
Manning Colliery Monthly Website Report – February 2023

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| Site: | Manning Colliery |
| Department: | Technical Services |
| Report Title: | Monthly Environmental Report – February 2023 |
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Monthly Website Report

Mannering Colliery Monthly Environmental Report – February 2023

Table of Contents

| | |
|---------------------------------------|----|
| Summary | 3 |
| Introduction | 3 |
| Scope | 4 |
| Definitions | 4 |
| References | 4 |
| Monitoring Results | 5 |
| Water – Quality | 5 |
| Water – Volume | 7 |
| Water – Groundwater Discharge | 7 |
| Air Quality – Depositional Dust | 8 |
| Air Quality – PM ₁₀ | 10 |
| Air Quality – PM _{2.5} | 11 |
| Weather Data | 12 |

Monthly Website Report

Mannering Colliery Monthly Environmental Report – February 2023

Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of February 2023.

Introduction

Great Southern Energy Pty Ltd (trading as Delta Coal) operates Mannering Colliery, an underground coal mine at the southern end of Lake Macquarie.

Mannering Colliery operates under the following regulatory instruments:

- Section 66(6) of the *Protection of the Environment Operations Act 1997*, to make monitoring data related to an Environment Protection Licence (EPL) publicly available;
- Condition 10 & 13, Schedule 5, of Project Approval 06_0311 (as modified) to provide details of monitoring results and environmental performance;
- An Environment Protection Licence (EPL 191) issued under the *Protection of the Environment Operations Act 1997*; and
- A Water Access Licence (WAL40461), Aquifer (Sydney Basin – North Coast Groundwater Source) for 450-unit shares (megalitres).

Details of the Mannering Colliery EPL 191 are provided below.

| Mannering Colliery Information | |
|--------------------------------|--|
| Premises name | Mannering Colliery |
| Address | Ruttleys Road, Doyalson, NSW, 2262 |
| Licensee | Great Southern Energy Pty Ltd |
| EPL # | 191 |
| EPL location | EPL 0191 - 14 April 2021 |

The overall purpose of this monthly report is to keep stakeholders informed of the environmental monitoring results at Mannering Colliery and maintain a transparent and accountable reporting system.

Monthly Website Report

Manning Colliery Monthly Environmental Report – February 2023

Scope

This report presents the results from the various environmental monitoring programs undertaken for Manning Colliery. Results are presented monthly with annual data, averages and trends in data also shown where relevant.

Where applicable, the results of the monitoring programs are compared with the relevant criteria (from the EPL or Project Approval) to assess compliance.

Monitoring results presented include:

- Water – quality;
- Water – volume;
- Air Quality – Depositional Dust
- Air Quality – PM₁₀
- Air Quality – PM_{2.5}; and
- Meteorological data.

Definitions

g/m²/month – grams per square metre per month;

kL – kilolitre;

ML – megalitre;

mg/L – milligrams per litre;

TSS – total suspended solids;

µg/L – micrograms per litre; and

µS/cm – microSiemens per centimetre.

References

Project Approval MP06_0311 (as modified)

Environment Protection Licence 191 (Licence version date: 14 April 2021)

ALS - Dust Deposition Report **February 2023**

ALS – MC Water Analysis Reports **February 2023**

Monthly Website Report

Mannering Colliery Monthly Environmental Report – February 2023

Monitoring Results

Water – Quality

Weekly water quality results for discharge point LDP001 are presented below.

| February 2023 | | | | |
|-----------------------------|-------------------------------|------------|-----------------------|---------------------------------|
| EPL | 191 | | | |
| Licensee | Great Southern Energy Pty Ltd | | | |
| Premises | Mannering Colliery | | | |
| Location | LDP001 (EPA ID # 1) | | | |
| Sample Frequency | Weekly | | | |
| pH limit | 6.5 - 8.5 | | | |
| TSS limit (mg/L) | 50 | | | |
| Oil and grease limit (mg/L) | 10 | | | |
| Water Quality Results | | | | |
| Date | pH | TSS (mg/L) | Oil and grease (mg/L) | Electrical Conductivity (µS/cm) |
| 01/02/2023 | 7.71 | 7 | <5 | 26,200 |
| 12/02/2023 | 7.76 | <5 | <5 | 25,600 |
| 14/02/2023 | 8.18 | 7 | <5 | 12,400 |
| 26/02/2023 | 7.78 | 15 | <5 | 25,900 |
| Average | 7.86 | 7.9 | <5 | 22,525 |

There were no exceedances of water quality criteria in February 2023 at Mannering Colliery.

