
Manning Colliery Monthly Website Report – December 2021

Site:	Manning Colliery
Department:	Technical Services
Report Title:	Monthly Environmental Report – December 2021
Prepared by:	Lachlan McWha
Report Date:	14 th January 2022
Distribution:	Delta Coal website

Table of Contents

Summary	3
Introduction	3
Scope	4
Definitions	4
References	4
Monitoring Results	5
Water – Quality	5
Water – Volume	7
Water – Groundwater Discharge.....	8
Air Quality	8
Rolling annual average depositional dust results	9
Air Quality – PM ₁₀	9
Air Quality – PM _{2.5}	10
Weather Data	Error! Bookmark not defined.

Monthly Website Report

Manning Colliery Monthly Environmental Report – December 2021

Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of December 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	http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=50781&SYSUID=1&LICID=191

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 – 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 06_0311 (as modified)

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

ALS - Dust Deposition Report **December 2021**

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

Monthly Website Report

Manning Colliery Monthly Environmental Report – December 2021

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.

December 2021				
EPL	191			
Licensee	Great Southern Energy Pty Ltd			
Premises	Manning Colliery			
Period	01-December-21		to	31-December-21
Location	LDP001 (EPA ID # 1)			
Date sampled	Weekly			
Date reported	Refer report date			
Monitoring requirement	Weekly			
pH limit	6.5 - 8.5			
TSS limit (mg/L)	50			
Oil and grease limit (mg/L)	10			
Exceedance (Yes/No)	No			
Water Quality Results				
Date	pH	TSS (mg/L)	Oil and grease (mg/L)	Electrical Conductivity (µS/cm)
01/12/2021	7.72	8	<5	25,800
10/12/2021	7.75	<5	<5	23,600
16/12/2021	7.89	7	<5	13,900
21/12/2021	7.70	6	<5	27,000
29/12/2021	8.27	<5	<5	18,700
Average	7.87	6.2	<5	26,450

Monthly water quality results, primarily metals, at LDP001 are presented below for the period.

Monthly Website Report

Manning Colliery Monthly Environmental Report – December 2021

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		LDP001
		Sampling date / time		21-Dec-2021 10:15
Compound	CAS Number	LOR	Unit	ES2146786-001
				Result
ED040F: Dissolved Major Anions				
Sulfur as S	63705-05-5	1	mg/L	157
Silicon as SiO ₂	14464-46-1	0.1	mg/L	14.1
ED093T: Total Major Cations				
Calcium	7440-70-2	1	mg/L	257
Magnesium	7439-95-4	1	mg/L	329
Potassium	7440-09-7	1	mg/L	45
EG020F: Dissolved Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	<100
Arsenic	7440-38-2	1	µg/L	<10
Beryllium	7440-41-7	1	µg/L	<10
Cadmium	7440-43-9	0.1	µg/L	<1.0
Chromium	7440-47-3	1	µg/L	<10
Cobalt	7440-48-4	1	µg/L	<10
Copper	7440-50-8	1	µg/L	<10
Lead	7439-92-1	1	µg/L	<10
Manganese	7439-96-5	1	µg/L	64
Molybdenum	7439-98-7	1	µg/L	10
Nickel	7440-02-0	1	µg/L	<10
Selenium	7782-49-2	10	µg/L	<100
Silver	7440-22-4	1	µg/L	<10
Vanadium	7440-62-2	10	µg/L	<100
Zinc	7440-66-6	5	µg/L	<50
EG020T: Total Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	<100
Antimony	7440-36-0	1	µg/L	<10
Arsenic	7440-38-2	1	µg/L	<10
Beryllium	7440-41-7	1	µg/L	<10
Barium	7440-39-3	1	µg/L	252
Cadmium	7440-43-9	0.1	µg/L	<1.0
Chromium	7440-47-3	1	µg/L	<10
Cobalt	7440-48-4	1	µg/L	<10
Copper	7440-50-8	1	µg/L	<10
Lead	7439-92-1	1	µg/L	<10
Lithium	7439-93-2	1	µg/L	790
EG020T: Total Metals by ICP-MS - Continued				
Molybdenum	7439-98-7	1	µg/L	<10
Nickel	7440-02-0	1	µg/L	<10
Selenium	7782-49-2	10	µg/L	<100
Silver	7440-22-4	1	µg/L	<10
Tin	7440-31-5	1	µg/L	<10
Titanium	7440-32-6	10	µg/L	<100
Vanadium	7440-62-2	10	µg/L	<100
Zinc	7440-66-6	5	µg/L	<52
Boron	7440-42-8	50	µg/L	800
Iron	7439-89-6	50	µg/L	440
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	0.99
EK067G: Total Phosphorus as P by Discrete Analyser				
Total Phosphorus as P	----	0.01	mg/L	0.06

