

Chain Valley Colliery Monthly Website Report – December 2021

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Department:	Technical Services
Report Title:	Monthly Environmental Website Report – December 2021
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Introduction

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

Chain Valley 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) publically available;
- Conditions 8 & 11, Schedule 6, of Development Consent SSD-5465 (as modified), issued under the *Environmental Planning and Assessment Act 1979* to provide details of monitoring results and environmental performance;
- An Environment Protection Licence (EPL 1770) issued under the *Protection of the Environment Operations Act 1997*; and
- A Water Access Licence (WAL41508), Aquifer (Sydney Basin – North Coast Groundwater Source) for 4,443 unit shares (megalitres).

The above development consent and licences require various monitoring and reporting requirements to be undertaken by Delta Coal for Chain Valley Colliery.

This report provides environmental monitoring data from Chain Valley Colliery for the month of December 2021.

Details of the Chain Valley Colliery EPL 1770 are provided below.

Chain Valley Colliery Information	
Premises name	Chain Valley Colliery
Address	Construction Road, Chain Valley Bay, NSW, 2259
Licensee	Great Southern Energy Pty Ltd
EPL #	1770
EPL location	http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=50980&SYSUID=1&LICID=1770

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

Scope

This report presents the results from the various environmental monitoring programs undertaken for Chain Valley Colliery. Results are presented monthly with annual data and averages.

Where applicable, the results of the monitoring programs are compared with the relevant criteria (from the EPL or Development Consent) to assess compliance. Monitoring results presented in this report 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.

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References

ALS Group - Monthly Water Monitoring Results **December 2021**

ALS Group - Dust Deposition Report **December 2021**

Development Consent SSD-5465 (as modified)

Environment Protection Licence (EPL) 1770 (Licence version date: 30 September 2021)

Monitoring Results

Water – Quality

Water quality results for Decemberr 2021 monthly surface water sampling at Chain Valley Colliery, EPA Discharge Point 1 (LDP1) are presented below.

December 2021			
EPL	1770		
Licensee	Great Southern Energy Pty Ltd		
Premises	Chain Valley Colliery		
Date Sampled	24-11-2021		
Date Obtained	01-12-2021		
Sampling Point	LDP1		
Parameter	Units	Limit	Result
Biochem. Oxygen Demand	mg/L	-	<2
Enterococci	col/100mL	-	41
Faecal Coliforms	CFU/100mL	200	~20
pH	pH	6.5-8.5	7.80
Total Sus. Solids	mg/L	50	<5
Electrical Conductivity	µS/cm	-	33,900
Oil and Grease			<5

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Water – Volume

Monthly water volumes discharged from the site are summarised below.

The daily water volumes at EPA Discharge Point 1 (LDP1) during November 2021 did not exceed the EPL 1770 discharge limit.

EPL	1770
Licensee	Great Soutehrn Energy Pty Ltd
Premises	Chain Valley Colliery
Date Sampled	Daily
Date Reported	Refer report date
Discharge volume limit	12,161 kilolitres per day
Sampling Point	1

Date (24 hour period)	Unit	LDP 1 Volume
01/12/2021	kL	7378.1
02/12/2021	kL	7050.14
03/12/2021	kL	7562.85
04/12/2021	kL	6550.27
05/12/2021	kL	7298.21
06/12/2021	kL	8743.84
07/12/2021	kL	6782.5
08/12/2021	kL	6950.47
09/12/2021	kL	6495.58
10/12/2021	kL	7028.54
11/12/2021	kL	7640.04
12/12/2021	kL	7676.47
13/12/2021	kL	4263.67
14/12/2021	kL	5040.21
15/12/2021	kL	7340.81
16/12/2021	kL	8865.64
17/12/2021	kL	6532.44
18/12/2021	kL	5239.44
19/12/2021	kL	2431.93
20/12/2021	kL	3544.03
21/12/2021	kL	2620.76
22/12/2021	kL	3863.16
23/12/2021	kL	2051.99
24/12/2021	kL	1005.83
25/12/2021	kL	545.81
26/12/2021	kL	0*
27/12/2021	kL	0*
28/12/2021	kL	0*
29/12/2021	kL	0*
30/12/2021	kL	0*
31/12/2021	kL	0*

Average	kL	6,472.30
Minimim	kL	2,506.36
Maximum	kL	10,055.87

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The volumetric flow meter installed and monitoring discharge volumes at LDP1 was vandalised on the 26/12/2021. Due to the vandalism the monitor ceased operating. The monitor was repaired on the 10/01/2022 following sourcing of replacement parts. The cost of LDP1 monitor repair was payed by Delta Coal.

