Broken Hill Operations Pty Ltd **ABN 95 103 555 862**

Rasp Mine

Annual Review

REPORTING PERIOD

1 January 2023 – 31 December 2023

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Title Block

Name of Operation:	Rasp Mine
Name of Operator:	Broken Hill Operations Pty Ltd
Development consent / project approval:	PA 07_0018 (MOD1, MOD2, MOD3, MOD4, MOD5, MOD6, MOD7, MOD8, MOD9, MOD10)
Name of holder of development consent / project approval:	Broken Hill Operations Pty Ltd
Mining Titles / Leases:	Consolidated Mining Lease 7 Mining Purpose Leases 183, 184, 185, 186
Name of holder of mining lease:	Broken Hill Operations Pty Ltd
Water licence:	85WA752823
Name of holder of water licence:	Broken Hill Operations Pty Ltd
AR Commencement Date: 01/01/2023	**AR End Date:** 31/12/2023
I, Devon Roberts, certify that this report is a true and accurate record of the compliance status of the Rasp Mine for the period 1 January 2023 to 31 December 2023 (Reporting Period as per DA 07_0018 Sch4 Cond3) and that I am authorised to make this statement on behalf of Broken Hill Operations Pty Ltd.	
Name of authorised reporting officer:	Devon Roberts
Title of authorised reporting officer:	Senior Environmental Advisor
Signature of authorised reporting officer:	
Date: 31 March 2024	

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1. STATEMENT OF COMPLIANCE

Table 1-1 lists the development consent and mining leases and confirms compliance as at the end of the reporting period. **Table 1.2** lists the non-compliances with relevant approval conditions for the reporting period.

Table 1-1 Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	(Yes/No)
Project Approval 07_0018 (Consolidated MOD11)	No
Consolidated Mining Lease 7	No
Mining Purpose Lease 183	Yes
Mining Purpose Lease 184	Yes
Mining Purpose Lease 185	Yes
Mining Purpose Lease 186	Yes

Table 1-2 lists conditions that were identified as non-compliant and provides a comment outlining actions undertaken and where appropriate, addressed in this Annual Review. An Independent Environmental Audit was conducted in July 2023 and a copy of the report and Action Plan are available on the CBH Rasp Mine website. Non-compliances are reported in the Annual Review for the period 1 January 2023 to 31 December 2023.

Table 1-2 Non-Compliances

Relevant Approval	Relevant Condition	Condition description (summary)	Compliance Status	Comment	Annual Review Section
PA07_0018	Schedule 3 Condition 3	The Proponent shall ensure that all reasonable mitigation measures are employed so that particulate matter emissions generated by the project do not cause an exceedance of the criteria listed in Tables 1, 2 or 4 at any residence on privately-owned land.	Non-compliant	Power to the TEOM2 PM_{10} monitor was lost at 8pm on 14 March 2023 and not restored until 8am the following morning. Because of this the minimum data collection for the 24-hour period was no achieved and BHOP was non-compliant with Schedule 3 Condition 3 Table 2 of PA07_0018.	10
PA07_0018	Schedule 3 Condition 3	The Proponent shall ensure that all reasonable mitigation measures are employed so that particulate matter emissions generated by the project do not cause an exceedance of the criteria listed in Tables 1, 2 or 4 at any residence on privately-owned land.	Non-compliant	The 24-hour average of PM_{10} data for TEOM2 on 12 October 2023 was 136.6 ug/m^3 (data validated by Acoem ERS) exceeding the allowable level of 50 ug/m^3 PM10 dust averaged over a 24-hour period as specified by PA07_0018 Schedule 3 Condition 3.	10
PA07_0018	Schedule 3 Condition 3	The Proponent shall ensure that all reasonable mitigation measures are employed so that particulate matter emissions generated by the project do not cause an exceedance of the criteria listed in Tables 1, 2 or 4 at	Non-compliant	The 24-hour average of PM_{10} data for TEOM2 on 26 October 2023 was 96.3 ug/m^3 (data validated by Acoem ERS) exceeding the allowable level of 50 ug/m^3 PM10 dust averaged over a 24-hour period as specified by PA07_0018	10

		any residence on privately-owned land.		Schedule 3 Condition 3.	
PA07_0018	Schedule 3 Condition 3	The Proponent shall ensure that all reasonable mitigation measures are employed so that particulate matter emissions generated by the project do not cause an exceedance of the criteria listed in Tables 1, 2 or 4 at any residence on privately-owned land.	Non-compliant	On 6 November 2023, High Volume Air Samplers HVAS and HVAS1 did not run for a complete 24-hour period as required by AS/NZS 3580.9.3:2015 for a valid sample to be collected, and as a consequence were non-compliant with PA07_0018 (Schedule 3 Condition 3) and BHO-PLN-ENV-001 Air Quality Management Plan.	10
PA07_0018	Schedule 3 Condition 3	The Proponent shall ensure that all reasonable mitigation measures are employed so that particulate matter emissions generated by the project do not cause an exceedance of the criteria listed in Tables 1, 2 or 4 at any residence on privately-owned land.	Non-compliant	The 24-hour average of PM_{10} data for TEOM2 on 19 November 2023 was 76.7ug/m^3 (validated by Acoem ERS) exceeding the allowable level of 50ug/m^3 PM10 dust averaged over a 24-hour period as specified by PA07_0018 Schedule 3 Condition 3.	10
PA07_0018	Schedule 3 Condition 5	The Proponent shall regularly assess real-time air quality monitoring and meteorological forecasting data and relocate, modify and/ or suspend operations to ensure compliance with the relevant conditions of this approval.	Non-compliant	On 7 December 2023, TEOM2 was damaged in a severe wind event and was not able to continuously monitor air quality as per PA07_0018 Schedule 3 Condition 5.	10
PA07_0018	Schedule 3 Condition 3	The Proponent shall ensure that all reasonable mitigation measures are employed so that particulate matter emissions generated by the project do not cause an exceedance of the criteria listed in Tables 1, 2 or 4 at any residence on privately-owned land.	Non-compliant	The 24-hour average of PM_{10} data for TEOM2 on 30 December was 52.0ug/m^3 (validated by Acoem ERS) exceeding the allowable level of 50ug/m^3 PM10 dust averaged over a 24-hour period as specified by PA07_0018 Schedule 3 Condition 3.	10

1.1 Actions required from previous Annual Review

Item	Action	Status
1	Include data and information since last Annual Review which was until 30 April 2021.	Complete – Annual Review reissued.
2	Check details throughout the Annual Report regarding dates and figures (i.e.: signature block refers to last Annual Review period, section 2.1 refers to December 2023, complaint and non-compliances figures in section 8 and 10).	Complete – Annual Review reissued.
3	Include details regarding the departments Official Caution issued on 22 December 2022 regarding failure to obtain a construction certificate.	Complete – Annual Review reissued.
4	Include an update on the current outstanding actions from the 2022 Independent Environmental Audit.	Complete – Annual Review reissued.

2. INTRODUCTION

2.1 Purpose

The Annual Review (AR) documents the environmental performance of the Rasp Mine for the reporting period 1 January 2023 to 31 December 2023. It has been prepared in accordance with the NSW Government *Post-approval requirements for State significant mining developments - Annual Review Guideline*, October 2015 to meet the requirements of the relevant mining leases, Project Approval 07_0018, and EPL 12559.

2.2 Location

The Rasp Mine is owned and operated by Broken Hill Operations Pty Ltd (BHO), a wholly owned subsidiary of CBH Resources Ltd (CBH). The Mine is located on Consolidated Mine Lease 7 (CML7) within the City of Broken Hill and includes several Mining Purposes Leases (183,184,185 and 186) with the entire Project extending over Western Land Leases and freehold properties.

The Rasp Mine consists of underground mining operations, a processing plant producing zinc and lead concentrates, a rail siding for concentrate dispatch to shipping facilities within Australia as well as other mining ancillary facilities. In the reporting period all concentrate product was placed in sealed containers and transported by rail either to port in South Australia or smelter operations in Port Pirie SA. Rasp Mine is approved to produce 500,000 tpa of ore and 8,450,000 tonnes of ore over the life of the Project to December 2026.

The Mine is located centrally within the City of Broken Hill (Figure 2-1) and is surrounded by transport infrastructure, areas of commercial and industrial development and some residential housing. The Mine is bounded by Eyre Street to the south east, Perilya Broken Hill Operations Pty Ltd (Perilya) North Mine to the east and Perilya's South Mine to the west, and the commercial centre of Broken Hill to the north. Two major State roads dissect CML7 - South Road (Silver City Highway SH22) to the southwest and Menindee Road (MR66) to the northeast. These roads form part of the existing road train and B-double routes through Broken Hill. Mawson's Quarry lies to the east of the existing processing plant. The Broken Hill railway station is located within CML7 on a surface exclusion with the main Sydney – Perth railway line also located within the Lease on various surface exclusions. Residential and commercial areas surround the mine with pastureland to the southeast. An aerial view of CML7 is provided in **Plan 1, Figure 2-1**.

