
Manning Colliery Monthly Website Report – December 2023

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Summary

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

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Scope

This report presents the results from the various environmental monitoring programs undertaken for Mannering 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 **December 2023**

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

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Monitoring Results

Water – Quality

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

December 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)
5/12/2023	7.83	<5	<5	28000
14/12/2023	8.32	12	<5	17400
22/12/2023	8.22	<5	<5	8260
23/11/2023	7.96	<5	<5	28500
28/12/2023	7.77	6	<5	27700
Average	8.02	6.6	<5	21972

There were no exceedances of water quality criteria in December 2023 at Mannering 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		14-Dec-2023 10:45
Compound	CAS Number	LOR	Unit	ES2343537-001
				Result
ED040F: Dissolved Major Anions				
Sulfur as S	63705-05-5	1	mg/L	97
Silicon as SiO ₂	14464-46-1	0.1	mg/L	6.9
ED093T: Total Major Cations				
Calcium	7440-70-2	1	mg/L	191
Magnesium	7439-95-4	1	mg/L	197
Potassium	7440-09-7	1	mg/L	28
EG020F: Dissolved Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	<10
Arsenic	7440-38-2	1	µg/L	6
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
Copper	7440-50-8	1	µg/L	<1
Cobalt	7440-48-4	1	µg/L	<1
Nickel	7440-02-0	1	µg/L	2
Lead	7439-92-1	1	µg/L	<1
Zinc	7440-66-6	5	µg/L	10
Manganese	7439-96-5	1	µg/L	19
Molybdenum	7439-98-7	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
EG020T: Total Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	40
Antimony	7440-36-0	1	µg/L	3
Arsenic	7440-38-2	1	µg/L	7
Beryllium	7440-41-7	1	µg/L	<1
EG020T: Total Metals by ICP-MS - Continued				
Barium	7440-39-3	1	µg/L	290
Cadmium	7440-43-9	0.1	µg/L	<0.1
Chromium	7440-47-3	1	µg/L	<1
Copper	7440-50-8	1	µg/L	<1
Cobalt	7440-48-4	1	µg/L	<1
Nickel	7440-02-0	1	µg/L	2
Lead	7439-92-1	1	µg/L	<1
Zinc	7440-66-6	5	µg/L	10
Lithium	7439-93-2	1	µg/L	482
Molybdenum	7439-98-7	1	µg/L	8
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
Boron	7440-42-8	50	µg/L	260
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	0.03
EK067G: Total Phosphorus as P by Discrete Analyser				
Total Phosphorus as P	----	0.01	mg/L	0.04

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Water – Volume

Monthly water volumes discharged via MC's LDP1 during December 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)
01/12/2023	1358.32	0
02/12/2023	1356.71	3.8
03/12/2023	1351.34	0
04/12/2023	1320.48	0
05/12/2023	1304.94	0
06/12/2023	1289.14	0
07/12/2023	887.19	0
08/12/2023	1262.82	0
09/12/2023	255.88	0
10/12/2023	0	3
11/12/2023	0	0
12/12/2023	20.59	0
13/12/2023	855.5	0
14/12/2023	1998.42	0
15/12/2023	1066.33	0
16/12/2023	642.6	0
17/12/2023	966.43	0
18/12/2023	955.02	0
19/12/2023	966.36	4.2
20/12/2023	2061.28	30
21/12/2023	761.33	4.4
22/12/2023	56.23	0
23/12/2023	0	0
24/12/2023	951.3	12.4
25/12/2023	1476.79	1.2
26/12/2023	1300.96	1.8
27/12/2023	1137.83	2.4
28/12/2023	1283.47	0.2
29/12/2023	1181.12	0
30/12/2023	376.61	2
31/12/2023	9.61	2.2

Average	917.9kL/day	2 mm/day
Maximum	2061.3kL/day	30 mm/day

There were no exceedances of volumetric discharge limits at LDP1 in December 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	28	155
January 2024		
February 2024		
March 2024		
April 2024		
May 2024		
June 2024		

