

Mannering Colliery Monthly Website Report – November 2024

Site:	Mannering Colliery
Department:	Technical Services
Report Title:	Monthly Environmental Report – November 2024
Report Date:	14 th December 2024
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Mannering Colliery Monthly Environmental Report - November 2024

Table of Contents

3
3
4
4
4
5
5
7
8
8
9
11
12

Mannering Colliery Monthly Environmental Report - November 2024

Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of November 2024.

Introduction

Great Southern Energy Pty Ltd (trading as Delta Coal) operates Mannering Colliery, an underground coal mine at the southern end of Lake Macquarie.

Mannering 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 Mannering Colliery EPL 191 are provided below.

Mannering Colli	Mannering Colliery Information		
Premises name	Mannering Colliery		
Address	Ruttleys Road, Doyalson, NSW, 2262		
Licensee	Great Southern Energy Pty Ltd		
EPL#	191		
EPL location	EPL 0191 - 16 June 2023		

The overall purpose of this monthly report is to keep stakeholders informed of the environmental monitoring results at Mannering Colliery and maintain a transparent and accountable reporting system.

Mannering Colliery Monthly Environmental Report - November 2024

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

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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.
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References

Project Approval MP06_0311 (as modified)

Environment Protection Licence 191 (Licence version date: 16 June 2023)

ALS - Dust Deposition Report November 2024

ALS – MC Water Analysis Reports November 2024

Mannering Colliery Monthly Environmental Report - November 2024

Monitoring Results

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

	November 2	.024		
EPL	191			
Licensee	Great Southern Ener	gy 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 I	Results		
		TSS	Oil and grease	Electrical Conductivity
Date	рН	(mg/L)	(mg/L)	(μS/cm)
5/11/2024	7.83	13	<5	26500
11/11/2024	7.66	10	<5	28500
21/11/2024	7.76	11	<5	24400
27/11/2024	8.01	9	<5	24800
	·		•	
Average	7.82	10.75	<5	26050

There were no exceedances of water quality criteria in November 2024 at Mannering Colliery.

