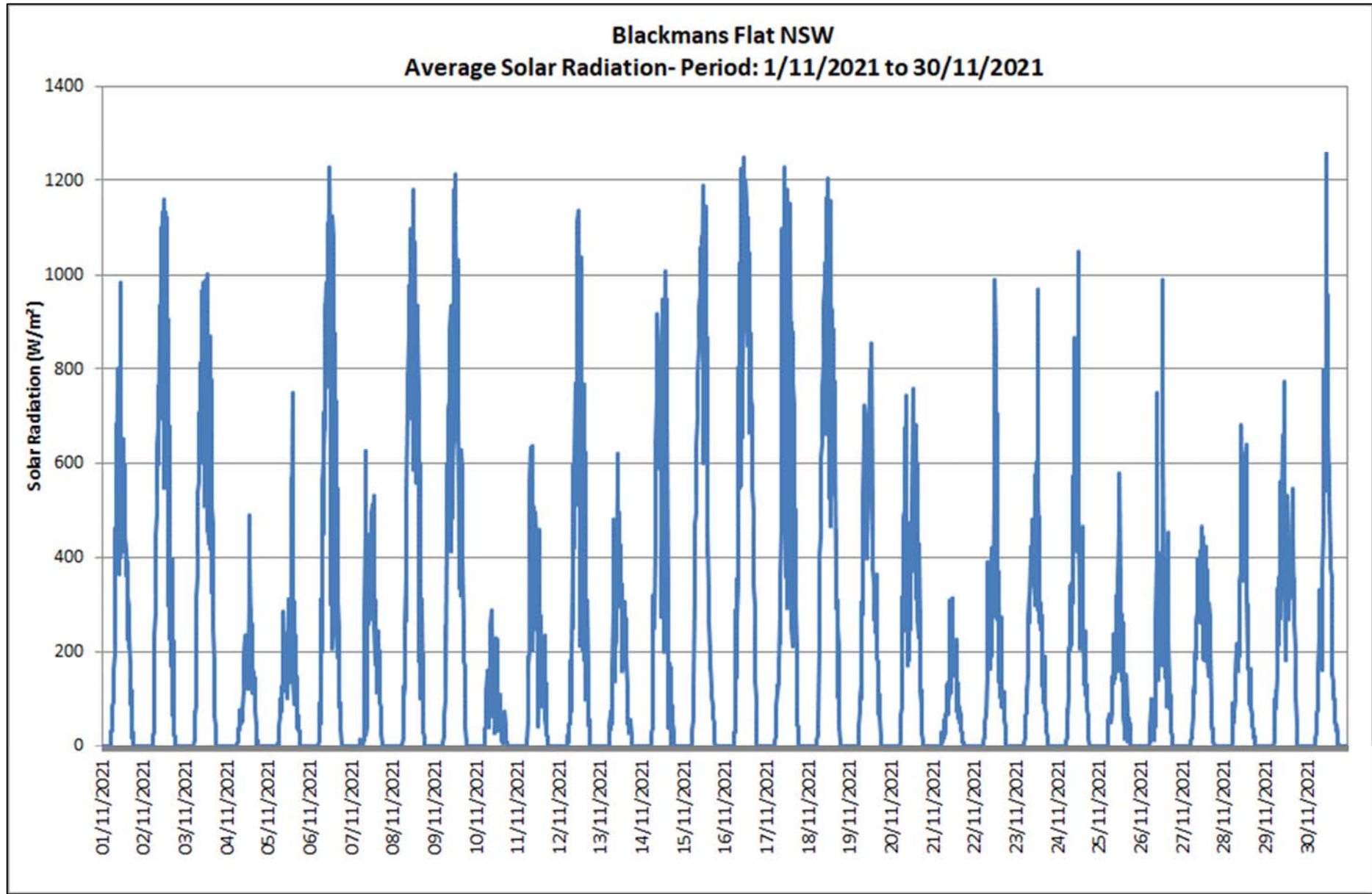
Meteorological Data (on-site weather station)