Monthly water quality results, primarily metals and metalloids, at LDP001 are presented below for the period.

Monthly Website Report

Mannering Colliery Monthly Environmental Report – February 2023

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

Sample ID

LDP001

Sampling date / time

14-Feb-2023 12:00

Compound

CAS Number

LOR

Unit

ES2304806-001

Result

ED040F: Dissolved Major Anions

| | | | | |
|-----------------|------------|-----|------|-----|
| Sulfur as S | 63705-05-5 | 1 | mg/L | 76 |
| Silicon as SiO2 | 14464-46-1 | 0.1 | mg/L | 6.8 |

ED093T: Total Major Cations

| | | | | |
|-----------|-----------|---|------|------|
| Calcium | 7440-70-2 | 1 | mg/L | 118 |
| Magnesium | 7439-95-4 | 1 | mg/L | 128 |
| Sodium | 7440-23-5 | 1 | mg/L | 2430 |

EG020F: Dissolved Metals by ICP-MS

| | | | | |
|------------|-----------|-----|------|------|
| Aluminium | 7429-90-5 | 10 | µg/L | <10 |
| Arsenic | 7440-38-2 | 1 | µg/L | 10 |
| Beryllium | 7440-41-7 | 1 | µg/L | <1 |
| Cadmium | 7440-43-9 | 0.1 | µg/L | <0.1 |
| Chromium | 7440-47-3 | 1 | µg/L | <1 |
| Cobalt | 7440-48-4 | 1 | µg/L | <1 |
| Copper | 7440-50-8 | 1 | µg/L | 2 |
| Lead | 7439-92-1 | 1 | µg/L | <1 |
| Manganese | 7439-96-5 | 1 | µg/L | 49 |
| Molybdenum | 7439-98-7 | 1 | µg/L | 8 |
| Nickel | 7440-02-0 | 1 | µg/L | 1 |
| Selenium | 7782-49-2 | 10 | µg/L | <10 |
| Silver | 7440-22-4 | 1 | µg/L | <1 |
| Vanadium | 7440-62-2 | 10 | µg/L | <10 |
| Zinc | 7440-66-6 | 5 | µg/L | 5 |

EG020T: Total Metals by ICP-MS

| | | | | |
|------------|-----------|-----|------|------|
| Aluminium | 7429-90-5 | 10 | µg/L | 40 |
| Antimony | 7440-36-0 | 1 | µg/L | 4 |
| Arsenic | 7440-38-2 | 1 | µg/L | 11 |
| Beryllium | 7440-41-7 | 1 | µg/L | <1 |
| Barium | 7440-39-3 | 1 | µg/L | 302 |
| Cadmium | 7440-43-9 | 0.1 | µg/L | <0.1 |
| Chromium | 7440-47-3 | 1 | µg/L | <1 |
| Cobalt | 7440-48-4 | 1 | µg/L | <1 |
| Copper | 7440-50-8 | 1 | µg/L | <1 |
| Lead | 7439-92-1 | 1 | µg/L | <1 |
| Lithium | 7439-93-2 | 1 | µg/L | 267 |
| Molybdenum | 7439-98-7 | 1 | µg/L | 10 |
| Nickel | 7440-02-0 | 1 | µg/L | <1 |
| Selenium | 7782-49-2 | 10 | µg/L | <10 |
| Silver | 7440-22-4 | 1 | µg/L | <1 |
| Tin | 7440-31-5 | 1 | µg/L | <1 |
| Titanium | 7440-32-6 | 10 | µg/L | <10 |
| Vanadium | 7440-62-2 | 10 | µg/L | <10 |
| Zinc | 7440-66-6 | 5 | µg/L | 6 |
| Boron | 7440-42-8 | 50 | µg/L | 190 |
| Iron | 7439-89-6 | 50 | µg/L | <50 |

