
Manning Colliery Monthly Website Report – June 2023

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Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of June 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 **June 2023**

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

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Monitoring Results

Water – Quality

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

June 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)
05/06/2023	7.85	<5	<5	27300
13/06/2023	7.91	9	<5	26900
21/06/2023	7.99	8	<5	24600
28/06/2023	8.01	<5	<5	25800
Average	7.94	5.5	<5	26150

There were no exceedances of water quality criteria in June 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		13-Jun-2023 12:30
Compound	CAS Number	LOR	Unit	ES2319558-001
				Result
ED040F: Dissolved Major Anions				
Sulfur as S	63705-05-5	1	mg/L	150
Silicon as SiO ₂	14464-46-1	0.1	mg/L	14.2
ED093T: Total Major Cations				
Calcium	7440-70-2	1	mg/L	237
Magnesium	7439-95-4	1	mg/L	286
Potassium	7440-09-7	1	mg/L	39
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	21
Molybdenum	7439-98-7	1	µg/L	8
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	40
EG020T: Total Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	<10
Antimony	7440-36-0	1	µg/L	<1
Arsenic	7440-38-2	1	µg/L	2
Beryllium	7440-41-7	1	µg/L	<1
Barium	7440-39-3	1	µg/L	203
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	535
EG020T: Total Metals by ICP-MS - Continued				
Molybdenum	7439-98-7	1	µg/L	11
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	43
Boron	7440-42-8	50	µg/L	400
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	0.83
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 MC's LDP1 during June 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)
01/06/2023	1693.69	0
02/06/2023	1647.92	0.2
03/06/2023	1623.69	0.2
04/06/2023	1575.79	0
05/06/2023	1531.36	0
06/06/2023	1492.74	1
07/06/2023	1399.86	0
08/06/2023	1075.12	1.4
09/06/2023	1079.02	0.2
10/06/2023	1336.86	0.2
11/06/2023	1445.35	0
12/06/2023	1373.6	0.2
13/06/2023	1218.64	0.8
14/06/2023	1218.28	0.2
15/06/2023	1014.15	0
16/06/2023	4.06	0.2
17/06/2023	0	0
18/06/2023	0	0.2
19/06/2023	321.73	0
20/06/2023	1062.02	0
21/06/2023	1078.72	0
22/06/2023	1068.75	1
23/06/2023	1073.28	2.2
24/06/2023	1079.19	0
25/06/2023	1009.82	0
26/06/2023	983.02	0
27/06/2023	1009.51	0
28/06/2023	978.92	0.2
29/06/2023	978.88	0.2
30/06/2023	942.16	0

Average	1077.2 kL/day	0.28 mm/day
Maximum	1693.69 kL/day	2.2 mm/day

There were no exceedances of volumetric discharge limits at LDP1 in June 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)	Groundwater Discharge (ML)	Groundwater Discharge (Total ML Water Year to Date)
Jul-22	23.9	24
Aug-22	21.7	46
Sep-22	23.9	69
Oct-22	18.4	88
Nov-22	25.9	114
Dec-22	16.7	130
Jan-23	33.3	164
Feb-23	22.9	187
Mar-23	24.8	211
Apr-23	23.3	235
May-23	8.0	243
Jun-23	30	273

