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# Manning Colliery Monthly Website Report – May 2021

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| <b>Site:</b>         | Manning Colliery                        |
| <b>Department:</b>   | Technical Services                      |
| <b>Report Title:</b> | Monthly Environmental Report – May 2021 |
| <b>Prepared by:</b>  | Lachlan McWha                           |
| <b>Report Date:</b>  | 10 <sup>th</sup> June 2021              |
| <b>Distribution:</b> | Delta Coal website                      |

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# Report

Manning Colliery Monthly Environmental Report – May 2021

## Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of May 2021.

## Introduction

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

Manning Colliery operates under the following regulatory instruments:

- Section 66(6) of the *Protection of the Environmental 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 Manning Colliery EPL 191 are provided below.

| Manning Colliery Information |   |
|------------------------------|---|
| Premises name                | Manning Colliery  |
| Address                      | Ruttleys Road, Doyalson, NSW, 2262  |
| Licensee                     | Great Southern Energy Pty Ltd   |
| EPL #                        | 191   |
| EPL location                 | <a href="http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=50781&amp;SYSUID=1&amp;LICID=191">http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=50781&amp;SYSUID=1&amp;LICID=191</a> |

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

### 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 – PM<sub>10</sub>
- Air Quality – PM<sub>2.5</sub>; and
- Meteorological data.

### Definitions

g/m<sup>2</sup>/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 06\_0311 (as modified)

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

ALS - Dust Deposition Report **May 2021**

ALS – MC Water Analysis Reports **May 2021**

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## Monitoring Results

### Water – Quality

Weekly water quality results for discharge point LDP001 are presented below. Monitoring of these parameters have reverted to weekly as per EPL PRP requirements.

| May 2021                           |                               |            |                       |                                 |
|------------------------------------|-------------------------------|------------|-----------------------|---------------------------------|
| <b>EPL</b>                         | 191                           |            |                       |                                 |
| <b>Licensee</b>                    | Great Southern Energy Pty Ltd |            |                       |                                 |
| <b>Premises</b>                    | Manning Colliery              |            |                       |                                 |
| <b>Period</b>                      | 01-May-21                     |            | to                    | 31-May-21                       |
| <b>Location</b>                    | LDP001 (EPA ID # 1)           |            |                       |                                 |
| <b>Date sampled</b>                | Weekly                        |            |                       |                                 |
| <b>Date reported</b>               | Refer report date             |            |                       |                                 |
| <b>Monitoring requirement</b>      | Weekly                        |            |                       |                                 |
| <b>pH limit</b>                    | 6.5 - 8.5                     |            |                       |                                 |
| <b>TSS limit (mg/L)</b>            | 50                            |            |                       |                                 |
| <b>Oil and grease limit (mg/L)</b> | 10                            |            |                       |                                 |
| <b>Exceedance (Yes/No)</b>         | No                            |            |                       |                                 |
| Water Quality Results              |                               |            |                       |                                 |
| Date                               | pH                            | TSS (mg/L) | Oil and grease (mg/L) | Electrical Conductivity (µS/cm) |
| 04/05/2021                         | 7.82                          | 7          | <5                    | 28,300                          |
| 13/05/2021                         | 7.51                          | <5         | <5                    | 28,000                          |
| 21/05/2021                         | 7.77                          | 7          | <5                    | 28,200                          |
| 24/05/2021                         | 7.74                          | <5         | <5                    | 28,300                          |
| <b>Average</b>                     | 7.71                          | 7          | <5                    | 28200                           |
| <b>Minimum</b>                     | 7.82                          | 7          | <5                    | 28300                           |
| <b>Maximum</b>                     | 7.51                          | 7          | <5                    | 28000                           |

The water quality analytical results during the reporting period did not exceed the discharge water quality criteria within EPL 191. Monthly water quality results, primarily metals, at LDP001 are presented below for the period.