Air Quality – Depositional Dust

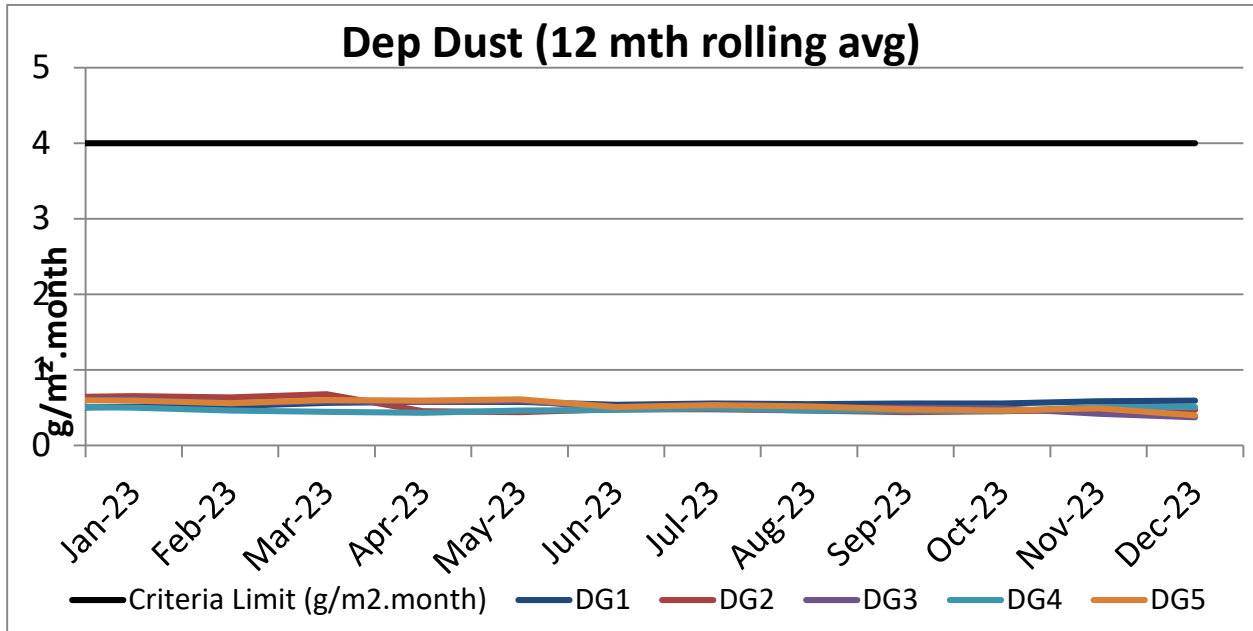
Monthly depositional dust results are shown below.

December 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	01/11/2023 – 01/12/2023	
EPA ID no.	Site	Insoluble Matter (g/m2/month)
3	DG1	0.7
4	DG2	0.5
5	DG3	0.2
6	DG4	0.5
7	DG5	0.6
Notes:	Sampling locations provided in Delta Coal Air Quality and Greenhouse Gas Management Plan available on the Delta Coal website.	

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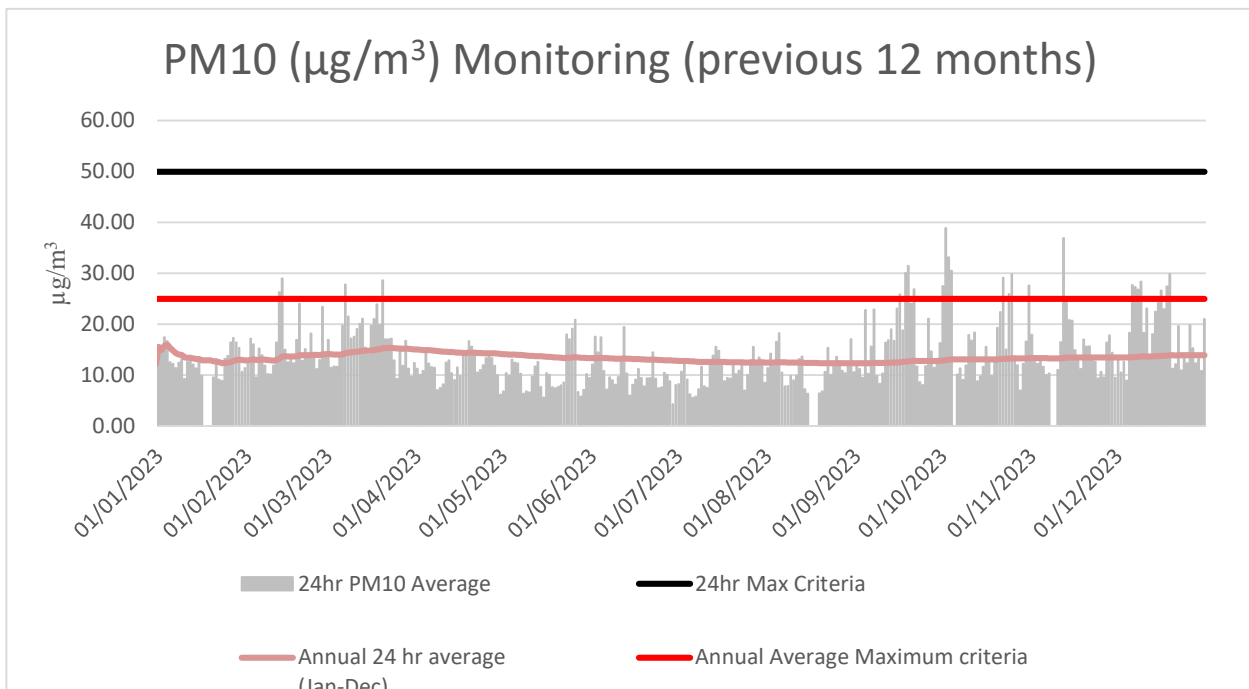
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A 12-month rolling average of depositional dust concentrations has been presented below. Mannering Colliery's dust gauges are located around the perimeter of the Mannering Colliery site boundary.



Air Quality – PM_{10}

The 24hr PM_{10} 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 PM_{10} average maximum criteria for December 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 **97.4%** for the month of December 2023.

