



Manning Colliery Monthly Website Report – November 2023

Site:	Manning Colliery
Department:	Technical Services
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Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of November 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 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	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 MP06_0311 (as modified)

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

ALS - Dust Deposition Report **November 2023**

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

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Monitoring Results

Water – Quality

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

November 2023				
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)
1/11/2023	7.83	6	<5	28400
6/11/2023	7.88	16	<5	18000
16/11/2023	7.90	11	<5	27900
23/11/2023	7.96	<5	<5	28500
28/11/2023	7.92	<5	<5	28200
Average	7.898	6.6	<5	26200

There were no exceedances of water quality criteria in November 2023 at Manning Colliery.

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

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Sub-Matrix: WATER (Matrix: WATER)		Sample ID		LDP001
		Sampling date / time		06-Nov-2023 10:25
Compound	CAS Number	LOR	Unit	ES2338251-001
				Result
ED040F: Dissolved Major Anions				
Sulfur as S	63705-05-5	1	mg/L	87
Silicon as SiO2	14464-46-1	0.1	mg/L	8.9
ED093T: Total Major Cations				
Calcium	7440-70-2	1	mg/L	262
Magnesium	7439-95-4	1	mg/L	242
Potassium	7440-09-7	1	mg/L	32
EG020F: Dissolved Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	<10
Arsenic	7440-38-2	1	µg/L	2
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	46
Molybdenum	7439-98-7	1	µg/L	3
Nickel	7440-02-0	1	µg/L	3
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	11
EG020T: Total Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	90
Antimony	7440-36-0	1	µg/L	3
Arsenic	7440-38-2	1	µg/L	2
Beryllium	7440-41-7	1	µg/L	<1
Barium	7440-39-3	1	µg/L	223
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	493

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EG020T: Total Metals by ICP-MS - Continued				
Molybdenum	7439-98-7	1	µg/L	8
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	12
Boron	7440-42-8	50	µg/L	300
Iron	7439-89-6	50	µg/L	200
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	0.64
EK067G: Total Phosphorus as P by Discrete Analyser				
Total Phosphorus as P	---	0.01	mg/L	<0.01

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Water – Volume

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

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)
01/11/2023	1069.55	0
02/11/2023	628.13	0
03/11/2023	1035.82	0
04/11/2023	1053.42	8.6
05/11/2023	1714.68	0.2
06/11/2023	1130.98	3.8
07/11/2023	1022.9	1.2
08/11/2023	933.85	0
09/11/2023	1114.2	0
10/11/2023	1144.67	0
11/11/2023	945.59	0
12/11/2023	867.44	0
13/11/2023	842.37	0
14/11/2023	879.87	0
15/11/2023	932.22	0
16/11/2023	441.67	0
17/11/2023	16.22	1
18/11/2023	262.01	0
19/11/2023	173.7	0
20/11/2023	5.35	0
21/11/2023	0	0
22/11/2023	312.38	0
23/11/2023	459.05	0
24/11/2023	490.56	0
25/11/2023	450.87	1.2
26/11/2023	424.44	37.8
27/11/2023	660.75	38
28/11/2023	941.71	0.2
29/11/2023	1084.18	0
30/11/2023	1169.79	0

Average	740.28 kL/day	2.91 mm/day
Maximum	1714.68 kL/day	25.6 mm/day

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

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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)	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	18	127
December 2023		
January 2024		
February 2024		
March 2024		
April 2024		
May 2024		
June 2024		