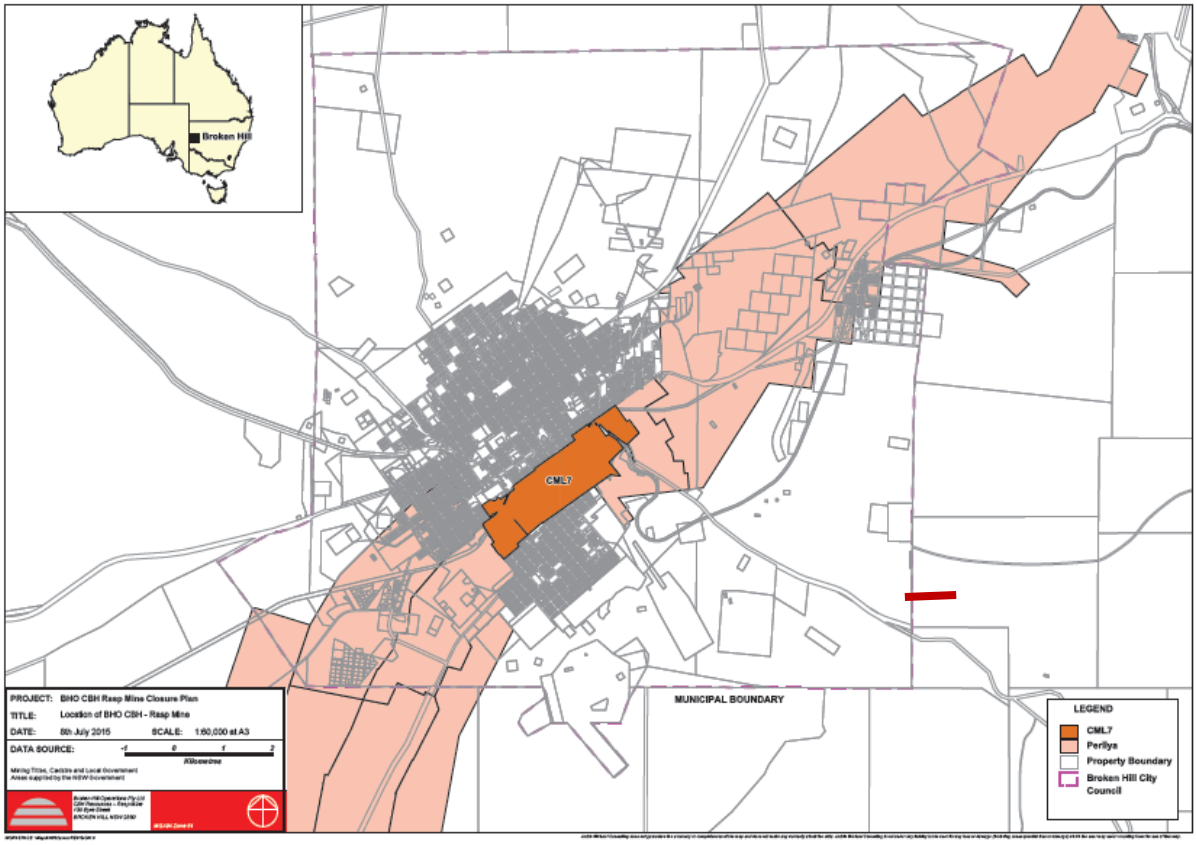
The mining leases occupy a central region of the historic Broken Hill Line of Lode ore body incorporating the original mine areas that commenced operations in the 1880s including a substantial amount of mining infrastructure from various mining phases. The Mine was the birthplace of Broken Hill Pty Ltd (BHP) in 1885. Subsequently several mining companies, including Broken Hill South and Minerals Mining and Metallurgy Ltd (MMM), have operated the mine. This past mining has left the mining lease highly modified and disturbed. The original landform has been significantly altered, the majority of native vegetation removed and soils have been degraded and covered with waste rock.

There are a number of heritage items on the site relating to historic mining activities and the site is recorded on the Register of National Estate for its heritage values. The people of Broken Hill consider the mine as an important historic site for its role in Broken Hill's history. The Broken Hill Miners Memorial and Broken Earth Café are located centrally within CML7.

The Project Area includes additional areas to the south-east located on Western Land leases or freehold properties owned or leased by BHO (highlighted in orange). Located in this area are the current Rasp Mine administration offices and stores.

The AR is distributed to a range of stakeholders that include government authorities and is available on the CBH website at: www.cbhresources.com.au.

Figure 2-1 Location Map – Plan 1



2.2 Mine Level

The Rasp Mine is classified as a Level 1 Mine and in 2018 it was transitioned to a State Significant Development under the *EP&A Act* with development consent determined and authorised by the Minister for the Department of Planning and Environment.

2.3 Mine Contacts

Table 2-1 outlines the contacts for the Rasp Mine.

Table 2-1 Mine Contacts

Name	Title	Contact Details
Giorgio Dall'Armi	BHO General Manager Rasp Mine, Exploration and Strategy	08 8088 9101
Carlos Vanegas	BHO Operations Manager	08 8088 9102
Joel Sulicich	BHO HSET Manager	08 8088 9125
Devon Roberts	BHO Senior Environmental Advisor	08 8088 9126
Complaints Line	Health, Safety and Environment Office	08 8088 9211

3. APPROVALS, LICENCES AND PERMITS

3.1 Approvals

Table 3-1 provides a list of all current development consents, mining leases and licences held by the Rasp Mine.

Table 3-1 Rasp Mine - Current Approvals

Approval Number	Date Issued	Expiry	Purpose
Project Approval 07_0018 (Part 3A)	31 Jan 2011	31 Dec 2026	Mining production of 750,000 tpa from Western Mineralisation, Centenary Mineralisation and Main Lode Pillars. Construction and operation of minerals processing plant and rail load out facility. Supported by an EAR and PPR. MOD1 – relocation of primary ventilation shaft (March 2012) MOD2 – 24 hour operation of crusher (August 2014) MOD3 – Mining of Block 14 (Zinc & Main Lodes) (March 2015) MOD4 – Installation of Concrete Batching Plant and Extension to TSF2 (September 2017) MOD5 – Warehouse Extension, Cement Silo and adjustment of air quality monitoring (October 2018) MOD6 – New Tailing Storage Facility and Mine Portal (March 2022) MOD7 – Utilise, crush and screen waste rock in BHP Pit for Embankments construction (July 2019) MOD8 – Mining under a Perilya Sublease (April 2021) MOD9 – Extension of Underground Exploration (December 2021) MOD10 – Temporary tailings placement in TSF2 (December 2022)
CML7	17 Jan 2007	31 Dec 2026	Granted 8 Oct 1987. As per Schedule 2 of the Lease - Open cutting, shaft sinking, stoping, tunnelling, building of dams, extraction and obtaining minerals, generation of electricity, erecting dwellings, storage of fuels, dumping of ore, treatment and dumping of tailing, development of roads
MPL 183	24 Apr 2007	31 Dec 2026	Granted 4 Feb 1981. Dumping of ore and mine residues, treatment of tailing
MPL 184	24 Apr 2007	31 Dec 2026	Granted 4 Feb 1981. Dumping of ore and mine residues, treatment of tailing
MPL 185	24 Apr 2007	31 Dec 2026	Granted 4 Feb 1981. Dumping of ore and mine residues, treatment of tailing
MPL 186	24 Apr 2007	31 Dec 2026	Granted 4 Feb 1981. Dumping of ore and mine residues, treatment of tailing
EPL 12559	EPA	Upon surrender, suspension or revocation.	Authorises the carrying out of scheduled activities: Crushing , grinding or separating >500,000 – 2,000,000T processed. Mining for minerals >500,000 – 2,000,000T produced.
Dangerous Goods Explosives	Work Cover	24 Oct 2027	Store Manufacture
Refrigerant	Refrigerant Trading Council	27 Mar 2025	Use of refrigerant
Water extraction	NOW	29 Mar 2027	To extract 370 ML for use on site or to send to

Approval Number	Date Issued	Expiry	Purpose
85WA752823			Perilya Broken Hill Operations Pty Ltd.
Radiation #5063802	EPA	26 July 2025	Sell and/or possess radiation apparatus. Sell and/or possess radioactive or items containing radioactive substances.

3.2 Rehabilitation Management Plan and Strategy

The Rasp Mine Rehabilitation Management Plan and Rehabilitation Strategy are available on the company website.

3.3 Management Plans

The Rasp Mine has developed a number of environmental management plans as required by PA07_0018. **Table 3-2** provides a list of these Plans together with the date last updated.

Table 3-2 Status of Environmental Management Plans

Environmental Management Plan	Condition	Approved
Environment Management Strategy	Sched 4 Cond 1	01-Jul-23
Air Quality Management Plan	Sched 3 Cond 11	10-Aug-22 (awaiting approval for 2023 update)
Community Lead Management Plan	Sched 3 Cond 13	24-Nov-23
Noise and Blast Management Plan	Sched 3 Cond 20	26-July-23
Site Water Management Plan	Sched 3 Cond 23	04-Mar-22 (Awaiting approval for 2023 update)
Waste Management Plan	Sched 3 Cond 33	09-Feb-24
Rehabilitation Strategy	Sched 3 Cond 34A	21-Nov-23

4. OPERATIONS SUMMARY

During the reporting period, an application to modify the Project Approval (MOD11) for a Ventilation Intake and Underground Exploration was submitted.

Construction of the boxcut (commencing August 2022) under MOD6 was completed in 2023 and preparation of the Kintore Pit TSF3 began for an anticipated completion date of February 2024.

Commencement of the TSF2 tailings stockpile (approved under MOD10) began in April 2023 with an anticipated completion date of February 2024, coinciding with the Kintore Pit TSF3 becoming available for tailings disposal.

On 10 November 2023, Toho Zinc (parent company of CBH Resources) announced to the market that it was unable to continue investing in further development required to sustain the operation of the Rasp Mine, Broken Hill Operations would progress to a staged closure in 2023, and rehabilitation obligations would be fulfilled after this period. There was a reduction in workforce numbers, including contractors, in November 2023. CBH is actively seeking a new owner for the Rasp Mine.

Table 4-1 outlines the production summary for the reporting period.

Table 4-1 Production Summary – Cumulative

Material	Approved Limit	At end of 2022 (end previous reporting period)	End of reporting period
Waste rock	NA	3,417,305	3,462,614
Ore	500,000	6,432,905	6,814,479
Processing waste (Tailings)	NA	5,600,206	5,942,824
Product (Concentrates)	NA	774,304	813,260

4.1 Exploration

4.1.1 Surface exploration

The primary exploration focus remained on underground diamond drill testing for continuations/extensions of both the Western Mineralisation and the Main Lode remnant zones. Surface exploration programs targeting the Centenary, Blackwoods and Thompson areas were conducted in the period.

