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# Manning Colliery Monthly Website Report – September 2021

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<b>Site:</b>	<b>Manning Colliery</b>
<b>Department:</b>	<b>Technical Services</b>
<b>Report Title:</b>	<b>Monthly Environmental Report – September 2021</b>
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## Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of September 2021.

## 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	<a href="http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=50781&amp;SYSUID=1&amp;LICID=191">http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=50781&amp;SYSUID=1&amp;LICID=191</a>

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 – PM<sub>10</sub>
- Air Quality – PM<sub>2.5</sub>; and
- Meteorological data.

### Definitions

g/m<sup>2</sup>/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 06\_0311 (as modified)

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

ALS - Dust Deposition Report **September 2021**

ALS – MC Water Analysis Reports **September 2021**

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## Monitoring Results

### Water – Quality

Weekly water quality results for discharge point LDP001 are presented below. Monitoring of these parameters have reverted to weekly as per EPL PRP requirements.

September 2021				
<b>EPL</b>	191			
<b>Licensee</b>	Great Southern Energy Pty Ltd			
<b>Premises</b>	Manning Colliery			
<b>Period</b>	01-September-21		to	30-September-21
<b>Location</b>	LDP001 (EPA ID # 1)			
<b>Date sampled</b>	Weekly			
<b>Date reported</b>	Refer report date			
<b>Monitoring requirement</b>	Weekly			
<b>pH limit</b>	6.5 - 8.5			
<b>TSS limit (mg/L)</b>	50			
<b>Oil and grease limit (mg/L)</b>	10			
<b>Exceedance (Yes/No)</b>	No			
Water Quality Results				
Date	pH	TSS (mg/L)	Oil and grease (mg/L)	Electrical Conductivity (µS/cm)
09/09/2021	8.11	<5	6	14,400
15/09/2021	7.79	<5	<5	28,500
21/09/2021	8.16	<5	<5	7,590
28/09/2021	7.89	<5	<5	24,800
<b>Average</b>	7.98	<5	5.25	18,823
<b>Minimum</b>	7.79	<5	<5	7,590
<b>Maximum</b>	8.16	<5	6	28,500

The water quality analytical results during the reporting period did not exceed the discharge water quality criteria within EPL 191. Monthly water quality results, primarily metals, at LDP001 are presented below for the period.

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## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		LDP001
		Sampling date / time		28-Sep-2021 12:00
Compound	CAS Number	LOR	Unit	WN2111175-001 Result
<b>ED040F: Dissolved Major Anions</b>				
Sulfur as S	63705-05-5	1	mg/L	110
Silicon as SiO2	14464-46-1	0.1	mg/L	12.4
<b>ED093T: Total Major Cations</b>				
Calcium	7440-70-2	1	mg/L	267
Magnesium	7439-95-4	1	mg/L	314
Potassium	7440-09-7	1	mg/L	45
<b>EG020F: Dissolved Metals by ICP-MS</b>				
Aluminium	7429-90-5	10	µg/L	<10
Silver	7440-22-4	1	µg/L	<1
Arsenic	7440-38-2	1	µg/L	4
Beryllium	7440-41-7	1	µg/L	<1
Cadmium	7440-43-9	0.1	µg/L	<0.1
Cobalt	7440-48-4	1	µg/L	<1
Chromium	7440-47-3	1	µg/L	<1
Copper	7440-50-8	1	µg/L	<1
Manganese	7439-96-5	1	µg/L	18
Molybdenum	7439-98-7	1	µg/L	9
Nickel	7440-02-0	1	µg/L	3
Lead	7439-92-1	1	µg/L	<1
Selenium	7782-49-2	10	µg/L	<10
Vanadium	7440-62-2	10	µg/L	<10
Zinc	7440-66-8	5	µg/L	8
<b>EG020T: Total Metals by ICP-MS</b>				
Aluminium	7429-90-5	10	µg/L	80
Silver	7440-22-4	1	µg/L	7
Arsenic	7440-38-2	1	µg/L	6
Boron	7440-42-8	50	µg/L	420
Barium	7440-39-3	1	µg/L	389
Titanium	7440-32-6	10	µg/L	<10
Beryllium	7440-41-7	1	µg/L	<1
Cadmium	7440-43-9	0.1	µg/L	<0.1
Cobalt	7440-48-4	1	µg/L	<1
Chromium	7440-47-3	1	µg/L	<1
Copper	7440-50-8	1	µg/L	1
<b>EG020T: Total Metals by ICP-MS - Continued</b>				
Lithium	7439-93-2	1	µg/L	627
Molybdenum	7439-98-7	1	µg/L	16
Nickel	7440-02-0	1	µg/L	4
Lead	7439-92-1	1	µg/L	<1
Antimony	7440-36-0	1	µg/L	2
Selenium	7782-49-2	10	µg/L	<10
Tin	7440-31-5	1	µg/L	<1
Vanadium	7440-62-2	10	µg/L	<10
Zinc	7440-66-8	5	µg/L	9
Iron	7439-89-8	50	µg/L	60
<b>EG035F: Dissolved Mercury by FIMS</b>				
Mercury	7439-97-6	0.1	µg/L	<0.1
<b>EG035T: Total Recoverable Mercury by FIMS</b>				
Mercury	7439-97-6	0.1	µg/L	<0.1
<b>EK055G: Ammonia as N by Discrete Analyser</b>				
Ammonia as N	7664-41-7	0.01	mg/L	0.53
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>				
Total Phosphorus as P	----	0.01	mg/L	<0.02

