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# Mannering Colliery Monthly Website Report – February 2022

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<b>Site:</b>	Mannering Colliery
<b>Department:</b>	Technical Services
<b>Report Title:</b>	Monthly Environmental Report – February 2022
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<b>Distribution:</b>	Delta Coal website

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## Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of February 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 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 **February 2022**

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

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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.

February 2022				
<b>EPL</b>	191			
<b>Licensee</b>	Great Southern Energy Pty Ltd			
<b>Premises</b>	Manning Colliery			
<b>Period</b>	01-February-2022		to	28-February-2022
<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			
Water Quality Results				
Date	pH	TSS (mg/L)	Oil and grease (mg/L)	Electrical Conductivity (µS/cm)
01/02/2022	7.69	10	<5	27,000
07/02/2022	7.71	<5	<5	25,300
16/02/2022	8.32	<5	<5	8,380
24/02/2022	8.26	7	<5	12,000
28/02/2022	7.8	13	<5	20,100
<b>Average</b>	7.96	8	<5	18,556

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

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Sub-Matrix: WATER (Matrix: WATER)		Sample ID		LDP001
		Sampling date / time		16-Feb-2022 12:20
Compound	CAS Number	LOR	Unit	ES2205276-001
				Result
<b>ED040F: Dissolved Major Anions</b>				
Sulfur as S	63705-05-5	1	mg/L	42
Silicon as SiO2	14464-46-1	0.1	mg/L	5.2
<b>ED093T: Total Major Cations</b>				
Calcium	7440-70-2	1	mg/L	82
Magnesium	7439-95-4	1	mg/L	81
Potassium	7440-09-7	1	mg/L	12
<b>EG020F: Dissolved Metals by ICP-MS</b>				
Aluminium	7429-90-5	10	µg/L	10
Arsenic	7440-38-2	1	µg/L	8
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	3
Lead	7439-92-1	1	µg/L	<1
Manganese	7439-96-5	1	µg/L	11
Molybdenum	7439-98-7	1	µg/L	5
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	6
<b>EG020T: Total Metals by ICP-MS</b>				
Aluminium	7429-90-5	10	µg/L	40
Antimony	7440-36-0	1	µg/L	3
Arsenic	7440-38-2	1	µg/L	9
Beryllium	7440-41-7	1	µg/L	<1
Barium	7440-39-3	1	µg/L	231
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
Lithium	7439-93-2	1	µg/L	213
<b>EG020T: Total Metals by ICP-MS - Continued</b>				
Molybdenum	7439-98-7	1	µg/L	7
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	5
Boron	7440-42-8	50	µg/L	150
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	<0.01
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>				
Total Phosphorus as P	----	0.01	mg/L	0.02

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## Water – Volume

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

February 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)	

Day	Unit	Volume
01/02/2022	kL	1820.58
02/02/2022	kL	1061.22
03/02/2022	kL	707.96
04/02/2022	kL	1308.18
05/02/2022	kL	319.23
06/02/2022	kL	1236.21
07/02/2022	kL	1594.19
08/02/2022	kL	332.61
09/02/2022	kL	1748.14
10/02/2022	kL	1014.58
11/02/2022	kL	739.24
12/02/2022	kL	1778.46
13/02/2022	kL	351.15
14/02/2022	kL	670.98
15/02/2022	kL	501.23
16/02/2022	kL	429.79
17/02/2022	kL	1731.89
18/02/2022	kL	752.33
19/02/2022	kL	313.88
20/02/2022	kL	1204.16
21/02/2022	kL	220.94
22/02/2022	kL	164.44
23/02/2022	kL	1043.69
24/02/2022	kL	529.99
25/02/2022	kL	1276.4
26/02/2022	kL	2000.77
27/02/2022	kL	1045.25
28/02/2022	kL	2613.55
<b>Average</b>	<b>kL</b>	<b>1,018 / day</b>

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 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 FY2021-2022		
Date (month)	Groundwater Discharge (ML)	Groundwater Discharge (Total ML Water Year to Date)
July 2021	32.48	32.48
August 2021	28.77	61.25
September 2021	17.42	78.67
October 2021	9.87	88.55
November 2021	37.73	126.28
December 2021	19.25	145.53
January 2022	30.17	175.70
February 2022	20.99	196.69
March 2022		
April 2022		
May 2022		
June 2022		

## Air Quality

Monthly depositional dust results are shown below. There was no exceedance of depositional dust limits in February 2022.