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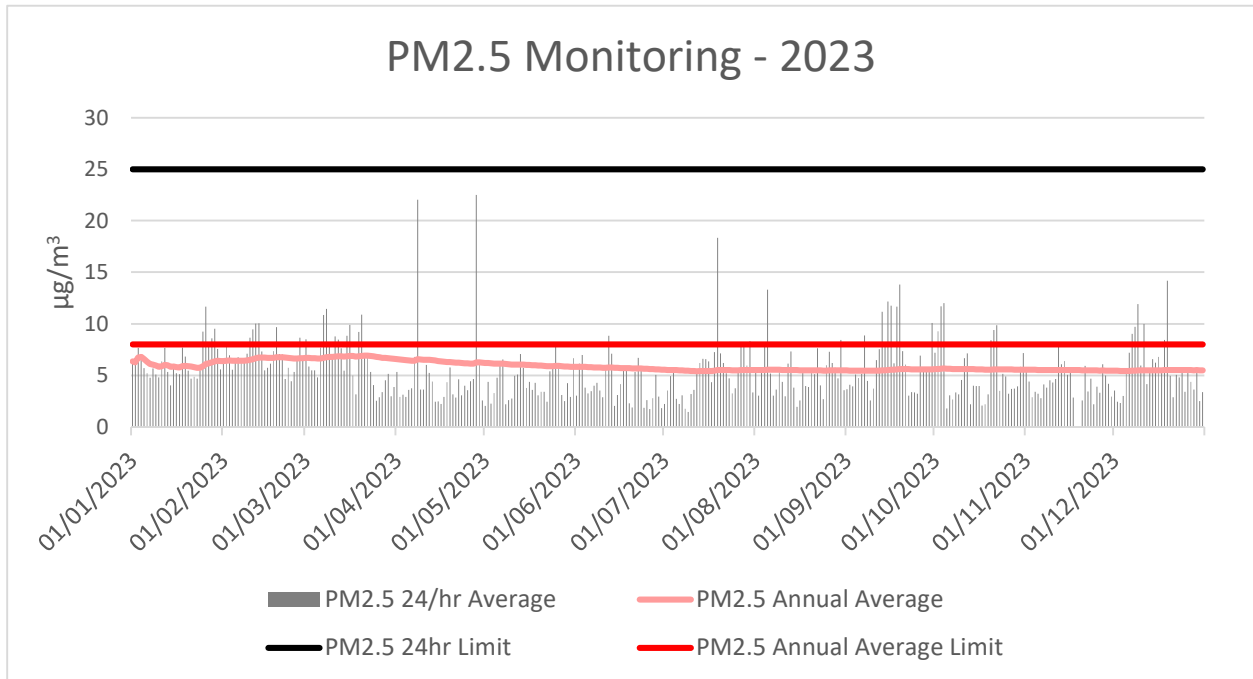
Variable	December	Total	Valid
A/C Temp	100%	8928	8927
A1	100%	8928	8927
A1_Scaled	100%	8928	8927
Bypass Flow	100%	8928	8927
Cap Temp	100%	8928	8927
Case Temp	100%	8928	8927
Config	100%	8928	8927
Dew Point	100%	8928	8927
Dig-In	100%	8928	8927
Dig-Latch	100%	8928	8927
ESN	100%	8928	8927
Filter Freq	100%	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

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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 December 2023. The 12-month rolling average PM_{2.5} value on 31 December was 5.48 µg/m³. PM_{2.5} data availability in December 2023 was 100% respectively. The 2023 year to date PM_{2.5} data availability is 98.21%.

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	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
Dec-23	67.6	14.7	41.4

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Variable	December	Total	Valid
Baro (Corrected)	94.7%	2976	2817
10m Temp	94.7%	2976	2817
2m Temp	94.7%	2976	2817
A1	94.7%	2976	2817
A1_Scaled	94.7%	2976	2817
Assumed Temp	94.7%	2976	2817
Barometric	94.7%	2976	2817
Config	94.7%	2976	2817
Daily Evap	94.7%	2976	2817
Daily Rain	94.7%	2976	2817
Delta T	94.7%	2976	2817
Dew Point	94.7%	2976	2817
Dig-In	94.7%	2976	2817
Dig-Latch	94.7%	2976	2817
ESN	94.7%	2976	2817
FDI	94.7%	2976	2817
Heat Index	94.7%	2976	2817
Humidity	94.7%	2976	2817
Mobile Signal	94.7%	2976	2817
Rain	94.7%	2976	2817
Raw Evap	94.7%	2976	2817
S Class	94.7%	2976	2817
Scalar WS	94.7%	2976	2817
Sigma	94.7%	2976	2817
Site	0.0%	2976	0
Solar Radiation	94.7%	2976	2817
Vector WD	94.7%	2976	2817
Vector WS	94.7%	2976	2817
Volts	94.7%	2976	2817
Wind Chill	94.7%	2976	2817
Wind Direction	94.7%	2976	2817
Wind Speed	94.7%	2976	2817
WS Avg	94.7%	2976	2817
WS Gust	94.7%	2976	2817