EG035F: Dissolved Mercury by FIMS

| | | | | |
|---------|-----------|-----|------|------|
| Mercury | 7439-97-6 | 0.1 | µg/L | <0.1 |
|---------|-----------|-----|------|------|

EG035T: Total Recoverable Mercury by FIMS

| | | | | |
|---------|-----------|-----|------|------|
| Mercury | 7439-97-6 | 0.1 | µg/L | <0.1 |
|---------|-----------|-----|------|------|

EK055G: Ammonia as N by Discrete Analyser

| | | | | |
|--------------|-----------|------|------|------|
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | 0.19 |
|--------------|-----------|------|------|------|

EK067G: Total Phosphorus as P by Discrete Analyser

| | | | | |
|-----------------------|------|------|------|------|
| Total Phosphorus as P | ---- | 0.01 | mg/L | 0.04 |
|-----------------------|------|------|------|------|

Monthly Website Report

Mannering Colliery Monthly Environmental Report – February 2023

Water – Volume

Monthly water volumes discharged via LDP001 at Mannering Colliery are summarised below.

| February 2023 | | |
|------------------------|-------------------------------|--|
| EPL | 191 | |
| Licensee | Great Southern Energy Pty Ltd | |
| Premises | Mannering Colliery | |
| Date Sampled | Daily | |
| Date Reported | Refer report date | |
| Discharge volume limit | 4000 kilolitres per day | |
| Sampling Point | LDP001 (EPA ID # 1) | |

| Date (24 hour period) | LDP 1 Volume (kL/day) | Rainfall (mm) |
|-----------------------|-----------------------|---------------|
| 01/02/2023 | 911.47 | 0 |
| 02/02/2023 | 922.47 | 0 |
| 03/02/2023 | 1117.54 | 0 |
| 04/02/2023 | 838.91 | 0 |
| 05/02/2023 | 796.35 | 0 |
| 06/02/2023 | 1029.9 | 0 |
| 07/02/2023 | 1007.98 | 0 |
| 08/02/2023 | 800.73 | 0 |
| 09/02/2023 | 1571.15 | 31 |
| 10/02/2023 | 1393.58 | 0.2 |
| 11/02/2023 | 607.45 | 0 |
| 12/02/2023 | 994.99 | 0 |
| 13/02/2023 | 944.35 | 5.2 |
| 14/02/2023 | 968.84 | 3.4 |
| 15/02/2023 | 725.91 | 1.4 |
| 16/02/2023 | 913.88 | 0 |
| 17/02/2023 | 884.53 | 0 |
| 18/02/2023 | 714.85 | 4.2 |
| 19/02/2023 | 845.71 | 0 |
| 20/02/2023 | 931.74 | 0 |
| 21/02/2023 | 651.69 | 1.8 |
| 22/02/2023 | 2257.69 | 39.2 |
| 23/02/2023 | 400.58 | 0.4 |
| 24/02/2023 | 284.83 | 0 |
| 25/02/2023 | 1596.09 | 0 |
| 26/02/2023 | 1074.09 | 0 |
| 27/02/2023 | 1040.31 | 3.6 |
| 28/02/2023 | 779.79 | 0.2 |

| | | |
|---------|--------------|------------|
| Average | 964.5 kL/day | 3.2 mm/day |
|---------|--------------|------------|

There were no exceedances of volumetric discharge limits at LDP1 in February 2023.

Water – Groundwater Discharge

Groundwater discharged from underground workings to the MCs surface retention Dams has been detailed below. Mannering Colliery operates Water Access License 40461 permitting the extraction of

Monthly Website Report

Manning Colliery Monthly Environmental Report – February 2023

450 megalitres per financial year and reports annual use to the Water NSW, Water Accounting System (iWAS).