Water – Groundwater Discharge

Groundwater discharged from underground workings to the CVC sedimentation ponds within the surface operational area has been detailed below. Chain Valley Colliery operates Water Access License (WAL 41508) permitting the extraction of 4,443 megalitres per water year (financial year calander) with a roll-over entitlement up to a maximum of 8,886 megalitres.

CVC Groundwater to Surface Totals FY2021-2022		
Date (month)	GW Discharge (ML/Month)	GW Discharge (Cumulative ML YTD)
July 2021	189.98	189.98
August 2021	164.83	354.82
September 2021	135.72	490.54
October 2021	187.79	678.33
November 2021	173.63	851.96
December 2021	157.59	1009.55
January 2022		
February 2022		
March 2022		
April 2022		
May 2022		
June 2022		

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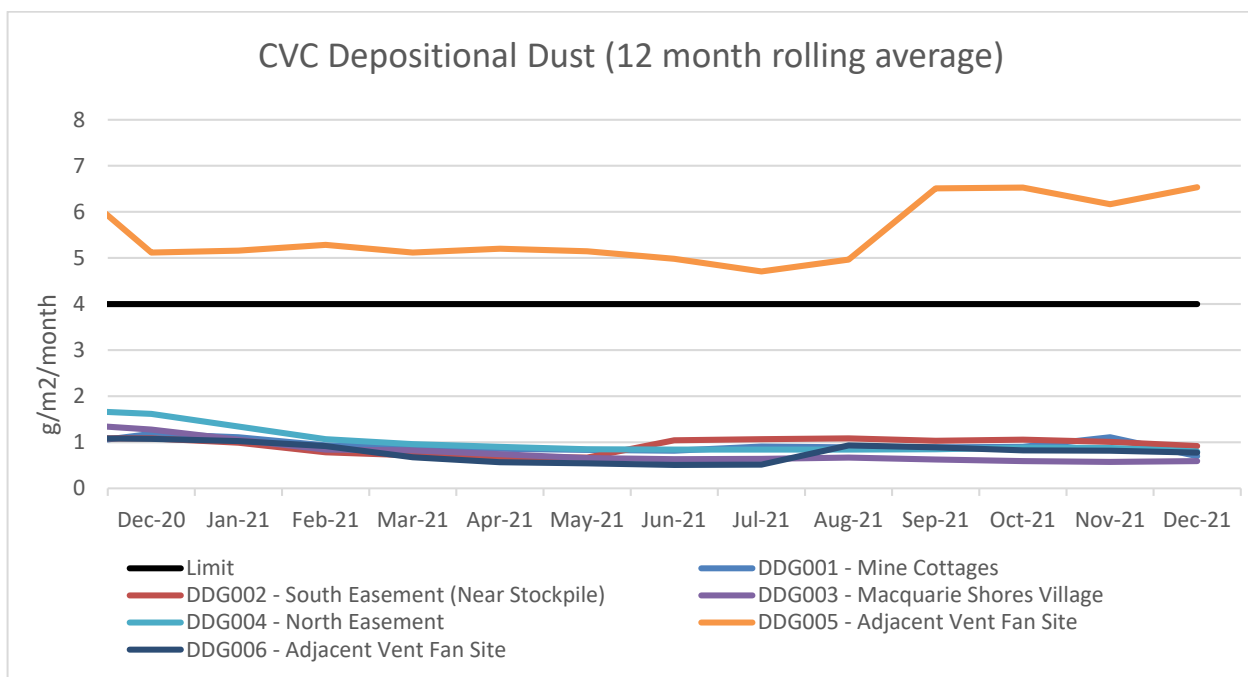
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Air Quality - Depositional Dust

Monthly depositional dust results are shown below. Dust deposition gauges were sampled and analysed in accordance with the project approval, CVC Air Quality Management Plan and relevant Australian Standards.