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### Analytical Results

| Sub-Matrix: WATER<br>(Matrix: WATER)                      |            | Sample ID            |      |               | LDP001            |
|---|------------|----------------------|------|---------------|-------------------|
|   |            | Sampling date / time |      |               | 24-May-2021 11:45 |
| Compound  | CAS Number | LOR                  | Unit | ES2119381-001 |                   |
|   |            |                      |      |               | Result            |
| <b>ED040F: Dissolved Major Anions</b>                     |            |                      |      |               |                   |
| Sulfur as S   | 63705-05-5 | 1                    | mg/L | 154           |                   |
| Silicon as SiO2   | 14464-46-1 | 0.1                  | mg/L | 15.0          |                   |
| <b>ED093T: Total Major Cations</b>                        |            |                      |      |               |                   |
| Calcium   | 7440-70-2  | 1                    | mg/L | 300           |                   |
| Magnesium   | 7439-95-4  | 1                    | mg/L | 302           |                   |
| Potassium   | 7440-09-7  | 1                    | mg/L | 41            |                   |
| <b>EG020F: Dissolved Metals by ICP-MS</b>                 |            |                      |      |               |                   |
| Aluminium   | 7429-90-5  | 0.01                 | mg/L | <0.01         |                   |
| Arsenic   | 7440-38-2  | 0.001                | mg/L | <0.001        |                   |
| Beryllium   | 7440-41-7  | 0.001                | mg/L | <0.001        |                   |
| Cadmium   | 7440-43-9  | 0.0001               | mg/L | <0.0001       |                   |
| Chromium  | 7440-47-3  | 0.001                | mg/L | <0.001        |                   |
| Copper  | 7440-50-8  | 0.001                | mg/L | <0.001        |                   |
| Cobalt  | 7440-48-4  | 0.001                | mg/L | <0.001        |                   |
| Nickel  | 7440-02-0  | 0.001                | mg/L | 0.004         |                   |
| Lead  | 7439-92-1  | 0.001                | mg/L | <0.001        |                   |
| Zinc  | 7440-66-6  | 0.005                | mg/L | 0.009         |                   |
| Manganese   | 7439-96-5  | 0.001                | mg/L | 0.043         |                   |
| Molybdenum  | 7439-98-7  | 0.001                | mg/L | 0.009         |                   |
| Selenium  | 7782-49-2  | 0.01                 | mg/L | <0.01         |                   |
| Silver  | 7440-22-4  | 0.001                | mg/L | 0.004         |                   |
| Vanadium  | 7440-62-2  | 0.01                 | mg/L | <0.01         |                   |
| <b>EG020T: Total Metals by ICP-MS</b>                     |            |                      |      |               |                   |
| Aluminium   | 7429-90-5  | 0.01                 | mg/L | <0.01         |                   |
| Antimony  | 7440-36-0  | 0.001                | mg/L | <0.001        |                   |
| Arsenic   | 7440-38-2  | 0.001                | mg/L | <0.001        |                   |
| Beryllium   | 7440-41-7  | 0.001                | mg/L | <0.001        |                   |
| Barium  | 7440-39-3  | 0.001                | mg/L | 0.239         |                   |
| Cadmium   | 7440-43-9  | 0.0001               | mg/L | <0.0001       |                   |
| Chromium  | 7440-47-3  | 0.001                | mg/L | <0.001        |                   |
| Copper  | 7440-50-8  | 0.001                | mg/L | <0.001        |                   |
| Cobalt  | 7440-48-4  | 0.001                | mg/L | <0.001        |                   |
| Nickel  | 7440-02-0  | 0.001                | mg/L | 0.004         |                   |
| Lead  | 7439-92-1  | 0.001                | mg/L | <0.001        |                   |
| Zinc  | 7440-66-6  | 0.005                | mg/L | 0.012         |                   |
| Lithium   | 7439-93-2  | 0.001                | mg/L | 0.840         |                   |
| Molybdenum  | 7439-98-7  | 0.001                | mg/L | 0.011         |                   |
| Selenium  | 7782-49-2  | 0.01                 | mg/L | <0.01         |                   |
| Silver  | 7440-22-4  | 0.001                | mg/L | 0.010         |                   |
| Tin   | 7440-31-5  | 0.001                | mg/L | <0.001        |                   |
| Titanium  | 7440-32-6  | 0.01                 | mg/L | <0.01         |                   |
| Vanadium  | 7440-62-2  | 0.01                 | mg/L | <0.01         |                   |
| Boron   | 7440-42-8  | 0.05                 | mg/L | 0.45          |                   |
| Iron  | 7439-89-6  | 0.05                 | mg/L | <0.05         |                   |
| <b>EG035F: Dissolved Mercury by FIMS</b>                  |            |                      |      |               |                   |
| Mercury   | 7439-97-6  | 0.0001               | mg/L | <0.0001       |                   |
| <b>EG035T: Total Recoverable Mercury by FIMS</b>          |            |                      |      |               |                   |
| Mercury   | 7439-97-6  | 0.0001               | mg/L | <0.0001       |                   |
| <b>EK055G: Ammonia as N by Discrete Analyser</b>          |            |                      |      |               |                   |
| Ammonia as N  | 7664-41-7  | 0.01                 | mg/L | 1.11          |                   |
| <b>EK067G: Total Phosphorus as P by Discrete Analyser</b> |            |                      |      |               |                   |
| Total Phosphorus as P                                     | ----       | 0.01                 | mg/L | <0.05         |                   |