| MC Groundwater Pumped to Surface Totals FY2022-2023 | | |
|--|----------------------------|--|
| Date (month) | Groundwater Discharge (ML) | Groundwater Discharge (Total ML Water Year to Date) |
| Jul-22 | 23.88 | 24 |
| Aug-22 | 21.7 | 46 |
| Sep-22 | 23.9 | 69 |
| Oct-22 | 18.4 | 88 |
| Nov-22 | 25.9 | 114 |
| Dec-22 | 16.69 | 130 |
| Jan-23 | 33.25 | 164 |
| Feb-23 | 22.87 | 187 |
| Mar-23 | | |
| Apr-23 | | |
| May-23 | | |
| Jun-23 | | |

Air Quality – Depositional Dust

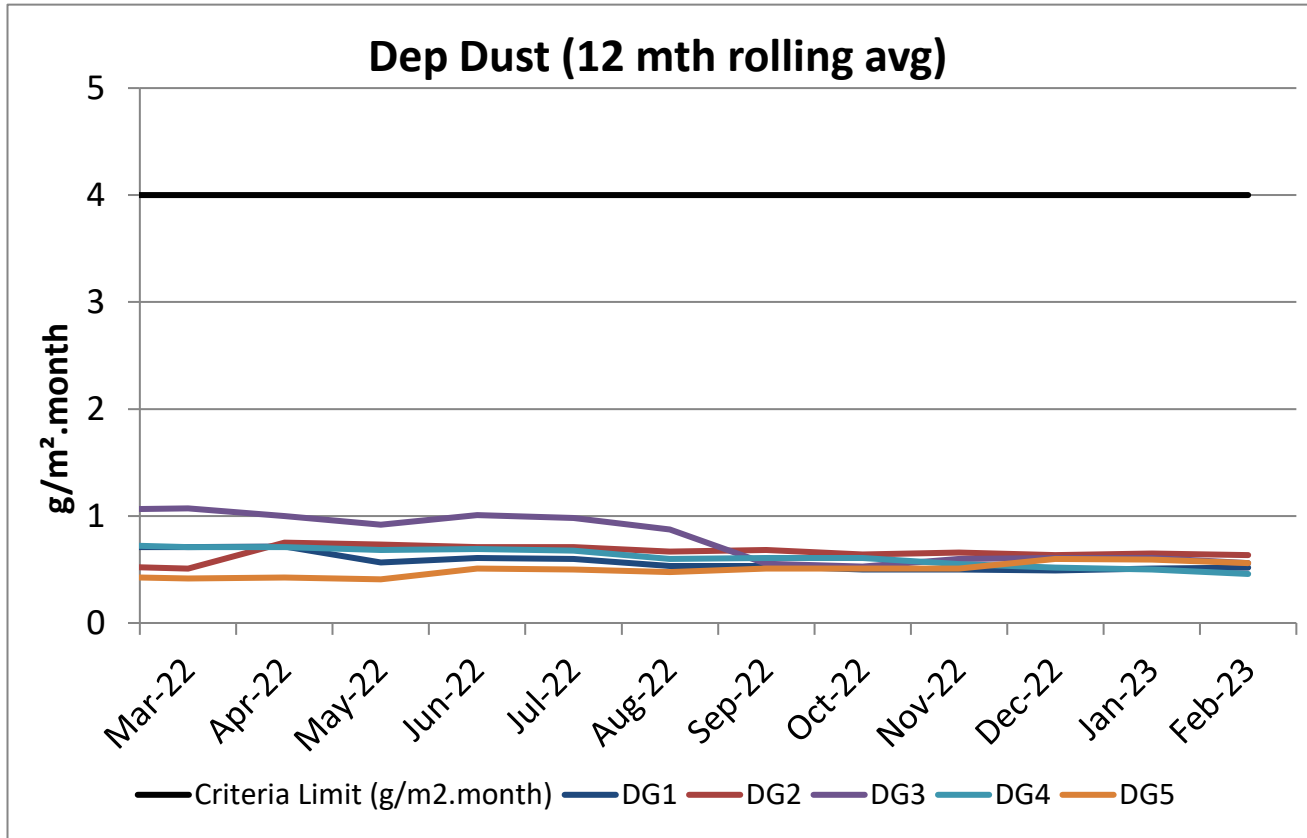
Monthly depositional dust results are shown below.

