
Manning Colliery Monthly Website Report – October 2022

Site:	Manning Colliery
Department:	Technical Services
Report Title:	Monthly Environmental Report – October 2022
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Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of October 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	EPL 0191 14 April 2021

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 **October 2022**

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

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Monitoring Results

Water – Quality

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

October 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)
04/10/2022	7.77	6	<5	26,800
12/10/2022	7.89	59	<5	618
14/10/2022	7.80	8	N/A	27,500
19/10/2022	7.48	9	<5	28,500
27/10/2022	7.73	12	<5	26,800
Average	7.73	18.8	<5	22,044

There was one exceedance of water quality criteria in October 2022 for Total Suspended Solids limits detailed within EPL 191 (50 mg/L). The exceedance occurred following intensive rainfalls on the 8th November, it was noted at the time of sampling that flow rates were very low and reviewing site flow meter data, the flow rate at the time of sampling was less than 2L/sec (minimum registerable flow rate for Point 1 monitoring) indicating minimal discharge. The exceedance was investigated and reported to the Department of Planning and Environment, NSW EPA and NSW Resources Regulator. Delta Coal is investigating corrective actions to improve water management at Manning Colliery to mitigate impacts of sediment laden storm-water resulting from intensive rainfall events.

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		LD001
		Sampling date / time		19-Oct-2022 13:00
Compound	CAS Number	LOR	Unit	ES2237532-001 Result
ED040F: Dissolved Major Anions				
Sulfur as S	63705-05-5	1	mg/L	170
Silicon as SiO2	14464-46-1	0.1	mg/L	15.5
ED093T: Total Major Cations				
Calcium	7440-70-2	1	mg/L	273
Magnesium	7439-95-4	1	mg/L	322
Potassium	7440-09-7	1	mg/L	45
EG020F: Dissolved Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	<10
Arsenic	7440-38-2	1	µg/L	<1
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	66
Molybdenum	7439-98-7	1	µg/L	6
Nickel	7440-02-0	1	µg/L	4
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	17
EG020T: Total Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	60
Antimony	7440-36-0	1	µg/L	<1
Arsenic	7440-38-2	1	µg/L	<1
Beryllium	7440-41-7	1	µg/L	<1
Barium	7440-39-3	1	µg/L	226
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	624
EG020T: Total Metals by ICP-MS - Continued				
Molybdenum	7439-98-7	1	µg/L	6
Nickel	7440-02-0	1	µg/L	4
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	60
Boron	7440-42-8	50	µg/L	410
Iron	7439-89-6	50	µg/L	370
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	0.0001	mg/L	<0.0001
EK055G: Ammonia as N by Discrete Analyser				
Ammonia as N	7664-41-7	0.01	mg/L	1.06
EK067G: Total Phosphorus as P by Discrete Analyser				
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.

October 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)
01/10/2022	974.03	0.2
02/10/2022	939.4	5
03/10/2022	920.9	0.2
04/10/2022	866.98	0
05/10/2022	1311.68	9.6
06/10/2022	0	4.6
07/10/2022	141.37	11.6
08/10/2022	2106.33	52.2
09/10/2022	2201.8	8.4
10/10/2022	166.37	1.4
11/10/2022	0	0.2
12/10/2022	0	0
13/10/2022	563.03	0
14/10/2022	1206.22	0.6
15/10/2022	1653.64	0
16/10/2022	1692.39	4.4
17/10/2022	2122.18	11.8
18/10/2022	1301.67	7.4
19/10/2022	957.21	0.8
20/10/2022	1371.22	13
21/10/2022	1888.13	0.4
22/10/2022	1238.96	0.6
23/10/2022	1108.81	5.8
24/10/2022	240.98	5.2
25/10/2022	490.07	4.8
26/10/2022	1540.73	0.2
27/10/2022	909.78	1.2
28/10/2022	64.96	0
29/10/2022	0	0
30/10/2022	0	0
31/10/2022	895.68	0

Average	931 kL/day	4.8 mm
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There were no exceedances of volumetric discharge limits at LDP1 in October 2022.

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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 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		
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 October 2022.