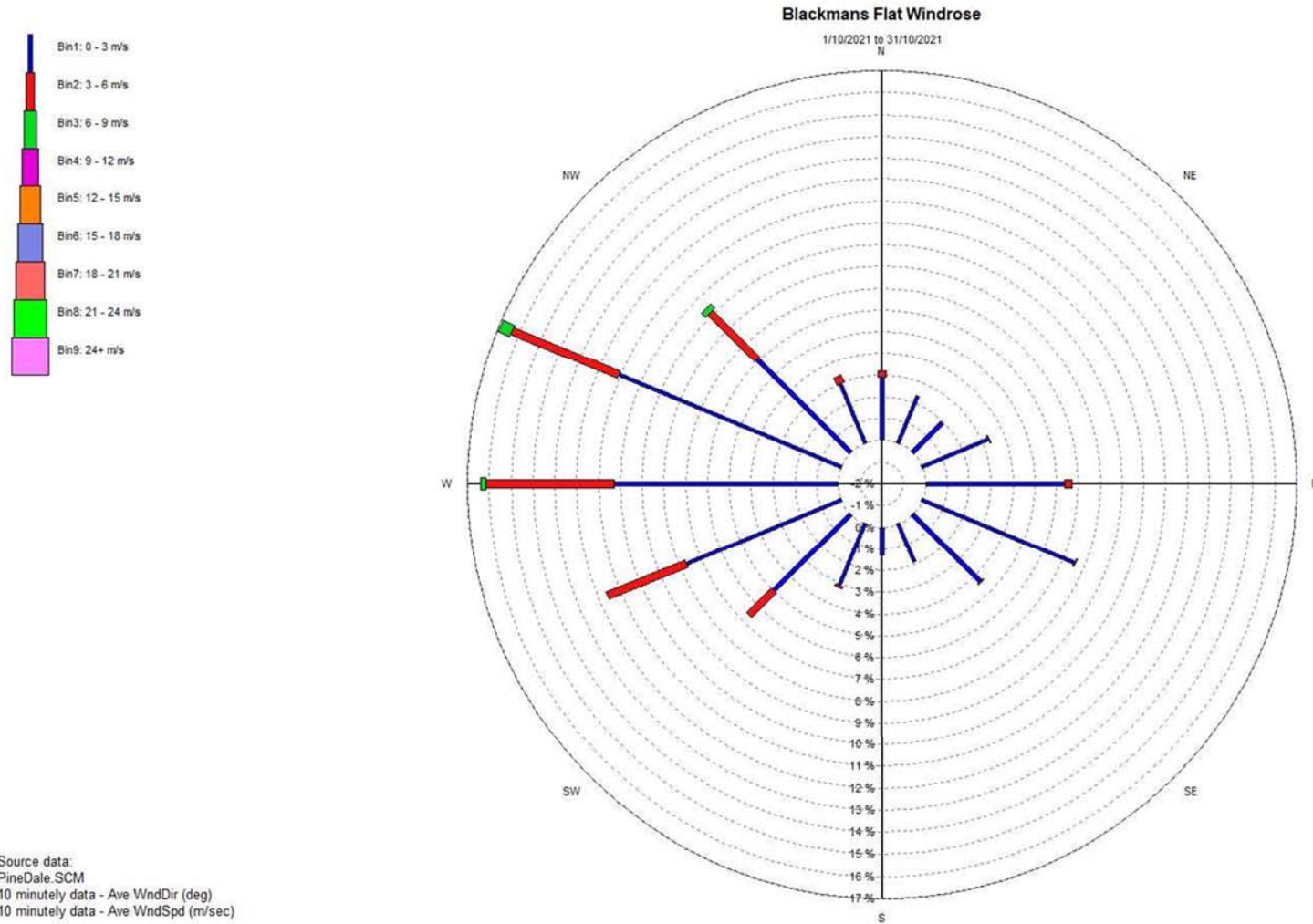








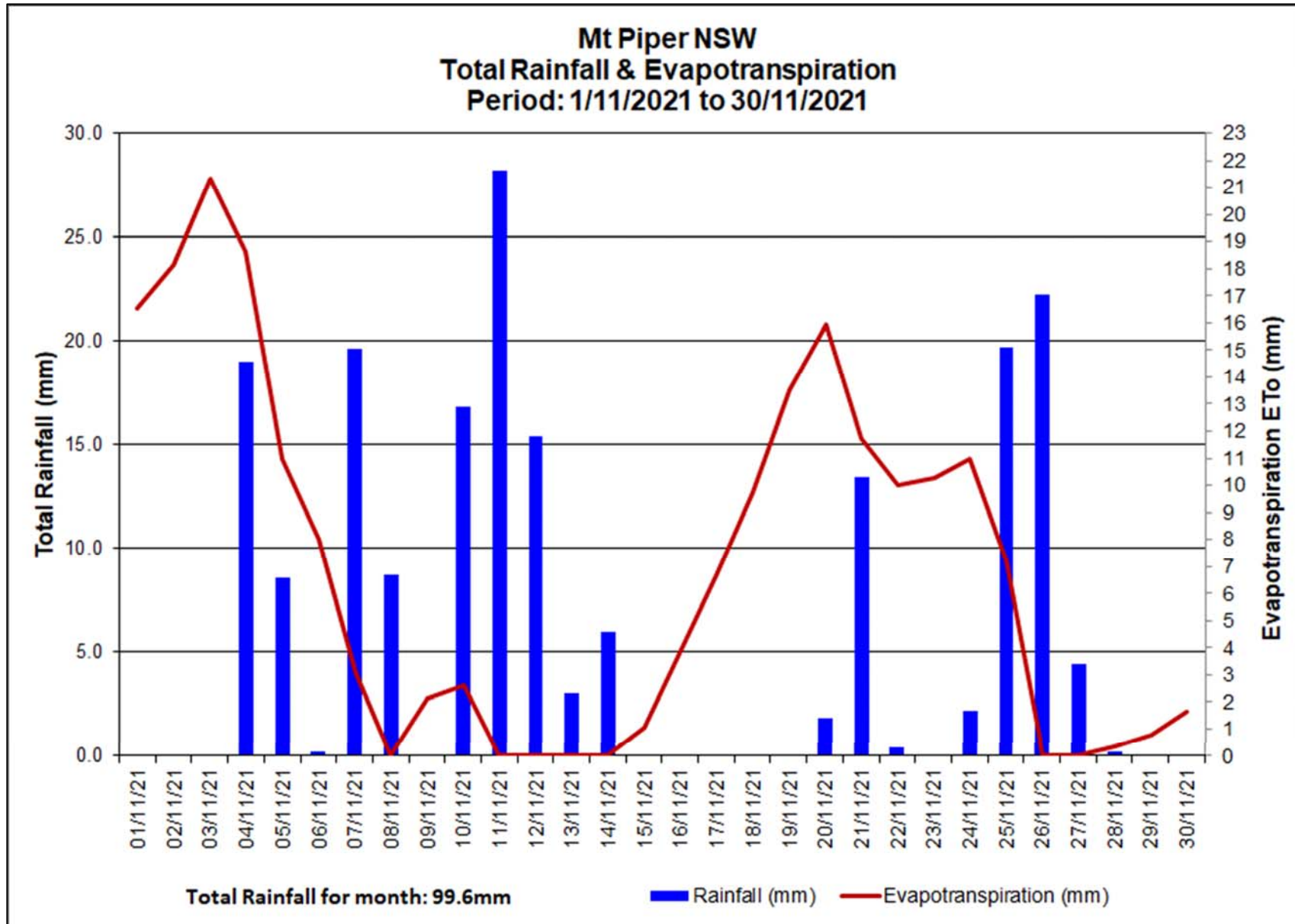