| February 2023 | | |
|---|---------------------------------------|-------------------------------|
| EPL | 191 | |
| Limits | Max. total deposited dust level | 4g/m ² /month |
| | Max. increase in deposited dust level | 2g/m ² /month |
| Sampling Date | 04/01/2023 – 03/02/2023 | |
| EPA ID no. | Site | Insoluble Matter (g/m2/month) |
| 3 | DG1 | 0.5 |
| 4 | DG2 | 0.2 |
| 5 | DG3 | 0.2 |
| 6 | DG4 | 0.4 |
| 7 | DG5 | 0.2 |
| Notes: Sampling locations provided in Manning Colliery Air Quality Management Plan available on the Delta Coal website. | | |

Monthly Website Report

Mannering Colliery Monthly Environmental Report – February 2023

A 12-month rolling average of depositional dust concentrations has been presented below. Mannering Colliery's dust gauges are located around the perimeter of the Mannering Colliery site boundary.

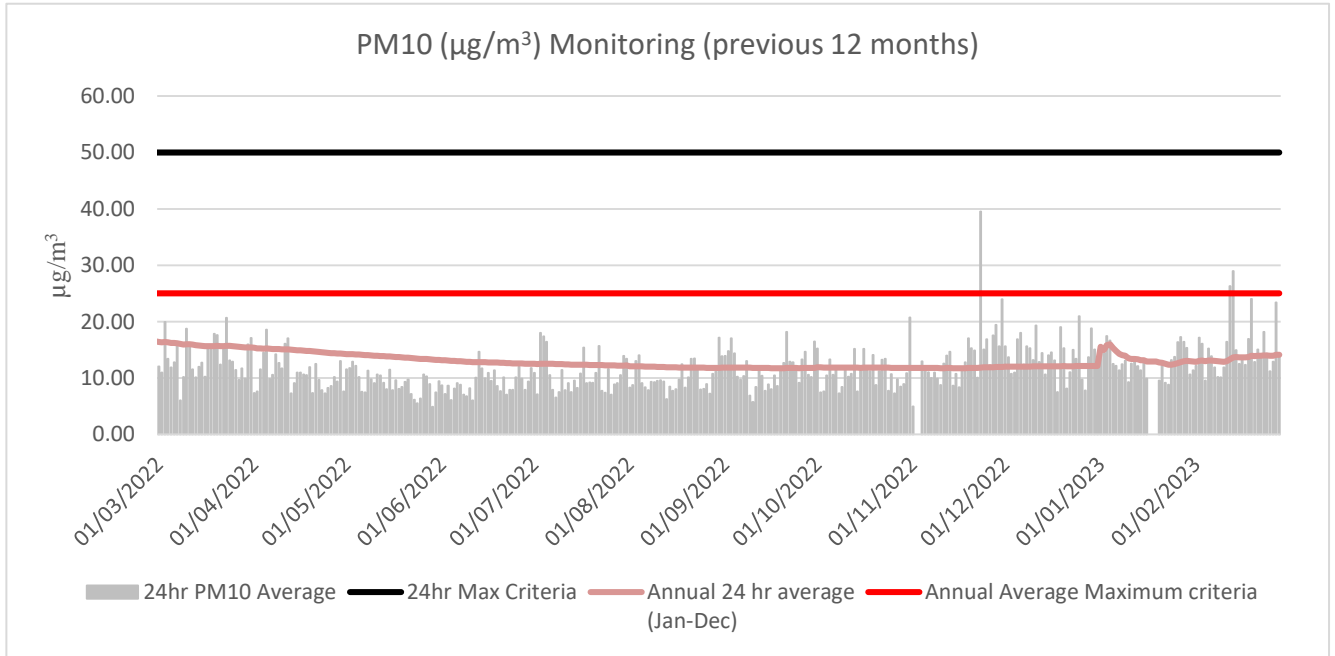


Monthly Website Report

Mannering Colliery Monthly Environmental Report – February 2023

Air Quality – PM₁₀

The 24hr PM₁₀ average from Delta Coal's Tapered Element Oscillating Microbalance (TEOM), located at the Mannering Park Sewage Treatment Plant, is presented below for the previous 12 months.



Annual 24hr PM₁₀ average maximum criteria for February 2023 was below the annual average maximum criteria limit. A summary of data availability for Delta Coal's TEOM is presented below for the reporting period. Delta Coals TEOM had a data availability of **94.9%** for the month of February 2023.

