
Mannering Colliery Monthly Website Report – March 2022

Site:	Mannering Colliery
Department:	Technical Services
Report Title:	Monthly Environmental Report – March 2022
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Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of March 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	http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=50781&SYSUID=1&LICID=191

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 – 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 06_0311 (as modified)

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

ALS - Dust Deposition Report **March 2022**

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

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Monitoring Results

Water – Quality

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

March 2022				
EPL	191			
Licensee	Great Southern Energy Pty Ltd			
Premises	Manning 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)
10/03/2022	7.78	8	<5	22,400
18/03/2022	7.84	<5	<5	25,300
22/03/2022	8.02	14	<5	18,300
30/03/2022	7.71	32	<5	13,900
Average	7.85	14.75*	<5	19,975

* = where analytical result is less than the limit of reporting, the limit of reporting is conservatively adopted for the purpose of determining averages.

Monthly water quality results, primarily metals, 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		22-Mar-2022 12:15
Compound	CAS Number	LOR	Unit	ES2210027-001 Result
ED040F: Dissolved Major Anions				
Sulfur as S	63705-05-5	1	mg/L	97
Silicon as SiO2	14464-46-1	0.1	mg/L	7.9
ED093T: Total Major Cations				
Calcium	7440-70-2	1000	µg/L	160000
Magnesium	7439-95-4	1000	µg/L	200000
Potassium	7440-09-7	1000	µg/L	27000
EG020F: Dissolved Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	<10
Arsenic	7440-38-2	1	µg/L	9
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	17
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
EG020T: Total Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	<10
Antimony	7440-36-0	1	µg/L	3
Arsenic	7440-38-2	1	µg/L	10
Beryllium	7440-41-7	1	µg/L	<1
Barium	7440-39-3	1	µg/L	299
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	415
EG020T: Total Metals by ICP-MS - Continued				
Molybdenum	7439-98-7	1	µg/L	6
Nickel	7440-02-0	1	µg/L	3
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	280
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	0.14
EK067G: Total Phosphorus as P by Discrete Analyser				
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.

March 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
01/03/2022	kL	2165.92
02/03/2022	kL	2345.85
03/03/2022	kL	2158.78
04/03/2022	kL	989.41
05/03/2022	kL	1301.68
06/03/2022	kL	1639.3
07/03/2022	kL	1005
08/03/2022	kL	1841.37
09/03/2022	kL	899.81
10/03/2022	kL	1663.71
11/03/2022	kL	1651.3
12/03/2022	kL	1602.94
13/03/2022	kL	193.33
14/03/2022	kL	1632.14
15/03/2022	kL	1621.25
16/03/2022	kL	263.01
17/03/2022	kL	1437.54
18/03/2022	kL	1540.02
19/03/2022	kL	272.71
20/03/2022	kL	1543.43
21/03/2022	kL	1365.49
22/03/2022	kL	85.33
23/03/2022	kL	962.96
24/03/2022	kL	2224.49
25/03/2022	kL	593.3
26/03/2022	kL	1759.67
27/03/2022	kL	1326.89
28/03/2022	kL	785.38
29/03/2022		1920.3
30/03/2022		2196.45
31/03/2022		2706.64
Average	kL	1,409 / day

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

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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 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	25.08	221.76
April 2022		
May 2022		
June 2022		