February 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>	07/01/2022 – 07/02/2022	
EPA ID no.	Site	Insoluble Matter (g/m <sup>2</sup> /month)
3	DG1	0.4
4	DG2	0.4
5	DG3	0.8
6	DG4	0.9
7	DG5	0.6
<b>Notes:</b>	Sampling locations provided in Manning Colliery Air Quality Management Plan available on the Delta Coal website.	

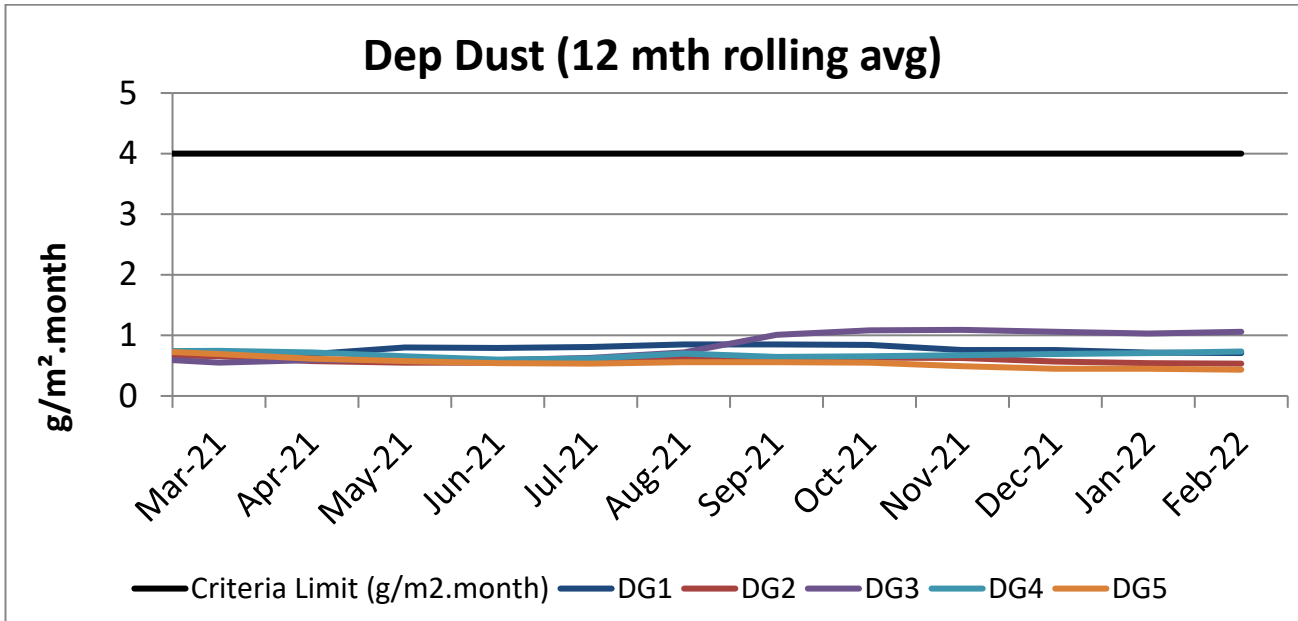
## Rolling Annual Average Depositional Dust

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.