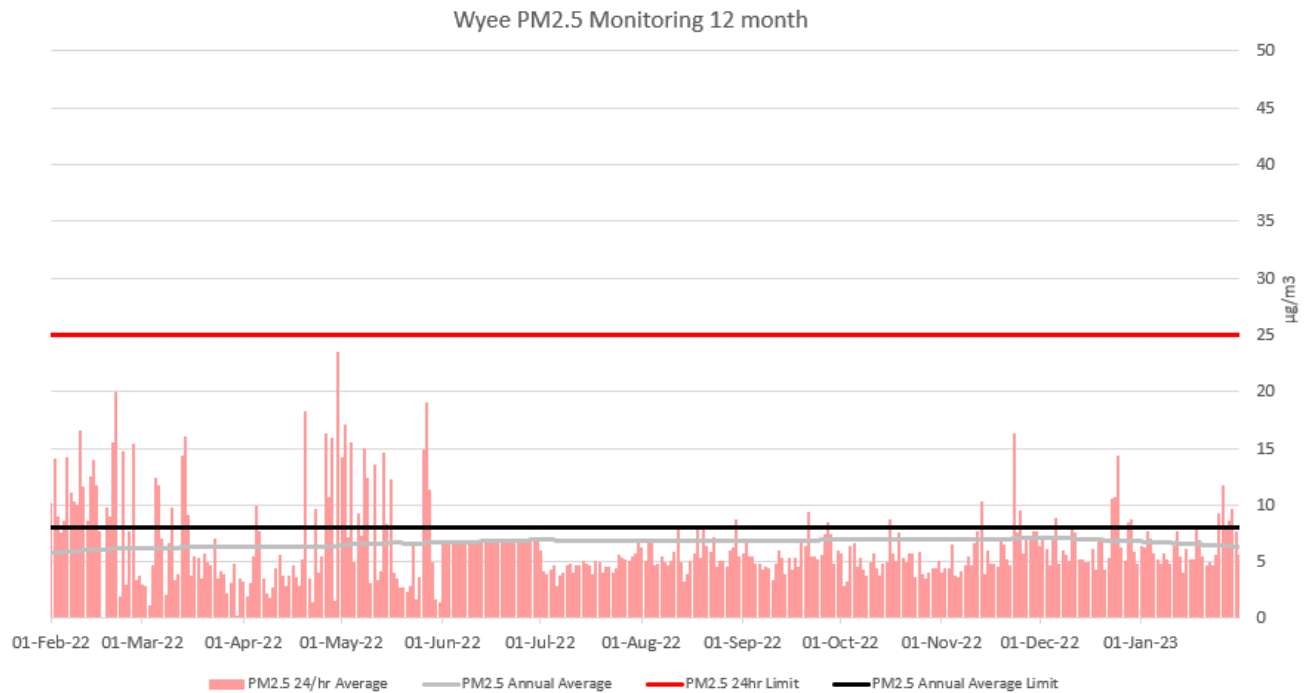
| Variable | February Total | Valid |
|---------------|----------------|-----------|
| A/C Temp | 99.8% | 8064 8044 |
| A1 | 99.8% | 8064 8044 |
| A1_Scaled | 99.8% | 8064 8044 |
| Bypass Flow | 99.7% | 8064 8043 |
| Cap Temp | 99.7% | 8064 8043 |
| Case Temp | 99.7% | 8064 8043 |
| Config | 99.8% | 8064 8044 |
| Dew Point | 99.7% | 8064 8043 |
| Dig-In | 99.8% | 8064 8044 |
| Dig-Latch | 99.8% | 8064 8044 |
| ESN | 99.8% | 8064 8044 |
| Filter Freq | 99.7% | 8064 8043 |
| Filter Load | 99.7% | 8064 8043 |
| Humidity | 99.7% | 8064 8043 |
| MC | 99.7% | 8064 8043 |
| MC 12Hr | 99.7% | 8064 8043 |
| MC 1Hr | 99.7% | 8064 8043 |
| MC 24Hr | 99.7% | 8064 8043 |
| MC 30min | 99.7% | 8064 8043 |
| MC 8Hr | 99.7% | 8064 8043 |
| MC Total | 99.7% | 8064 8043 |
| Mobile Signal | 99.8% | 8064 8044 |
| Noise | 99.7% | 8064 8043 |
| PM10 Flow | 99.7% | 8064 8043 |
| Pressure | 99.7% | 8064 8043 |
| Site | 0.0% | 8064 0 |
| Temperature | 99.7% | 8064 8043 |
| Tube Temp | 99.7% | 8064 8043 |
| Vac Pressure | 99.7% | 8064 8043 |
| Volts | 99.8% | 8064 8044 |

