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# Manning Colliery Monthly Website Report – August 2021

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

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## Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of August 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 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	<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 **August 2021**

ALS – MC Water Analysis Reports **August 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.

August 2021				
<b>EPL</b>	191			
<b>Licensee</b>	Great Southern Energy Pty Ltd			
<b>Premises</b>	Manning Colliery			
<b>Period</b>	01-August-21		to	31-August-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)
05/08/2021	7.57	<5	<5	27,500
12/08/2021	7.93	6	<5	18,500
20/08/2021	7.94	<5	<5	19,800
26/08/2021	7.87	<5	<5	24,900
31/08/2021	7.86	<5	<5	29,800
<b>Average</b>	7.83	5.2	<5	24,100
<b>Minimum</b>	7.57	<5	<5	18,500
<b>Maximum</b>	7.94	6	<5	29,800

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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Sub-Matrix: WATER (Matrix: WATER)		Sample ID		LDP001
		Sampling date / time		31-Aug-2021 12:00
Compound	CAS Number	LOR	Unit	WN2109844-001
				Result
<b>ED040F: Dissolved Major Anions</b>				
Sulfur as S	83705-05-5	1	mg/L	145
Silicon as SiO2	14484-48-1	0.1	mg/L	14.0
<b>ED093T: Total Major Cations</b>				
Calcium	7440-70-2	1	mg/L	215
Magnesium	7439-95-4	1	mg/L	229
Potassium	7440-09-7	1	mg/L	35
<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	2
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	7439-98-5	1	µg/L	22
Molybdenum	7439-98-7	1	µg/L	6
Nickel	7440-02-0	1	µg/L	4
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	16
<b>EG020T: Total Metals by ICP-MS</b>				
Aluminium	7429-90-5	10	µg/L	50
Silver	7440-22-4	1	µg/L	<1
Arsenic	7440-38-2	1	µg/L	5
Boron	7440-42-8	50	µg/L	320
Barium	7440-39-3	1	µg/L	246
Titanium	7440-32-8	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	506
Molybdenum	7439-98-7	1	µg/L	9
Nickel	7440-02-0	1	µg/L	3
Lead	7439-92-1	1	µg/L	<1
Antimony	7440-38-0	1	µg/L	1
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	15
Iron	7439-89-6	50	µg/L	60
<b>EG035F: Dissolved Mercury by FIMS</b>				
Mercury	7439-97-8	0.1	µg/L	0.4
<b>EG035T: Total Recoverable Mercury by FIMS</b>				
Mercury	7439-97-8	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	0.81
<b>EK067G: Total Phosphorus as P by Discrete Analyser</b>				
Total Phosphorus as P	----	0.01	mg/L	<0.05

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## Water – Volume

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

August 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
01/08/2021	kL	1868.37
02/08/2021	kL	1865.5
03/08/2021	kL	1534.5
04/08/2021	kL	1214.6
05/08/2021	kL	1323.2
06/08/2021	kL	233.41
07/08/2021	kL	1951.24
08/08/2021	kL	1335.19
09/08/2021	kL	1436.05
10/08/2021	kL	841.99
11/08/2021	kL	1377.71
12/08/2021	kL	709.09
13/08/2021	kL	98.42
14/08/2021	kL	914.96
15/08/2021	kL	1420.03
16/08/2021	kL	1191.78
17/08/2021	kL	1287.35
18/08/2021	kL	811.59
19/08/2021	kL	1165.89
20/08/2021	kL	76.85
21/08/2021	kL	1226.42
22/08/2021	kL	1396.28
23/08/2021	kL	58.35
24/08/2021	kL	1379.58
25/08/2021	kL	929.26
26/08/2021	kL	800.42
27/08/2021	kL	816.81
28/08/2021	kL	1683.4
29/08/2021	kL	1314.62
30/08/2021	kL	1196.29
31/08/2021	kL	777.83
Average	kL	1,104.4
Minimum	kL	58.35
Maximum	kL	1,951.2

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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		
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.

