

BAAL BONE UNDERGROUND

GLENCORE

Q3 2022 Monitoring Summary July to September 2022



Table of Contents

1.	Introduction	3
2.	Air quality	3
3.	Surface Water	5
4.	Noise.....	9

1. Introduction

In accordance with Schedule 5, Condition 9 of Project Approval 09_0178 this report provides a summary of environmental monitoring results for Baal Bone Colliery, for the period **1 April 2022 to 30 September 2022**. Baal Bone's licensed discharge and monitoring locations are identified in **Figure 7**.

2. Air quality

Monthly dust monitoring is carried out in accordance with Australian Standard AS3580.10.1, EPL requirements and Baal Bone's Air Quality Monitoring Program.

Sample analysis is undertaken by the ALS Group Environmental Division, a NATA Accredited laboratory.

Baal Bone maintains a network of dust deposition gauges:

- Sample location DM1 (EPL monitoring point No. 7);
- Sample location DM2 (EPL monitoring point No. 13);
- Sample location DM3 (EPL monitoring point No. 14);
- Sample location DM4 (EPL monitoring point No. 15)

Locations of the dust deposition gauges are shown in **Figure 7**.

Schedule 3, Condition 10 of Project Approval 09_0178 includes air quality impact assessment criteria for the project and are summarised in **Table 1**. The pollutants to be monitored include deposited dust, TSP and PM¹⁰.

In accordance with the DP&E approved Air Quality Monitoring Program, monitoring for TSP and PM10 was discontinued in June 2012. The monitoring was discontinued following Baal Bone mining operations entering care and maintenance in September 2011, and the completion of coal washing and transporting of coal off-site in December 2011 and April 2012 respectively.

Table 1: Baal Bone Air Quality Impact Assessment Criteria

Pollutant	Averaging period	Criterion	
		Maximum increase	Maximum total
Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month
TSP	Annual	90 µg/m ³	
PM10	24 hour	50 µg/m ³	
	Annual	30 µg/m ³	

The monthly results for each of the monitoring locations are summarised in **Table 2**.

Figure 1 provides the monthly deposited dust results for the year to date. **Figure 2** provides the twelve month rolling average.

Table 2: Deposited dust monitoring results for 2022 (g/m²/month)

Collection Date	EPL Point 7 DM1	EPL Point 13 DM2	EPL Point 14 DM3	EPL Point 15 DM4
10-Jan-22	0.1	0.4	0.8	0.6
8-Feb-22	0.4	0.4	0.7	0.5
8-Mar-22	0.5	0.8	0.6	0.8
5-Apr-22	0.3	0.2	0.2	0.1
3-May-22	0.7	0.6	0.7	0.7
31-May-22	0.3	0.2	0.4	0.2
28-Jun-22	0.5	0.2	0.2	0.2
26-Jul-22	0.4	0.6	0.7	0.4
24-Aug-22	0.5	0.3	0.6	0.3
23-Sep-22	1.1	0.5	0.7	0.4