Monthly Website Report

Manning Colliery Monthly Environmental Report – December 2021

Water – Volume

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

December 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
01/12/2021	kL	1579.73999
02/12/2021	kL	1552.01
03/12/2021	kL	55.84
04/12/2021	kL	1444.1
05/12/2021	kL	1572.37
06/12/2021	kL	5.8
07/12/2021	kL	970.07
08/12/2021	kL	847.41
09/12/2021	kL	1614.26
10/12/2021	kL	1997.65
11/12/2021	kL	941
12/12/2021	kL	376.46
13/12/2021	kL	1685.6
14/12/2021	kL	1715.25
15/12/2021	kL	939.53
16/12/2021	kL	378.85
17/12/2021	kL	524.24
18/12/2021	kL	1328.82
19/12/2021	kL	375.81
20/12/2021	kL	1497.02
21/12/2021	kL	959.79
22/12/2021	kL	333.44
23/12/2021	kL	202.02
24/12/2021	kL	53.32
25/12/2021	kL	13
26/12/2021	kL	5.21
27/12/2021	kL	0
28/12/2021	kL	3.2
29/12/2021	kL	0
30/12/2021	kL	0
31/12/2021	kL	0
Average	kL	741 / day

Monthly Website Report

Manning Colliery Monthly Environmental Report – December 2021

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 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 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	9.87	88.55
November 2021	37.73	126.28
December 2021	19.25	145.53
January 2022		
February 2022		
March 2022		
April 2022		
May 2022		
June 2022		

Air Quality

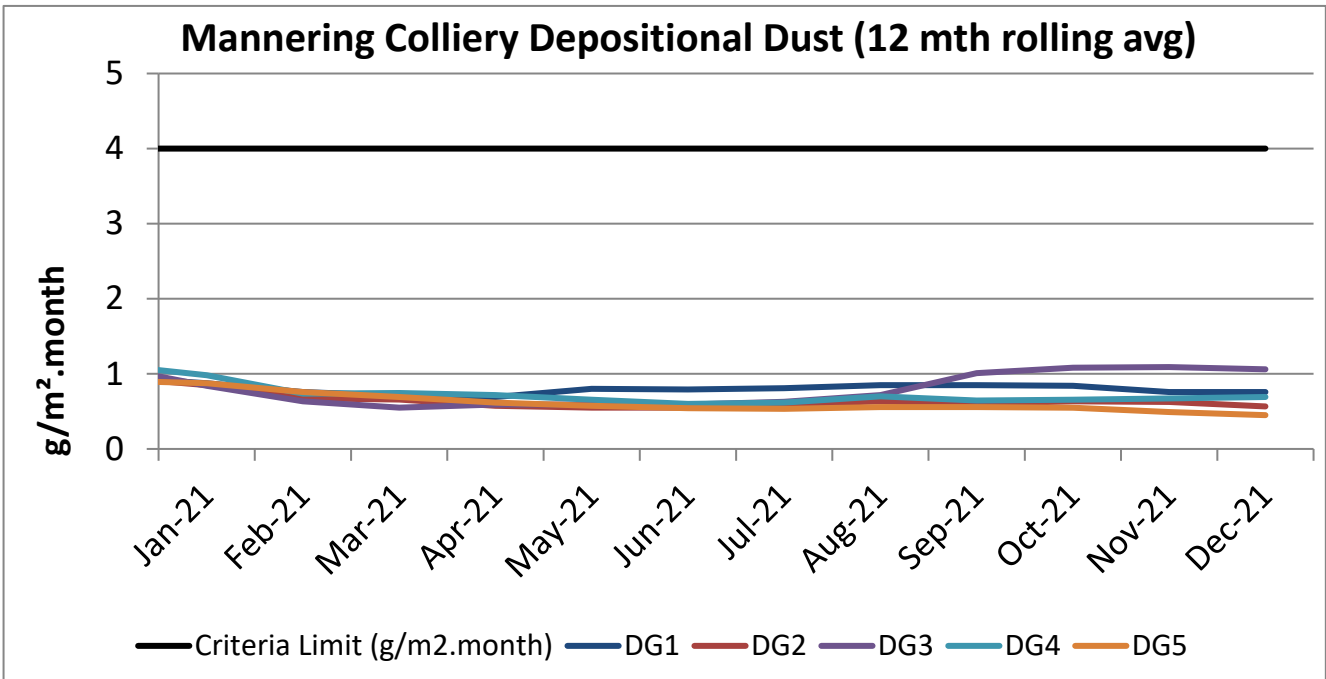
Monthly depositional dust results are shown below.