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### Water – Volume

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

| May 2021               |                               |         |
|------------------------|-------------------------------|---------|
| EPL                    | 191                           |         |
| Licensee               | Great Southern Energy Pty Ltd |         |
| Premises               | Manning Colliery              |         |
| Date Sampled           | Daily                         |         |
| Date Reported          | Refer report date             |         |
| Discharge volume limit | 4000 kilolitres per day       |         |
| Sampling Point         | LDP001 (EPA ID # 1)           |         |
| Day                    | Unit                          | Volume  |
| 01/05/2021             | kL                            | 914.63  |
| 02/05/2021             | kL                            | 916.39  |
| 03/05/2021             | kL                            | 515.27  |
| 04/05/2021             | kL                            | 454.15  |
| 05/05/2021             | kL                            | 420.43  |
| 06/05/2021             | kL                            | 555.17  |
| 07/05/2021             | kL                            | 337.6   |
| 08/05/2021             | kL                            | 947.61  |
| 09/05/2021             | kL                            | 966.97  |
| 10/05/2021             | kL                            | 386.24  |
| 11/05/2021             | kL                            | 313.91  |
| 12/05/2021             | kL                            | 50.98   |
| 13/05/2021             | kL                            | 1742.21 |
| 14/05/2021             | kL                            | 1397.49 |
| 15/05/2021             | kL                            | 473.7   |
| 16/05/2021             | kL                            | 702.64  |
| 17/05/2021             | kL                            | 126.49  |
| 18/05/2021             | kL                            | 139.72  |
| 19/05/2021             | kL                            | 146.4   |
| 20/05/2021             | kL                            | 925.93  |
| 21/05/2021             | kL                            | 935.24  |
| 22/05/2021             | kL                            | 930.37  |
| 23/05/2021             | kL                            | 947.15  |
| 24/05/2021             | kL                            | 967.71  |
| 25/05/2021             | kL                            | 250.33  |
| 26/05/2021             | kL                            | 0       |
| 27/05/2021             | kL                            | 0       |
| 28/05/2021             | kL                            | 0       |
| 29/05/2021             | kL                            | 0       |
| 30/05/2021             | kL                            | 0       |
| 31/05/2021             | kL                            | 0       |
| Average                | kL                            | 531     |
| Minimum                | kL                            |         |
| Maximum                | kL                            | 1742    |

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There were no exceedances of volumetric discharge limits at Manning Colliery during the report period.