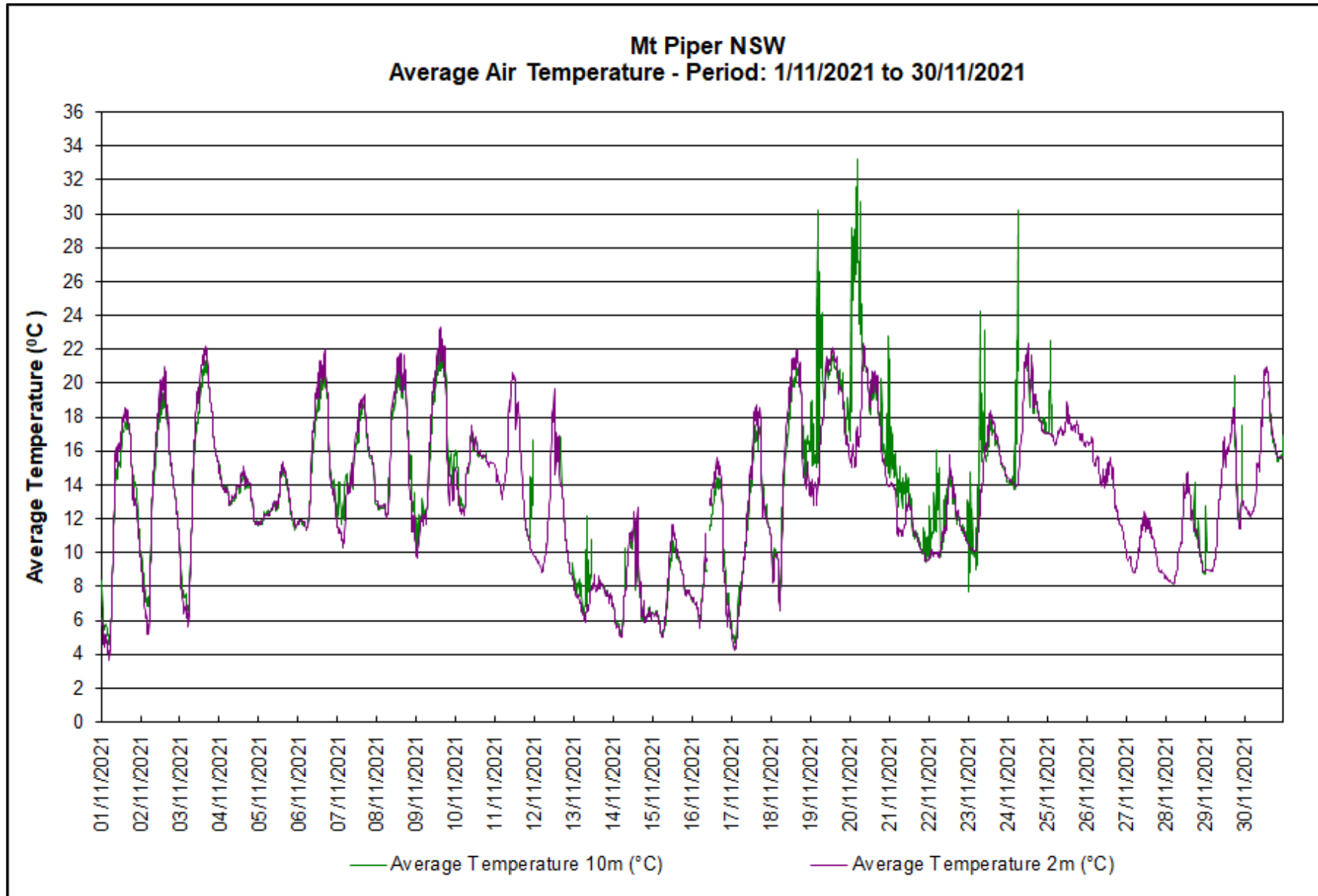


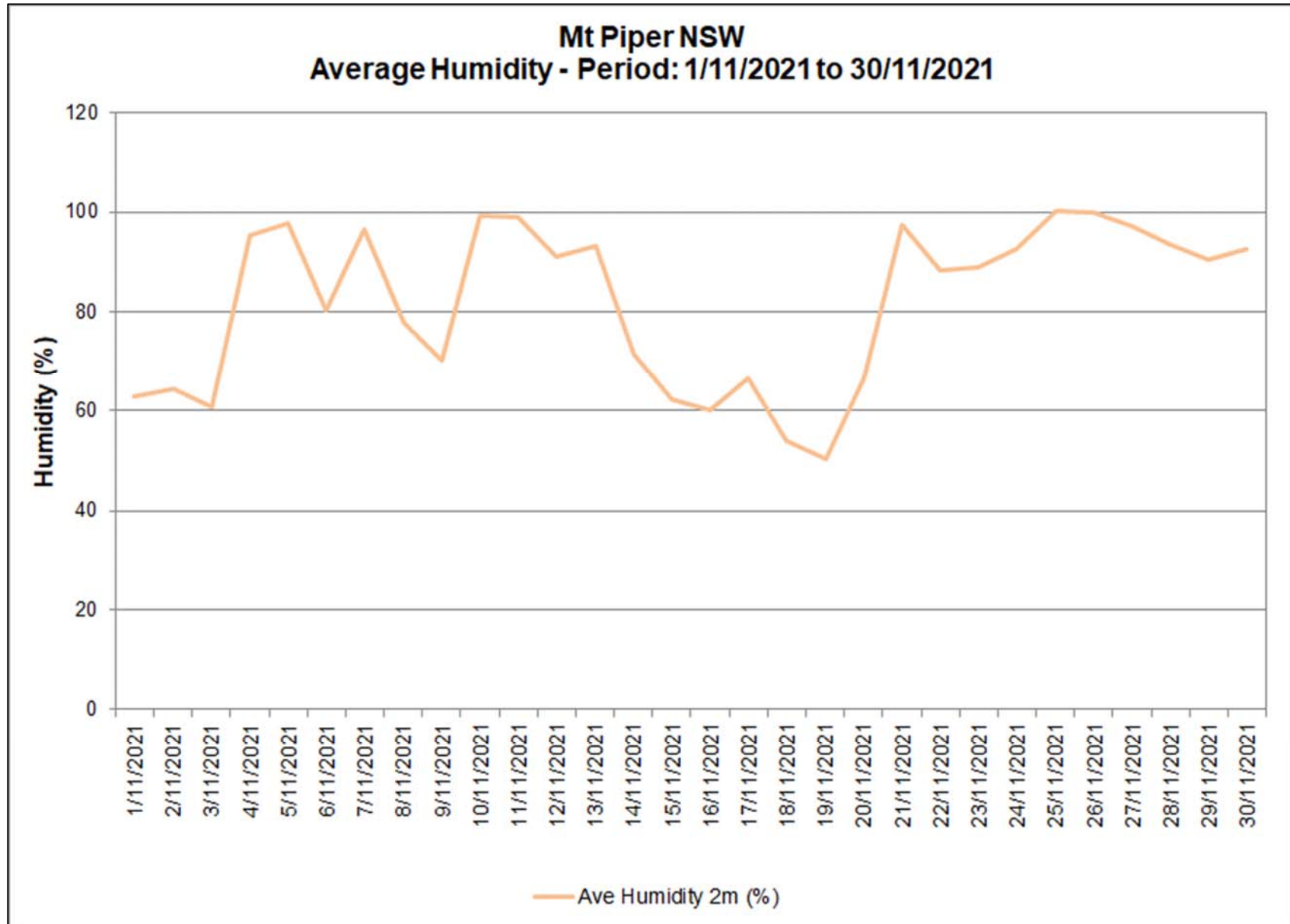
# Appendix D