The program was located on land already disturbed by historic mining and no vegetation was removed. Top soils had already been removed from the area by historic mining activities. The drill pads were installed off existing tracks with minimal earthworks required.

No surface rehabilitation activities were undertaken on CML7 during the reporting period as the drill pads were still operational, although drill holes have been capped.

In the next reporting period, surface exploration will target the Western Mineralisation, Browne' Shaft and Thompsons Mineralisation in the northwest portion of CML7.

4.1.2 Underground exploration

During the reporting period, 23,114.2 m of underground diamond drilling was completed.

Diamond drilling was suspended after 13 November following the announcement that Rasp Mine would undergo staged closure late in 2024.

Should it restart, underground exploration conducted in 2024 will continue to focus on the Western Mineralisation including Siberia and Blackwoods North.

4.2 Construction

4.2.1 New buildings / structures

No new buildings were constructed in 2023.

Construction of the boxcut (commencing August 2022) under MOD6 was completed in 2023 and preparation of the Kintore Pit TSF3 began for an anticipated completion date of February 2024.

Commencement of the TSF2 tailings stockpile (approved under MOD10) began in April 2023 with an anticipated completion date of February 2024, coinciding with the Kintore Pit TSF3 becoming available for tailings disposal.

4.2.2 Roads and fencing

A tailings haul road from the western end of TSF2 to the site haul road adjacent to the boxcut access was installed in 2023. The road surface is sealed with road base material.

Routine maintenance of roads was undertaken as required which includes the application of dust suppressant to infrequently used roads.

Boundary fencing was also inspected and repaired.

4.3 Mining

4.3.1 Mine access

All mining is conducted underground and the mine is accessed via the box cut and new underground portal entrance completed in 2023.

Mining activities included mining of the Western Mineralisation and Main Lode Pillars.

Mining activities were undertaken as follows and met the requirements of the Project Approval:

- Underground operations, 24 hours per day, 7 days per week;
- Truck haulage of ore from underground to ROM Pad 24 hours per day, 7 days per week;
- Production rock blasting between 6.45 am to 7.15 pm, 7 days per week;
- Development blasting concurrently with production blasting where practicable;
- Ventilation fans, 24 hours per day, 7 days per week;

4.3.2 Mining method and sequence

A variety of production methods are utilised, including open stoping (OS), uphole benching, room and pillar and uphole pillar retreat mining. OS is the most prevalent method used in the Western Mineralisation, uphole stoping (with room and pillar) and uphole pillar retreat in the Main Lode Pillars.

The ore was blasted using a bulk emulsion explosive and extracted using load haul dump vehicles (LHD's) either conventionally or under remote control and transported to loading points where mine trucks transported ore to the ROM pad.

A total 381,574t of ore was mined during the reporting period. This resulted in approximately 9,540 truck movements to the ROM pad. **Figure 4-2** provides a long section indicating location of the stopes mined. A vertical distance of 64 m was maintained (in the Zinc Lodes) from South Rd/Bonanza Street.

4.3.3 Void backfilling

Waste rock was used to backfill mined out stopes with a total of 181,537 t placed during the reporting period. This includes Cemented Rock Fill where conditions and requirements dictate its use.

4.3.4 Waste rock and void backfilling

Waste rock is generated from underground mining operations and is predominantly used underground for backfilling stopes and maintenance of underground roads. During the reporting period 226,846 t was extracted as waste, 181,537 t of waste rock was returned underground as void fill, and 45,309 t to surface pits. At the end of the reporting period, the waste stockpile in Kintore Pit held approximately 1,200,000t and BHP Pit held approximately 693,338t.

Waste rock is used for road making and repairs underground.

Block modelling is used to identify underground waste material sources. Underground diamond drilling results and assays assist the geological technicians to identify waste materials earmarked for surface.

4.3.5 Ore and waste stockpiles

Ore mined in the reporting period (381,574 t) was transported by truck and stored on the ROM Pad before being processed. The ROM Pad is 32m by 80m and is surrounded by 5 m windbreaks. Water application was used to control dust. No more than a week's processing was stored on the ROM

stockpile at any one time. Mined ore in the period was below the approved maximum rate of 500,000 tpa.

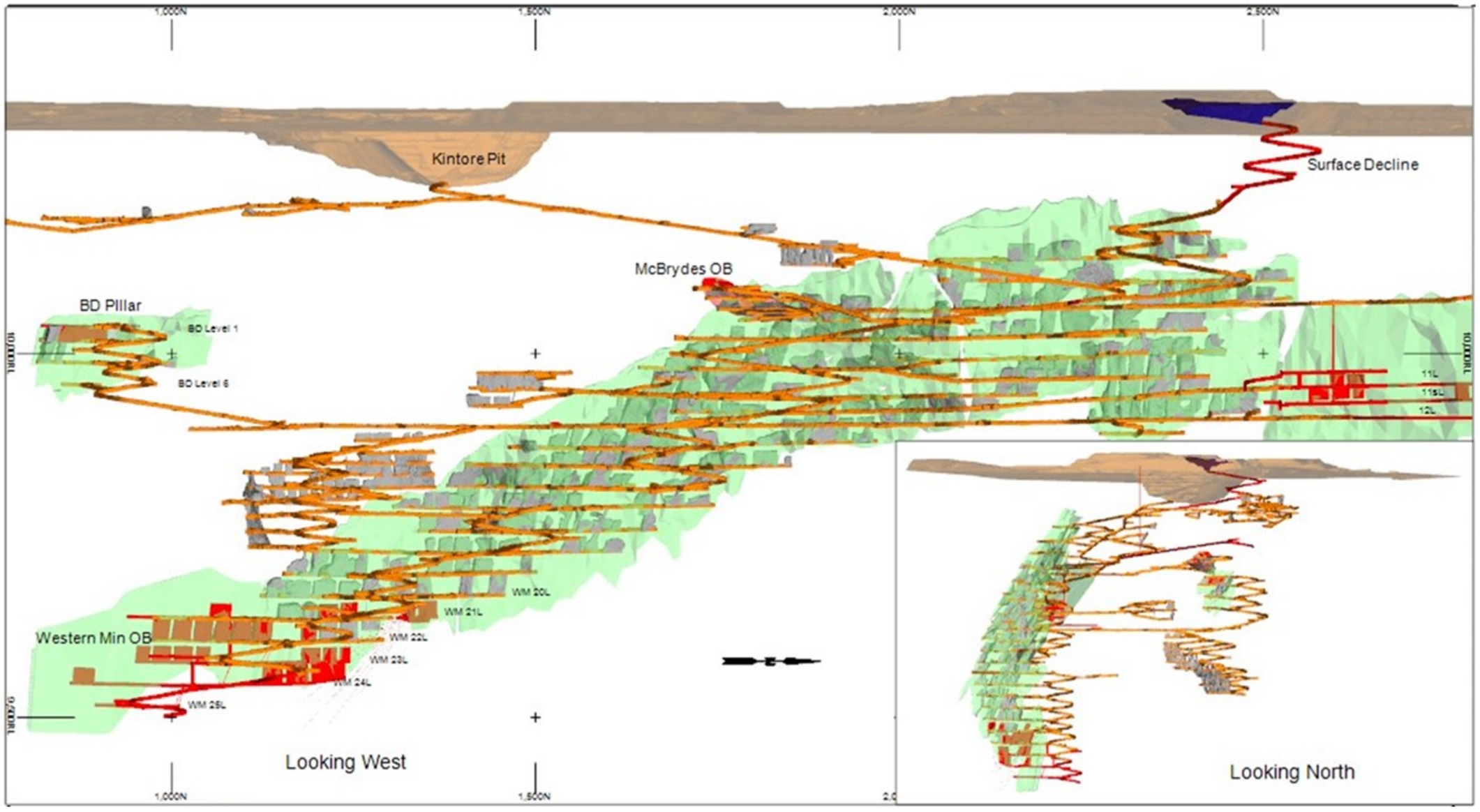
A total of 45,309 t of waste rock was deposited at the surface during the reporting period and stored in Surface Pits totalling approximately 1,400,000t stored.

Ore and waste production for the reporting period is summarised in **Table 4-2**.

Table 4-2 Ore and Waste Summary for the Reporting Period

Item	Total Production Tonnes
Topsoil Stripped	N/A
Topsoil Spread	N/A
Ore Tonnes Mined: Dry Tonnes	381,574
Waste Backfill (UG voids): Tonnes	181,537
Waste Trucked to Pits	45,309

Figure 4-1 Plan 3 Mining Activities in the Reporting Period



4.4 Mineral Processing

4.4.1 Processing methods and rates

All mined ore is processed on site in the processing plant. This consists of a single stage crushing circuit with a two stage Semi-Autogenous Grind (SAG) – Ball milling circuit capable of processing ore at the required rate and to the required grind size. Material then passes through differential flotation, which incorporates conventional roughing, scavenging and multi-stage cleaning and includes concentrate regrind, to separate lead and zinc concentrates. Concentrates are dewatered using thickeners and pressure filtration. The filtered concentrates are conveyed directly into containers and sealed. The concentrate is stored in these sealed containers in readiness for loading onto rail wagons for transport to Port Adelaide and Nyrstar Pty Ltd smelter at Port Pirie, SA.

Reagents used in the process included pulp pH modifier, flotation frothers, collectors, activators and depressants, used in various combinations in the lead and zinc flotation circuits. Flocculants are used in concentrate and tailing dewatering.

With MOD6 approval, the capacity of TSF2 is extended by employing tailings harvesting with deposit to Kintore Pit TSF3. MOD10 has approved dry stacking of tailings in the western end of TSF2 until TSF3 preparations for accepting tailings is completed.