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## Water – Volume

Monthly water volumes discharged via LDP001 at Manning Colliery are summarised below.

September 2021		
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)	
Day	Unit	Volume
01/09/2021	kL	0
02/09/2021	kL	734.09
03/09/2021	kL	1003.29
04/09/2021	kL	465.59
05/09/2021	kL	1044.93
06/09/2021	kL	1035.4
07/09/2021	kL	1028.47
08/09/2021	kL	995.58
09/09/2021	kL	422.06
10/09/2021	kL	461.78
11/09/2021	kL	1300.74
12/09/2021	kL	1285.62
13/09/2021	kL	1051.24
14/09/2021	kL	887.34
15/09/2021	kL	716.08
16/09/2021	kL	253.99
17/09/2021	kL	928.03
18/09/2021	kL	899.79
19/09/2021	kL	584.76
20/09/2021	kL	4.14
21/09/2021	kL	129.68
22/09/2021	kL	278.1
23/09/2021	kL	614.4
24/09/2021	kL	754.23
25/09/2021	kL	1209.67
26/09/2021	kL	297.52
27/09/2021	kL	1308.76
28/09/2021	kL	1313.7
29/09/2021	kL	796.61
30/09/2021	kL	194.76
Average	kL	733.35
Minimum	kL	0
Maximum	kL	1,313.7

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There were no exceedances of volumetric discharge limits at Manning Colliery during the report period.

## Water – Groundwater Discharge

Groundwater discharged from underground workings to the MCs retention Dams within the surface operational area has been detailed below. Manning Colliery operates Water Access License 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 FY2021-2022		
Date (month)	Groundwater and Surface Water Discharge (ML)	Groundwater and Surface Water Discharge (Total ML Water Year to Date)
July 2021	32.48	32.48
August 2021	28.77	61.25
September 2021	17.42	78.67
October 2021		
November 2021		
December 2021		
January 2022		
February 2022		
March 2022		
April 2022		
May 2022		
June 2022		

## Air Quality

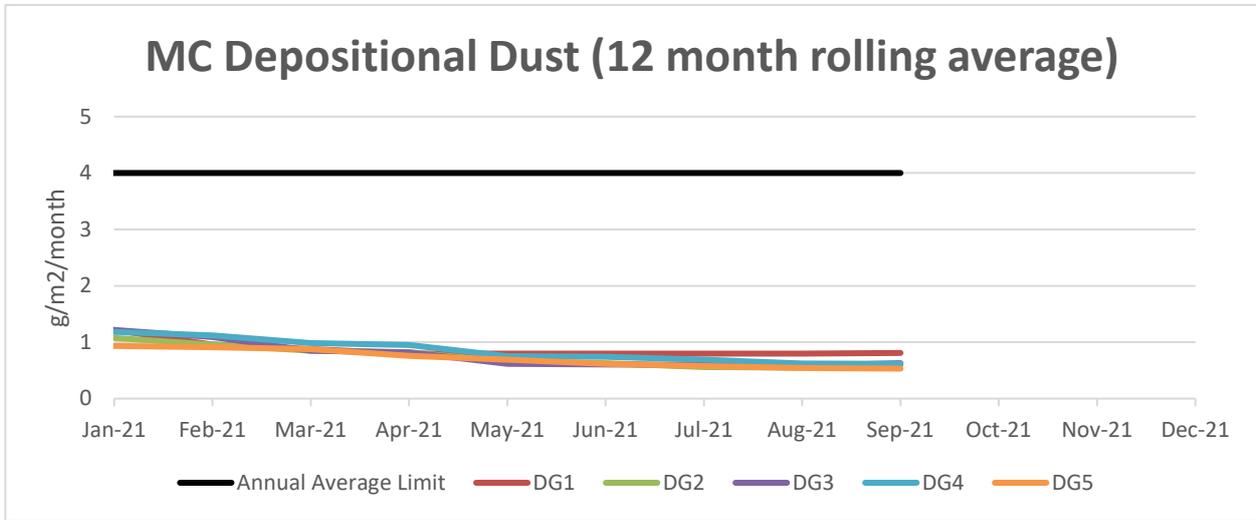
Monthly depositional dust results are shown below.