Air Quality – Depositional Dust

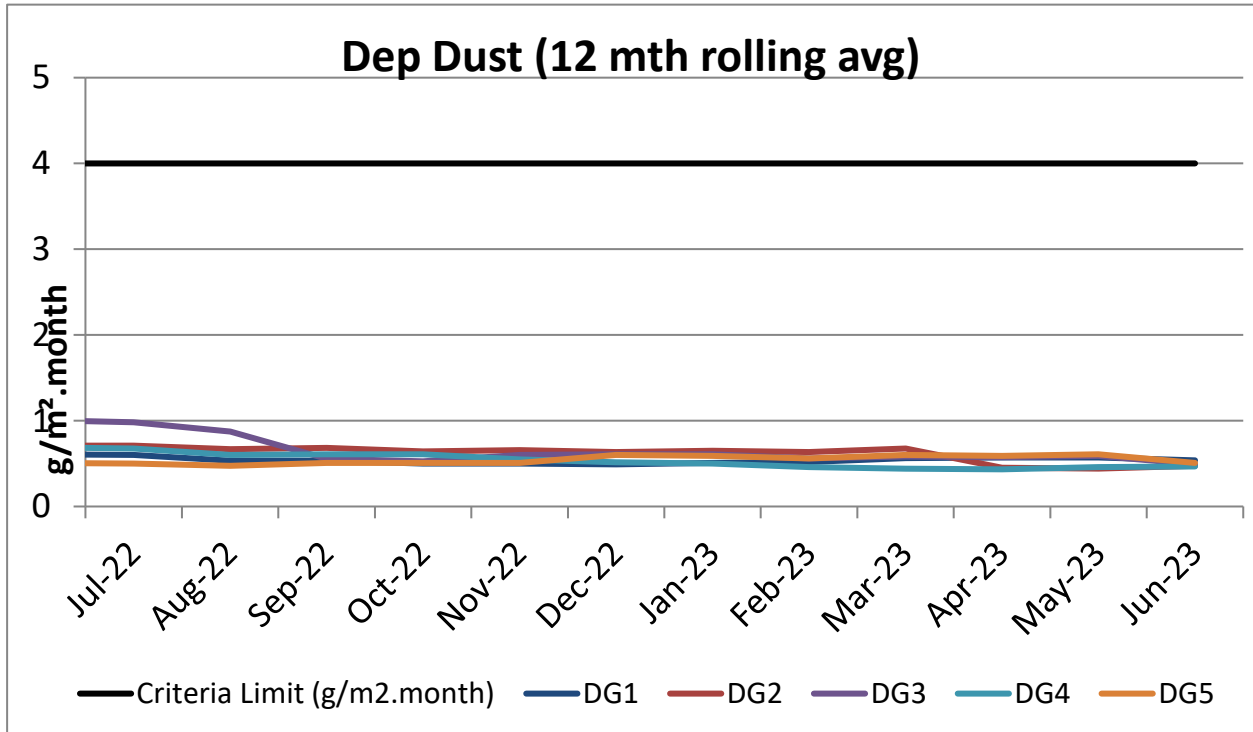
Monthly depositional dust results are shown below.

June 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	04/05/2023 – 05/06/2023	
EPA ID no.	Site	Insoluble Matter (g/m2/month)
3	DG1	0.7
4	DG2	0.6
5	DG3	0.2
6	DG4	0.5
7	DG5	0.1
Notes:	Sampling locations provided in Delta Coal Air Quality and Greenhouse Gas Management Plan available on the Delta Coal website.	

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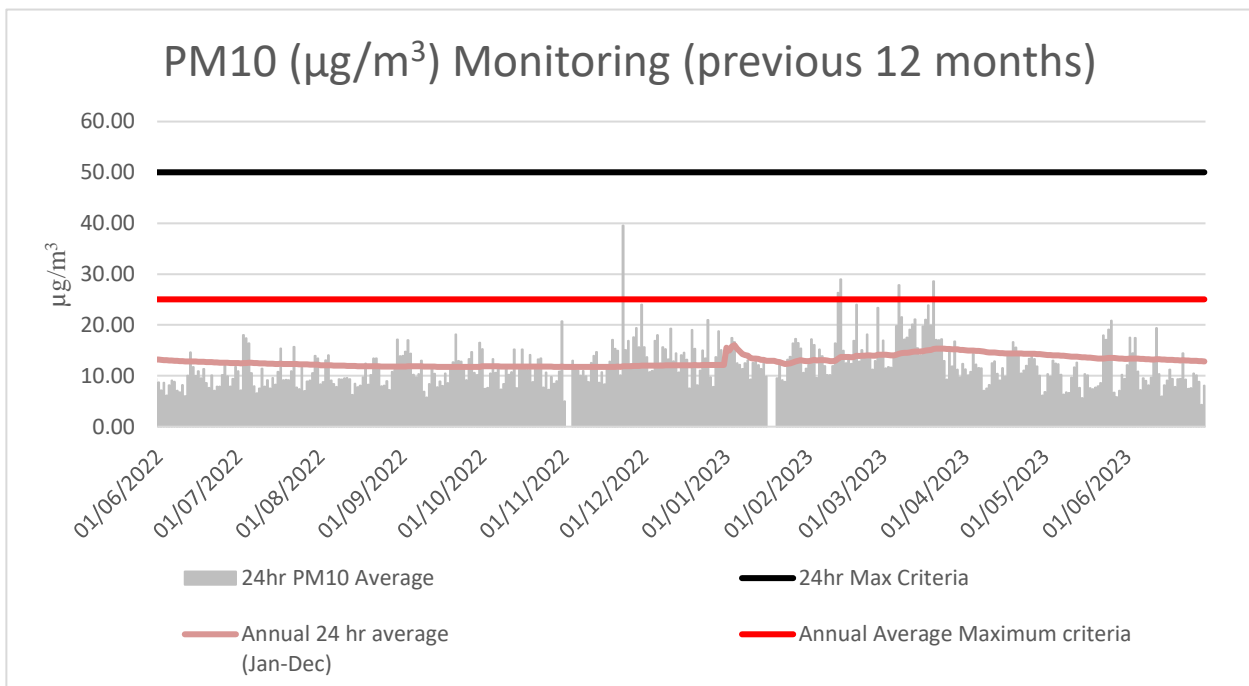
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A 12-month rolling average of depositional dust concentrations has been presented below. Manning Colliery's dust gauges are located around the perimeter of the Manning Colliery site boundary.