October 2021		
EPL	191	
Limits	Max. total deposited dust level	4g/m ² /month
	Max. increase in deposited dust level	2g/m ² /month
Sampling Date	10/11/2021 – 10/12/2021	
EPA ID no.	Site	Insoluble Matter (g/m ² /month)
3	DG1	0.7
4	DG2	0.8
5	DG3	0.6
6	DG4	0.9
7	DG5	0.6
Notes:	Sampling locations provided in Manning Colliery Air Quality Management Plan available on the Delta Coal website.	

Monthly Website Report

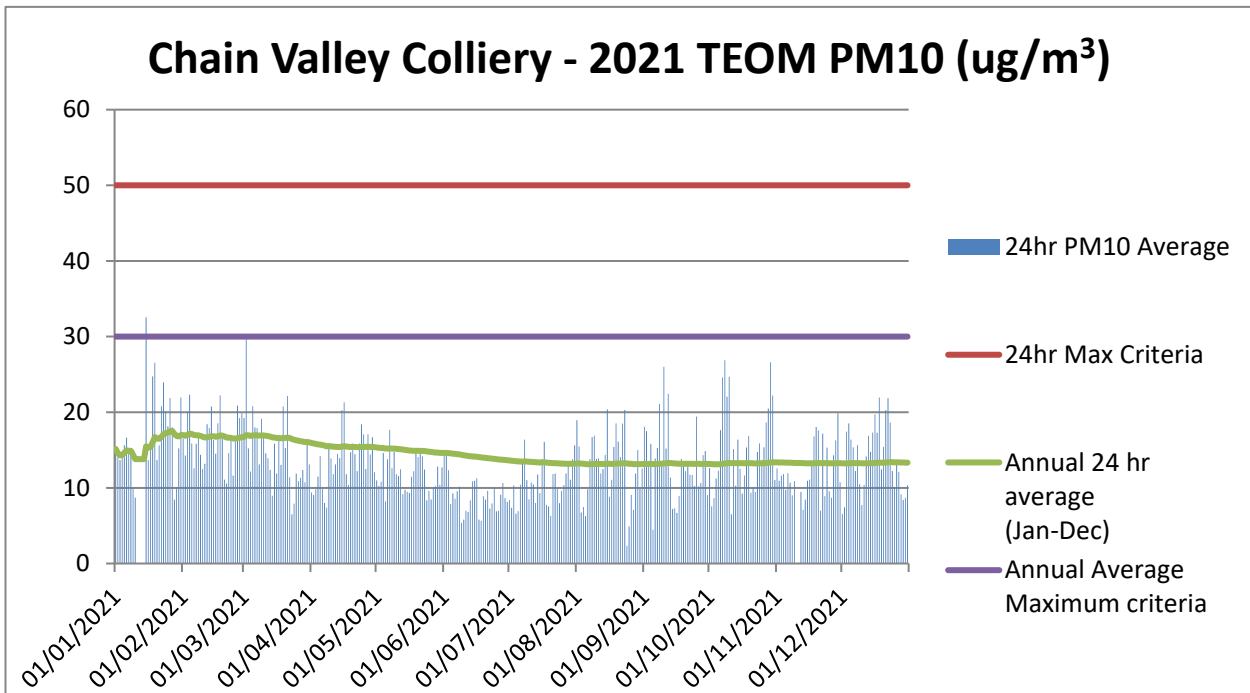
Manning Colliery Monthly Environmental Report – December 2021

Rolling annual average depositional dust results



Air Quality – PM₁₀

The 24hr PM₁₀ average from Delta Coal’s Tapered Element Oscillating Microbalance (TEOM) monitor is presented below for the year to date.



Annual 24hr PM₁₀ 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 reporting period.