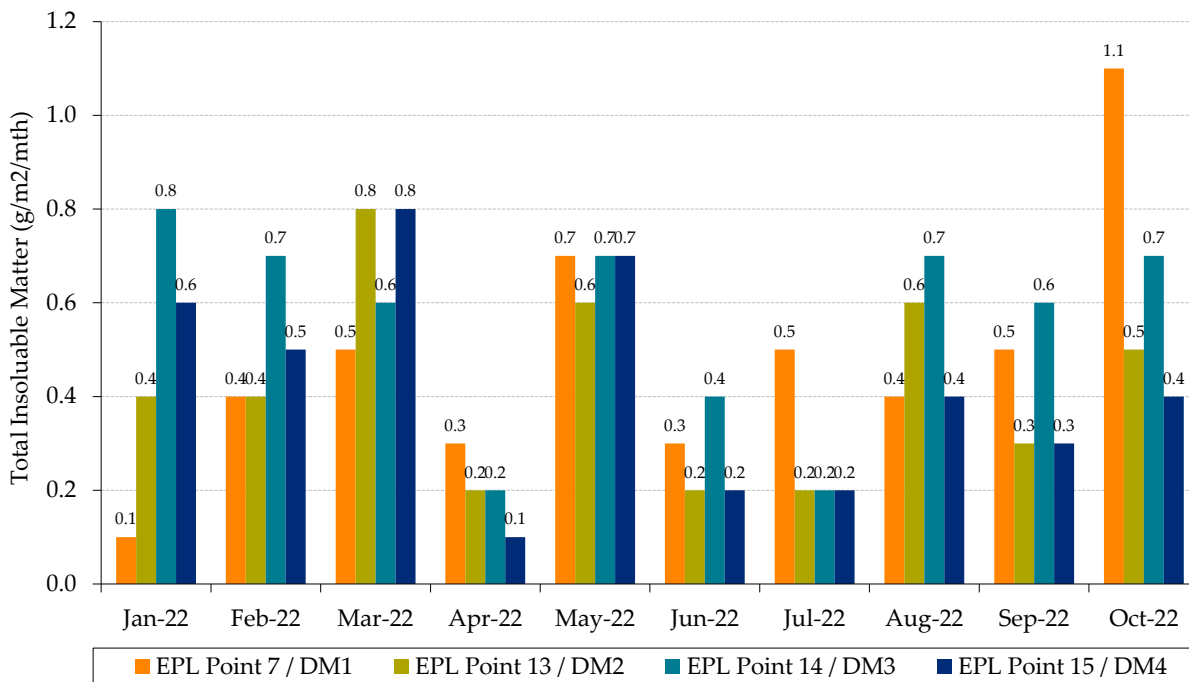


Figure 1: Monthly Total Insoluble Matter

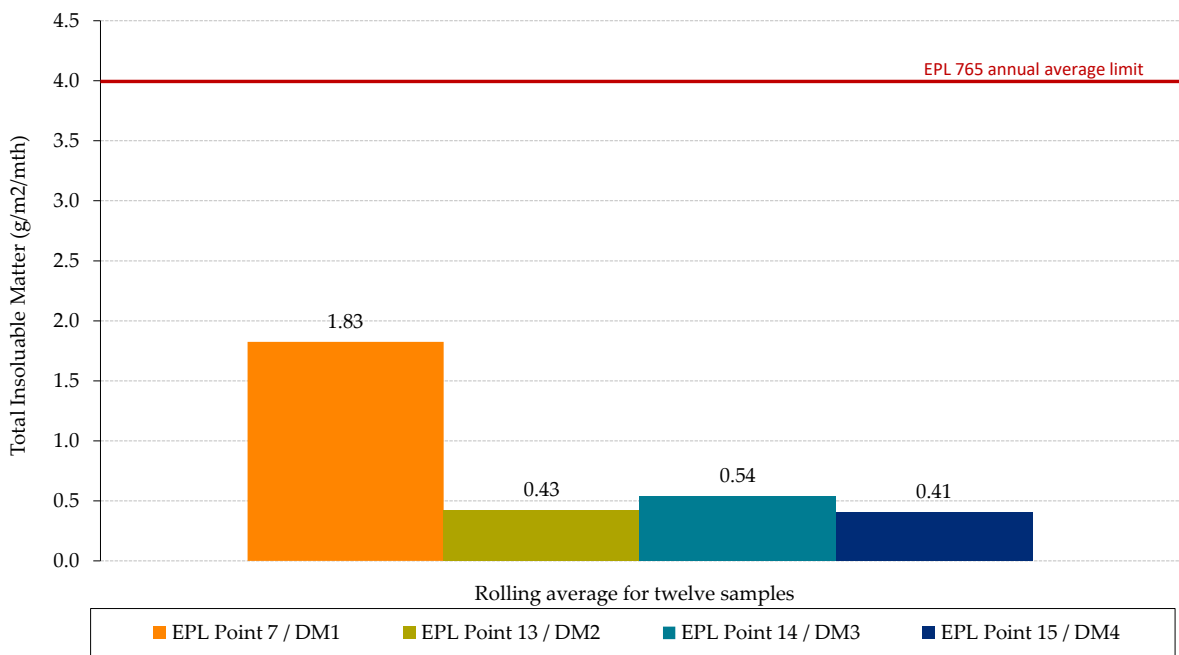


Figure 2: Rolling Average Total Insoluble Matter (12 samples until end Sept 2022)

3. Surface Water

Condition L2 of EPL 765 outlines water concentration limits for oil and grease, pH, total suspended solids and total iron. These limits are presented below in **Table 3**.