September 2021		
<b>EPL</b>	191	
<b>Limits</b>	Max. total deposited dust level	4g/m <sup>2</sup> /month
	Max. increase in deposited dust level	2g/m <sup>2</sup> /month
<b>Sampling Date</b>	12/08/2021 to 09/09/2021	
EPA ID no.	Site	Insoluble Matter (g/m <sup>2</sup> /month)
3	DG1	0.6
4	DG2	0.4
5	DG3	3.9
6	DG4	0.5
7	DG5	0.4
<b>Notes:</b>	Sampling locations provided in Manning Colliery Air Quality Management Plan available on the Delta Coal website.	

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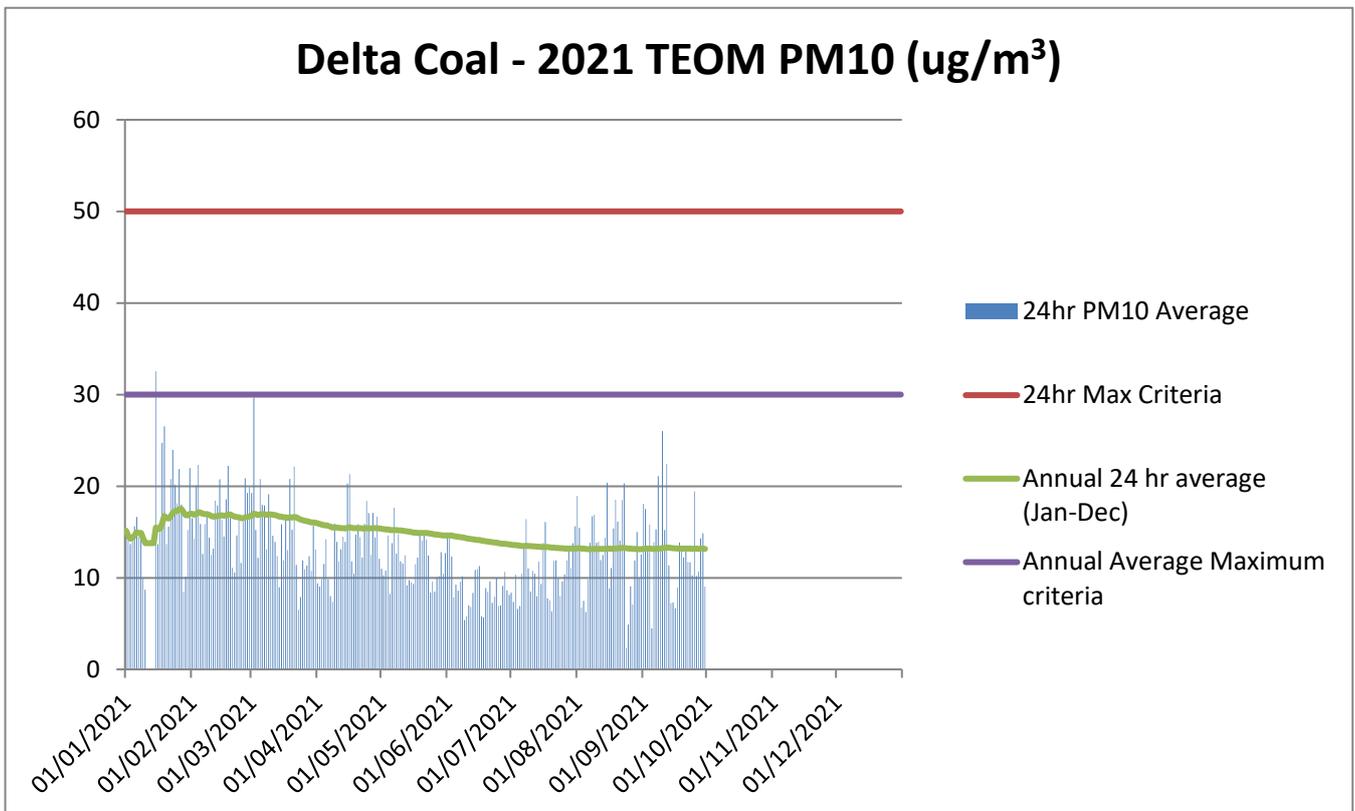
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## Rolling annual average depositional dust results



## Air Quality – PM<sub>10</sub>

The 24hr PM<sub>10</sub> average from Delta Coal’s Tapered Element Oscillating Microbalance (TEOM) monitor is presented below for the year to date.



Annual 24hr PM<sub>10</sub> average maximum criteria for the month was below the annual average maximum criteria limit. A summary of data availability for Delta Coal’s TEOM is presented below for the year to date.