Air Quality

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

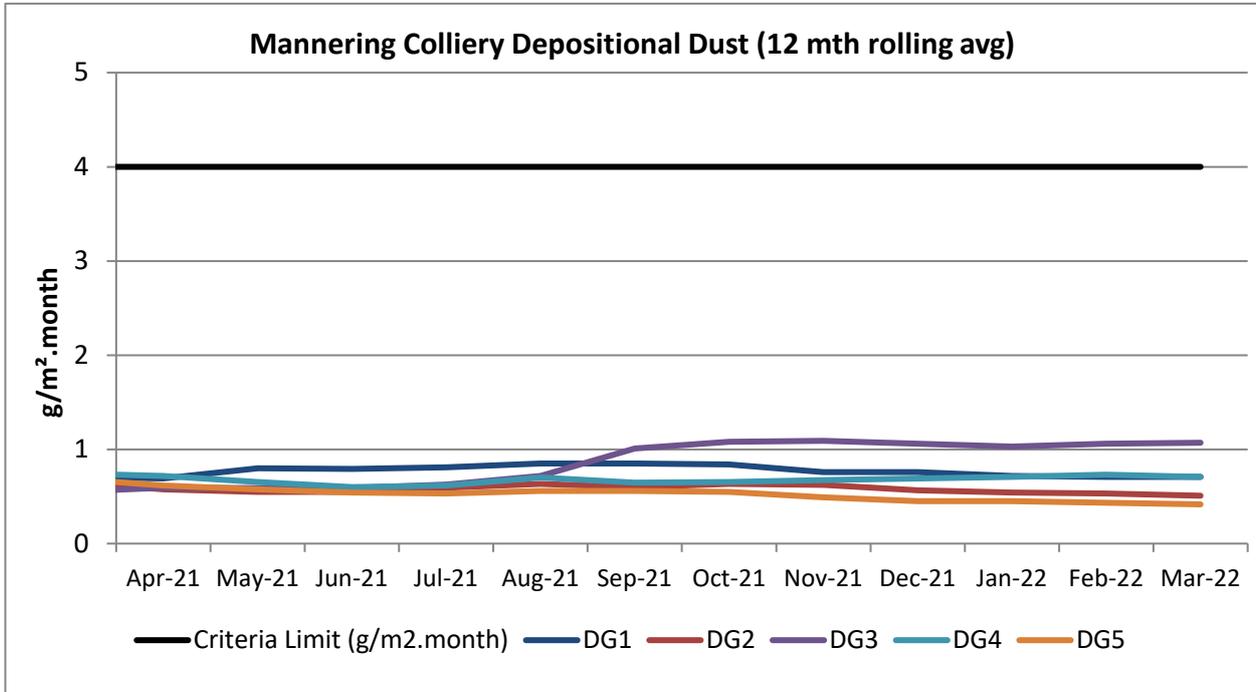
March 2022		
EPL	191	
Limits	Max. total deposited dust level	4g/m ² /month
	Max. increase in deposited dust level	2g/m ² /month
Sampling Date	07/02/2022 – 10/03/2022	
EPA ID no.	Site	Insoluble Matter (g/m ² /month)
3	DG1	0.4
4	DG2	0.4
5	DG3	0.8
6	DG4	0.9
7	DG5	0.6
Notes:	Sampling locations provided in Manning Colliery Air Quality Management Plan available on the Delta Coal website.	