### Water – Groundwater Discharge

Groundwater discharged from underground workings to the MCs retention Dams within the surface operational area has been detailed below. Delta Coal notes that MC does not have calibrated volume sensors on underground piping, as such, discharge from LDP001 is utilised to estimate groundwater extraction. Manning Colliery operates Water Access License permitting the extraction of 450 megalitres per financial year and reports annual use to the Water NSW, Water Accounting System (iWAS).

| MC Indicative Groundwater Pumped to Surface<br>Totals FY2020-2021 |  |   |
|---|--|---|
| Date (month)  | Groundwater and Surface Water Discharge (ML) | Groundwater and Surface Water Discharge (Total ML Water Year to Date) |
| July 2020   | 26.83  | 26.83   |
| August 2020   | 29.04  | 55.87   |
| September 2020  | 17.09  | 72.96   |
| October 2020  | 30.9   | 103.88  |
| November 2020   | 28.03  | 131.91  |
| December 2020   | 30.33  | 162.24  |
| January 2021  | 25.84  | 188.08  |
| February 2021   | 30.62  | 218.70  |
| March 2021  | 45.46  | 264.16  |
| April 2021  | 22.36  | 286.52  |
| May 2021  | 16.46  | 302.98  |
| June 2021   |  |   |

### Air Quality

Monthly depositional dust results are shown below.

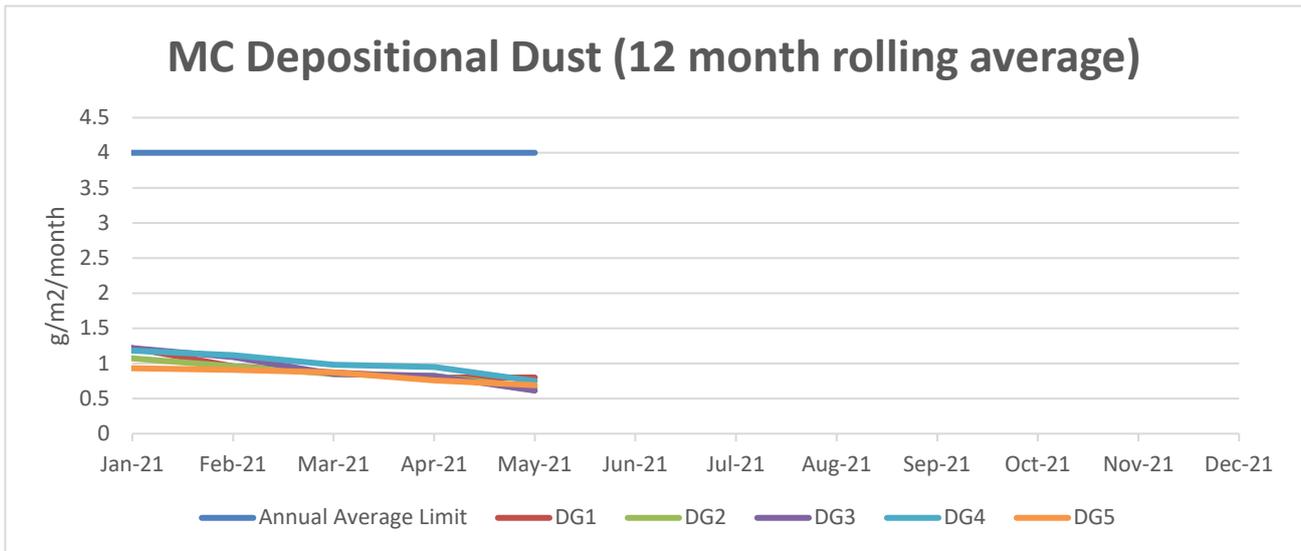
| May 2021             |  |  |
|----------------------|--|--|
| <b>EPL</b>           | 191  |  |
| <b>Limits</b>        | Max. total deposited dust level  | 4g/m <sup>2</sup> /month                   |
|                      | Max. increase in deposited dust level  | 2g/m <sup>2</sup> /month                   |
| <b>Sampling Date</b> | 12/04/2021 to 13/05/2021   |  |
| EPA ID no.           | Site   | Insoluble Matter (g/m <sup>2</sup> /month) |
| 3                    | DG1  | 2.1  |
| 4                    | DG2  | 0.4  |
| 5                    | DG3  | 81.9 <sup>(C)</sup>                        |
| 6                    | DG4  | 0.4  |
| 7                    | DG5  | 0.3  |
| <b>Notes:</b>        | DG3 composition: 40% sand, 40% polysaccharide slime, 10% insects, 5% vegetation and 5% coal. |  |