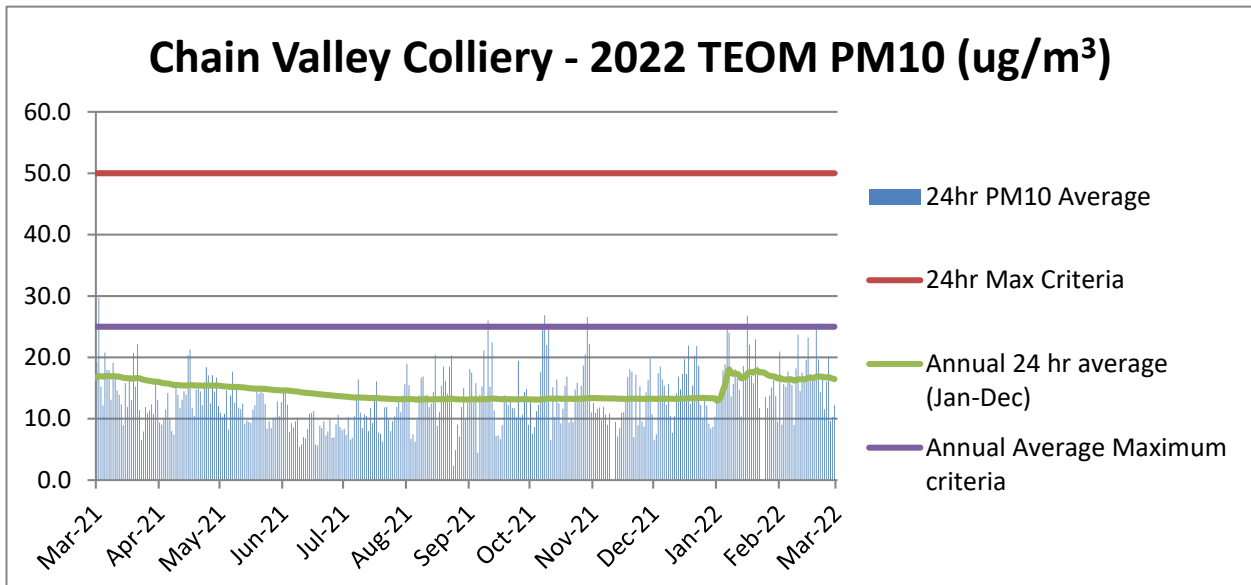
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## Air Quality – PM<sub>10</sub>

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



Annual 24hr PM<sub>10</sub> average maximum criteria for February 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 February 2022.