A summary of mineral processing production rates for the reporting period is presented in **Table 4-3.**

Table 4-3 Mineral Processing Summary for the Reporting Period

Activity	Total in reporting period (t)
Milled	381,574
Lead concentrate	11,887
Zinc concentrate	27,069
Tailings deposited	342,618
Tailings Storage Facility (TSF2) storage capacity as at end of period	To Dec 2026 as per PA with storage and harvesting operations

4.4.2 Mill operating hours

The processing plant operates 24 hours per day in accordance with the Project Approval. Schedule 3 Condition 16 places a restriction on milling activities - (b) *shunting of concentrate wagons shall only occur between 7:00am and 6:00pm on any day*. No shunting of concentrate wagons occurs during the loading or unloading of concentrate containers. Concentrate trains are moved into and out of the loading area by Pacific National operators as one unit and no reordering of wagons occurs. Pacific National conducts this activity twice per week taking 10 to 15 minutes, following inspection of the connection and state of the wagons. Once loaded, the train departs in the same direction as arrival. During the reporting period there were no community complaints related to this activity.

In July 2020 due to operational changes the Mill began operating on an 8 day on/6 day off campaign.

4.4.3 Mineral waste - tailings

All tailings generated from the processing plant are deposited into Blackwood Pit (TSF2). Tailings from the flotation process are pumped to and deposited in one of two cells in TSF2 via a duty/standby configuration of centrifugal pumps. Particle solids settle out of the slurry stream along the length of each TSF2 cell in a north-easterly direction. Any excess water is pumped back into the process water tank via a mobile diesel water pump.

During the reporting period, 342,618t of tailings were pumped to TSF2, on average the tailings contained zinc (0.74%), lead (0.37%), copper (0.02%), Ag (8g/t), and Fe (2.97%).

In the initial Project Approval, BHO underestimated the amount of mine development that was required to access the Main Lode and Western Mineralisation ore bodies. The need to undertake more underground mining development than anticipated has reduced the capacity of underground voids to accept both waste rock and tailings material from the Backfill Plant. In the original EA, it was predicted that approximately 250,000 t of waste rock would be produced each year for a production rate of 750,000 t of ore. BHO has chosen to place the additional waste rock underground to fill voids and stopes, as it is more economical to dispose waste rock underground if possible rather than transporting waste to the surface. Hence, there is no void space underground for the backfill of tailings.

BHO also opted to only deposit tailings in TSF2 as this facility had greater capacity and was economically more viable. In 2024, BHO will deposit tailings in TSF3 Kintore Pit.

Table 4-4 shows past and proposed tailings deposition and waste rock production rates.

Table 4-4 Summary of Proposed (EA) and Actual Placement of Waste Rock and Tailings

Period	EA Tailings in Underground back fill per year (t)	EA Tailings deposited in TSF1 (t)	EA Tailings deposited in TSF2 (t)	EA Waste Rock U/G (t)	Actual[1]/ Predicted[2] Tailings in TSF2 (t)	Actual waste rock placed underground (t)	Actual waste rock stored Kintore Pit (t)	Actual Total waste rock (t)
2012	97,969	273,281	0	250,000	322,111[1]	47,527	150,000[3]	197,527
2013	195,938	195,138	0	250,000	574,833[1]	230,607	150,000[3]	380,607
2014	195,938	195,138	0	250,000	486,749[1]	223,473	163,304	386,777
2015	216,563	216,563	0	250,000	499,598[1]	223,611	228,942	452,553
2016[1]	247,500	88,281	159,219	250,000	555,837[1]	265,369	96,888	362,257
2017[1]	292,475	0	278,438	250,000	622,161[1]	215,897	76,578	292,475
2018[1]	309,375	0	309,375	250,000	644,828[1]	332,702	121,864	444,566
2019[1]	309,375	0	309,375	250,000	578,472[1]	357,792[2]	134,706[1]	492,792[1]
April 2021[1]	309,375	0	309,375	250,000	469,049[1]	318,816	-	338,220
April 2022	309,375	0	309,375	250,000	392,600	197,140	83,923	281,063
May – Dec 2022	206,250	0	206,250	250,000	369,413	114,571	148,072	262,643
2023	309,375	0	309,375	250,000	342,618	181,537	45,309	226,846
TOTALS	**2,985,471**	**968,401**	**2,190,782**	**3,000,000**	**5,858,269**	**2,709,042**	**4,099,592**	**4,118,326**

Note[1]: Actual tailings deposited.
Note[2]: Predicted.
Note[3]: Estimated from visual inspection at the time.

4.5 Mining Fleet

Table 4-5 lists the mining fleet as at the end of the reporting period.

Table 4-5 Mining Fleet

Vehicle Category	Number	Vehicle Category	Number
Jumbo drill	2	Grader	1
Production Drill	1	Excavator	1
Haul Truck Underground	3	Service Vehicle	1
Haul Truck Surface	4	Wheel Loader	2
Explosive Charger	2	Prime Mover	2
Forklift IT	10	Light Vehicle	40

4.6 Next Reporting Period

4.6.1 Construction

The next reporting period will see storage of tailings in TSF3 as approved in MOD6 and use of the boxcut for mine access as approved under MOD6.

4.6.1.1 MOD4 TSF2 water spray system

The water spray system that was designed and approved as part of MOD4 has been partially installed at the end of the previous reporting period. It is expected that the system will installed and operational in 2024. The spray system has been redesigned to complement the MOD6 TSF2 harvesting and will also incorporate the MOD10 tailings storage arrangement.

4.6.1.2 MOD 10

Development consent (PA07_0018) MOD 10 was granted in December 2022. This development allows BHO to dry stack tailings in the western end of TSF2 (began April 2023) while TSF3 Kintore Pit is being prepared to receive tailings and waste rock.

4.6.1.3 MOD 6

Development consent (PA07_0018) MOD6 was granted on 16 March 2022. This allowed for the development of Kintore Pit as a new Tailings Storage Facility (TSF3). In order for this to occur, a new mine portal and access decline (boxcut) was developed and TSF2 was redeveloped to allow tailings drying and harvesting for final deposition in Kintore Pit.

Golder Associates (Tailing Storage Facility Options Assessment, September 2017) were engaged to investigate potential sites in and around Rasp Mine for establishment of a new tailing storage facility, concluding that Kintore Pit is the most suitable site. It was established that in order to reduce the risk of inrush to the underground workings, tailings would need to be dewatered further than 35% as is output by milling processes, leading to the decision to dry (naturally) and harvest tailings.

As part of MOD6 approval BHOP began monitoring for $PM_{2.5}$ as well as continuing to monitor PM_{10} and TSP. Noise monitors were installed on TSF1 to provide real-time monitoring of noise from the excavation and construction of the boxcut.

4.6.1.4 MOD 11

BHO has made a modification request (07_0018 MOD 11) to the Minister for Planning and Public Spaces for approval under Section 4.55(1A) of the EP&A Act for a ventilation intake and an extension of development workings in Main Lode Blocks 13, 14 and 15. These activities are required to allow

the continued access to future ore reserves and to augment the safety systems at the mine in accordance with relevant safety legislation and guidelines.

4.6.2 Exploration

During 2024, Surface exploration drilling will target the Western Mineralisation, Browne' Shaft and Thompsons Mineralisation in the northwest portion of CML7. The areas in which the drill pads will be established are highly disturbed and clearance of vegetation is unlikely.

4.6.3 Operations

Table 4-6 outlines the planned production rates for 2024**. Figure 4-2** shows the mining areas and stopes. Planned mine production is estimated at 305,343t, tailings deposition is estimated at 267,890t. Estimates are based on a planned cessation of works in September 2024.

Table 4-6 Summary of Planned Production for next reporting period

Activity	Next reporting period (t)
Ore Mined	305,343
Waste Backfill (UG Rock Places)	149,445
Waste Trucked to Surface	0
Milled	305,343
Lead concentrate	10,111
Zinc concentrate	27,342
Tailings deposited	267,890
TSF2 storage capacity as at end of period	0.1 years
TSF3 storage capacity as at end of period	13 years

4.6.4 Water structures - maintenance

Surveying of the water storage structures were conducted in 2022.

Inspections of storages for sediment build-up were conducted in 2018 and sediment removal was conducted in sediment pond 17A and Horwood's Dam in 2019. The material recovered from Horwoods Pond was disposed of in the north-eastern end of TSF2 in 2020.

With the construction of Kintore Pit TSF3 an new repository for potentially contaminated sediment will become available.

Electric pumps were installed at the S14, S17, and Mill Events water storage ponds to enable 24-hour transfer of water to Horwoods and S22 storage ponds.

An electrical supply and a high-capacity automatic pump was installed in the Ryan St Dam in 2023 to enable the rapid transfer of water to the S1A pond on South Road.

A seepage interception trench was constructed outside the S14 pond after a seepage event in April 2022.

4.6.5 Modification applications

In 2023, BHO applied for modification (MOD11) of the project to the installation of a new ventilation raise to provide adequate ventilation to northern areas of the mine and conduct further underground development of northern areas of the mine.

Figure 4-2 Plan 3 - Long Section Planned Stopes for the Next Reporting Period

5. ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

5.1 Meteorological

Figure 5-5-1 and **Table** 5-1 provide summary weather data from the site weather station.

Temperatures and rainfall in the reporting period remained consistent with the BoM's long-term averages, with rainfall of 96.4mm for the period lower than the BoM's long-term annual average of 246mm. There were 52 rain days for the period. Winds were predominantly from the south with high winds experienced in the summer months.