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

Mannering Colliery Monthly Environmental Report - November 2024

Resour	o-Matrix: WATER atrix: WATER)		Sample ID	LDP001
				21-Nov-2024 11:00
2040F: Dissolved Major Anions 2017 as S 63705-05-5 1 mg/L 137	ompound CAS Number	LOR	Unit	
Sultra s S Silicon as SiO2	2040E: Discolved Major Anjana			Result
Silicon as SiO2		1	ma/L	137
20331: Total Major Cations				10.00
Caclum	Process agreement recomposition and agreement	0.1	g. E	11.0
Magnesium 7439-954 1 mg/L 284 Potassium 7440-097 1 mg/L 35 35020F: Dissolved Motals by ICP-MS Arsenic 7440-38-2 1 μg/L 3 Beryllium 7440-41-7 1 μg/L 41 Cadmium 7440-41-7 1 μg/L 41 Cadmium 7440-41-7 1 μg/L 41 Cadmium 7440-41-7 1 μg/L 41 Cobalt 7440-88-4 1 μg/L 41 Cobalt 7440-88-8 1 μg/L 41 Copper 7440-50-8 1 μg/L 41 Copper 744		1	ma/l	258
Potassium 7440-09-7 1 mg/L 35 3020F: Dissolved Metals by ICP-MS Aluminium 7429-90-5 10 μg/L <10 Assente 7440-38-2 11 μg/L <1 Cadmium 7440-41-7 1 μg/L <1 Cadmium 7440-41-7 1 μg/L <1 Cadmium 7440-43-9 0.1 μg/L <1 Cadmium 7440-43-9 1.1 μg/L <1 Cobalt 7440-84-4 1 μg/L <1 Cobalt 7440-84-8 1 μg/L <1 Cobalt 7440-80-8 1 μg			-	117.25
Auminium 7429-90-5 10 µg/L 410 Arsenic 7440-38-2 1 µg/L 41 Arsenic 7440-38-2 1 µg/L 41 Arsenic 7440-38-2 1 µg/L 41 Arsenic 7440-47-3 1 µg/L 41 Arsenic 7440-48-4 1 µg/L 41 Arsenic 7440-48-5 1 µg/L 41 Arsenic 7439-98-7 1 µg/L 41 Arsenic 7440-48-5 1 µg/L 41 Arsenic 4140-48-5 1 µ				
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Cobalt 7440-48-4 1 μg/L <1 Copper 7440-50-8 1 μg/L <1 Lead 7439-90-5 1 μg/L <1 Manganese 7439-90-5 1 μg/L 33 Molybdenum 7439-90-7 1 μg/L 3 Selonium 7440-02-0 1 μg/L <10 Silver 7440-22-4 1 μg/L <10 Vanadium 7440-62-2 10 μg/L <10 Zinc 7440-66-6 5 μg/L <10 Zinc 7440-66-6 5 μg/L <20 Antimony 7440-66-6 5 μg/L <20 Antimony 7440-38-0 1 μg/L <2 Arsenic 7440-38-0 1 μg/L <1 GO207: Total Metals by ICP-MS - Continued 1 μg/L <247 Barium 7440-31-3 1 μg/L <41 Cobalt 7440-				
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Lead 7439-92-1 1 μg/L <1 Manganese 7439-96-5 1 μg/L 33 Molybdenum 7439-98-7 1 μg/L 3 3 Molybdenum 7439-98-7 1 μg/L 3 3 3 Molybdenum 7782-49-2 10 μg/L <10 3 3 3 3 3 3 3 3 3	7440404		1.0	
Manganese			7.0	
Molybdenum 7439-98-7 1 μg/L 6 Nickel 7440-02-0 1 μg/L 3 Selenium 7782-49-2 10 μg/L <10 Silver 7440-22-4 1 μg/L <10 Silver 7440-62-2 10 μg/L <10 Zinc 7440-68-6 5 μg/L 19 GOZOT: Total Metals by ICP-MS Aluminium 7429-90-5 10 μg/L 20 Antimony 7440-38-0 1 μg/L 3 Beryllium 7440-41-7 1 μg/L 3 Beryllium 7440-41-7 1 μg/L 3 Beryllium 7440-41-7 1 μg/L 41 Cadmium 7440-43-3 1 μg/L 40.1 Cadmium 7440-43-3 1 μg/L 40.1 Chromium 7440-43-3 1 μg/L 41 Cobalt 7440-48-4 1 μg/L 41 Cobalt 7440-84-4 1 μg/L 41 Copper 7440-50-8 1 μg/L 41 Copper 7440-50-8 1 μg/L 41 Cithium 7439-93-2 1 μg/L 41 Cithium 7440-20 1 μg/L 41 Cithium 744	Lead 7439-92-1	1	μg/L	<1
Nickel	Manganese 7439-96-5	1	μg/L	33
Selentium 7782-49-2 10	Molybdenum 7439-98-7	1	μg/L	6
Silver	Nickel 7440-02-0	1	μg/L	3
Vanadium	Selenium 7782-49-2	10	μg/L	<10
Zinc	Silver 7440-22-4	1	μg/L	<1
Auminium	Vanadium 7440-62-2	10	μg/L	<10