Table 3: EPL 765 concentration limits

	EPL Monitoring Point 16 (LDP1)
Oil and grease (mg/L)	10
pH	6.5-8.5
Total Suspended Solids (mg/L)	50
Dissolved Iron (mg/L)	1.0

Note: On 22/06/21 the EPA issued a Notice of Variation of Licence No. 765 which removed the requirement to conduct water sampling at LD2. As a part of mine closure works at Baal Bone Colliery, the sewerage treatment plant has been removed from the site, and the transpiration bed area reshaped and rehabilitated. As such the EPA removed EPA Identification Point 2 from the licence along with all associated monitoring requirements for that point.

The monthly results for each of the monitoring locations are summarised in **Table 4**. **Figure 3** to **Figure 6** provide monthly results for each pollutant.

Table 4: EPL Water quality results for 2022

EPL Point	Month	EC	O&G	SO ²⁻ ₄	Fe	TSS	pH
		uS/cm	mg/L	mg/L	mg/L	mg/L	-
EPL Point 16 (LDP1)	Jan	464	<5	155	0.05	10	6.8
	Feb	530	<5	210	1.21	12	6.46
	Mar	370	<5	115	1.87	12	6.9
	Apr	645	<5	252	1.97	23	6.3
	May	599	<5	210	0.05	14	7.3
	June	1226	<5	392	0.15	9	7.2
	Jul	1167	<5	427	0.11	5	6.6
	Aug	1342	<5	578	0.11	6	6.6
	Sept	1529	<5	617	0.05	10	6.6

Legend

- BOD = Biological oxygen demand
- EC = Electrical conductivity
- Fe = Iron (dissolved iron)
- N = Nitrogen
- O & G = Oil and Grease
- P = Phosphorus
- SO₂- = Sulfate₄
- TSS = Total suspended solids