Figure 5-5-1 Weather Data for the Reporting Period

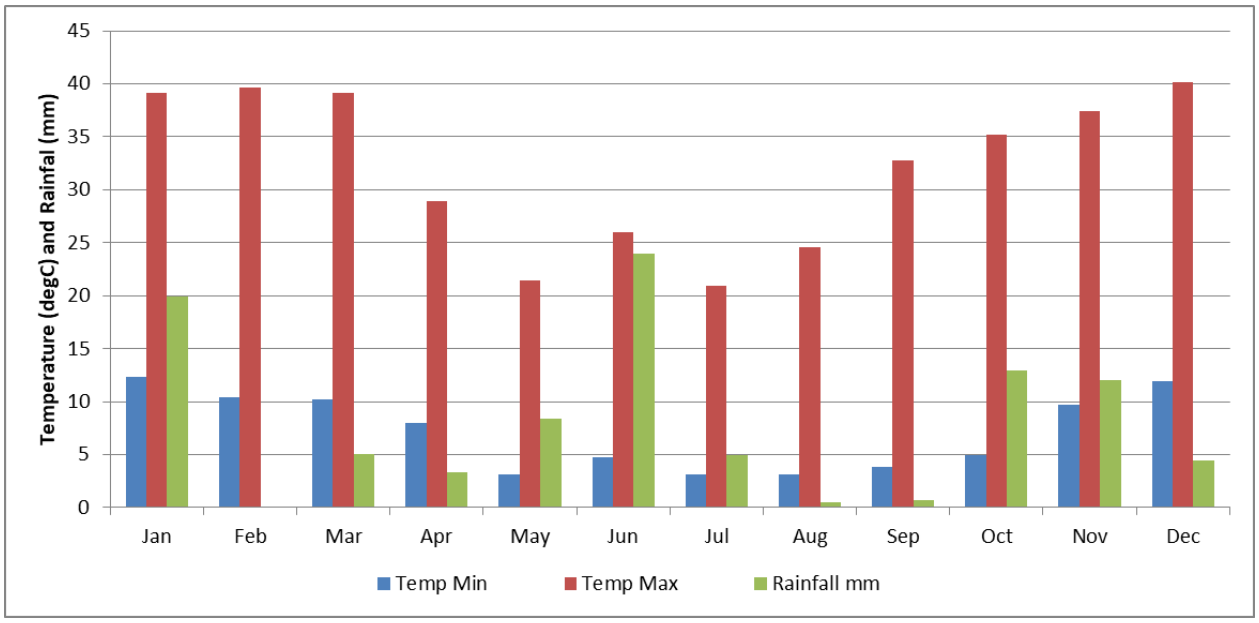


Table 5-1 Summary of Wind and Rain Days in Reporting Period

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Predominant Wind Direction	S	S	S	S	SSW	NW	NW	S	S	S	S	S
Max wind speed (km/hr)	45.3	45.8	39.1	36.9	23.4	28.9	22.4	28.2	29.2	31.8	27.4	34.4
Days rained in month	5	2	7	5	3	9	3	2	1	4	6	5

5.2 Environmental Monitoring Locations

The BHO site environmental monitoring program is summarised in **Table 5-2**, locations for sampling/monitoring points are shown in **Figure 5-2**. A new weather station was installed on site in January 2019 as the previous weather station could not calculate Sigma Theta, a requirement of EPL 12559. TEOM units with the capability of monitoring PM2.5 were installed in 2022 and replaced by BAM units in March 2023.

Table 5-2 Summary of BHO Environmental Monitoring Program

EPA ID	BHO ID	Parameter	Frequency
AIR QUALITY			
1	Primary Vent Shaft	- Oxides of Nitrogen (as NO_2) -Total solid particles (TSP) - Volatile organic compounds - Sb, As, Cd, Pb, Hg, Be, Cr, Co, Mn, Ni, Se, V	Quarterly (at blasting event)
2	Crusher Baghouse Stack	- Total solid particles (TSP) - Total - Sb, As, Cd, Pb, Hg, Be, Cr, Co, Mn, Ni, Se, V	Quarterly
3 - 9	D1 – D7	Insoluble solids, Lead	Monthly
10, 57	TSP-HVAS	Total Suspended Particulate, Lead on filter paper	Every 6 days
11, 12	HVAS1 & 2	PM10, Lead on filter paper	Every 6 days
13, 14	TEOM/BAM 1 & 2	PM10, PM 2.5	Continuous
SURFACE WATER			
29 - 36	S31-1, 44, 49, 1A, 9B-2, Horwood Dam, Upstream and Downstream	pH, EC, TDS, SO4, Cl, Na, Cd, Pb, Mn, Zn	When contain water (at least 2 per 12 months)
GROUNDWATER			
37 - 52	GW01 – GW16	pH, EC, TDS, SO4, Cl, Ca, Mg, Na, Fe, Cd, Pb, Mn, Zn	Quarterly
53, 54	Shaft 7 & Kintore Pit extraction	pH, EC, TDS, SO4, Cl, Ca, Mg, Na, Fe, Cd, Pb, Mn, Zn	Quarterly
NOISE & BLASTING VIBRATION			
15 - 28	A1 – A14	Leq, 15min/Day Leq, 15min/Evening Leq, 15min/Night	Annually
V1 – V5	V1 – V5	dB mm/ second	Continuous (when blasting)
-	V6	dB mm/ second	Continuous (when blasting)
WEATHER			
55	Meteorological Station	Temperature, wind speed & direction, rainfall, Sigma Theta	Continuous (15 minute intervals)

The following sections provide a summary of these monitoring requirements together with the results for the reporting period. A discussion of any identified trends and a comparison with predictions in the original EA/PPR are also provided where available.

5.3 Air Quality

In accordance with the conditions of PA07_0018 and EPL12259 air quality is monitored:

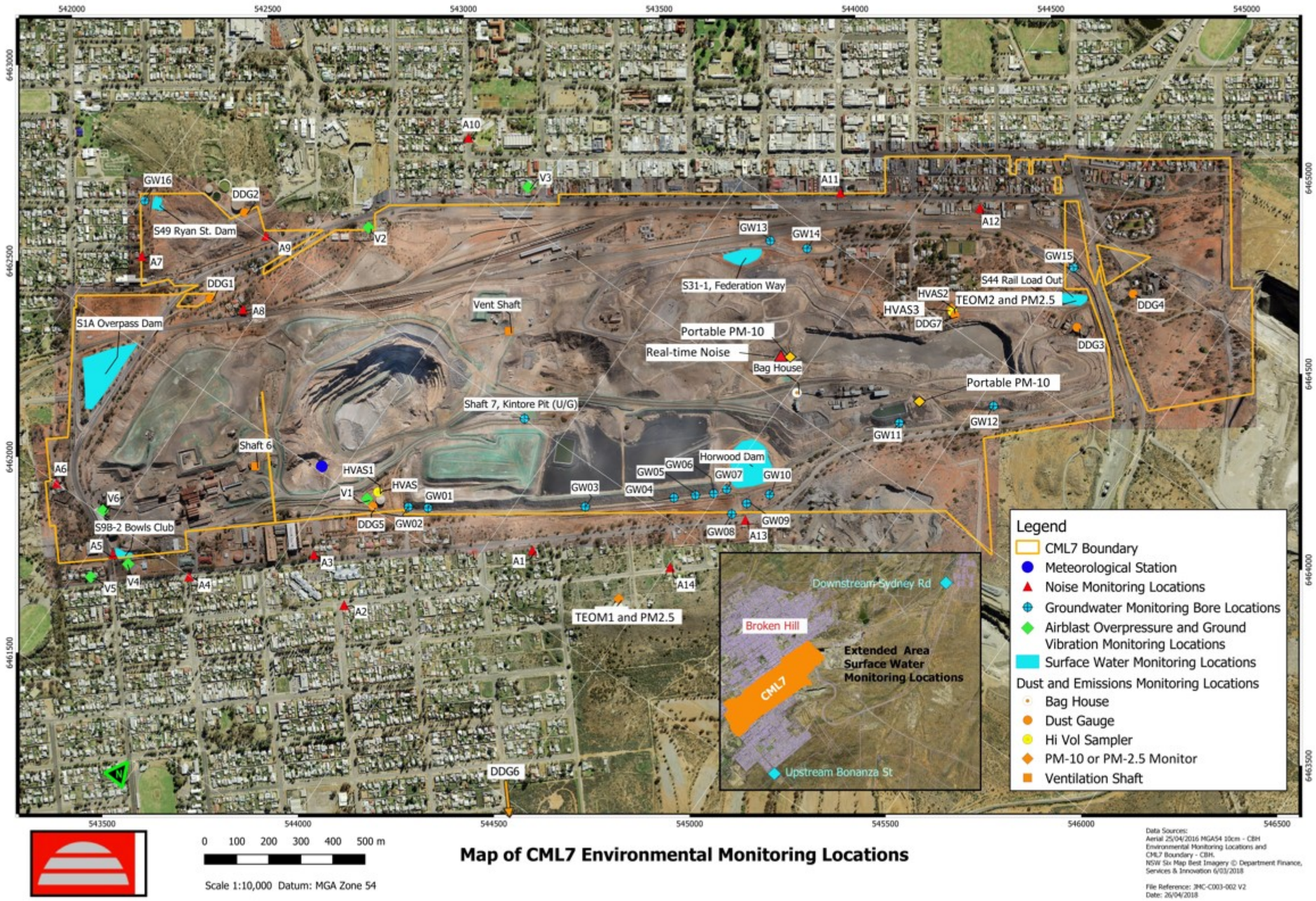
- Air emissions from in-stack mine exhaust ventilation and the crusher baghouse are tested quarterly by an external contractor with specialised equipment;
- Ambient air quality is monitored by BHO personnel via a combination of dust deposition gauges, high volumes air samplers (HVAS) and tapered element oscillating microbalance (TEOM) sampling units; and

Real-time information is downloaded and alerts automatically forwarded to assist in the day-to-day operational management of issues as well as long-term analysis of environmental data.

A Sintrol real-time dust monitor was installed in the crusher baghouse emissions stack in April 2022 to provide early warning of potential damage to the baghouse dust bags.

Figure 5-2 shows the sampling locations for all air quality monitoring units.