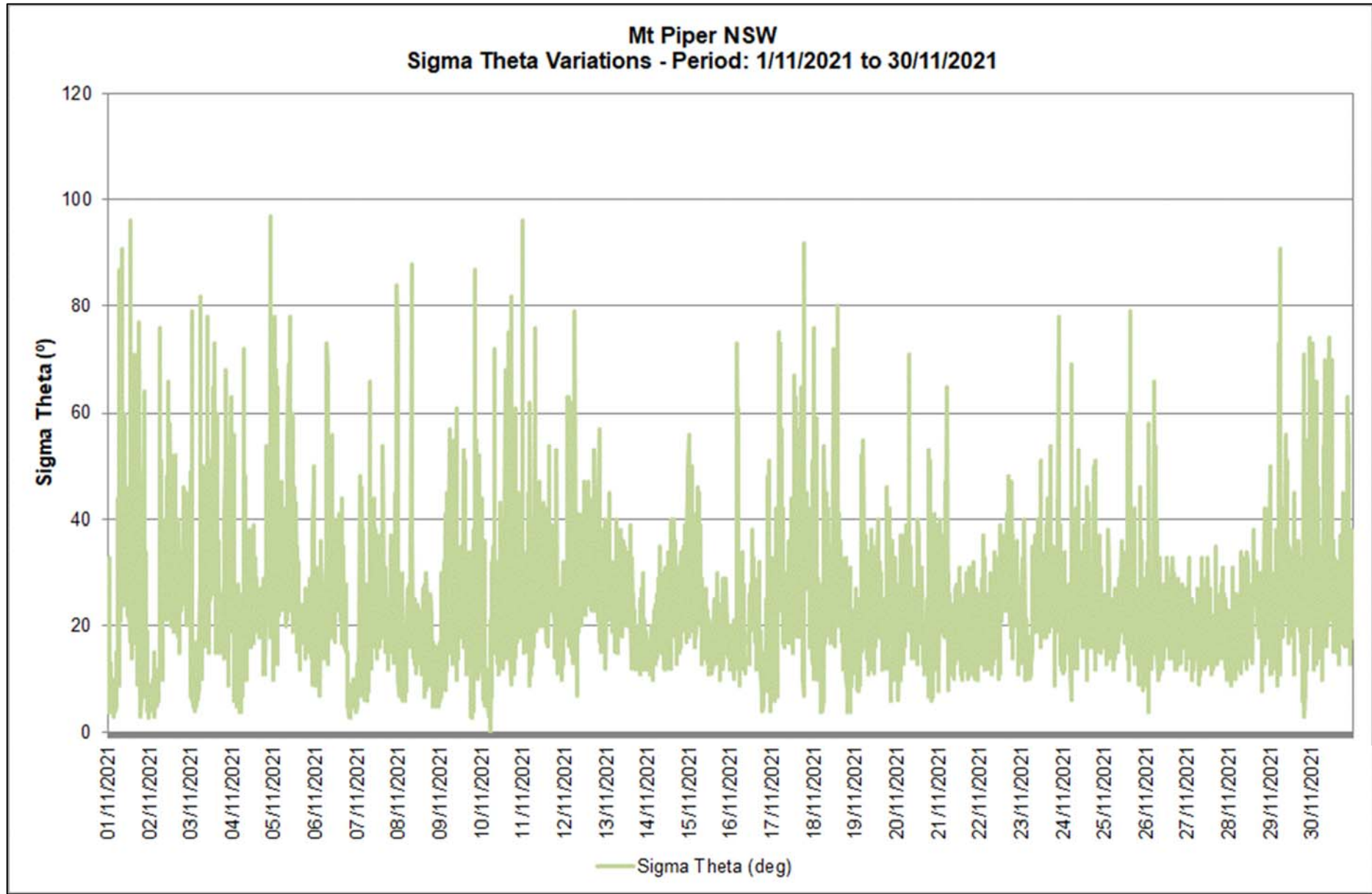
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Meteorological