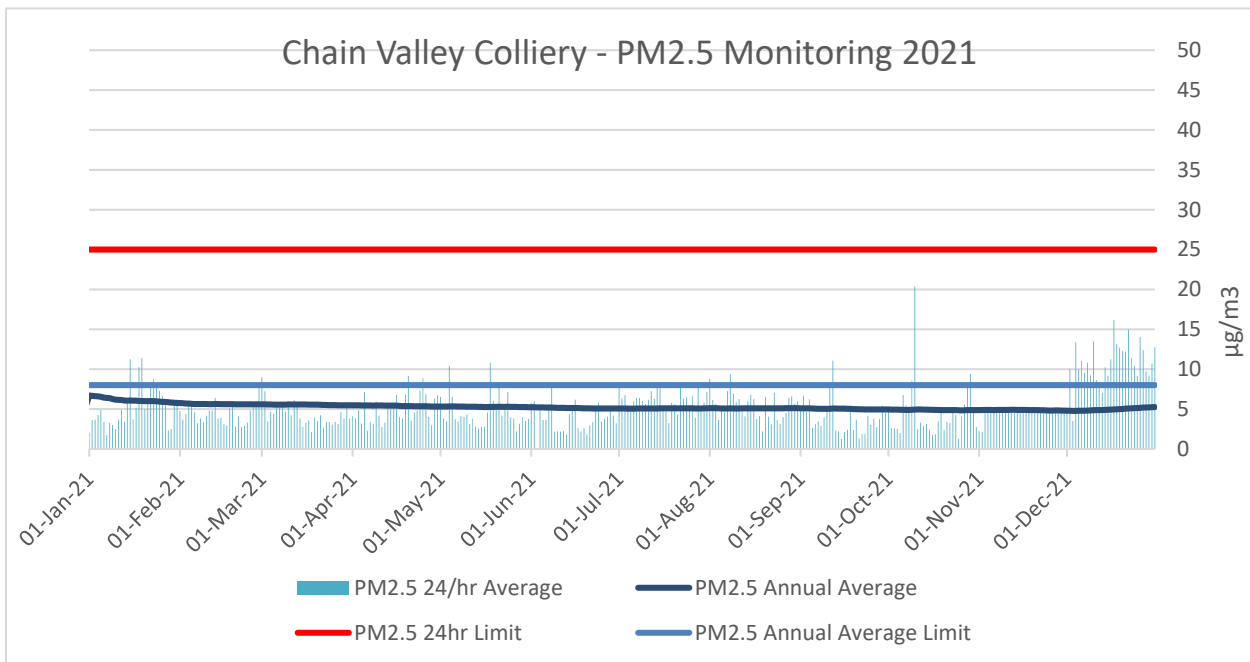
Monthly Website Report

Manning Colliery Monthly Environmental Report – December 2021

Variable	December	Total	Valid
A/C Temp	100%	8928	8928
A1	100%	8928	8928
A1_Scaled	100%	8928	8928
Bypass Flow	100%	8928	8928
Cap Temp	100%	8928	8928
Case Temp	100%	8928	8928
Config	100%	8928	8928
Dew Point	100%	8928	8928
Dig-In	100%	8928	8928
Dig-Latch	100%	8928	8928
ESN	100%	8928	8928
Filter Freq	100%	8928	8928
Filter Load	100%	8928	8928
Humidity	100%	8928	8928
MC	100%	8928	8928
MC 12Hr	100%	8928	8928
MC 1Hr	100%	8928	8928
MC 24Hr	100%	8928	8928
MC 30min	100%	8928	8928
MC 8Hr	100%	8928	8928
MC Total	100%	8928	8928
Mobile Signal	100%	8928	8928
Noise	100%	8928	8928
PM10 Flow	100%	8928	8928
Pressure	100%	8928	8928
Site	0.0%	8928	0
Temperature	100%	8928	8928
Tube Temp	100%	8928	8928
Vac Pressure	100%	8928	8928
Volts	100%	8928	8928

Air Quality – PM_{2.5}

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.



For the reporting period, the daily PM_{2.5} average concentration and annual average PM_{2.5} concentration did not exceed limits of 25 µg/m³ and 8 µg/m³ respectively.

Monthly Website Report

Manningering Colliery Monthly Environmental Report – December 2021

PM_{2.5} data availability for:

- December 2021 data availability was 94%; and
- 2021 year to date data availability has been 90%.

Weather Data

A summary of weather data recorded by a meteorological monitoring station at the adjacent Manningering Colliery is presented below for the year to date. (EPA ID no. 26).

Monthly Weather Data 2021			
Licensee	Great Southern Energy Pty Ltd		
Location	Manningering Colliery Meteorological station		
Date published	Refer report date		
Date sampled	Daily		
Date obtained	14 th January 2022		
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
October-21	16.4	7.5	33.1
November-21	223.6	8.9	27.6
December-21	91.0	13	35.6

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