Monthly Website Report

Manning Colliery Monthly Environmental Report – February 2023

Air Quality – PM_{2.5}

Delta Coal utilises PM_{2.5} data obtained from Delta Electricity owned and operated beta attenuation monitor (BAM). The PM_{2.5} monitor is located on Tingley Road, Wyee.



There were no exceedances of the PM_{2.5} daily average limit in January 2023. The 12-month rolling average PM_{2.5} value on 31 January 2023 was 6.35 µg/m³. PM_{2.5} data availability for January 2023 was 100%. The 2023 year to date PM_{2.5} data availability is 99.6%. It is noted that due to the validation of PM_{2.5} results, there is a one-month delay in publishing PM_{2.5} results, however, real-time alarms remain active to ensure mitigation responses to elevated results can be applied when necessary.

Monthly Website Report

Mannering Colliery Monthly Environmental Report – February 2023

Weather Data

A summary of weather data recorded by a meteorological monitoring station at the adjacent Mannering Colliery is presented below for the year to date. (EPA ID no. 26).

| Monthly Weather Data 2023 | | | |
|---------------------------|---|----------|----------|
| Licensee | Great Southern Energy Pty Ltd | | |
| Location | Mannering Colliery Meteorological station | | |
| Date published | Refer report date | | |
| Date sampled | Daily | | |
| Date obtained | 14 March 2023 | | |
| Month | Total Rainfall/Month (mm) | Min Temp | Max Temp |
| Jan-23 | 111.8 | 14.4 | 31.7 |
| Feb-23 | 91 | 12.6 | 33.2 |

| Variable | February | Total | Valid |
|---------------|----------|-------|-------|
| A/C Temp | 99.8% | 8064 | 8044 |
| A1 | 99.8% | 8064 | 8044 |
| A1_Scaled | 99.8% | 8064 | 8044 |
| Bypass Flow | 99.7% | 8064 | 8043 |
| Cap Temp | 99.7% | 8064 | 8043 |
| Case Temp | 99.7% | 8064 | 8043 |
| Config | 99.8% | 8064 | 8044 |
| Dew Point | 99.7% | 8064 | 8043 |
| Dig-In | 99.8% | 8064 | 8044 |
| Dig-Latch | 99.8% | 8064 | 8044 |
| ESN | 99.8% | 8064 | 8044 |
| Filter Freq | 99.7% | 8064 | 8043 |
| Filter Load | 99.7% | 8064 | 8043 |
| Humidity | 99.7% | 8064 | 8043 |
| MC | 99.7% | 8064 | 8043 |
| MC 12Hr | 99.7% | 8064 | 8043 |
| MC 1Hr | 99.7% | 8064 | 8043 |
| MC 24Hr | 99.7% | 8064 | 8043 |
| MC 30min | 99.7% | 8064 | 8043 |
| MC 8Hr | 99.7% | 8064 | 8043 |
| MC Total | 99.7% | 8064 | 8043 |
| Mobile Signal | 99.8% | 8064 | 8044 |
| Noise | 99.7% | 8064 | 8043 |
| PM10 Flow | 99.7% | 8064 | 8043 |
| Pressure | 99.7% | 8064 | 8043 |
| Site | 0.0% | 8064 | 0 |
| Temperature | 99.7% | 8064 | 8043 |
| Tube Temp | 99.7% | 8064 | 8043 |
| Vac Pressure | 99.7% | 8064 | 8043 |
| Volts | 99.8% | 8064 | 8044 |