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# Manning Colliery Monthly Website Report – September 2022

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<b>Site:</b>	Manning Colliery
<b>Department:</b>	Technical Services
<b>Report Title:</b>	Monthly Environmental Report – September 2022
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## Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of September 2022.

## 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 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 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="#">EPL 0191 14 April 2021</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 **September 2022**

ALS – MC Water Analysis Reports **September 2022**

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## Monitoring Results

Water – Quality

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

September 2022				
<b>EPL</b>	191			
<b>Licensee</b>	Great Southern Energy Pty Ltd			
<b>Premises</b>	Manning Colliery			
<b>Location</b>	LDP001 (EPA ID # 1)			
<b>Sample Frequency</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			
Water Quality Results				
Date	pH	TSS (mg/L)	Oil and grease (mg/L)	Electrical Conductivity (µS/cm)
02/09/2022	7.84	13	<5	28,600
07/09/2022	7.81	<5	<5	27,400
13/09/2022	7.89	11	<5	20,000
20/09/2022	7.93	15	<5	16,800
28/09/2022	7.99	5	<5	11,300
<b>Average</b>	7.89	9.3	<5	20,820

There were no exceedances of water quality criteria in September 2022. Monthly water quality results, primarily metals and metalloids, at LDP001 are presented below for the period.

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## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		LDP001
		Sampling date / time		13-Sep-2022 12:30
Compound	CAS Number	LOR	Unit	ES2232840-001 Result
<b>ED040F: Dissolved Major Anions</b>				
Sulfur as S	63705-05-5	1	mg/L	112
Silicon as SiO2	14464-46-1	0.1	mg/L	10.2
<b>ED093T: Total Major Cations</b>				
Calcium	7440-70-2	1	mg/L	219
Magnesium	7439-95-4	1	mg/L	213
Potassium	7440-09-7	1	mg/L	31
<b>EG020F: Dissolved Metals by ICP-MS</b>				
Aluminium	7429-90-5	10	µg/L	<10
Arsenic	7440-38-2	1	µg/L	5
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	<1
Lead	7439-92-1	1	µg/L	<1
Manganese	7439-96-5	1	µg/L	48
Molybdenum	7439-98-7	1	µg/L	5
Nickel	7440-02-0	1	µg/L	2
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	6
<b>EG020T: Total Metals by ICP-MS</b>				
Aluminium	7429-90-5	10	µg/L	30
Antimony	7440-36-0	1	µg/L	2
Arsenic	7440-38-2	1	µg/L	5
Beryllium	7440-41-7	1	µg/L	<1
Barium	7440-39-3	1	µg/L	243
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	512
<b>EG020T: Total Metals by ICP-MS - Continued</b>				
Molybdenum	7439-98-7	1	µg/L	6
Nickel	7440-02-0	1	µg/L	2
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	8
Boron	7440-42-8	50	µg/L	330
Iron	7439-89-6	50	µg/L	<50
<b>EG035F: Dissolved Mercury by FIMS</b>				
Mercury	7439-97-6	0.1	µg/L	<0.1
<b>EG035T: Total Recoverable Mercury by FIMS</b>				
Mercury	7439-97-6	0.1	µg/L	<0.1
<b>EK055G: Ammonia as N by Discrete Analyser</b>				
Ammonia as N	7664-41-7	0.01	mg/L	0.49
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>				
Total Phosphorus as P	----	0.01	mg/L	0.08

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## Water – Volume

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

September 2022	
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)

Date (24 hour period)	LDP 1 Volume (kL/day)	Rainfall (mm)
01/08/2022	1114.07	2.2
02/08/2022	784.01	13
03/08/2022	1166.61	16.6
04/08/2022	1309.15	5.6
05/08/2022	988.1	0
06/08/2022	842.96	1.4
07/08/2022	783.96	0.2
08/08/2022	1200.64	0.2
09/08/2022	930.36	4.6
10/08/2022	974.66	0.2
11/08/2022	763.39	0
12/08/2022	819.89	0
13/08/2022	1893.36	10
14/08/2022	1013.78	0.4
15/08/2022	905.47	12
16/08/2022	904.13	1.4
17/08/2022	855.57	0
18/08/2022	641.4	0
19/08/2022	632.47	0
20/08/2022	756.03	0
21/08/2022	1449.35	0.4
22/08/2022	1010.08	17.2
23/08/2022	922.79	3.6
24/08/2022	859.2	2
25/08/2022	891.79	0.2
26/08/2022	935.22	0
27/08/2022	922.03	1.4
28/08/2022	1611.53	8.4
29/08/2022	638.3	5.2
30/08/2022	998.79	13.8
Average	984 kL/day	4.0 mm

There were no exceedances of volumetric discharge limits at LDP1 in September 2022.

