
Manning Colliery Monthly Website Report – October 2023

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Monthly Website Report

Mannering Colliery Monthly Environmental Report – October 2023

Table of Contents

Summary	3
Introduction	3
Scope	4
Definitions	4
References	4
Monitoring Results	5
Water – Quality	5
Water – Volume.....	7
Water – Groundwater Discharge.....	8
Air Quality – Depositional Dust	8
Air Quality – PM ₁₀	9
Air Quality – PM _{2.5}	11
Weather Data	11

Monthly Website Report

Manning Colliery Monthly Environmental Report – October 2023

Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of October 2023.

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.

Monthly Website Report

Manning Colliery Monthly Environmental Report – October 2023

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 MP06_0311 (as modified)

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

ALS - Dust Deposition Report **October 2023**

ALS – MC Water Analysis Reports **October 2023**

Monthly Website Report

Mannering Colliery Monthly Environmental Report – October 2023

Monitoring Results

Water – Quality

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

October 2023				
EPL	191			
Licensee	Great Southern Energy Pty Ltd			
Premises	Mannering 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)
3/10/2023	7.71	13	<5	28500
9/10/2023	7.85	<5	<5	28100
17/10/2023	8.20	6	<5	21600
24/10/2023	8.26	<5	<5	28200
Average	8.005	9.5	<5	26600

There were no exceedances of water quality criteria in October 2023 at Mannering Colliery.

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

Monthly Website Report

Mannering Colliery Monthly Environmental Report – October 2023

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		LDP001
		Sampling date / time		24-Oct-2023 10:15
Compound	CAS Number	LOR	Unit	ES2336599-001
				Result
ED040F: Dissolved Major Anions				
Sulfur as S	63705-05-5	1	mg/L	156
Silicon as SiO2	14464-46-1	0.1	mg/L	14.6
ED093T: Total Major Cations				
Calcium	7440-70-2	1	mg/L	322
Magnesium	7439-95-4	1	mg/L	325
Potassium	7440-09-7	1	mg/L	41
EG020F: Dissolved Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	<100
Arsenic	7440-38-2	1	µg/L	<10
Beryllium	7440-41-7	1	µg/L	<10
Cadmium	7440-43-9	0.1	µg/L	<1.0
Chromium	7440-47-3	1	µg/L	<10
Cobalt	7440-48-4	1	µg/L	<10
Copper	7440-50-8	1	µg/L	<10
Lead	7439-92-1	1	µg/L	<10
Manganese	7439-96-5	1	µg/L	70
Molybdenum	7439-98-7	1	µg/L	<10
Nickel	7440-02-0	1	µg/L	<10
Selenium	7782-49-2	10	µg/L	<100
Silver	7440-22-4	1	µg/L	<10
Vanadium	7440-62-2	10	µg/L	<100
Zinc	7440-66-6	5	µg/L	<50
EG020T: Total Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	<100
Antimony	7440-36-0	1	µg/L	<10
Arsenic	7440-38-2	1	µg/L	<10
Beryllium	7440-41-7	1	µg/L	<10
Barium	7440-39-3	1	µg/L	209
Cadmium	7440-43-9	0.1	µg/L	<1.0
Chromium	7440-47-3	1	µg/L	<10
Cobalt	7440-48-4	1	µg/L	<10
Copper	7440-50-8	1	µg/L	<10
Lead	7439-92-1	1	µg/L	<10
Lithium	7439-93-2	1	µg/L	705
EG020T: Total Metals by ICP-MS - Continued				
Molybdenum	7439-98-7	1	µg/L	<10
Nickel	7440-02-0	1	µg/L	<10
Selenium	7782-49-2	10	µg/L	<100
Silver	7440-22-4	1	µg/L	<10
Tin	7440-31-5	1	µg/L	<10
Titanium	7440-32-6	10	µg/L	<100
Vanadium	7440-62-2	10	µg/L	<100
Zinc	7440-66-6	5	µg/L	<52
Boron	7440-42-8	50	µg/L	300
Iron	7439-89-6	50	µg/L	<100
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	1.13
EK067G: Total Phosphorus as P by Discrete Analyser				
Total Phosphorus as P	----	0.01	mg/L	0.02

Monthly Website Report

Mannering Colliery Monthly Environmental Report – October 2023

Water – Volume

Monthly water volumes discharged via MC's LDP1 during October 2023 at Mannering Colliery are summarised below.