Figure 5-2 Location of Monitoring / Sampling Points



5.3.1 In-stack air quality

During the reporting period BHO engaged Assured Monitoring Group (AMG) to conduct testing of the mine ventilation exhaust points and the crusher baghouse. Testing was performed each quarter in accordance with the EPL. AMG are NATA accredited to perform this testing. The EPL Condition L2.1 specifies the in-stack performance criteria for the two ventilation exhaust units - Primary Ventilation Shaft and the Crusher Baghouse. **Table 5-3** provides the results of the testing against the limits as set out in the EPL. All sampling events result were within criteria limits.

Table 5-3 Vent and Baghouse Testing Results During the Reporting Period

	Limit	Primary Vent (EPL1)				Crusher Baghouse (EPL2)			
Testing Date		28/02	30/05	21/08	21/11	28/02	30/05	21/08	22/11
Nitrogen Oxides (mg/m^3)	350	<2.05	0.647	<2.05	<2.05	N/A[1]	N/A[1]	N/A[1]	N/A
Volatile Organic Compounds (mg/m^3)	40	0.49	0.451	0.457	0.518	N/A[1]	N/A[1]	N/A[1]	N/A
Total Suspended Particles (mg/m^3)	20	11.03	3.76	1.68	2.24	2.49	6.41	12.5	1.5
Type 1 and Type 2[2] (mg/m^3)	1	0.019	0.104	0.204	0.026	0.053	0.122	0.298	0.075

Note 1 = Not required to be tested.
Note 2 = Type 1 substance Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements. Type 2 substance Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements.

Air Quality Management Plan BHO-PLN-ENV-001 lists the controls that were in place during the reporting period. In summary, the major controls include:

- Automatic watering sprays on the ventilation shafts; and
- Fully enclosed primary crusher operating under negative pressure to a baghouse and continuous stack monitor.

5.3.2 Dust deposition gauges

Dust deposition levels refer to the quantity of dust particles that settle out from the air as measured in grams per square metre per month (g/m^2/month) at a particular location. Total fallout dust (depositional dust) is continuously monitored from seven deposition gauges located on and around the Rasp Mine, as shown in **Figure 5-2**. D1 and D6 are located off-site, D1 near the St Johns training facility north of the Rasp Mine and D6 in Casuarina Avenue south of the Rasp Mine. D2 to D5 and D7 are located on the Mine lease in various locations.

Samples are collected monthly and are sent to ALS Laboratory (NATA accredited) in Newcastle and analysed for total deposited dust and deposited lead dust. Deposited dust is assessed as insoluble solids as defined by Standards Australia, 2003, AS 3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.

Dust deposition criteria are provided in terms of both an acceptable increase in dust deposition over the existing background levels and an absolute maximum value. These impact assessment criteria are summarised in **Table 5-4.**

Table 5-4 Dust Deposition Criteria

Pollutant	Averaging Period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m^2/month	4 g/m^2/month

Provided below is a discussion of results for dust deposition during the reporting period (January 2023 to December 2023) and trends over the operational life of the Rasp Mine. Dust deposition results are reported and reviewed internally on a monthly basis.

Figure 5-3 and **Figure 5-4** show the monthly dust deposition and total deposited lead results for the reporting period. There was one occasion when a monitoring location exceeded the depositional dust level of 4 g/m^2/month limit (red figures in **Table 5-5**), three less than in the previous reporting period. Highest readings occurred in the summer months when dust storms were more frequent. A number of large storms throughout the region also created an increased amount of sediment through much of Broken Hill, compounding dust storms.

Lead results were occasionally above baseline levels throughout the period at D3-Thompsons Shaft and D4-Junction Mine, which are adjacent to the rail loading facility and access road, as well as exposed areas situated on the northern side of the site. Exposed site areas around the Thompson Shaft gauge are sprayed with dust suppressant and a water cart services the haul road while concentrate is being carted to the rail loadout and loaded to trains.

Dust results were significantly elevated in the D4 Junction Mine gauge in December 2023. The predominant wind direction for the month of December was from the South, suggesting that the source of the dust was from site activities, although the gauge is situated in a residence and may have been impacted by localised activities.

Lead levels in the D3 Thompsons Shaft, D4 Junction Mine, D5 Silver Tank and D7 Blackwoods gauges were elevated in September when the predominant wind direction was from the South. The D3, D4 and D7 gauges were likely impacted by site activities while the D5 gauge was likely impacted by off-site activities as it is located on the southern boundary. The haul road and concrete loadout area is regularly swept and watered. A water cart will also attend to the haul road between the concentrate loading shed at the Mill and the rail loadout area when concentrate containers are being transported from the Mill to the rail loadout.

Table 5-5 Dust Deposition Results for the Reporting Period (g/m$^{2/}$month)

	D1 EPL3 (off site)		D2 EPL4		D3 EPL5		D4 EPL6		D5 EPL7		D6 EPL8 (off site)		D7 EPL9	
	Dust	Lead	Dust	Lead	Dust	Lead	Dust	Lead	Dust	Lead	Dust	Lead	Dust	Lead
Jan-23	1.1	0.00069	0.6	<0.00035	1.6	0.011	3.2	0.005	1.6	0.0037	2.8	0.0011	2.3	0.0042
Feb-23	0.2	0.0007	0.4	<0.0001	0.5	0.0015	1.3	0.0054	0.2	0.0011	1.6	0.0009	1	0.0024
Mar-23	0.7	0.0034	4.1	0.0047	1.2	0.0126	2.70	0.013	1.2	0.004	1.2	0.0008	1.4	0.0099
Apr-23	0.5	0.0002	ns	ns	1.2	0.0008	2.20	0.001	0.6	0.0028	1.3	<0.0001	0.7	0.0004
May-23	1	0.001	1.4	0.0009	1.2	0.0107	3.00	0.007	1.4	0.0042	1	0.0002	0.7	0.0019
Jun-23	0.5	0.0004	1.2	<0.0001	0.6	0.0015	0.90	0.001	1.5	0.0007	0.5	<0.0001	0.3	0.0006
Jul-23	0.4	0.0013	0.2	<0.0001	0.5	0.0056	2.20	0.001	3	0.0015	0.3	0.0004	<0.1	0.0013
Aug-23	0.4	0.0012	0.4	<0.0001	0.3	0.0034	1.20	0.004	0.6	0.0024	0.8	0.0008	0.5	0.0013
Sep-23	3.5	0.0044	2.8	0.0022	1.3	0.0214	3.60	0.028	4.4	0.0301	3.3	0.0066	1	0.0192
Oct-23	0.4	0.0008	0.2	<0.0001	0.5	0.0021	2.50	0.008	0.4	0.0012	0.7	<0.0001	1.7	0.0025
Nov-23	1	0.0024	2.4	0.001	1.3	0.0099	2.50	0.005	2.4	0.0032	2.3	0.0009	1.1	0.0037
Dec-23	2.2	0.0016	3.7	0.0016	1.6	0.0109	11.40	0.004	2.8	0.0142	5.4	0.0007	1.2	0.0075
2010	4.0	0.0034	3.1	0.005	4.3	0.005	5.7	0.006	N/A[1]	N/A[1]	5.8	0.004	N/A[1]	N/A[1]