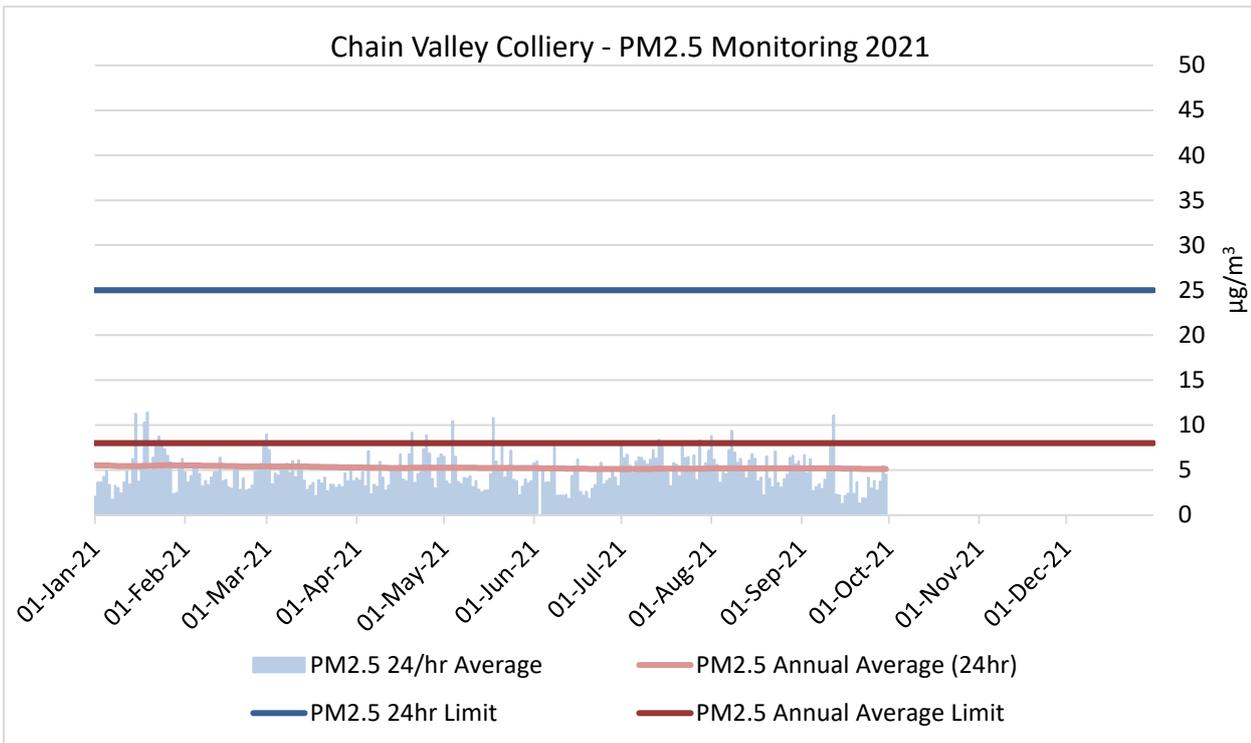
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Variable	September Total	Valid
A/C Temp	100%	8640 8640
A1	100%	8640 8640
A1_Scaled	100%	8640 8640
Bypass Flow	100%	8640 8640
Cap Temp	100%	8640 8640
Case Temp	100%	8640 8640
Config	100%	8640 8640
Dew Point	100%	8640 8640
Dig-In	100%	8640 8640
Dig-Latch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

### Air Quality – PM<sub>2.5</sub>

Delta Coal utilises PM<sub>2.5</sub> data obtained from Delta Electricity owned and operated beta attenuation monitor (BAM). The PM<sub>2.5</sub> monitor is located on Tingley Road, Wyee.



For the period of September 2021, the daily PM<sub>2.5</sub> average concentration and annual average PM<sub>2.5</sub> concentration did not exceed limits of 25 µg/m<sup>3</sup> and 8 µg/m<sup>3</sup> respectively.

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PM<sub>2.5</sub> data availability for:

- September 2021 data availability was 100%; and
- 2021 year to date data availability has been 98%.

## 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 2021			
Licensee	Great Southern Energy Pty Ltd		
Location	Manning Colliery Meteorological station		
Date published	Refer report date		
Date sampled	Daily		
Date obtained	12 <sup>th</sup> October 2021		
Month	Total Rainfall/Month (mm)	Min Temp	Max Temp
Jan-21	108.4	12.5	38.2
Feb-21	110.2	13.9	33.1
Mar-21	551.6	13.1	31.1
Apr-21	56.8	6.2	28.3
May-21	30.8	4.1	25.6
June-21	74.6	3.3	21.5
July-21	37.2	2	24.8
August-21	60.4	3.6	26.3
September-21	73.4	5.4	30.5

Variable	September	Total	Valid
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