Data (Mt Piper weather station)

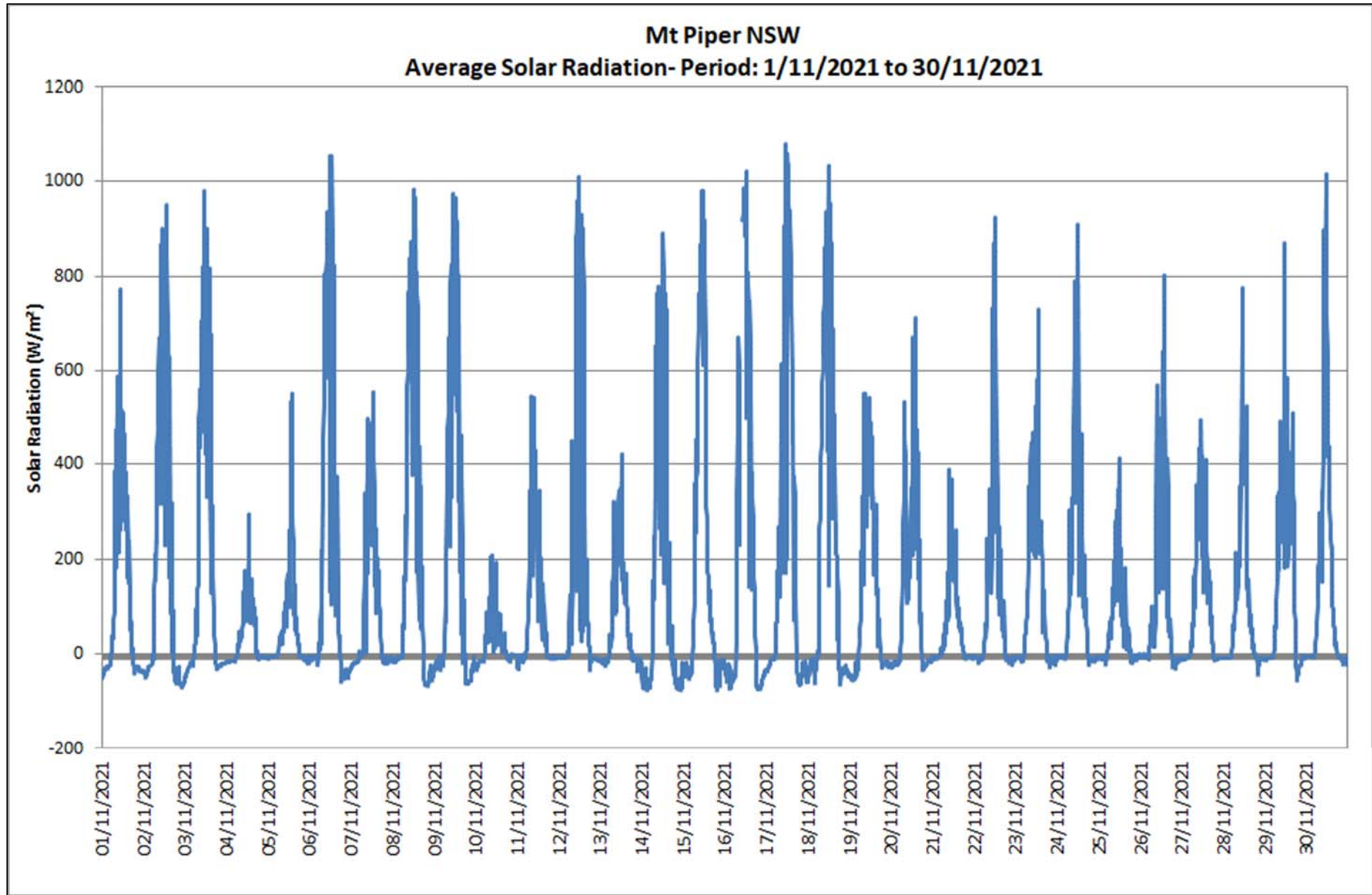












Pine Dale Mine Community Consultative Committee  
 Air, Water, Noise and Meteorological Monitoring – November 2021  
 Pine Dale Mine, Blackmans Flat  
 RCA ref 6880-1868/1, December 2021