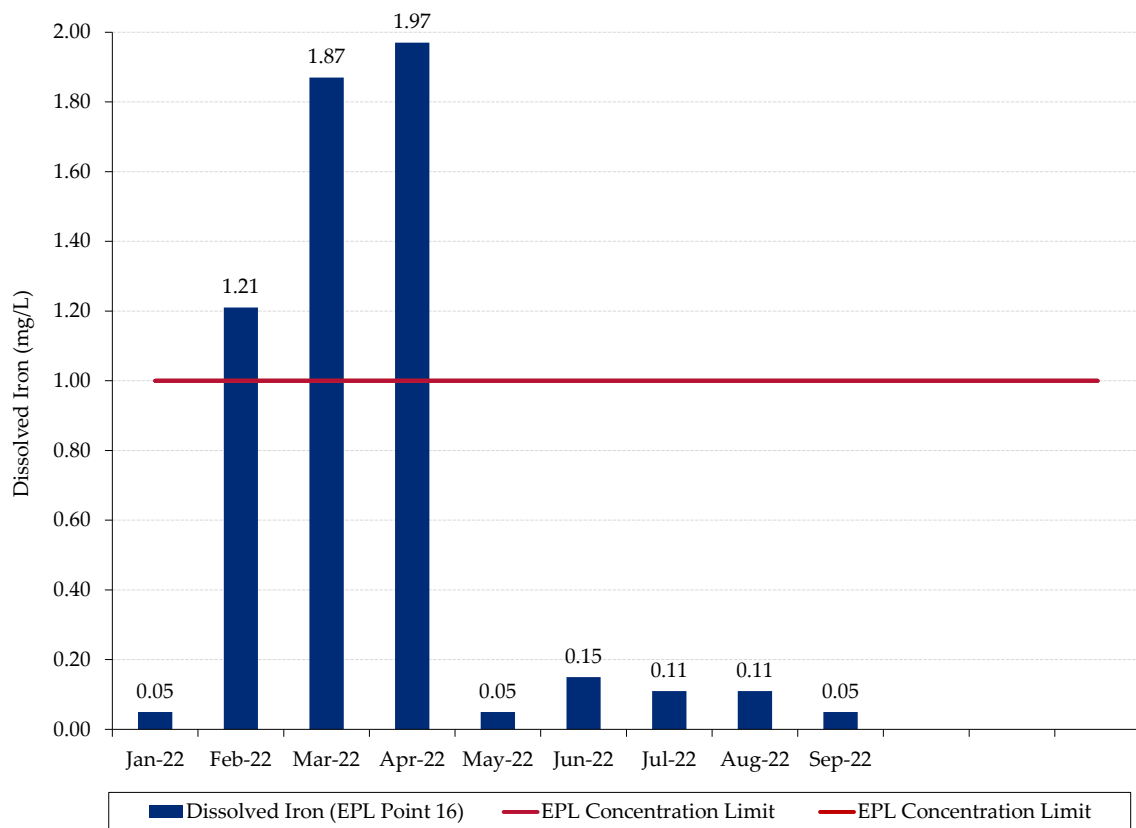


Figure 3: Monthly Dissolved Iron

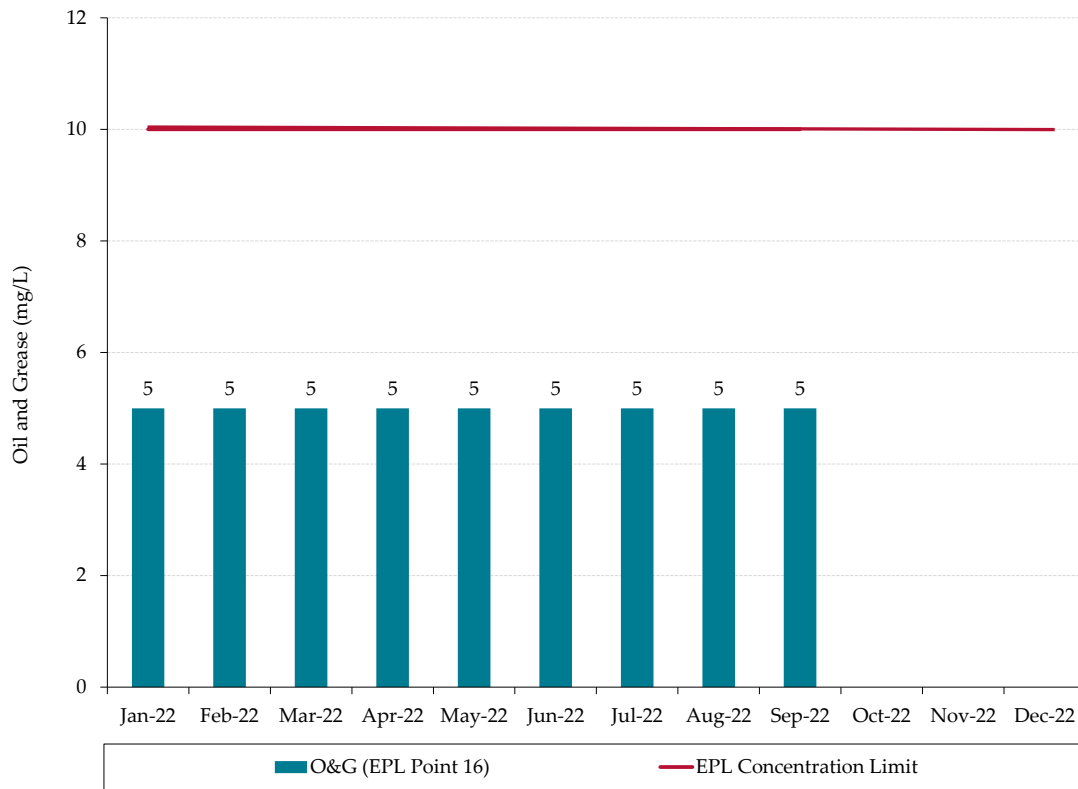


Figure 4: Monthly Oil and Grease

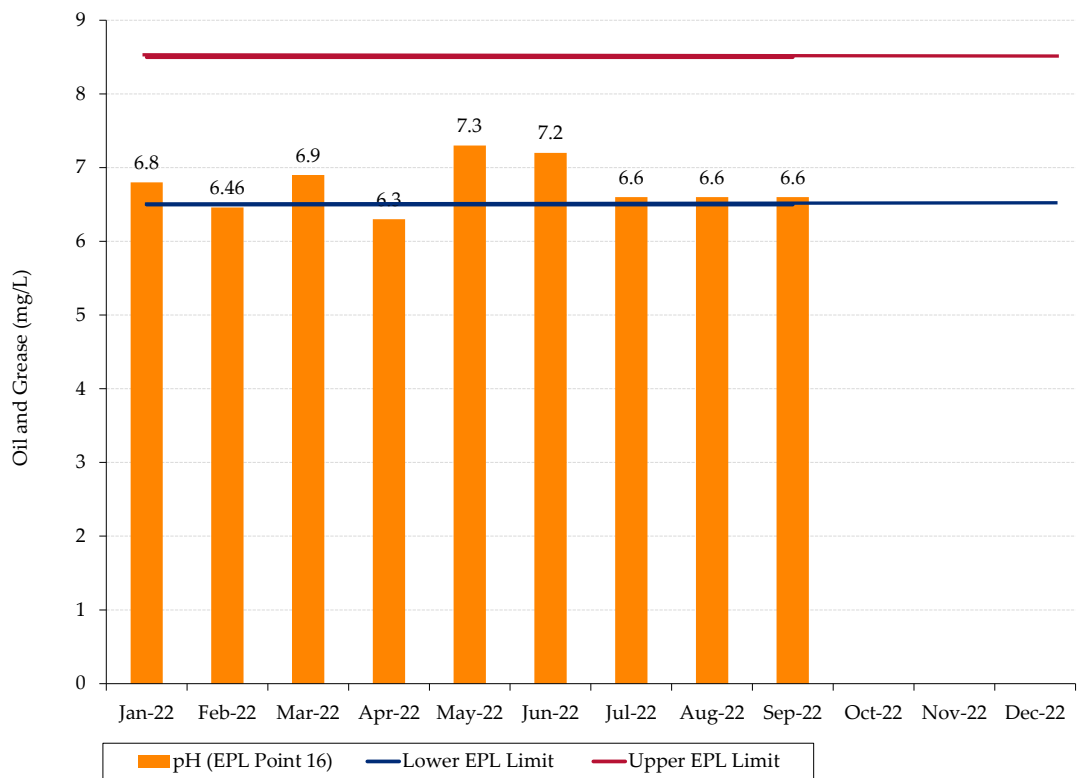


Figure 5: Monthly pH

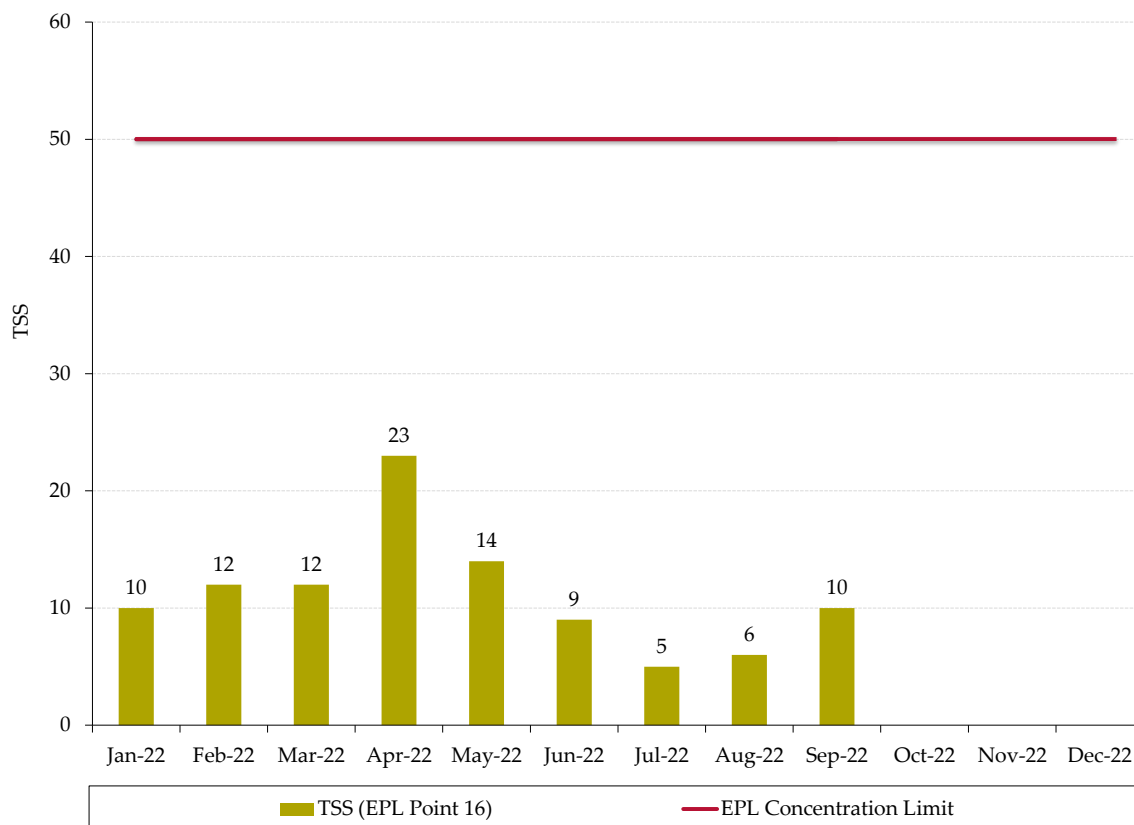


Figure 6: Monthly Total Suspended Solids

A summary of monitoring results for EPL discharge and monitoring points (those with specified concentration limits) can be found below for the 2022 reporting period to date:

- All monthly TSS results were below the EPL concentration limit of 50 mg/L; and
- All Oil and grease levels were below the EPL concentration limit of 10 mg/L.
- February, March and April 2022 results for dissolved iron exceeded the EPL limit of 1mg/L with readings of 1.21 mg/L, 1.87 mg/L and 1.97 mg/L respectively.
- February and April 2022 samples returned pH readings of 6.46 and 6.3 respectively which are outside of the pH concentration limits.