Air Quality – Depositional Dust

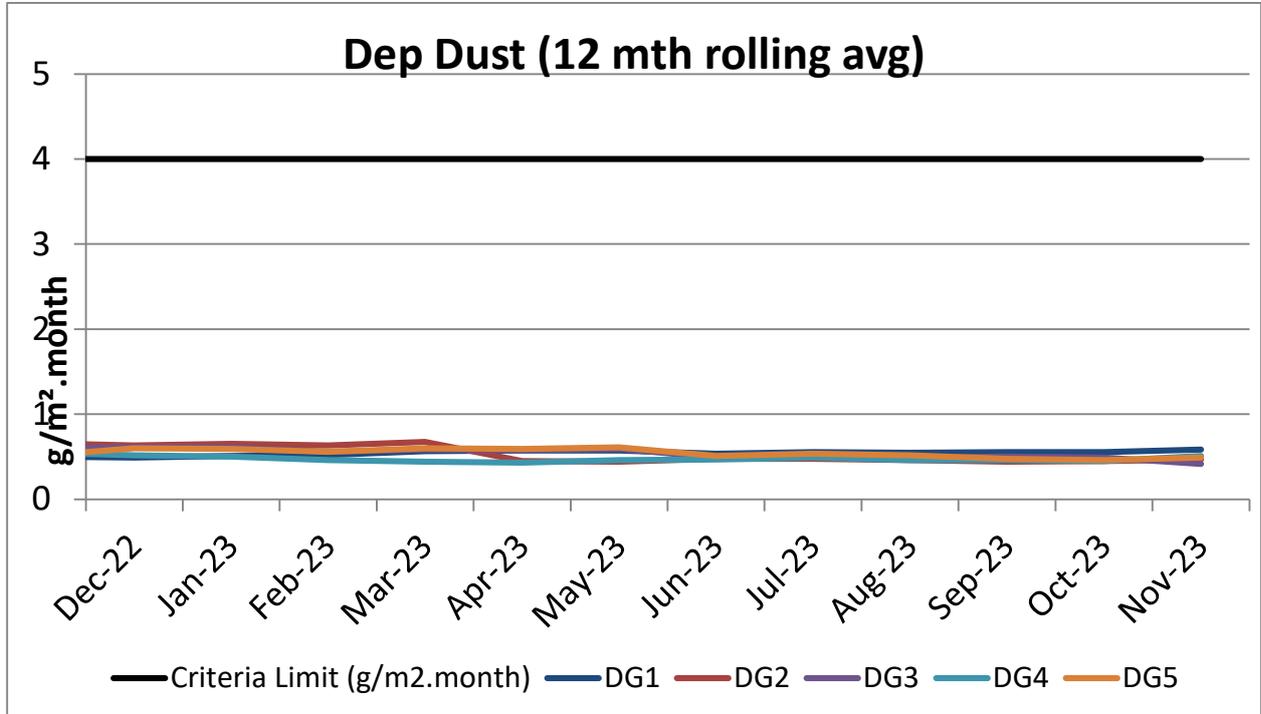
Monthly depositional dust results are shown below.

November 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	04/10/2023 – 01/11/2023	
EPA ID no.	Site	Insoluble Matter (g/m ² /month)
3	DG1	0.9
4	DG2	1.0
5	DG3	0.5
6	DG4	1.0
7	DG5	0.7
Notes:	Sampling locations provided in Delta Coal Air Quality and Greenhouse Gas Management Plan available on the Delta Coal website.	

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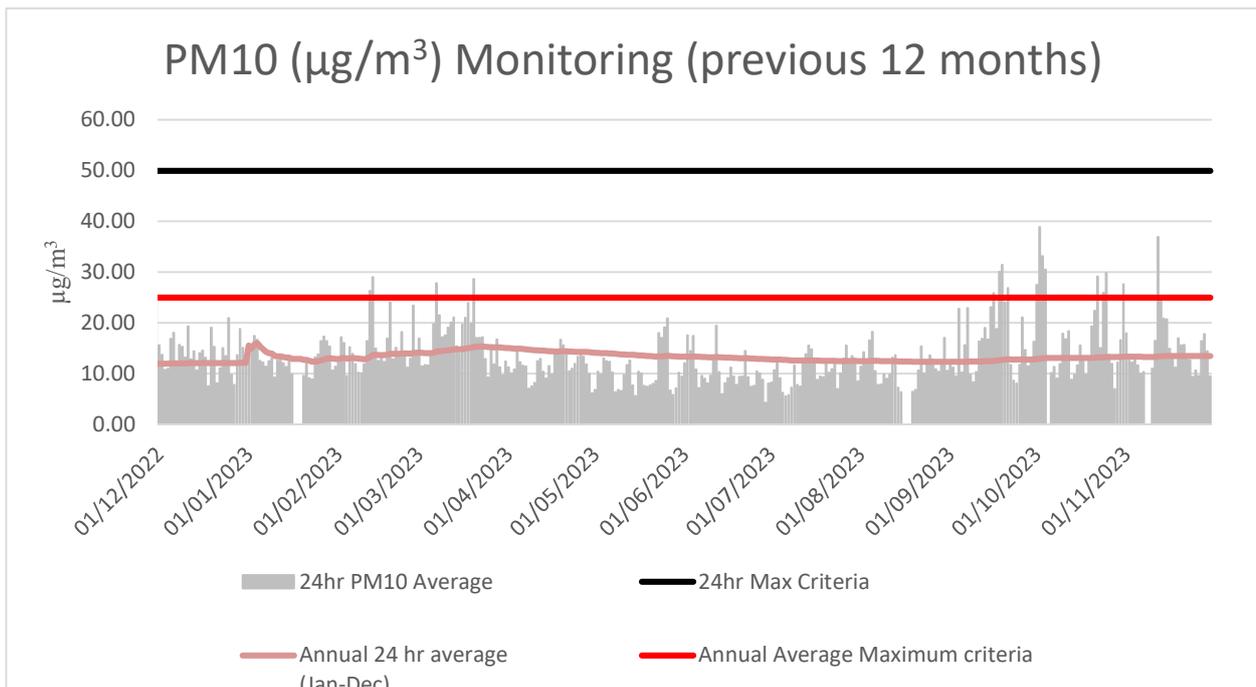
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A 12-month rolling average of depositional dust concentrations has been presented below. Manning Colliery's dust gauges are located around the perimeter of the Manning Colliery site boundary.