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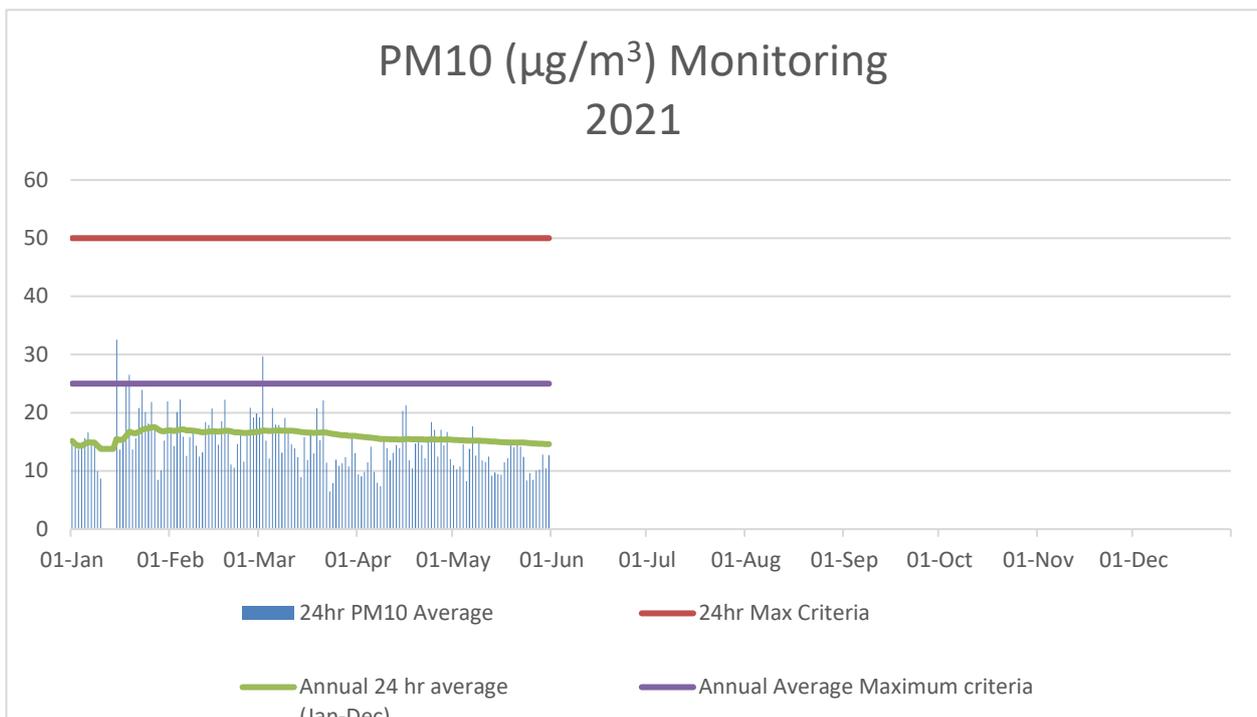
There was one exceedance of depositional dust criteria at dust gauge DG3, however, given the composition of the insoluble matter present in the gauge, it was considered the gauge was impacted by contamination unrelated to Manning Colliery activities and as such the reading was excluded from averaged results.

### Rolling annual average depositional dust results



### Air Quality – PM<sub>10</sub>

The 24hr PM<sub>10</sub> average from Delta Coal’s Tapered Element Oscillating Microbalance (TEOM) monitor is presented below for the year to date.



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Annual 24hr PM<sub>10</sub> average maximum criteria for the month was below the annual average maximum criteria limit. A summary of data availability for Delta Coal's TEOM is presented below for the year to date.