EPL	191
Licensee	Great Southern Energy Pty Ltd
Premises	Mannering 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)
01/10/2023	1277.82	0
02/10/2023	1217.77	0
03/10/2023	854.05	0
04/10/2023	956.16	8.6
05/10/2023	993.18	0.2
06/10/2023	830.97	3.8
07/10/2023	1159.73	1.2
08/10/2023	794.47	0
09/10/2023	1031.02	0
10/10/2023	1069.2	0
11/10/2023	1097.14	0
12/10/2023	914.9	0
13/10/2023	1045.64	0
14/10/2023	712.16	0
15/10/2023	809.46	0
16/10/2023	1153.79	0
17/10/2023	847.58	1
18/10/2023	724.74	0
19/10/2023	646.14	0
20/10/2023	448.41	0
21/10/2023	821.94	0
22/10/2023	892.13	0
23/10/2023	924.44	0
24/10/2023	957.31	0
25/10/2023	1076.29	1.2
26/10/2023	931.7	37.8
27/10/2023	961.19	38
28/10/2023	2643.06	0.2
29/10/2023	1151.83	0
30/10/2023	1180.53	0
31/10/2023	660.37	0

Average	971.67 kL/day	2.79 mm/day
Maximum	2643.06 kL/day	37.8 mm/day

There were no exceedances of volumetric discharge limits at LDP1 in October 2023.

Monthly Website Report

Manning Colliery Monthly Environmental Report – October 2023

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)	GW Discharge (ML/Month)	GW Discharge (Cumulative ML YTD)
July 2023	23	23
August 2023	30	53
September 2023	26	79
October 2023	30	109
November 2023		
December 2023		
January 2024		
February 2024		
March 2024		
April 2024		
May 2024		
June 2024		

Air Quality – Depositional Dust

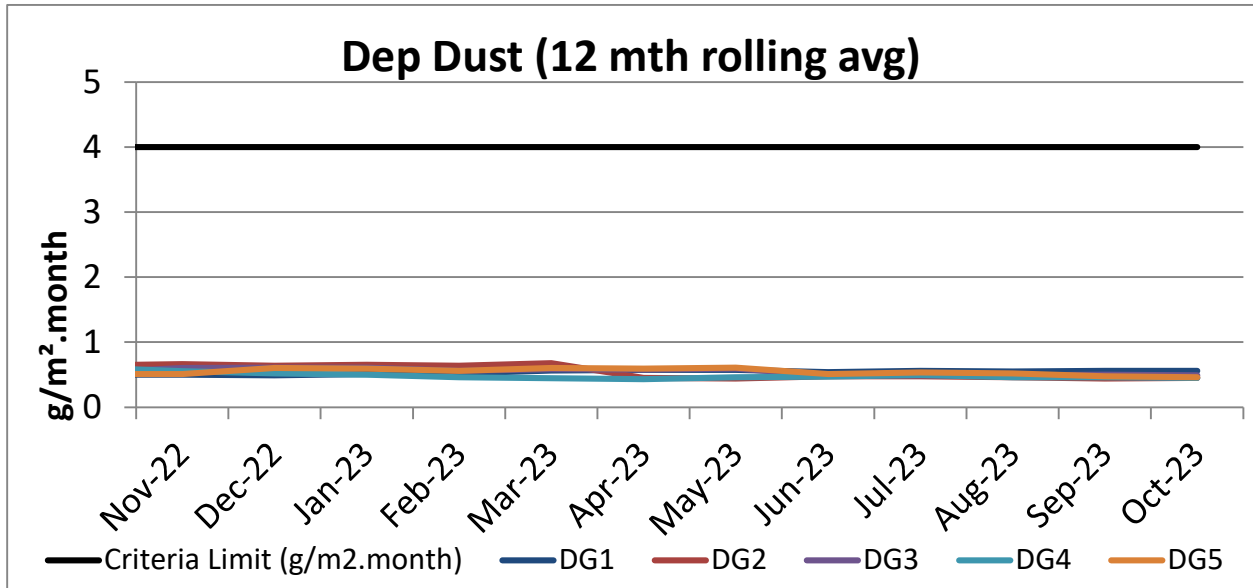
Monthly depositional dust results are shown below.