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 previous 12 months.



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Annual 24hr PM₁₀ average maximum criteria for November 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 **97.3%** for the month of November 2023.

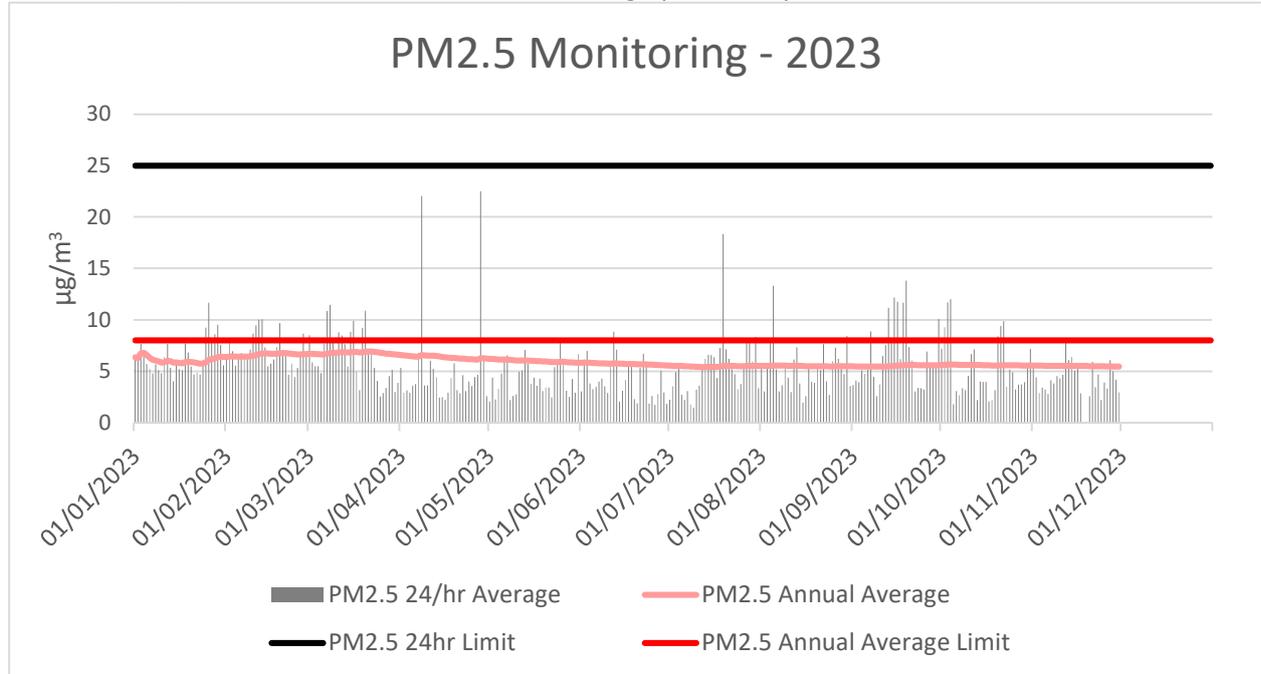
Variable	November	Total	Valid
A/C Temp	100%	8640	8636
A1	100%	8640	8636
A1_Scaled	100%	8640	8636
Bypass Flow	100%	8640	8636
Cap Temp	100%	8640	8636
Case Temp	100%	8640	8636
Config	100%	8640	8636
Dew Point	100%	8640	8636
Dig-In	100%	8640	8636
Dig-Latch	100%	8640	8636
ESN	100%	8640	8636
Filter Freq	100%	8640	8636
Filter Load	100%	8640	8636
Humidity	100%	8640	8636
MC	100%	8640	8636
MC 12Hr	100%	8640	8636
MC 1Hr	100%	8640	8636
MC 24Hr	100%	8640	8636
MC 30min	100%	8640	8636
MC 8Hr	100%	8640	8636
MC Total	100%	8640	8636
Mobile Signal	100%	8640	8636
Noise	100%	8640	8636
PM10 Flow	100%	8640	8636
Pressure	100%	8640	8636
Site	0.0%	8640	0
Temperature	100%	8640	8636
Tube Temp	100%	8640	8636
Vac Pressure	100%	8640	8636
Volts	100%	8640	8636

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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 October or November 2023. The 12-month rolling average PM_{2.5} value on 30 November 2023 was 5.46 $\mu\text{g}/\text{m}^3$. PM_{2.5} data availability in September and October 2023 was 98% and 90% respectively. The 2023 year to date PM_{2.5} data availability is 98.05%.

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 2023			
Licensee	Great Southern Energy Pty Ltd		
Location	Manning Colliery Meteorological station		
Date published	Refer report date		
Date sampled	Daily		
Date obtained	11 December 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
Aug -23	57.8	4.2	27.1
Sept-23	13.4	2.4	34.5
Oct-23	92	6.9	35.2
Nov-23	87.2	11.2	30.2

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Variable	November	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	100%	2880	2880
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