December 2021	
EPL	1770
Limit	4g/m ² /month / Annum
Sampling Date	10/11/2021 to 10/12/2021
Site	Insoluble Matter (g/m ² /month)
DDG001	0.3
DDG002	0.6
DDG003	1.6
DDG004	1.1
DDG005	14.3
DDG006 (proposed DDG005 Replacement)	0.4
Notes: For site locations refer to Chain Valley Colliery Air Quality Management Plan.	

A 12 month rolling average of depositional dust concentrations has been presented below. Dust Gauges DDG001, DDG002, DDG003 and DDG004 are located within a closer proximity to Chain Valley Colliery. DDG005 was intended to represent the CVC ventilation fan site, however has been frequently contaminated by factors outside of mine operations (bird droppings, insects, land maintenance activities and vegetation). Subsequently, DDG006 was installed in a location considered more representative of the CVC vent fan site. Delta Coal currently have a submission with the DPIE to amend the Chain Valley Colliery Air Quality Management Plan to replace location DDG005 with DDG006.

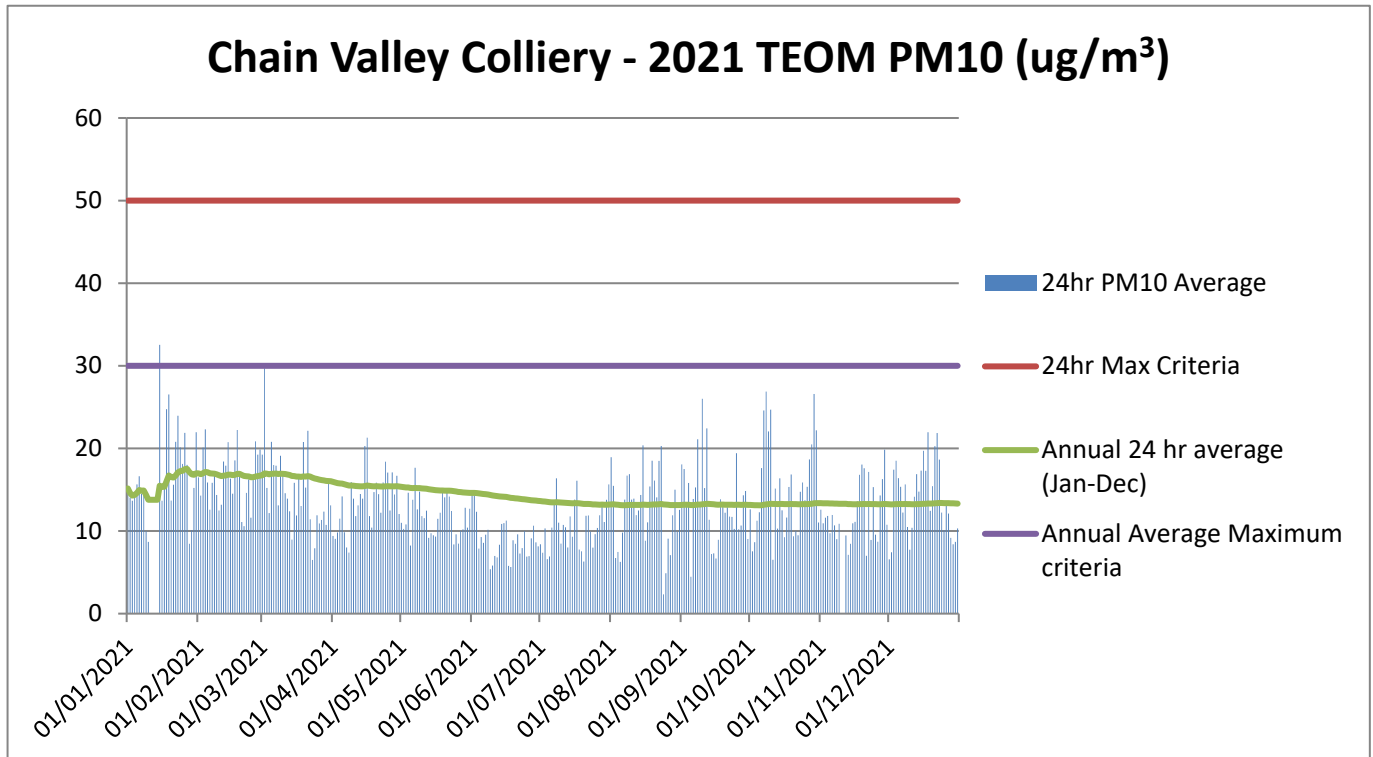


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Air Quality – PM₁₀

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



Annual 24hr PM₁₀ average maximum criteria for November 2021 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 December 2021.