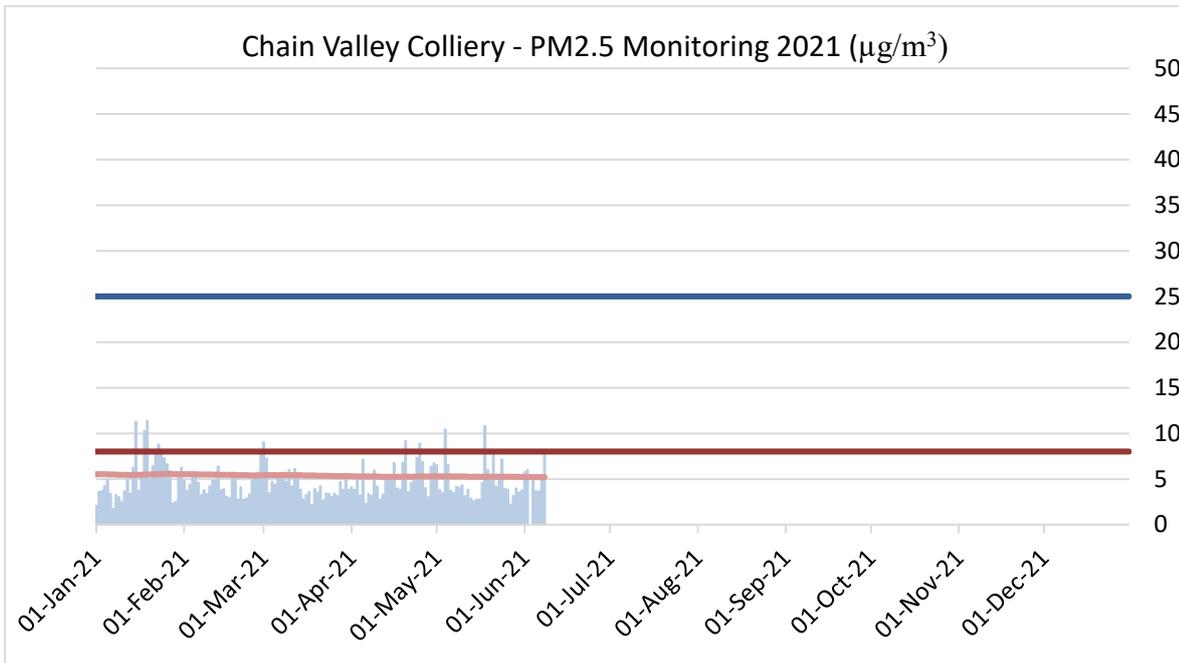
| Variable      | May  | Total | Valid |
|---------------|------|-------|-------|
| A/C Temp      | 100% | 8928  | 8928  |
| A1            | 100% | 8928  | 8928  |
| A1_Scaled     | 100% | 8928  | 8928  |
| Bypass Flow   | 100% | 8928  | 8928  |
| Cap Temp      | 100% | 8928  | 8928  |
| Case Temp     | 100% | 8928  | 8928  |
| Config        | 100% | 8928  | 8928  |
| Dew Point     | 100% | 8928  | 8928  |
| Dig-In        | 100% | 8928  | 8928  |
| Dig-Latch     | 100% | 8928  | 8928  |
| ESN           | 100% | 8928  | 8928  |
| Filter Freq   | 100% | 8928  | 8928  |
| Filter Load   | 100% | 8928  | 8928  |
| Humidity      | 100% | 8928  | 8928  |
| MC            | 100% | 8928  | 8928  |
| MC 12Hr       | 100% | 8928  | 8928  |
| MC 1Hr        | 100% | 8928  | 8928  |
| MC 24Hr       | 100% | 8928  | 8928  |
| MC 30min      | 100% | 8928  | 8928  |
| MC 8Hr        | 100% | 8928  | 8928  |
| MC Total      | 100% | 8928  | 8928  |
| Mobile Signal | 100% | 8928  | 8928  |
| Noise         | 100% | 8928  | 8928  |
| PM10 Flow     | 100% | 8928  | 8928  |
| Pressure      | 100% | 8928  | 8928  |
| Site          | 0.0% | 8928  | 0     |
| Temperature   | 100% | 8928  | 8928  |
| Tube Temp     | 100% | 8928  | 8928  |
| Vac Pressure  | 100% | 8928  | 8928  |
| Volts         | 100% | 8928  | 8928  |