## Water – Groundwater Discharge

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

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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		
Nov-22		
Dec-22		
Jan-23		
Feb-23		
Mar-23		
Apr-23		
May-23		
Jun-23		

## Air Quality

Monthly depositional dust results are shown below. There were no exceedances of depositional dust limits in September 2022.

September 2022		
<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>	04/08/2022 to 02/09/2022	
EPA ID no.	Site	Insoluble Matter (g/m <sup>2</sup> /month)
3	DG1	0.6
4	DG2	0.6
5	DG3	0.4
6	DG4	0.6
7	DG5	0.8
Notes: Sampling locations provided in Manning Colliery Air Quality Management Plan available on the Delta Coal website.		

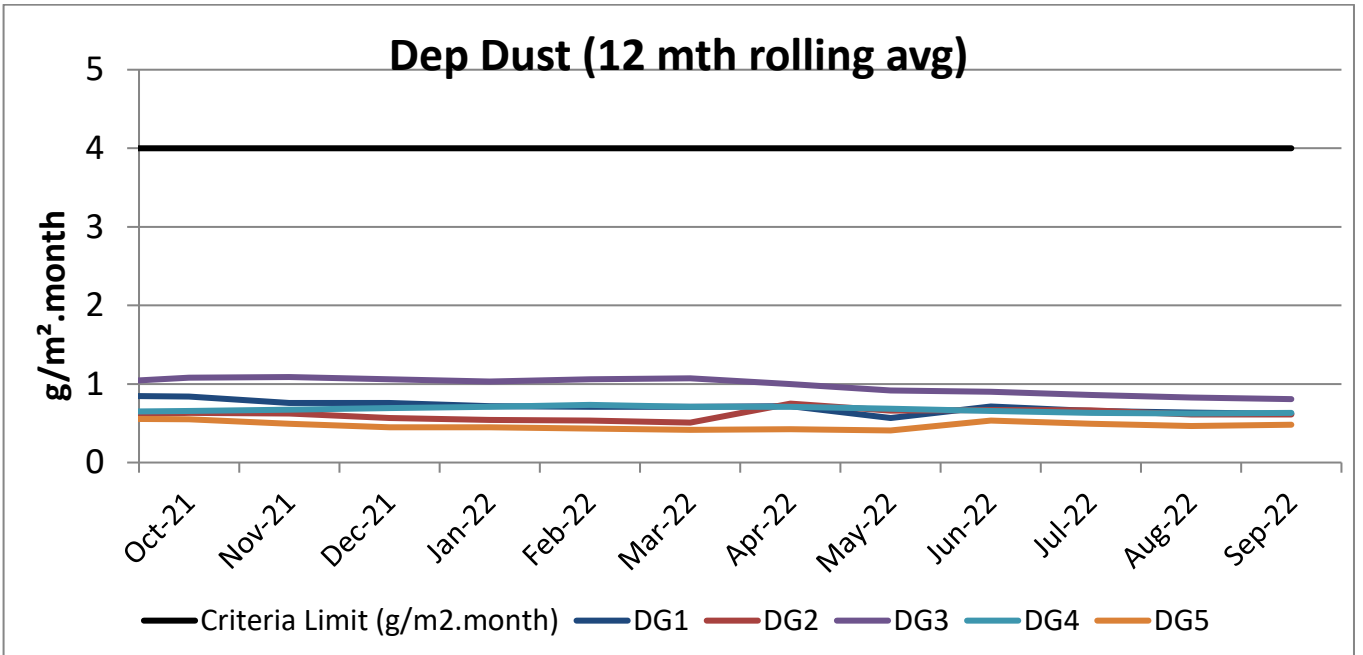
## Air Quality – Depositional Dust

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



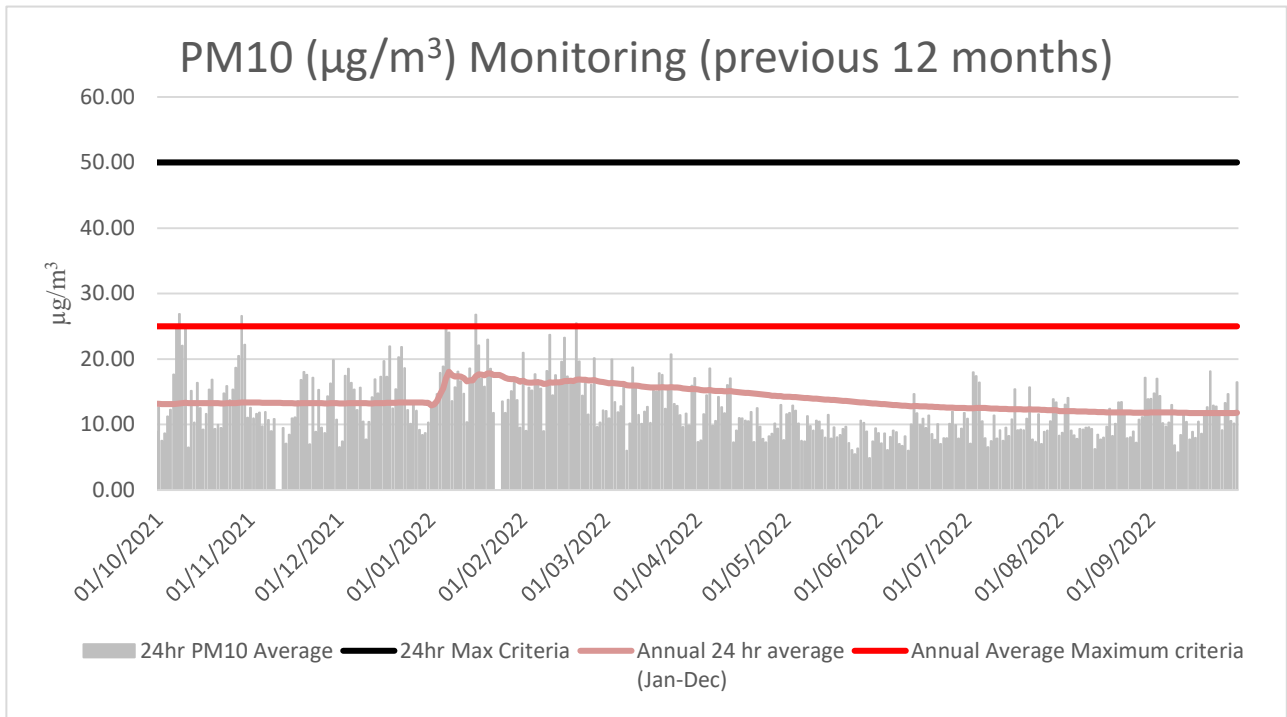
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## Air Quality – PM<sub>10</sub>