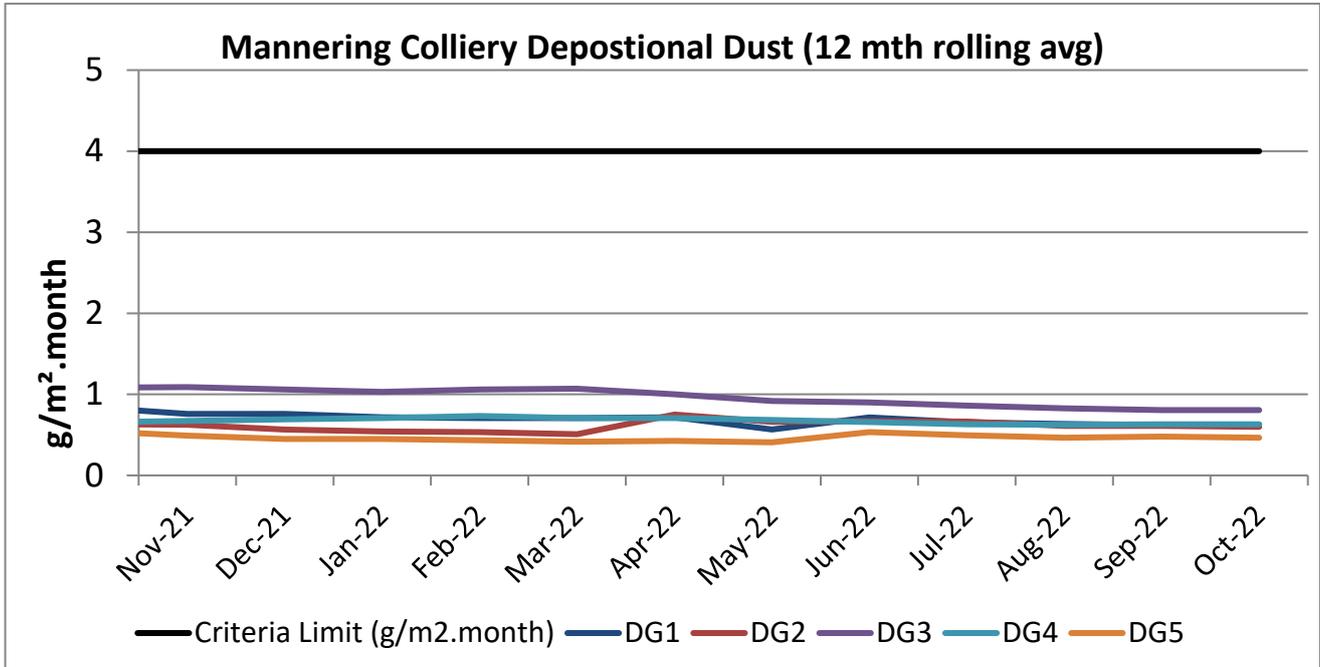
October 2022		
EPL	191	
Limits	Max. total deposited dust level	4g/m ² /month
	Max. increase in deposited dust level	2g/m ² /month
Sampling Date	02/09/2022 to 04/10/2022	
EPA ID no.	Site	Insoluble Matter (g/m ² /month)
3	DG1	0.6
4	DG2	0.3
5	DG3	0.5
6	DG4	0.6
7	DG5	0.5
Notes:	Sampling locations provided in Manning Colliery Air Quality Management Plan available on the Delta Coal website.	