### Air Quality – PM<sub>2.5</sub>

Delta Coal utilises PM<sub>2.5</sub> data obtained from Vales Point Power Station owned and operated beta attenuation monitor (BAM). The PM<sub>2.5</sub> monitor is located on Tingley Road, Wyee. Delta Coal is required to monitor PM<sub>2.5</sub> concentration following the approval of Development Consent SSD-5465 Modification 3 and Project Approval MP06\_0311 Modification 5 on the 26<sup>th</sup> June 2020.

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For the period of May 2021, the daily PM<sub>2.5</sub> average concentration and annual average PM<sub>2.5</sub> concentration did not exceed limits of 25 µg/m<sup>3</sup> and 8 µg/m<sup>3</sup> respectively.

PM<sub>2.5</sub> data availability for:

- April 2021 data availability was 99%; and
- 2021 year to date data availability has been 98%.

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### Weather Data

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

| Monthly Weather Data 2021 |   |          |          |
|---------------------------|---|----------|----------|
| Licensee                  | Great Southern Energy Pty Ltd           |          |          |
| Location                  | Manning Colliery Meteorological station |          |          |
| Date published            | Refer report date                       |          |          |
| Date sampled              | Daily                                   |          |          |
| Date obtained             | 12 <sup>th</sup> May 2021               |          |          |
| Month                     | Total Rainfall/Month (mm)               | Min Temp | Max Temp |
| Jan-21                    | 108.4                                   | 12.5     | 38.2     |
| Feb-21                    | 110.2                                   | 13.9     | 33.1     |
| Mar-21                    | 551.6                                   | 13.1     | 31.1     |
| Apr-21                    | 56.8                                    | 6.2      | 28.3     |
| May-21                    | 30.8                                    | 4.1      | 25.6     |

| Variable        | May   | Total | Valid |
|-----------------|-------|-------|-------|
| 10m Temp        | 99.8% | 2976  | 2970  |
| 2m Temp         | 99.8% | 2976  | 2970  |
| A1              | 99.8% | 2976  | 2970  |
| A1_Scaled       | 99.8% | 2976  | 2970  |
| Assumed Temp    | 99.8% | 2976  | 2970  |
| Barometric      | 99.8% | 2976  | 2970  |
| Config          | 99.8% | 2976  | 2970  |
| Daily Evap      | 99.8% | 2976  | 2970  |
| Daily Rain      | 99.8% | 2976  | 2970  |
| Delta T         | 99.8% | 2976  | 2970  |
| Dew Point       | 99.8% | 2976  | 2970  |
| Dig-In          | 99.8% | 2976  | 2970  |
| Dig-Latch       | 99.8% | 2976  | 2970  |
| ESN             | 99.8% | 2976  | 2970  |
| FDI             | 99.8% | 2976  | 2970  |
| Heat Index      | 99.8% | 2976  | 2970  |
| Humidity        | 99.8% | 2976  | 2970  |
| Mobile Signal   | 99.8% | 2976  | 2970  |
| Rain            | 99.8% | 2976  | 2970  |
| Raw Evap        | 99.8% | 2976  | 2970  |
| S Class         | 99.8% | 2976  | 2970  |
| Scalar WS       | 99.8% | 2976  | 2970  |
| Sigma           | 99.8% | 2976  | 2970  |
| Site            | 0.0%  | 2976  | 0     |
| Solar Radiation | 99.8% | 2976  | 2970  |
| Vector WD       | 99.8% | 2976  | 2970  |
| Vector WS       | 99.8% | 2976  | 2970  |
| Volts           | 99.8% | 2976  | 2970  |
| Wind Chill      | 99.8% | 2976  | 2970  |
| Wind Direction  | 99.8% | 2976  | 2970  |
| Wind Speed      | 99.8% | 2976  | 2970  |
| WS Avg          | 99.8% | 2976  | 2970  |
| WS Gust         | 99.8% | 2976  | 2970  |