The 24hr PM<sub>10</sub> average from Delta Coal’s Tapered Element Oscillating Microbalance (TEOM), located at the Manning Park Sewage Treatment Plant, is presented below for the year to date.



Annual 24hr PM<sub>10</sub> average maximum criteria for September 2022 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 **100%** for the month of September 2022.

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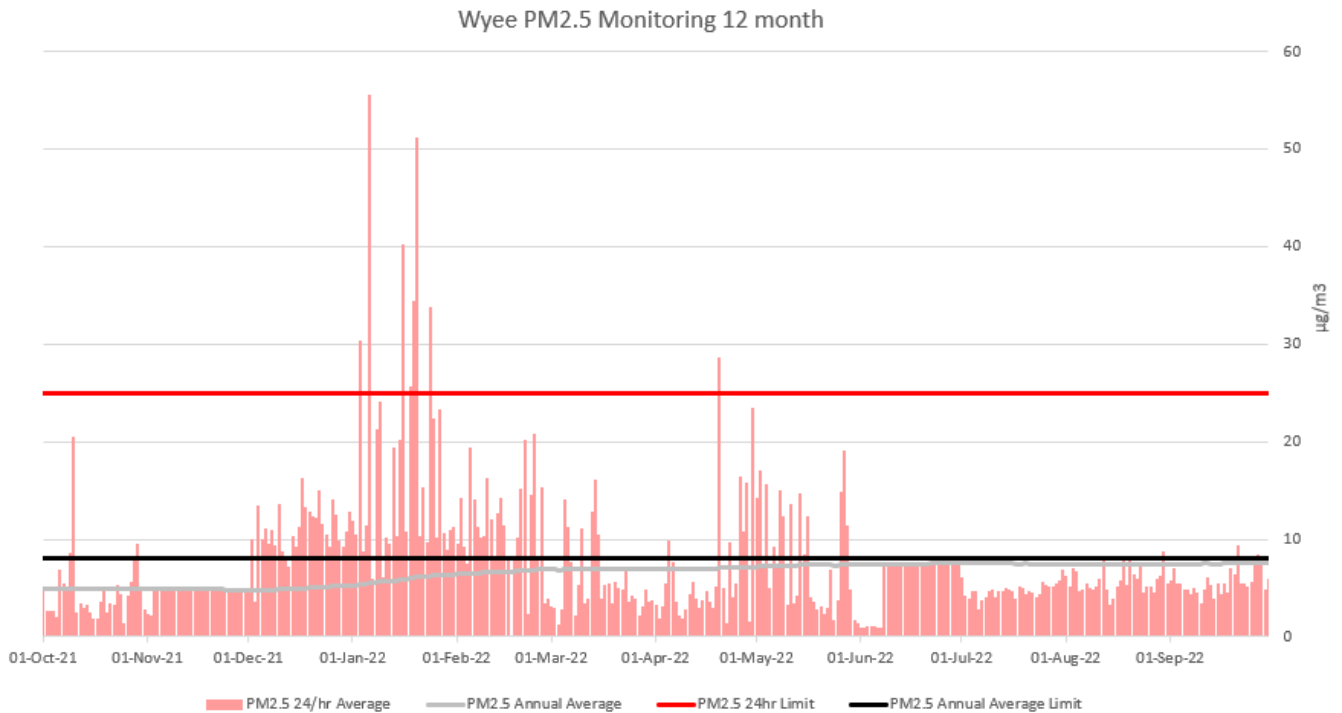
Variable	September	Total	Valid
A/C Temp	100%	8640	8637
A1	100%	8640	8637
A1_Scaled	100%	8640	8637
Bypass Flow	100%	8640	8637
Cap Temp	100%	8640	8637
Case Temp	100%	8640	8637
Config	100%	8640	8637
Dew Point	100%	8640	8637
Dig-In	100%	8640	8637
Dig-Latch	0.0%	8640	0
ESN	100%	8640	8637
Filter Freq	100%	8640	8637
Filter Load	100%	8640	8637
Humidity	100%	8640	8637
MC	100%	8640	8637
MC 12Hr	100%	8640	8637
MC 1Hr	100%	8640	8637
MC 24Hr	100%	8640	8637
MC 30min	100%	8640	8637
MC 8Hr	100%	8640	8637
MC Total	100%	8640	8637
Mobile Signal	100%	8640	8637
Noise	100%	8640	8637
PM10 Flow	100%	8640	8637
Pressure	100%	8640	8637
Site	0.0%	8640	0
Temperature	100%	8640	8637
Tube Temp	100%	8640	8637
Vac Pressure	100%	8640	8637
Volts	100%	8640	8637