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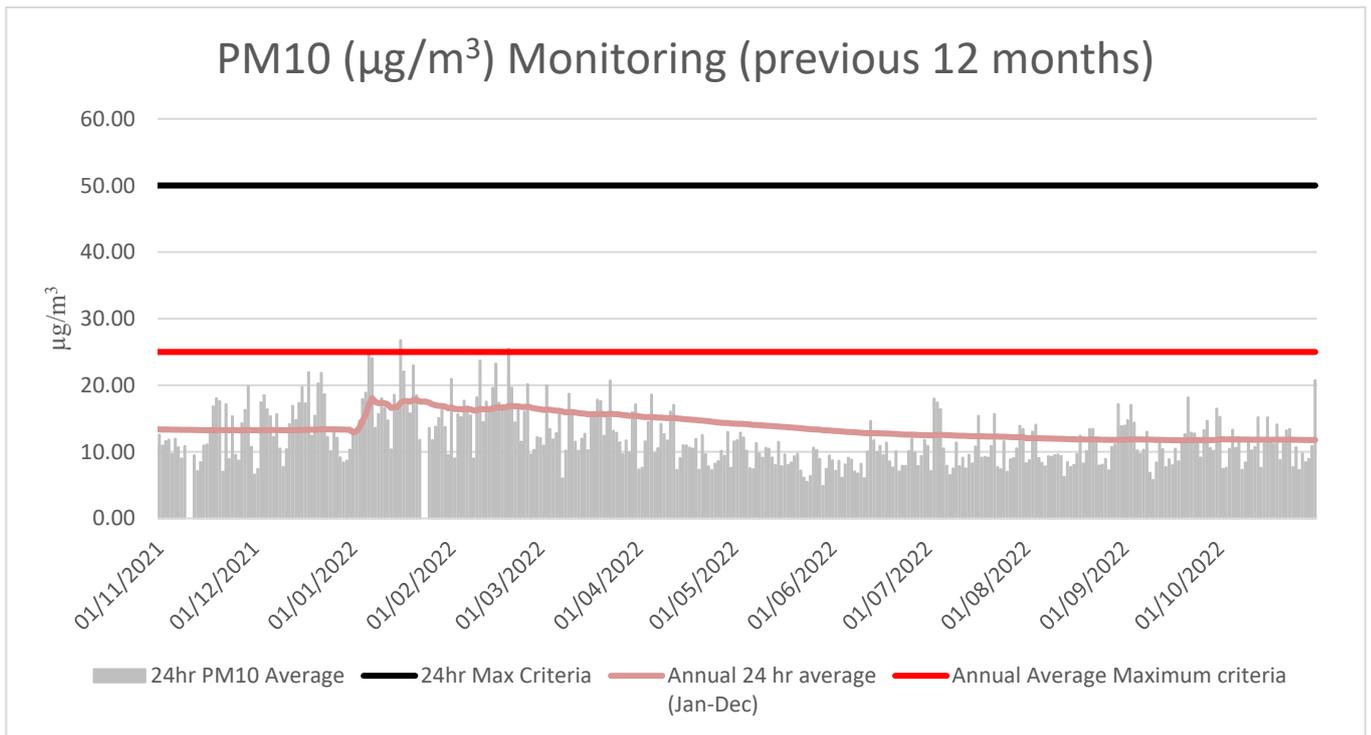
Air Quality – Depositional Dust

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.



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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Annual 24hr PM₁₀ average maximum criteria for October 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 **99.9%** for the month of October 2022. The 0.1% of data lost was due to calibration of the TEOM unit in the month.