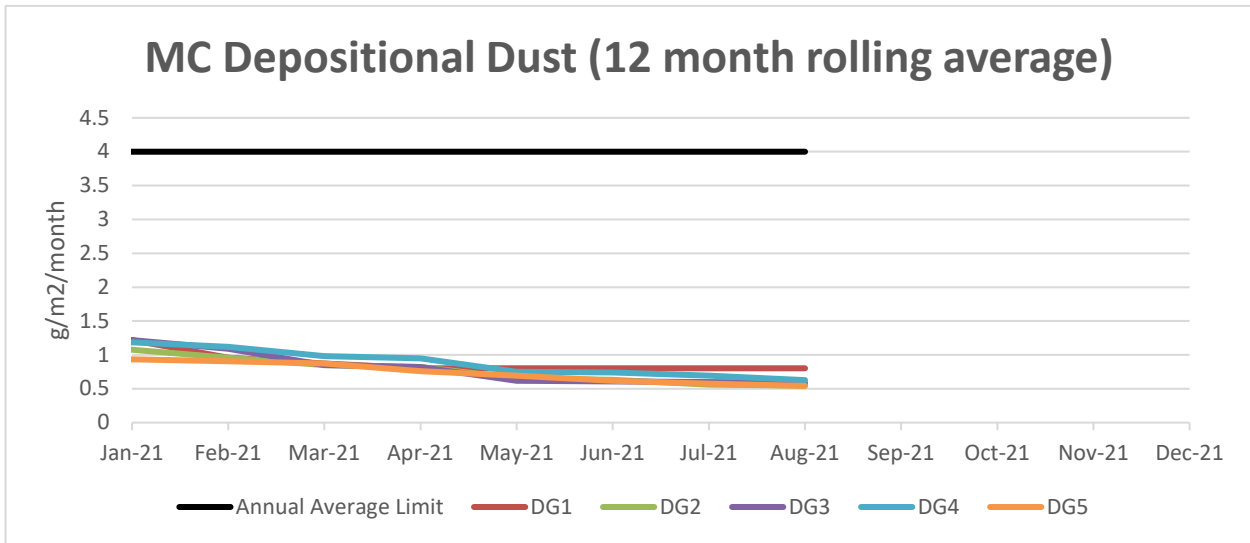
August 2021		
<b>EPL</b>	191	
<b>Limits</b>	Max. total deposited dust level	4g/m <sup>2</sup> /month
	Max. increase in deposited dust level	2g/m <sup>2</sup> /month
<b>Sampling Date</b>	13/07/2021 to 12/08/2021	
EPA ID no.	Site	Insoluble Matter (g/m <sup>2</sup> /month)
3	DG1	1.1
4	DG2	0.9
5	DG3	1.5
6	DG4	1.4
7	DG5	0.8
<b>Notes:</b>	Sampling locations provided in Manning Colliery Air Quality Management Plan available on the Delta Coal website.	



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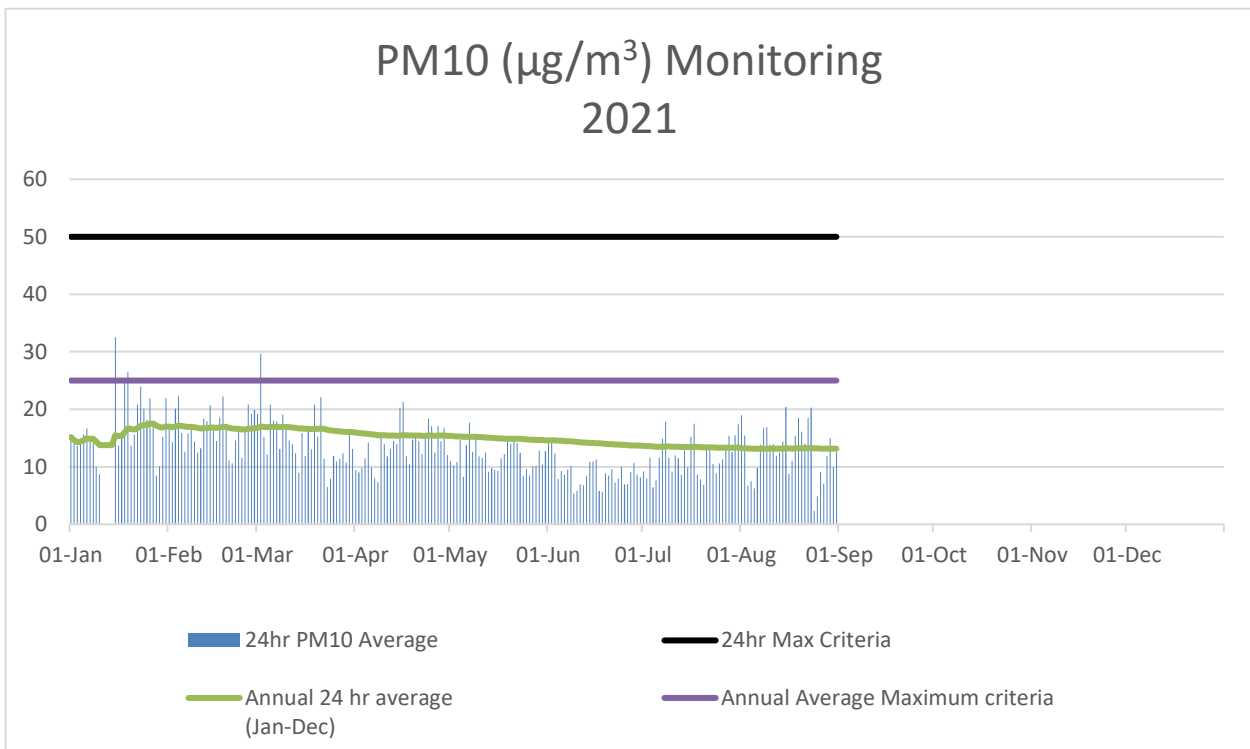
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## Rolling annual average depositional dust results