Note 1 = Background is not available for these locations ns = no sample

Figure 5-3 Monthly Total Deposited Dust for Results for the Reporting Period

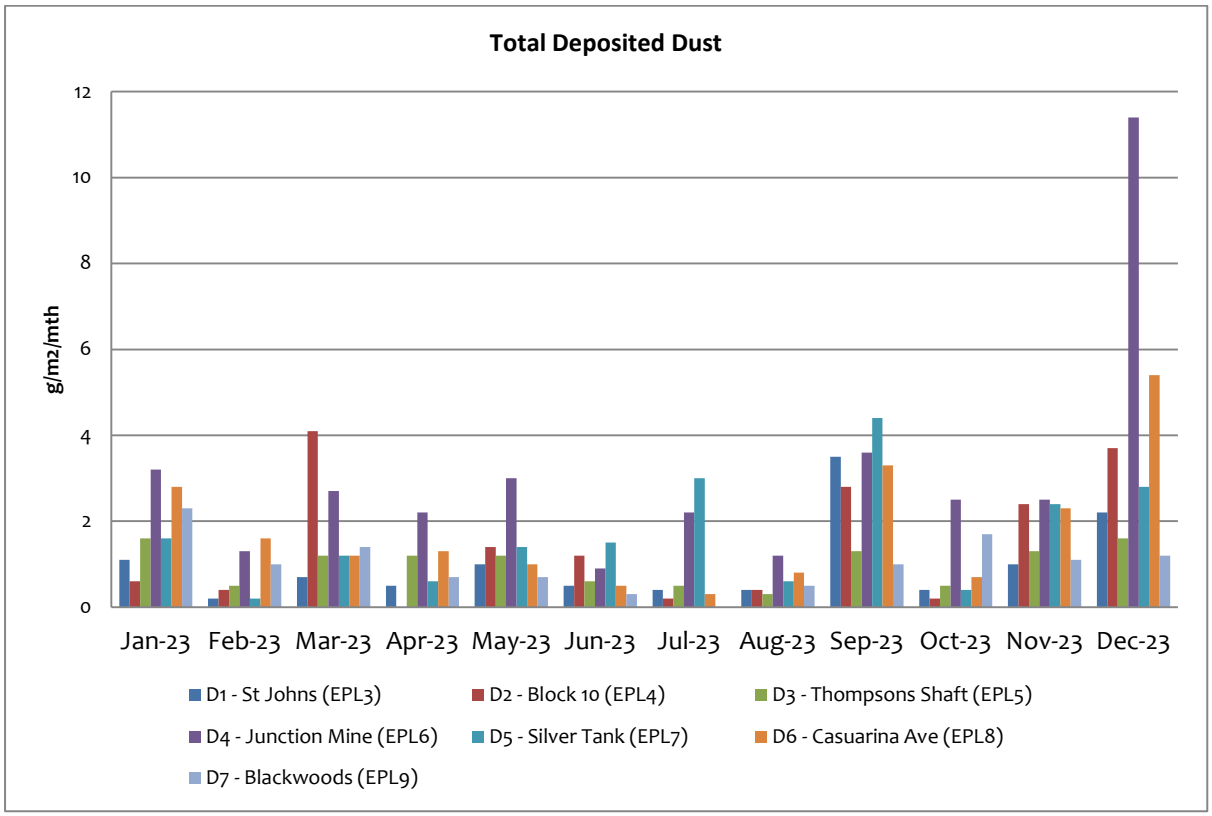


Figure 5-4 Monthly Lead Deposition for the Reporting Period

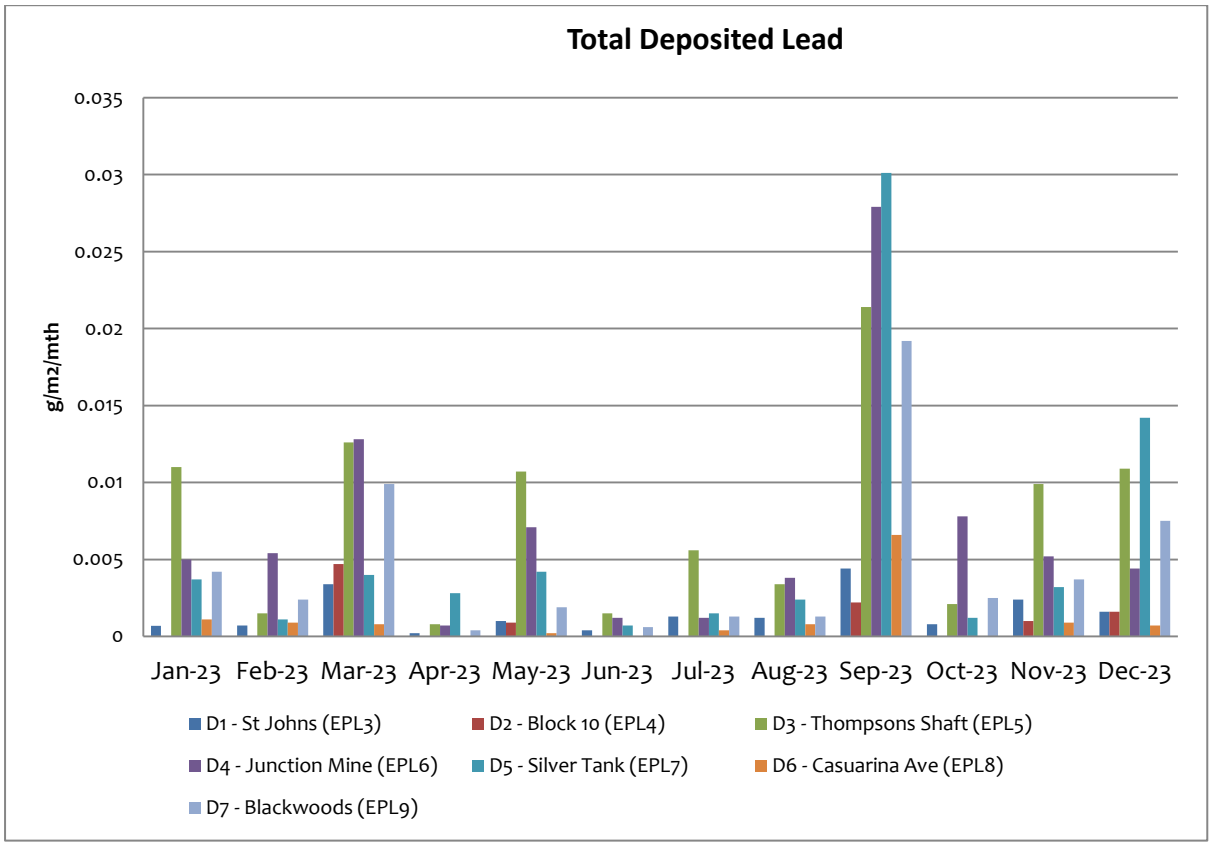


Figure 5-5 Total Deposited Dust 2007 – December 2023

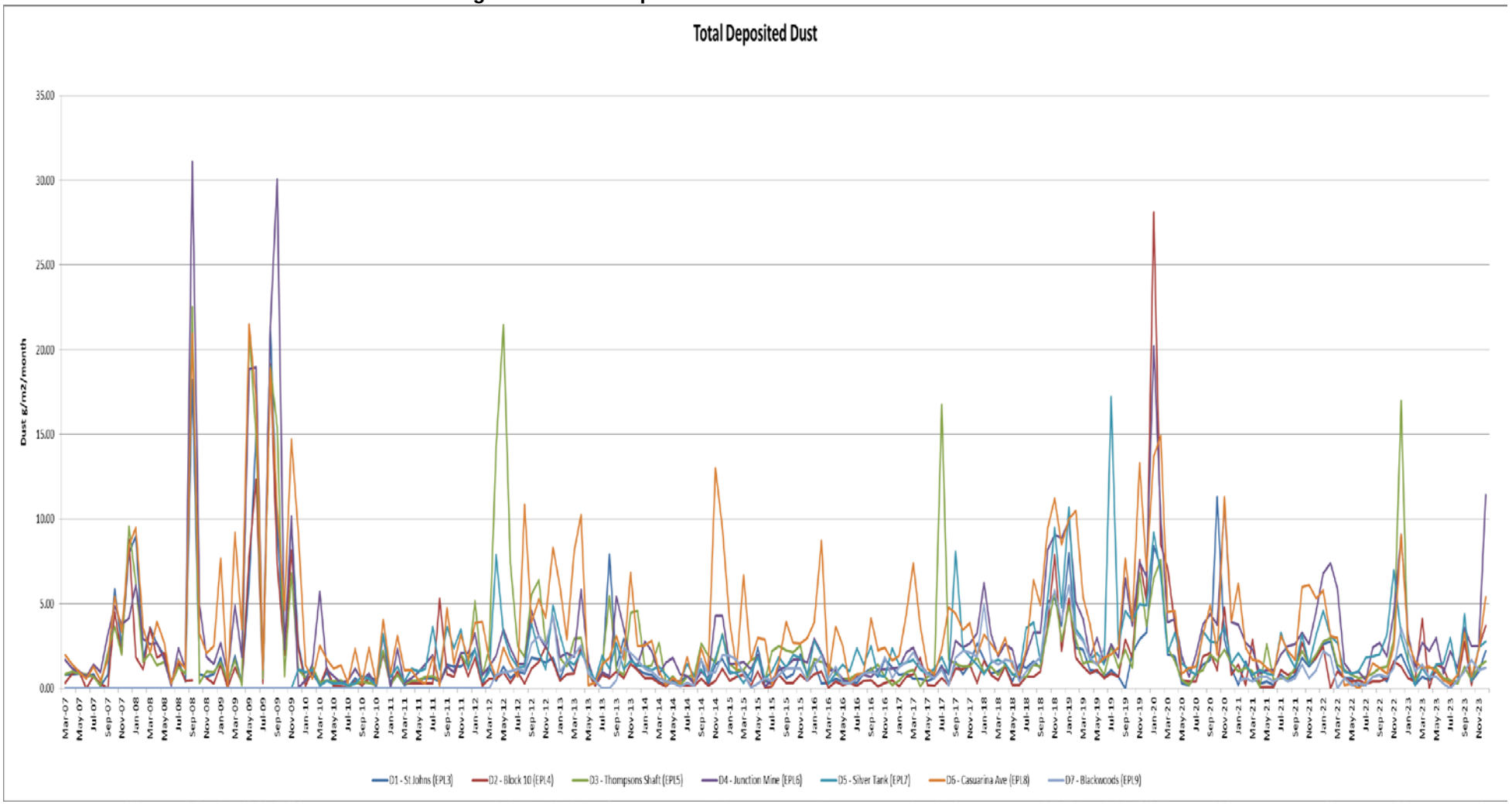
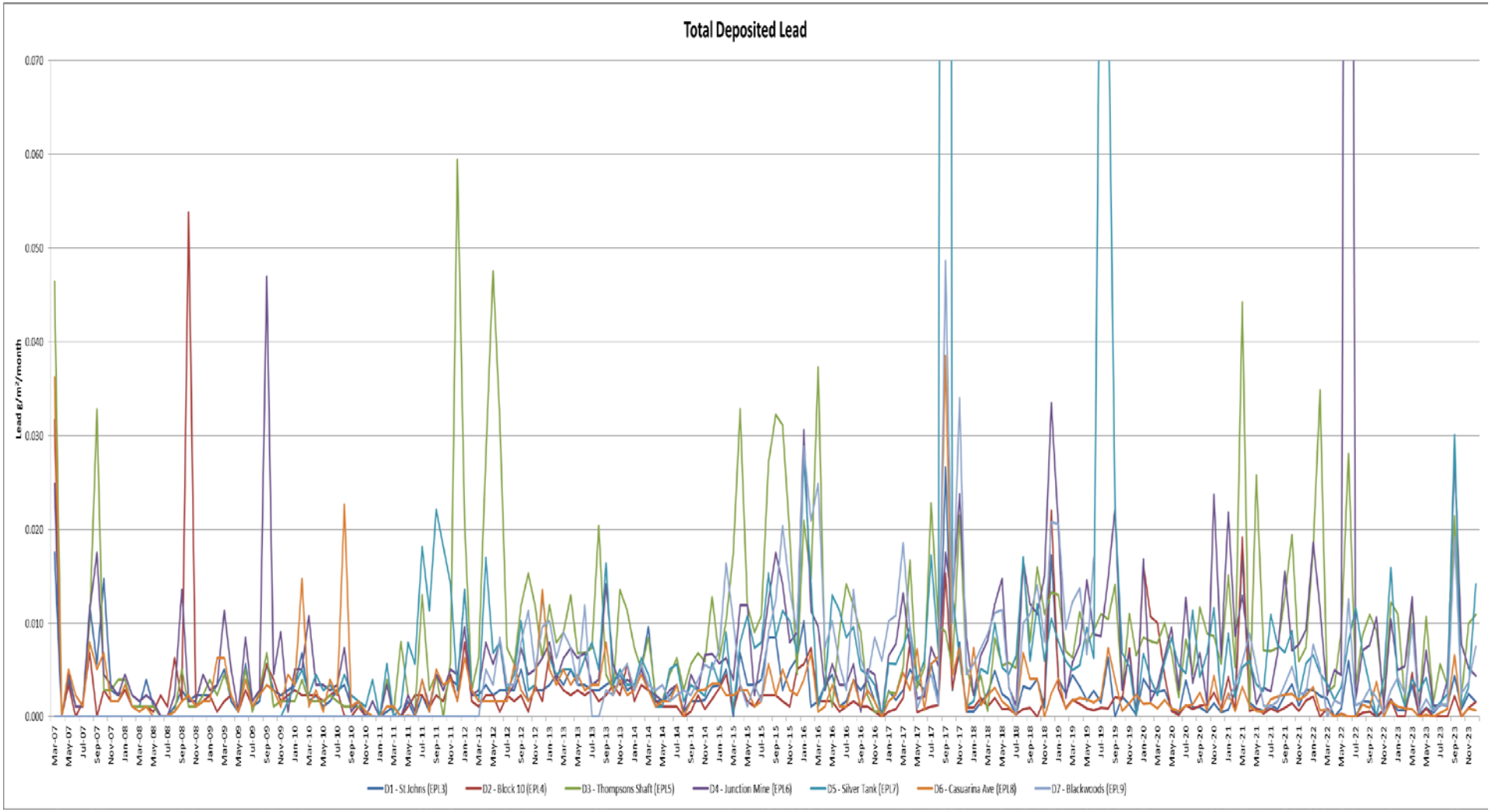