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## Air Quality – PM2.5

Delta Coal utilises PM<sub>2.5</sub> data obtained from Delta Electricity owned and operated beta attenuation monitor (BAM). The PM<sub>2.5</sub> monitor is located on Tingley Road, Wyee.



There were no exceedances of the PM<sub>2.5</sub> daily average limit in September 2022. The 12 month rolling average PM<sub>2.5</sub> value on 30 September 2022 was 7.63 µg/m<sup>3</sup>. PM<sub>2.5</sub> data availability for September 2022 was 100%. The 2022 year to date PM<sub>2.5</sub> data availability was 98%.

## 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 2022			
Licensee	Great Southern Energy Pty Ltd		
Location	Manning Colliery Meteorological station		
Date published	Refer report date		
Date sampled	Daily		
Date obtained	12 October 2022		
Month	Total Rainfall/Month (mm)	Min Temp	Max Temp
Jan-22	110.6	15.4	30.5
Feb-22	187.2	14.1	34
Mar-22	398.4	13.1	29
Apr-22	174.4	9.8	28.3
May-22	132.4	5.3	26.1
Jun-22	24.8	3	21.5
Jul-22	356.8	2.8	21.4
Aug-22	44	3.9	23.6
Sep-22	120	6	23.6

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Variable	September	Total	Valid
Baro (Corrected)	100%	2880	2880
10m Temp	100%	2880	2880
2m Temp	100%	2880	2880
A1	100%	2880	2880
A1_Scaled	100%	2880	2880
Assumed Temp	100%	2880	2880
Barometric	100%	2880	2880
Config	100%	2880	2880
Daily Evap	100%	2880	2880
Daily Rain	100%	2880	2880
Delta T	100%	2880	2880
Dew Point	100%	2880	2880
Dig-In	100%	2880	2880
Dig-Latch	0.0%	2880	0
ESN	100%	2880	2880
FDI	100%	2880	2880
Heat Index	100%	2880	2880
Humidity	100%	2880	2880
Mobile Signal	100%	2880	2880
Rain	100%	2880	2880
Raw Evap	100%	2880	2880
S Class	100%	2880	2880
Scalar WS	100%	2880	2880
Sigma	100%	2880	2880
Site	0.0%	2880	0
Solar Radiation	100%	2880	2880
Vector WD	100%	2880	2880
Vector WS	100%	2880	2880
Volts	100%	2880	2880
Wind Chill	100%	2880	2880
Wind Direction	100%	2880	2880
Wind Speed	100%	2880	2880
WS Avg	100%	2880	2880
WS Gust	100%	2880	2880