## 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.

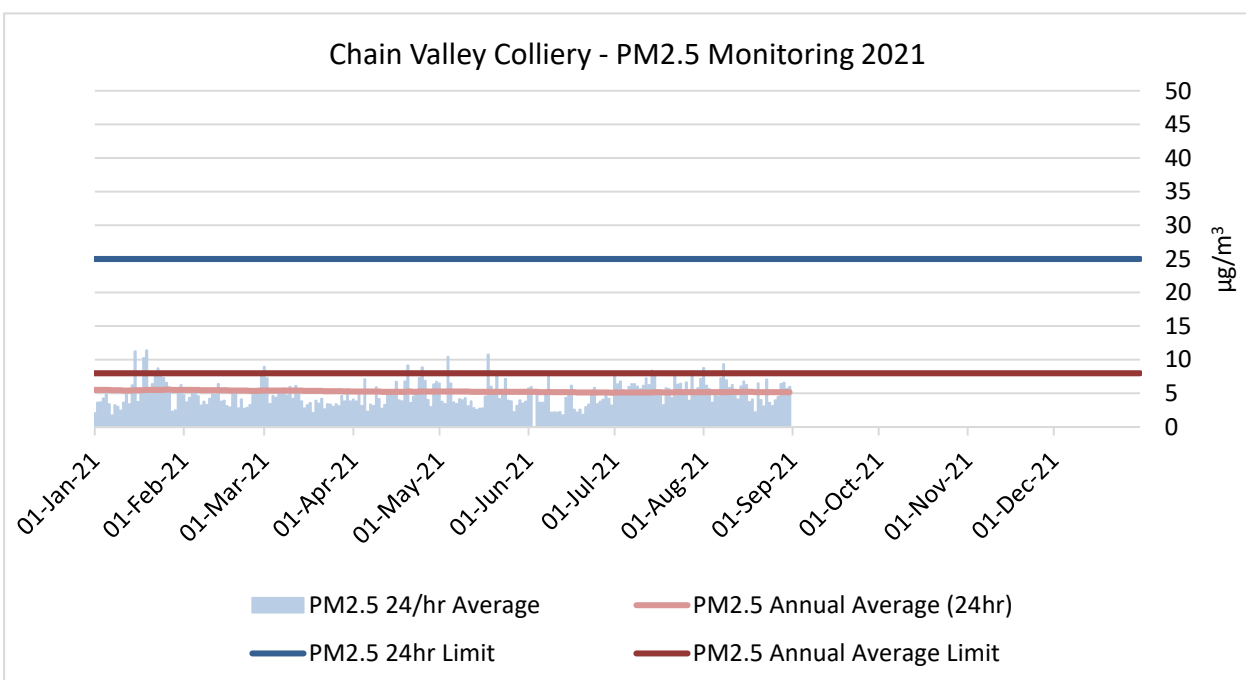
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Variable	August	Total	Valid
A/C Temp	100%	8928	8927
A1	100%	8928	8927
A1_Scaled	100%	8928	8927
Bypass Flow	100%	8928	8927
Cap Temp	100%	8928	8927
Case Temp	100%	8928	8927
Config	100%	8928	8927
Dew Point	100%	8928	8927
Dig-In	100%	8928	8927
Dig-Latch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

## 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.



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For the period of May 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.

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

- August 2021 data availability was 98%; 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> July 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

Variable	August	Total	Valid
10m Temp	100%	2976	2975
2m Temp	100%	2976	2975
A1	100%	2976	2975
A1_Scaled	100%	2976	2975
Assumed Temp	100%	2976	2975
Barometric	100%	2976	2975
Config	100%	2976	2975
Daily Evap	100%	2976	2975
Daily Rain	100%	2976	2975
Delta T	100%	2976	2975
Dew Point	100%	2976	2975
Dig-In	100%	2976	2975
Dig-Latch	100%	2976	2975
ESN	100%	2976	2975
FDI	100%	2976	2975
Heat Index	100%	2976	2975
Humidity	100%	2976	2975
Mobile Signal	100%	2976	2975
Rain	100%	2976	2975
Raw Evap	100%	2976	2975
S Class	100%	2976	2975
Scalar WS	100%	2976	2975
Sigma	100%	2976	2975
Site	0.0%	2976	0
Solar Radiation	100%	2976	2975
Vector WD	100%	2976	2975
Vector WS	100%	2976	2975
Volts	100%	2976	2975
Wind Chill	100%	2976	2975
Wind Direction	100%	2976	2975
Wind Speed	100%	2976	2975
WS Avg	100%	2976	2975
WS Gust	100%	2976	2975