Aluminium	Zinc 7440-66-6	5	μg/L	19
Aluminium 7429-90-5 10 μg/L 20 Antimony 7440-36-0 1 μg/L 2 Arsenic 7440-38-2 1 μg/L -3 Beryllium 7440-41-7 1 μg/L -41 G020T: Total Metals by ICP-MS - Continued 8 8 8 1 μg/L -41 Cadmium 7440-39-3 1 μg/L -0.1				
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Barium	Arsenic 7440-38-2	1	μg/L	3
Barium	Beryllium 7440-41-7	1	μg/L	<1
Barium 7440-39-3 1 μg/L 247 Cadmium 7440-43-9 0.1 μg/L <0.1	PARTICIONE DE LA CONTRACTOR DE LA CONTRA			
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Molybdenum	DATE OF THE PARTY			
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Selenium 7782-49-2 10 μg/L <10	1000 44000 00000			10000
Silver	11110020			
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Titanium 7440-32-6 10 μg/L <10 Vanadium 7440-62-2 10 μg/L <10 Zinc 7440-66-6 5 μg/L 22 Boron 7440-42-8 50 μg/L 410 Iron 7439-89-6 50 μg/L <50 G035F: Dissolved Mercury by FIMS Mercury 7439-97-6 0.1 μg/L <0.1 G035T: Total Recoverable Mercury by FIMS Mercury 7439-97-6 0.1 μg/L <0.1 K055G: Ammonia as N by Discrete Analyser Ammonia as N 7664-41-7 0.01 mg/L 0.14 K067G: Total Phosphorus as P by Discrete Analyser	Silver 7440-22-4		1.50	<1
Vanadium 7440-62-2 10 μg/L <10 Zinc 7440-66-6 5 μg/L 22 Boron 7440-42-8 50 μg/L 410 Iron 7439-89-6 50 μg/L <50 G035F: Dissolved Mercury by FIMS Mercury 7439-97-6 0.1 μg/L <0.1 G035T: Total Recoverable Mercury by FIMS Mercury 7439-97-6 0.1 μg/L <0.1 K055G: Ammonia as N by Discrete Analyser Ammonia as N 7664-41-7 0.01 mg/L 0.14 K067G: Total Phosphorus as P by Discrete Analyser	Tin 7440-31-5	1	μg/L	
Zinc 7440-66-6 5 μg/L 22	Titanium 7440-32-6	10	μg/L	<10
Boron 7440-42-8 50 μg/L 410 Iron 7439-89-6 50 μg/L <50 G035F: Dissolved Mercury by FIMS Mercury 7439-97-6 0.1 μg/L <0.1 G035T: Total Recoverable Mercury by FIMS Mercury 7439-97-6 0.1 μg/L <0.1 K055G: Ammonia as N by Discrete Analyser Ammonia as N 7664-41-7 0.01 mg/L 0.14 K067G: Total Phosphorus as P by Discrete Analyser	Vanadium 7440-62-2	10	μg/L	<10
Iron 7439-89-6 50 μg/L <50	Zinc 7440-66-6	5	μg/L	22
G035F: Dissolved Mercury by FIMS Plant	Boron 7440-42-8	50	μg/L	410
Mercury 7439-97-6 0.1 μg/L <0.1 G035T: Total Recoverable Mercury by FIMS Mercury 7439-97-6 0.1 μg/L <0.1	Iron 7439-89-6	50	μg/L	<50
Mercury 7439-97-6 0.1 μg/L <0.1 G035T: Total Recoverable Mercury by FIMS Mercury 7439-97-6 0.1 μg/L <0.1	G035F: Dissolved Mercury by FIMS			
Mercury 7439-97-6 0.1 μg/L <0.1 K055G: Ammonia as N by Discrete Analyser Ammonia as N 7664-41-7 0.01 mg/L 0.14 K067G: Total Phosphorus as P by Discrete Analyser		0.1	μg/L	<0.1
Mercury 7439-97-6 0.1 μg/L <0.1 K055G: Ammonia as N by Discrete Analyser Ammonia as N 7664-41-7 0.01 mg/L 0.14 K067G: Total Phosphorus as P by Discrete Analyser	and the second s			
Ammonia as N 7664-41-7 0.01 mg/L 0.14 K067G: Total Phosphorus as P by Discrete Analyser		0.1	μg/L	<0.1
Ammonia as N 7664-41-7 0.01 mg/L 0.14 K067G: Total Phosphorus as P by Discrete Analyser	K055G: Ammonia as N by Discrete Analyser		t-	
		0.01	mg/L	0.14
	K067G: Total Phosphorus as P by Discrete Analyser			
		0.01	ma/l	0.04