Management actions in response to pH and dissolved iron readings outside of EPL concentration limits:

- An external consultant: Gauge Scientific was commissioned in 2021 and has provided a report to Baal Bone Colliery investigating the iron exceedances, and providing monitoring and management recommendations;
- Gauge Scientific has advised that the increased iron concentrations are unlikely to have caused material harm to the environment;
- Written notifications were provided to the DPIE and EPA on 22 February 2022, 7 April 2022 and 3 May 2022.

Note: Monthly EPL reporting can be accessed at: [Reporting documents - Baal Bone Colliery \(glencore.com.au\)](https://glencore.com.au).

4. Noise

Noise Impact Assessment Criteria

Schedule 3, Condition 4 of Project Approval 09_0178 includes long term noise impact assessment criteria. **Table 5** outlines the assessment criteria.

Table 5: Long term noise impact assessment criteria

Location	All periods dB(a) $L_{Aeq}(15 \text{ min})$	Night dB(a) $L_{A1}(1 \text{ min})$
R1	46	47
R2	41	48
R3	41	48
All other privately-owned land	35	45

From 2013 onwards attended monitoring is undertaken on an annual basis at receptors R1 and R2/R3, shown in **Figure 7**.

Noise Audit Results

There have been no noise audits conducted during 2022 to date. Global Acoustics conducted the last annual environmental compliance noise audit at Baal Bone Colliery on 18 August 2021.

The August 2021 audit report and previous noise audit reports can be accessed from the Baal Bone publications web page at: [Reporting documents - Baal Bone Colliery \(glencore.com.au\)](https://www.glencore.com.au/reporting-documents-baal-bone-colliery).