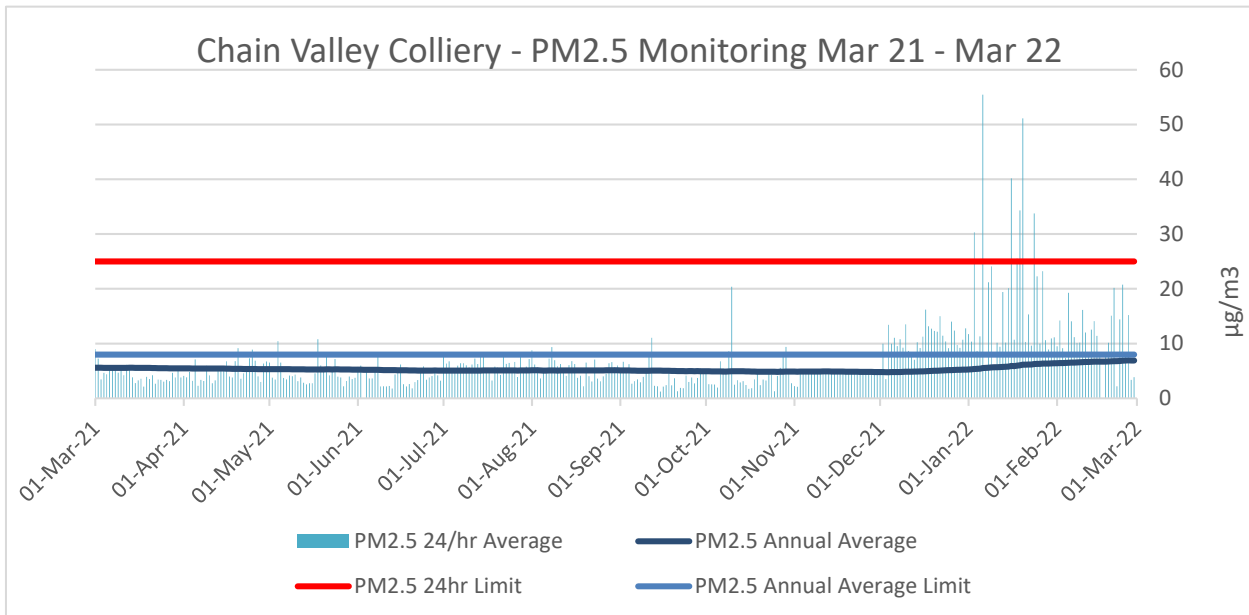
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Variable	February	Total	Valid
A/C Temp	100%	8064	8060
A1	100%	8064	8060
A1_Scaled	100%	8064	8060
Bypass Flow	100%	8064	8060
Cap Temp	100%	8064	8060
Case Temp	100%	8064	8060
Config	100%	8064	8060
Dew Point	100%	8064	8060
Dig-In	100%	8064	8060
Dig-Latch	100%	8064	8060
ESN	100%	8064	8060
Filter Freq	100%	8064	8060
Filter Load	100%	8064	8060
Humidity	100%	8064	8060
MC	100%	8064	8060
MC 12Hr	100%	8064	8060
MC 1Hr	100%	8064	8060
MC 24Hr	100%	8064	8060
MC 30min	100%	8064	8060
MC 8Hr	100%	8064	8060
MC Total	100%	8064	8060
Mobile Signal	100%	8064	8060
Noise	100%	8064	8060
PM10 Flow	100%	8064	8060
Pressure	100%	8064	8060
Site	0.0%	8064	0
Temperature	100%	8064	8060
Tube Temp	100%	8064	8060
Vac Pressure	100%	8064	8060
Volts	100%	8064	8060

### Air Quality – PM<sub>2.5</sub>

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 February 2022. The 12 month rolling average PM<sub>2.5</sub> value at the 28<sup>th</sup> February was 6.9 µm/m<sup>3</sup>. PM<sub>2.5</sub> data availability for February 2022 was 99.85% and 2022 year to date PM<sub>2.5</sub> data availability was 99.8%.

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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 2022			
Licensee	Great Southern Energy Pty Ltd		
Location	Manning Colliery Meteorological station		
Date published	Refer report date		
Date sampled	Daily		
Date obtained	7 <sup>th</sup> March 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

Variable	February	Total	Valid
Baro (Corrected)	100%	2688	2688
10m Temp	100%	2688	2688
2m Temp	100%	2688	2688
A1	100%	2688	2688
A1_Scaled	100%	2688	2688
Assumed Temp	100%	2688	2688
Barometric	100%	2688	2688
Config	100%	2688	2688
Daily Evap	100%	2688	2688
Daily Rain	100%	2688	2688
Delta T	100%	2688	2688
Dew Point	100%	2688	2688
Dig-In	100%	2688	2688
Dig-Latch	100%	2688	2688
ESN	100%	2688	2688
FDI	100%	2688	2688
Heat Index	100%	2688	2688
Humidity	100%	2688	2688
Mobile Signal	100%	2688	2688
Rain	100%	2688	2688
Raw Evap	100%	2688	2688
S Class	100%	2688	2688
Scalar WS	100%	2688	2688
Sigma	100%	2688	2688
Site	0.0%	2688	0
Solar Radiation	100%	2688	2688
Vector WD	100%	2688	2688
Vector WS	100%	2688	2688
Volts	100%	2688	2688
Wind Chill	100%	2688	2688
Wind Direction	100%	2688	2688
Wind Speed	100%	2688	2688
WS Avg	100%	2688	2688
WS Gust	100%	2688	2688