Mannering Colliery Monthly Environmental Report - November 2024

Water - Volume

Monthly water volumes discharged via MC's LDP1 during November 2024 at Mannering Colliery are summarised below.

EPL 191

Licensee Great Southern Energy Pty Ltd

Premises Mannering Colliery

Date Sampled Daily

Discharge volume limit 4000 kilolitres per day Sampling Point LDP001 (EPA ID # 1)

Date (24 hour period)	LDP 1 Volume (kL/day)	Rainfall (mm)
01/11/2024	1882.60	19.4
02/11/2024	2487.81	41
03/11/2024	1636.56	0
04/11/2024	1501.46	0
05/11/2024	1482.19	2
06/11/2024	1326.92	0
07/11/2024	905.50	3
08/11/2024	1361.68	6
09/11/2024	528.23	0
10/11/2024	0.00	0.2
11/11/2024	495.55	2.4
12/11/2024	1016.46	7.2
13/11/2024	739.83	12.8
14/11/2024	1811.01	0.2
15/11/2024	1417.67	22.8
16/11/2024	921.21	0
17/11/2024	895.23	8.2
18/11/2024	751.36	4.6
19/11/2024	648.28	0.2
20/11/2024	1066.09	0
21/11/2024	960.66	0
22/11/2024	526.35	0
23/11/2024	47.76	0
24/11/2024	2.95	0
25/11/2024	713.71	0
26/11/2024	863.35	0
27/11/2024	12.43	0
28/11/2024	659.05	3.4
29/11/2024	995.72	8.6
30/11/2024	165.79	7.2

Average	927.45 kL/day	4.97 mm/day
Maximum	2487.81 kL/day	41 mm/day

Volumetric discharge remained below the daily limit of 4,000 kL per day.

Mannering Colliery Monthly Environmental Report - November 2024

Water – Groundwater Discharge

Groundwater discharged from underground workings to the MCs surface retention Dams has been detailed below. Mannering 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 FY2024-2025				
Date (month)	GW Discharge (ML/Month)	GW Discharge (Cumulative ML YTD)		
July 2024	14	14		
August 2024	25	39		
September 2024	20	59		
October 2024	26	85		
November 2024	19	104		

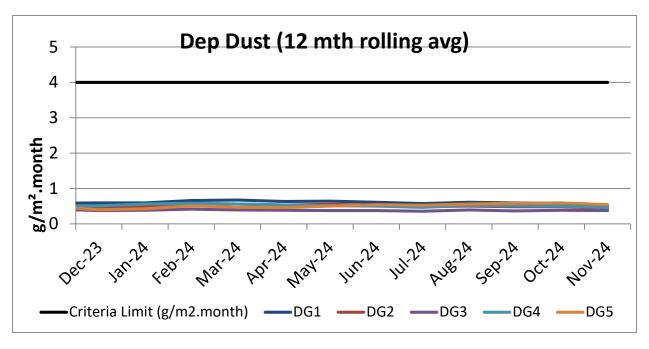
Air Quality – Depositional Dust

Monthly depositional dust results are shown below.

November 2024				
EPL	191			
	Max. total deposited dust level		4g/m²/month	
Limits	Max. increase in depo	sited dust level	2g/m²/month	
Sampling Date	02/10/2024 - 01/11/	′2024		
EPA I	D no.	Site	Insoluble Matter (g/m2/month)	
	3	DG1	0.2	
4	4	DG2	0.5	
!	5	DG3	0.4	
	6	DG4	0.5	
	7	DG5	0.2	
Sar	npling locations provide	ed in Delta Coal Air Qu	ality and Greenhouse	
Notes: Gas	Management Plan ava	ailable on the Delta Coa	al website.	