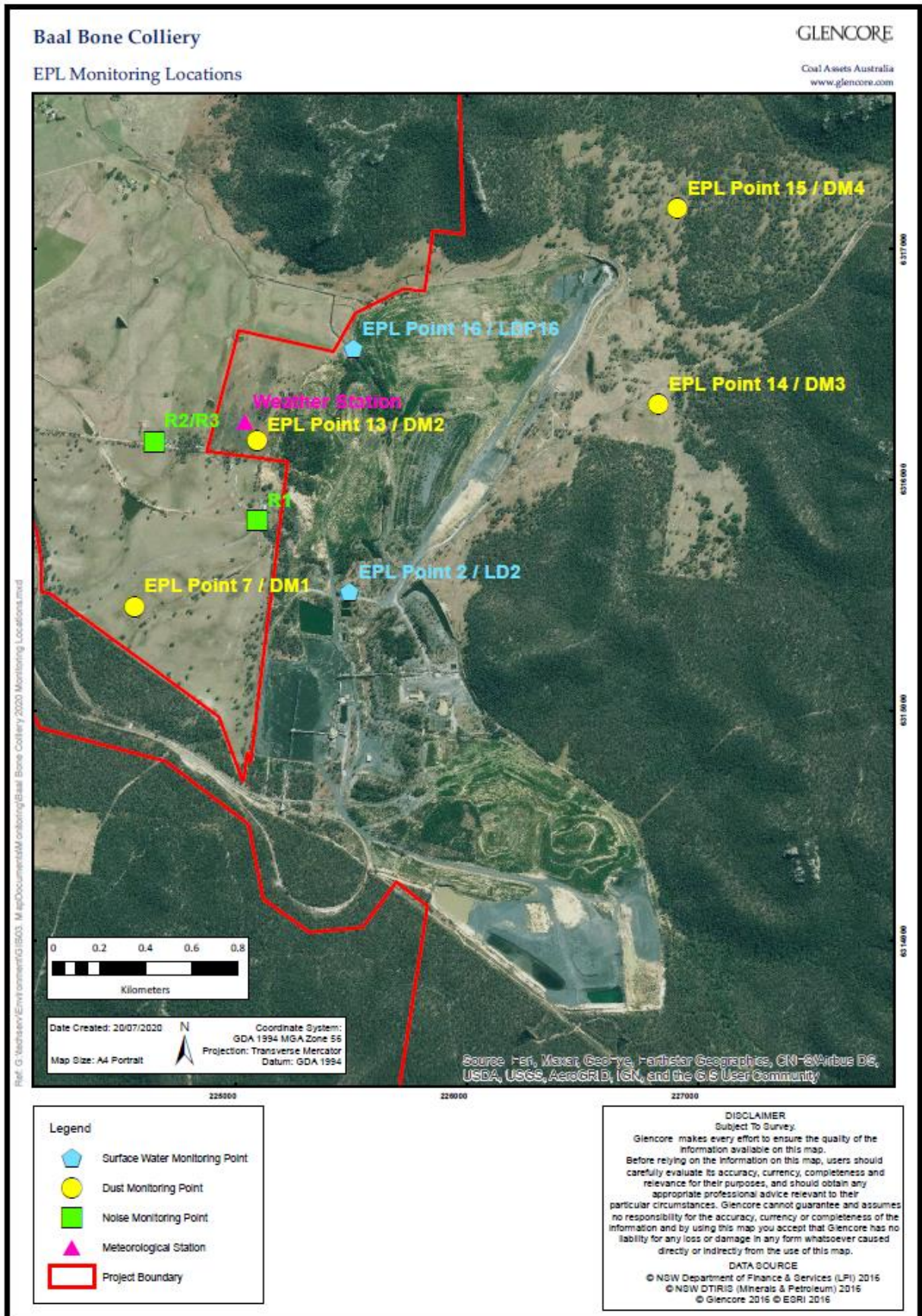


Figure 7: Baal Bone Colliery EPL Monitoring Points