October 2023		
EPL	191	
Limits	Max. total deposited dust level	4g/m ² /month
	Max. increase in deposited dust level	2g/m ² /month
Sampling Date	04/09/2023 – 04/10/2023	
EPA ID no.	Site	Insoluble Matter (g/m2/month)
3	DG1	0.6
4	DG2	0.4
5	DG3	0.4
6	DG4	0.6
7	DG5	0.3
Notes:	Sampling locations provided in Delta Coal Air Quality and Greenhouse Gas Management Plan available on the Delta Coal website.	

Monthly Website Report

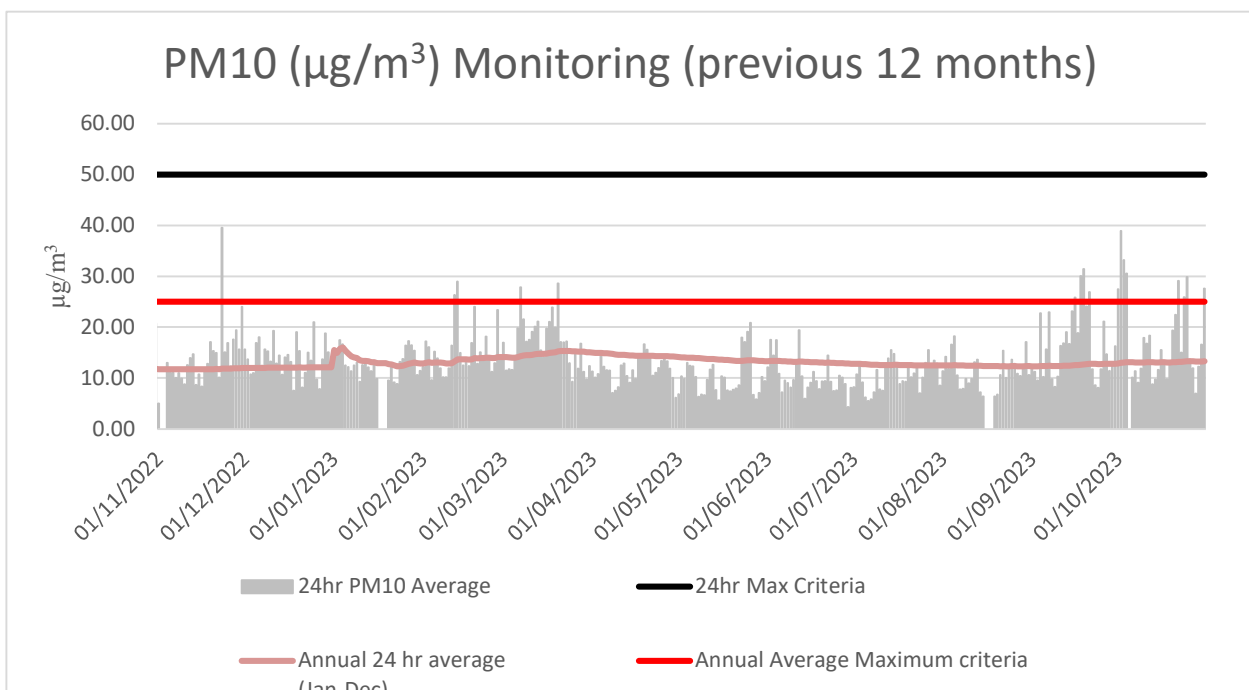
Mannering Colliery Monthly Environmental Report – October 2023