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 June 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 **100%** for the month of June 2023.

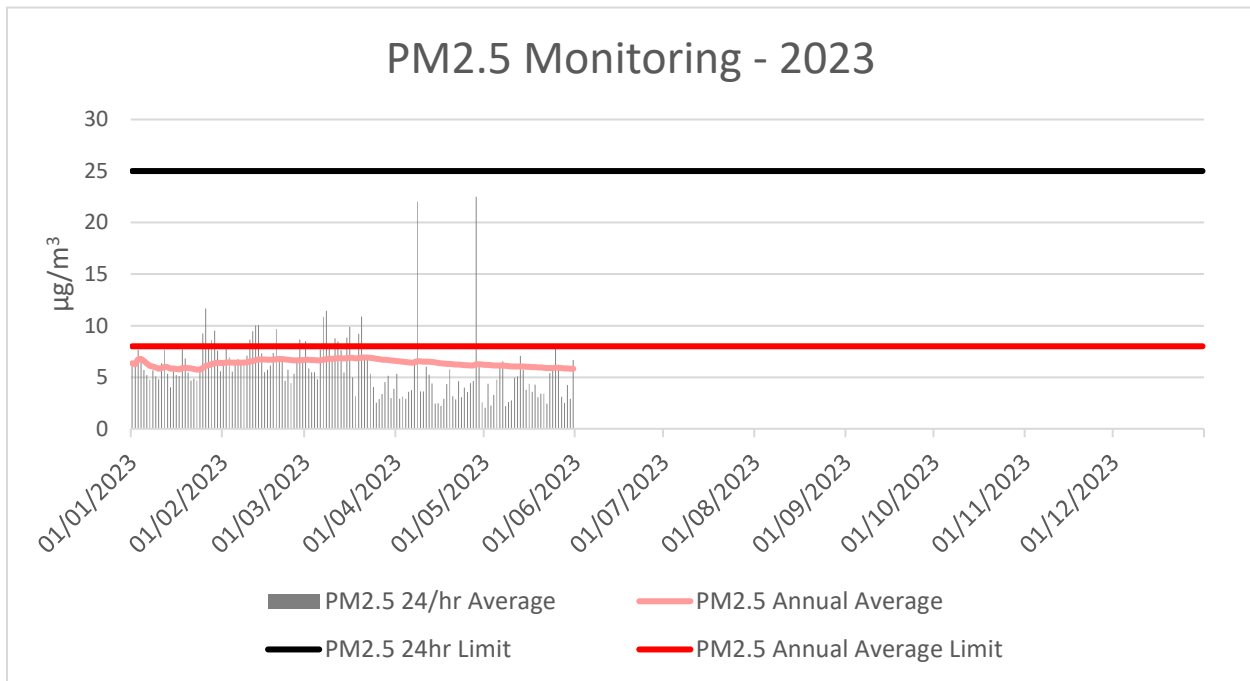
Variable	June	Total	Valid
A/C Temp	99.8%	8640	8626
A1	99.8%	8640	8626
A1_Scaled	99.8%	8640	8626
Bypass Flow	99.8%	8640	8626
Cap Temp	99.8%	8640	8626
Case Temp	99.8%	8640	8626
Config	99.8%	8640	8626
Dew Point	99.8%	8640	8626
Dig-In	99.8%	8640	8626
Dig-Latch	99.8%	8640	8626
ESN	99.8%	8640	8626
Filter Freq	99.8%	8640	8626
Filter Load	99.8%	8640	8626
Humidity	99.8%	8640	8626
MC	99.8%	8640	8626
MC 12Hr	99.8%	8640	8626
MC 1Hr	99.8%	8640	8626
MC 24Hr	99.8%	8640	8626
MC 30min	99.8%	8640	8626
MC 8Hr	99.8%	8640	8626
MC Total	99.8%	8640	8626
Mobile Signal	99.8%	8640	8626
Noise	99.8%	8640	8626
PM10 Flow	99.8%	8640	8626
Pressure	99.8%	8640	8626
Site	0.0%	8640	0
Temperature	99.8%	8640	8626
Tube Temp	99.8%	8640	8626
Vac Pressure	99.8%	8640	8626
Volts	99.8%	8640	8626

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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 May 2023. The 12-month rolling average PM_{2.5} value on 31 May 2023 was 5.83 µg/m³. PM_{2.5} data availability in May 2023 was 99%. The 2023 year to date PM_{2.5} data availability is 98.9%.

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.

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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	14 July 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

Variable	June	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