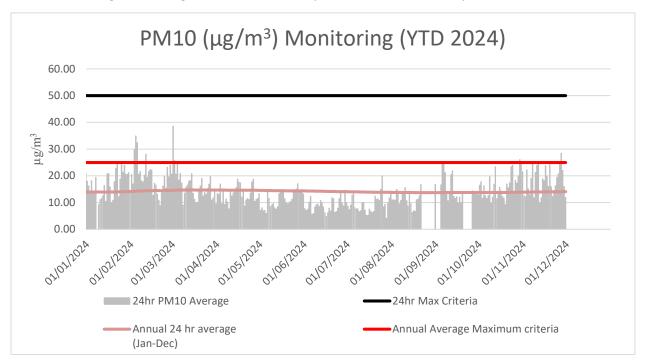
Mannering Colliery Monthly Environmental Report - November 2024

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 Osciliating 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 November 2024 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 94.1% for the month of November 2024.

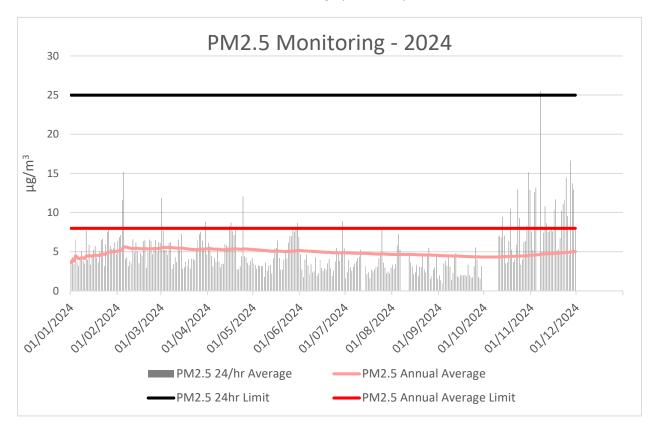
Mannering Colliery Monthly Environmental Report - November 2024

Variable	November	Total	Valid
A/C Temp	99.9%	8640	8635
A1_Scaled	99.9%	8640	8635
Band	99.9%	8640	8635
Bypass Flow	99.9%	8640	8634
Cap Temp	99.9%	8640	8634
Case Temp	99.9%	8640	8634
Config	99.9%	8640	8635
Dew Point	99.9%	8640	8634
Dig-In	99.9%	8640	8635
Dig-Latch	99.9%	8640	8635
ESN	99.9%	8640	8635
Filter Freq	99.9%	8640	8634
Filter Load	99.9%	8640	8634
Humidity	99.9%	8640	8634
MC	99.9%	8640	8634
MC 12Hr	99.9%	8640	8634
MC 1Hr	99.9%	8640	8634
MC 24Hr	99.9%	8640	8634
MC 30min	99.9%	8640	8634
MC 8Hr	99.9%	8640	8634
MC Total	99.9%	8640	8634
Mobile Signal	99.9%	8640	8635
Noise	99.9%	8640	8634
PM10 Flow	99.9%	8640	8634
Pressure	99.9%	8640	8634
Site	0.0%	8640	0
Temperature	99.9%	8640	8634
Tube Temp	99.9%	8640	8634
Vac Pressure	99.9%	8640	8634
Volts	99.9%	8640	8635

Mannering Colliery Monthly Environmental Report - November 2024

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 November 2024. The 12-month rolling average PM_{2.5} value on 30 November was 5.02 $\mu g/m^3$. PM_{2.5} data availability in November was 83%. The 2024 year to date PM_{2.5} data availability is 91.79%.

Mannering Colliery Monthly Environmental Report - November 2024

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 202	4	
Licensee	Great Southern Energy Pty Ltd		
Location	Mannering Colliery Meteorological station		
Date published	Refer report date		
Date sampled	Daily		
Date obtained	13 November 2024		
Month	Total Rainfall/Month (mm)	Min Temp	Max Temp
Jan-24	53.6	13.8	40.9
Feb-24	163	16.4	39
Mar-24	18.6	13.3	33.8
Apr-24	362	13.2	17.9
May-24	263	12.1	16.6
Jun-24	163	3.2	22.1
July-24	88	1.8	22
Aug-24	56.4	4	29.2
Sep-24	85.8	4.4	28.8
Oct-24	75	7.9	30.6
Nov-24	151	13.4	36.9

Mannering Colliery Monthly Environmental Report - November 2024

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