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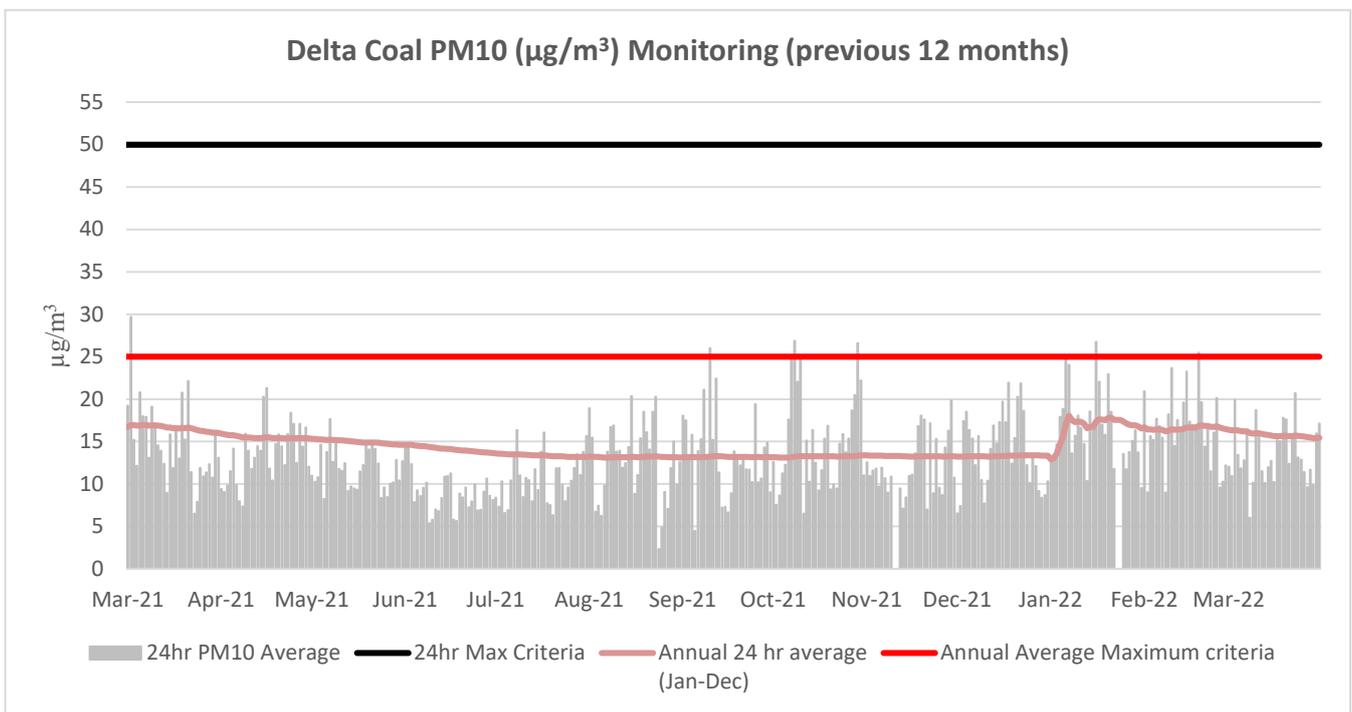
Rolling Annual Average Depositional Dust

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.



Air Quality – PM₁₀

The 24hr PM₁₀ 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.



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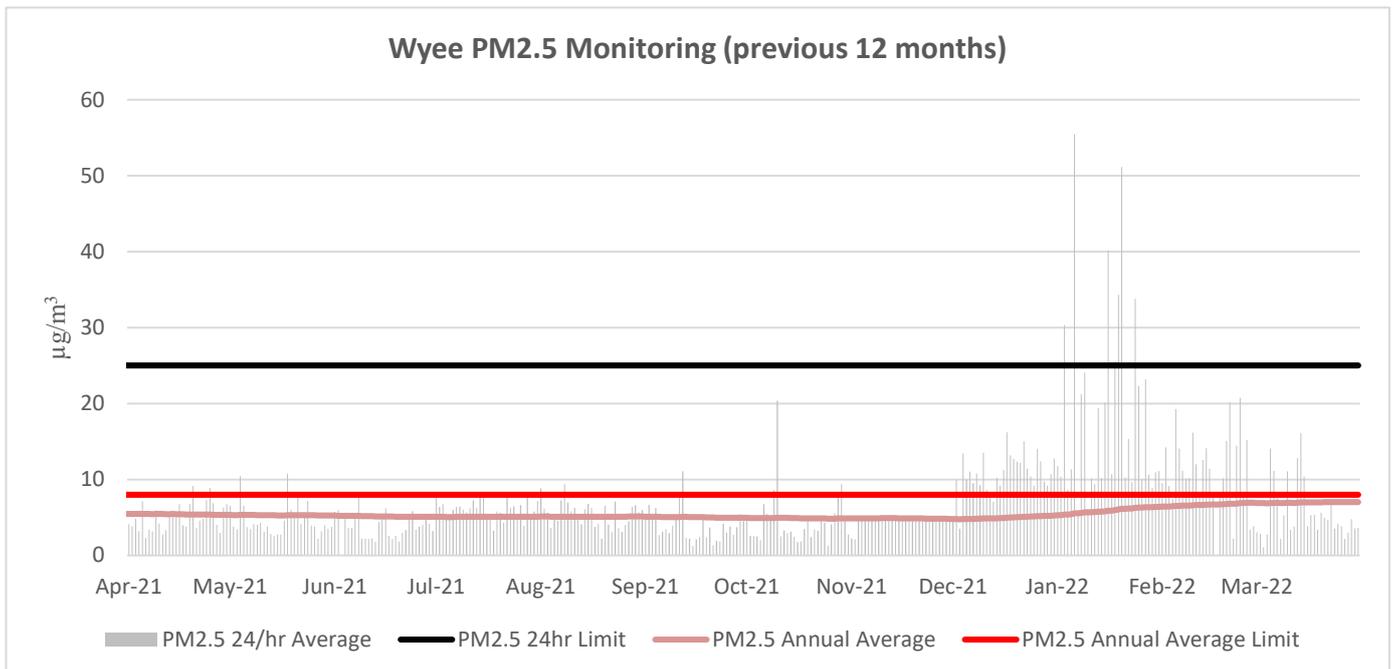
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Annual 24hr PM₁₀ average maximum criteria for February 2022 was below the annual average maximum criteria limit. A summary of data availability for Delta Coal’s TEOM is presented below for the reporting period. Delta Coals TEOM had a data availability of **100%** for the month of March 2022.