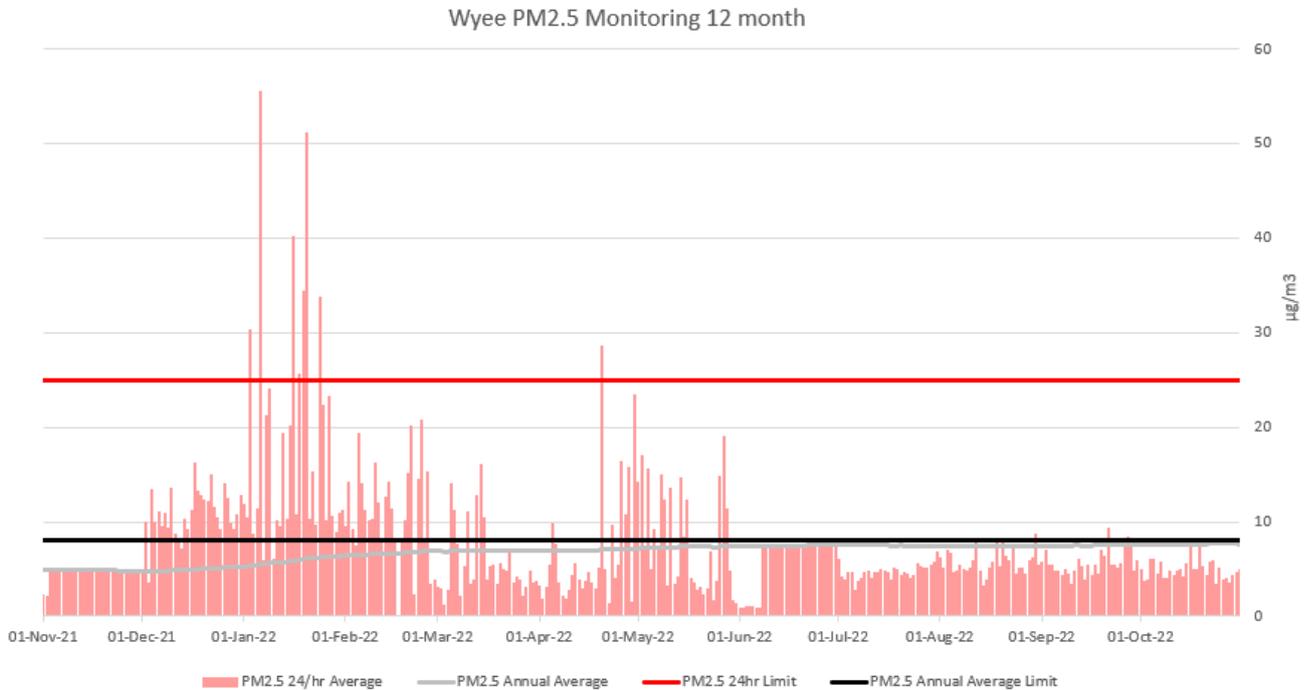
Variable	October	Total	Valid
A/C Temp	99.9%	8928	8917
A1	99.9%	8928	8917
A1_Scaled	99.9%	8928	8917
Bypass Flow	99.9%	8928	8917
Cap Temp	99.9%	8928	8917
Case Temp	99.9%	8928	8917
Config	99.9%	8928	8917
Dew Point	99.9%	8928	8917
Dig-In	99.9%	8928	8917
Dig-Latch	43.5%	8928	3884
ESN	99.9%	8928	8917
Filter Freq	99.9%	8928	8917
Filter Load	99.9%	8928	8917
Humidity	99.9%	8928	8917
MC	99.9%	8928	8917
MC 12Hr	99.9%	8928	8917
MC 1Hr	99.9%	8928	8917
MC 24Hr	99.9%	8928	8917
MC 30min	99.9%	8928	8917
MC 8Hr	99.9%	8928	8917
MC Total	99.9%	8928	8917
Mobile Signal	99.9%	8928	8917
Noise	99.9%	8928	8917
PM10 Flow	99.9%	8928	8917
Pressure	99.9%	8928	8917
Site	0.0%	8928	0
Temperature	99.9%	8928	8917
Tube Temp	99.9%	8928	8917
Vac Pressure	99.9%	8928	8917
Volts	99.9%	8928	8917

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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 September 2022. The 12-month rolling average PM_{2.5} value on 31 October 2022 was 7.64 µg/m³. PM_{2.5} data availability for October 2022 was 99%. The 2022 year to date PM_{2.5} 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
Oct-22	163.4	6.8	29.2

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Variable	October	Total	Valid
Baro (Corrected)	99.9%	2976	2973
10m Temp	99.9%	2976	2973
2m Temp	99.9%	2976	2973
A1	99.9%	2976	2973
A1_Scaled	99.9%	2976	2973
Assumed Temp	99.9%	2976	2973
Barometric	99.9%	2976	2973
Config	99.9%	2976	2973
Daily Evap	99.9%	2976	2973
Daily Rain	99.9%	2976	2973
Delta T	99.9%	2976	2973
Dew Point	99.9%	2976	2973
Dig-In	99.9%	2976	2973
Dig-Latch	43.5%	2976	1294
ESN	99.9%	2976	2973
FDI	99.9%	2976	2973
Heat Index	99.9%	2976	2973
Humidity	99.9%	2976	2973
Mobile Signal	99.9%	2976	2973
Rain	99.9%	2976	2973
Raw Evap	99.9%	2976	2973
S Class	99.9%	2976	2973
Scalar WS	99.9%	2976	2973
Sigma	99.9%	2976	2973
Site	0.0%	2976	0
Solar Radiation	99.9%	2976	2973
Vector WD	99.9%	2976	2973
Vector WS	99.9%	2976	2973
Volts	99.9%	2976	2973
Wind Chill	99.9%	2976	2973
Wind Direction	99.9%	2976	2973
Wind Speed	99.9%	2976	2973
WS Avg	99.9%	2976	2973
WS Gust	99.9%	2976	2973