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



Air Quality – PM₁₀

The 24hr PM₁₀ average from Delta Coal's Tapered Element Oscillating Microbalance (TEOM), located at the Mannering Park Sewage Treatment Plant, is presented below for the previous 12 months.



Annual 24hr PM₁₀ average maximum criteria for October 2023 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 **97.6%** for the month of October 2023.

Monthly Website Report

Mannering Colliery Monthly Environmental Report – October 2023

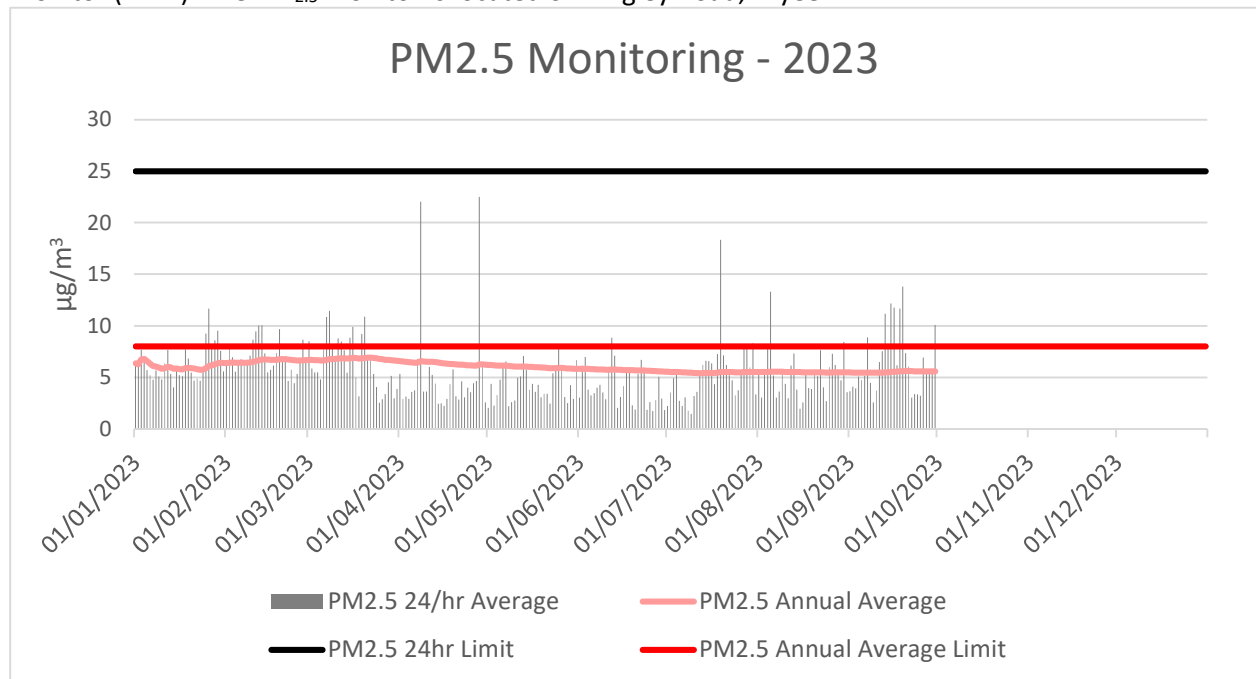
Variable	October	Total	Valid
A/C Temp	97.8%	8928	8735
A1	97.8%	8928	8735
A1_Scaled	97.8%	8928	8735
Bypass Flow	97.8%	8928	8735
Cap Temp	97.8%	8928	8735
Case Temp	97.8%	8928	8735
Config	97.8%	8928	8735
Dew Point	97.8%	8928	8735
Dig-In	97.8%	8928	8735
Dig-Latch	97.8%	8928	8735
ESN	97.8%	8928	8735
Filter Freq	97.8%	8928	8735
Filter Load	97.8%	8928	8735
Humidity	97.8%	8928	8735
MC	97.8%	8928	8735
MC 12Hr	97.8%	8928	8735
MC 1Hr	97.8%	8928	8735
MC 24Hr	97.8%	8928	8735
MC 30min	97.8%	8928	8735
MC 8Hr	97.8%	8928	8735
MC Total	97.8%	8928	8735
Mobile Signal	97.8%	8928	8735
Noise	97.8%	8928	8735
PM10 Flow	97.8%	8928	8735
Pressure	97.8%	8928	8735
Site	0.0%	8928	0
Temperature	97.8%	8928	8735
Tube Temp	97.8%	8928	8735
Vac Pressure	97.8%	8928	8735
Volts	97.8%	8928	8735