Variable	March	Total	Valid
A/C Temp	100%	8928	8927
A1	100%	8928	8927
A1_Scaled	100%	8928	8927
Bypass Flow	100%	8928	8927
Cap Temp	100%	8928	8927
Case Temp	100%	8928	8927
Config	100%	8928	8927
Dew Point	100%	8928	8927
Dig-In	100%	8928	8927
Dig-Latch	100%	8928	8927
ESN	100%	8928	8927
Filter Freq	100%	8928	8927
Filter Load	100%	8928	8927
Humidity	100%	8928	8927
MC	100%	8928	8927
MC 12Hr	100%	8928	8927
MC 1Hr	100%	8928	8927
MC 24Hr	100%	8928	8927
MC 30min	100%	8928	8927
MC 8Hr	100%	8928	8927
MC Total	100%	8928	8927
Mobile Signal	100%	8928	8927
Noise	100%	8928	8927
PM10 Flow	100%	8928	8927
Pressure	100%	8928	8927
Site	0.0%	8928	0
Temperature	100%	8928	8927
Tube Temp	100%	8928	8927
Vac Pressure	100%	8928	8927
Volts	100%	8928	8927

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, Wye.



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There were no exceedances of the PM_{2.5} daily average limit in March 2022. The 12 month rolling average PM_{2.5} value on 31 March 2022 was 7.0 µm/m³. PM_{2.5} data availability for March 2022 was 99.9% and 2022 year to date PM_{2.5} data availability was 99.8%.

Weather Data

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

Monthly Weather Data 2022			
Licensee	Great Southern Energy Pty Ltd		
Location	Manningering Colliery Meteorological station		
Date published	Refer report date		
Date sampled	Daily		
Date obtained	13 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
Mar-22	398.4	13.1	29

Variable	March	Total	Valid
Baro (Corrected)	99.9%	2976	2972
10m Temp	99.9%	2976	2972
2m Temp	99.9%	2976	2972
A1	99.9%	2976	2972
A1_Scaled	99.9%	2976	2972
Assumed Temp	99.9%	2976	2972
Barometric	99.9%	2976	2972
Config	99.9%	2976	2972
Daily Evap	99.9%	2976	2972
Daily Rain	99.9%	2976	2972
Delta T	99.9%	2976	2972
Dew Point	99.9%	2976	2972
Dig-In	99.9%	2976	2972
Dig-Latch	99.9%	2976	2972
ESN	99.9%	2976	2972
FDI	99.9%	2976	2972
Heat Index	99.9%	2976	2972
Humidity	99.9%	2976	2972
Mobile Signal	99.9%	2976	2972
Rain	99.9%	2976	2972
Raw Evap	99.9%	2976	2972
S Class	99.9%	2976	2972
Scalar WS	99.9%	2976	2972
Sigma	99.9%	2976	2972
Site	0.0%	2976	0
Solar Radiation	99.9%	2976	2972
Vector WD	99.9%	2976	2972
Vector WS	99.9%	2976	2972
Volts	99.9%	2976	2972
Wind Chill	99.9%	2976	2972
Wind Direction	99.9%	2976	2972
Wind Speed	99.9%	2976	2972
WS Avg	99.9%	2976	2972
WS Gust	99.9%	2976	2972