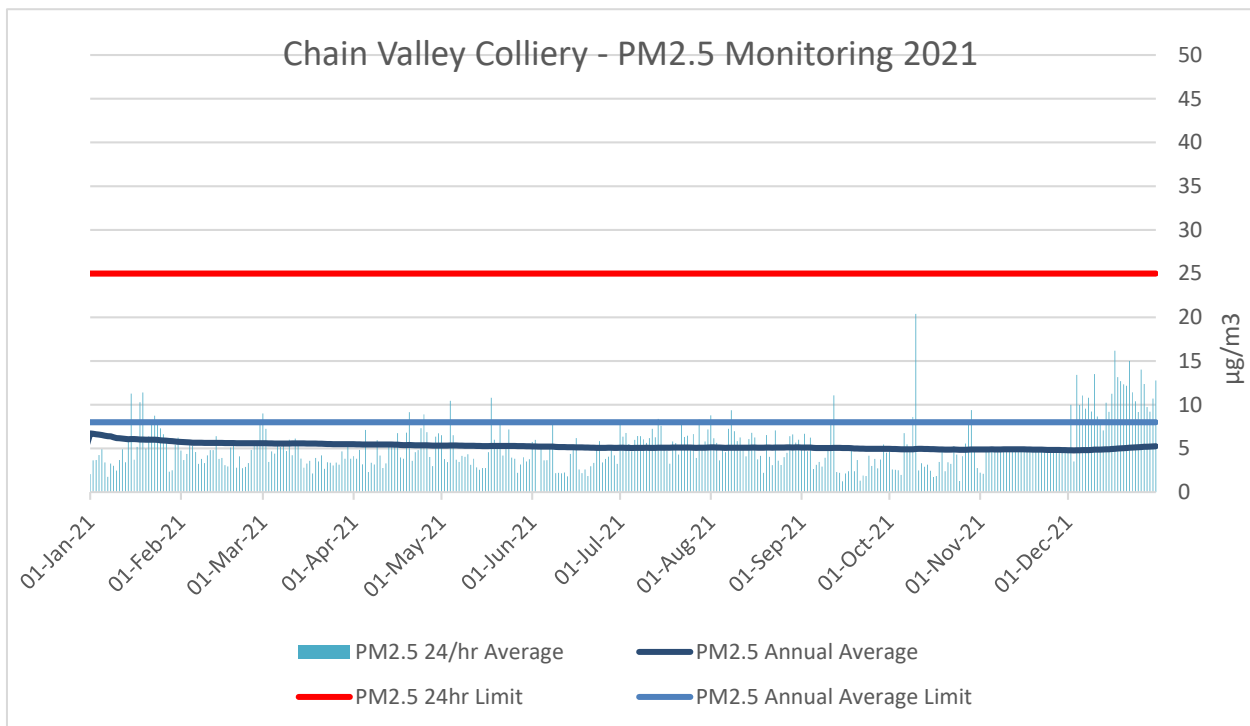
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Variable	December	Total	Valid
A/C Temp	100%	8928	8928
A1	100%	8928	8928
A1_Scaled	100%	8928	8928
Bypass Flow	100%	8928	8928
Cap Temp	100%	8928	8928
Case Temp	100%	8928	8928
Config	100%	8928	8928
Dew Point	100%	8928	8928
Dig-In	100%	8928	8928
Dig-Latch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

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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 Mannering Colliery is presented below for the year to date. (EPA ID no. 26).

Monthly Weather Data 2021			
Licensee	Great Southern Energy Pty Ltd		
Location	Mannering 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