Monthly Website Report

Mannering Colliery Monthly Environmental Report – October 2023

Air Quality – PM2.5

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 2023. The 12-month rolling average PM_{2.5} value on 30 September 2023 was 5.59 µg/m³. PM_{2.5} data availability in September 2023 was 99%. The 2023 year to date PM_{2.5} data availability is 98.05%.

It is noted that due to the external validation of PM_{2.5} results, there is a one-month delay in publishing PM_{2.5} results, however, real-time alarms remain active to ensure mitigation responses to elevated results can be applied when necessary.

Weather Data

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

Monthly Weather Data 2023			
Licensee	Great Southern Energy Pty Ltd		
Location	Mannering Colliery Meteorological station		
Date published	Refer report date		
Date sampled	Daily		
Date obtained	7 October 2023		
Month	Total Rainfall/Month (mm)	Min Temp	Max Temp
Jan-23	112	14.4	31.7
Feb-23	91	12.6	33.2
Mar-23	116	9.4	38.7
Apr-23	96	6.8	26.7
May-23	59.2	2.8	23.9
Jun-23	8.4	1.6	24.7
July-23	40.2	1.9	25.4

Monthly Website Report

Mannering Colliery Monthly Environmental Report – October 2023

Aug -23	57.8	4.2	27.1
Sept-23	13.4	2.4	34.5
Oct-23	92	6.9	35.2

Variable	October	Total	Valid
Baro (Corrected)	99.8%	2976	2971
10m Temp	99.8%	2976	2971
2m Temp	99.8%	2976	2971
A1	99.8%	2976	2971
A1_Scaled	99.8%	2976	2971
Assumed Temp	99.8%	2976	2971
Barometric	99.8%	2976	2971
Config	99.8%	2976	2971
Daily Evap	99.8%	2976	2971
Daily Rain	99.8%	2976	2971
Delta T	99.8%	2976	2971
Dew Point	99.8%	2976	2971
Dig-In	99.8%	2976	2971
Dig-Latch	99.8%	2976	2971
ESN	99.8%	2976	2971
FDI	99.8%	2976	2971
Heat Index	99.8%	2976	2971
Humidity	99.8%	2976	2971
Mobile Signal	99.8%	2976	2971
Rain	99.8%	2976	2971
Raw Evap	99.8%	2976	2971
S Class	99.8%	2976	2971
Scalar WS	99.8%	2976	2971
Sigma	99.8%	2976	2971
Site	0.0%	2976	0
Solar Radiation	99.8%	2976	2971
Vector WD	99.8%	2976	2971
Vector WS	99.8%	2976	2971
Volts	99.8%	2976	2971
Wind Chill	99.8%	2976	2971
Wind Direction	99.8%	2976	2971
Wind Speed	99.8%	2976	2971
WS Avg	99.8%	2976	2971
WS Gust	99.8%	2976	2971