Figure 5-6 Total Deposited Lead 2007 to December 2023



5.3.3 High volume air samplers

There are four high volume air samplers used to measure ambient air quality at the Rasp Mine – HVAS (EPL10) and HVAS1 (EPL11) are located at the Silver Tank, central and to the south of the mine lease, and HVAS2 (EPL12) and HVAS3 (EPL57) are located adjacent to and north of Blackwood Pit. Locations are shown in **Figure 5-2**. HVAS and HVAS3 sample for total suspended particulates (TSP) and lead dust, and HVAS1 and HVAS2 sample for particulate matter less than 10 microns (PM_{10}) and lead dust.

Samples are collected every six days and are sent to ALS Laboratory (NATA accredited) in Newcastle. **Table 5-6** outlines the impact assessment criteria as listed in PA07_0018.

In accordance with the PA07_0018 and the EPA air quality guidelines, from September 2017, the criteria for annual rolling average for PM_{10} criterion was reduced from 30 $\mu g/m^3$ to 25 $\mu g/m^3$. All other air quality criterion remains unchanged.

Table 5-6 Impact Assessment Criteria

Pollutant	Averaging Period	Criterion
Total suspended particulate (TSP) matter	Annual	90 $\mu g/m^3$
Particulate matter < 10 µm (PM_{10})	Annual	25 $\mu g/m^3$
Particulate matter < 10 µm (PM_{10})	24 hour	50 $\mu g/m^3$

Note: Criteria changed from 30 $\mu g/m^3$ to 25 $\mu g/m^3$ in September 2017

Provided below is a discussion of results for each HVAS unit during the reporting period and trends over the operational life of the Rasp Mine. HVAS unit results are reported and reviewed internally on a monthly basis.

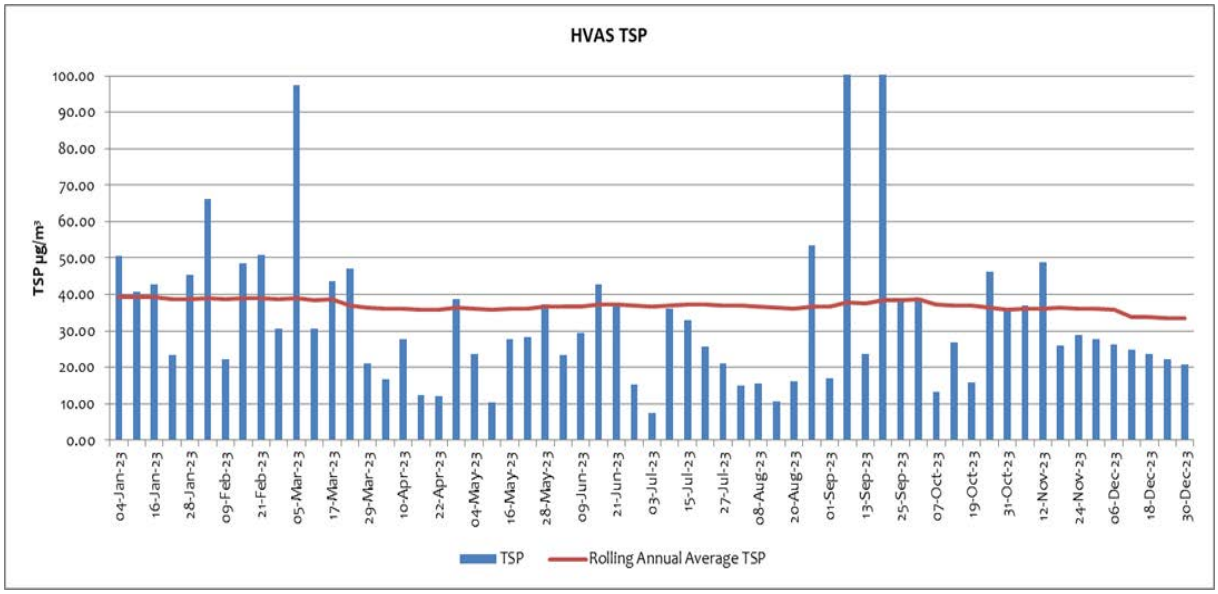
HVAS (EPL10)

TSP and TSP-lead results for the period recorded by HVAS are shown in **Figure 5-7** and **Figure 5-8.** These show the results have remained consistent over the reporting period.

The rolling annual average TSP at the HVAS unit recorded 33.39 $\mu g/m^3$ for the reporting period, a decrease compared to the previous period rolling annual average of 39.21 $\mu g/m^3$.

The rolling annual average TSP-lead at the HVAS unit has decreased to 0.18 $\mu g/m^3$ from 0.19 $\mu g/m^3$ at the beginning of the reporting period. The Rasp Mine PA07_0018 does not stipulate any criteria for lead; however the recorded annual average of TSP-lead remains below the NSW EPA guideline of 0.50$\mu g/m^3$.

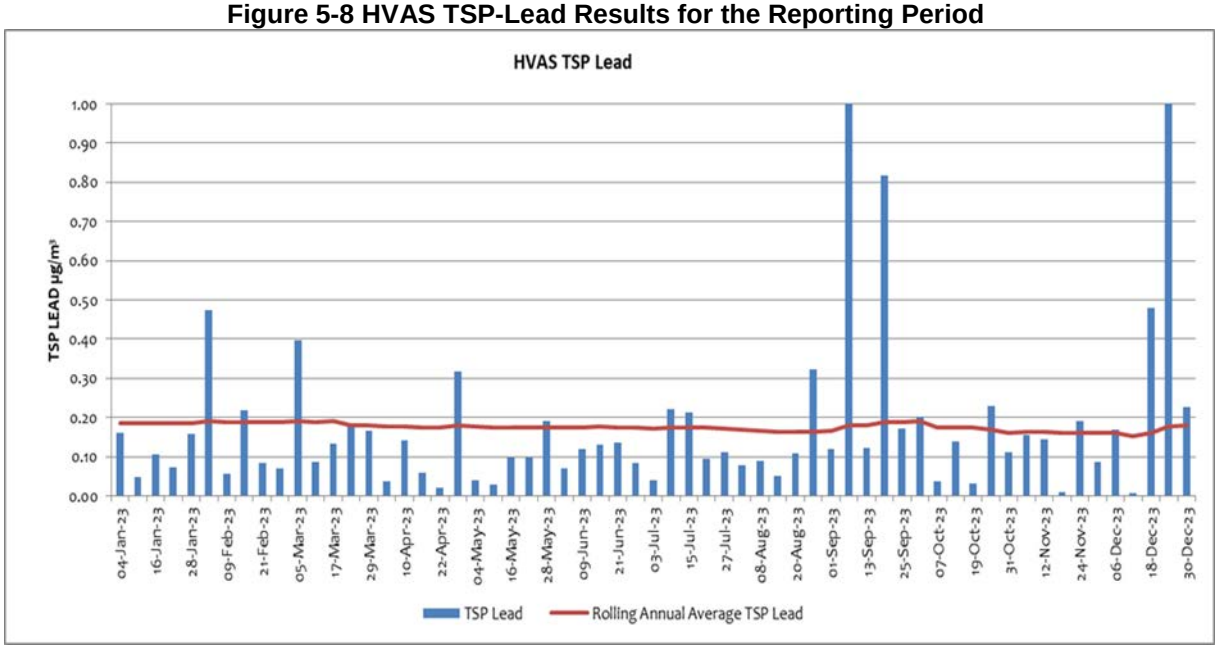
Figure 5-7 HVAS TSP Results for the Reporting Period



The highest TSP-Lead level recorded was on 24 December 2023 (1.15µg/m^3) when winds were predominately from the SW, suggesting contribution from off-site sources.

Figure 5-9 provides a summary of TSP and TSP-lead results from 2008 to 2022. Rolling annual averages for TSP are well below the annual average criteria of 90µg/m^3 and EPA threshold of 0.5 µg/m^3 for TSP-lead.

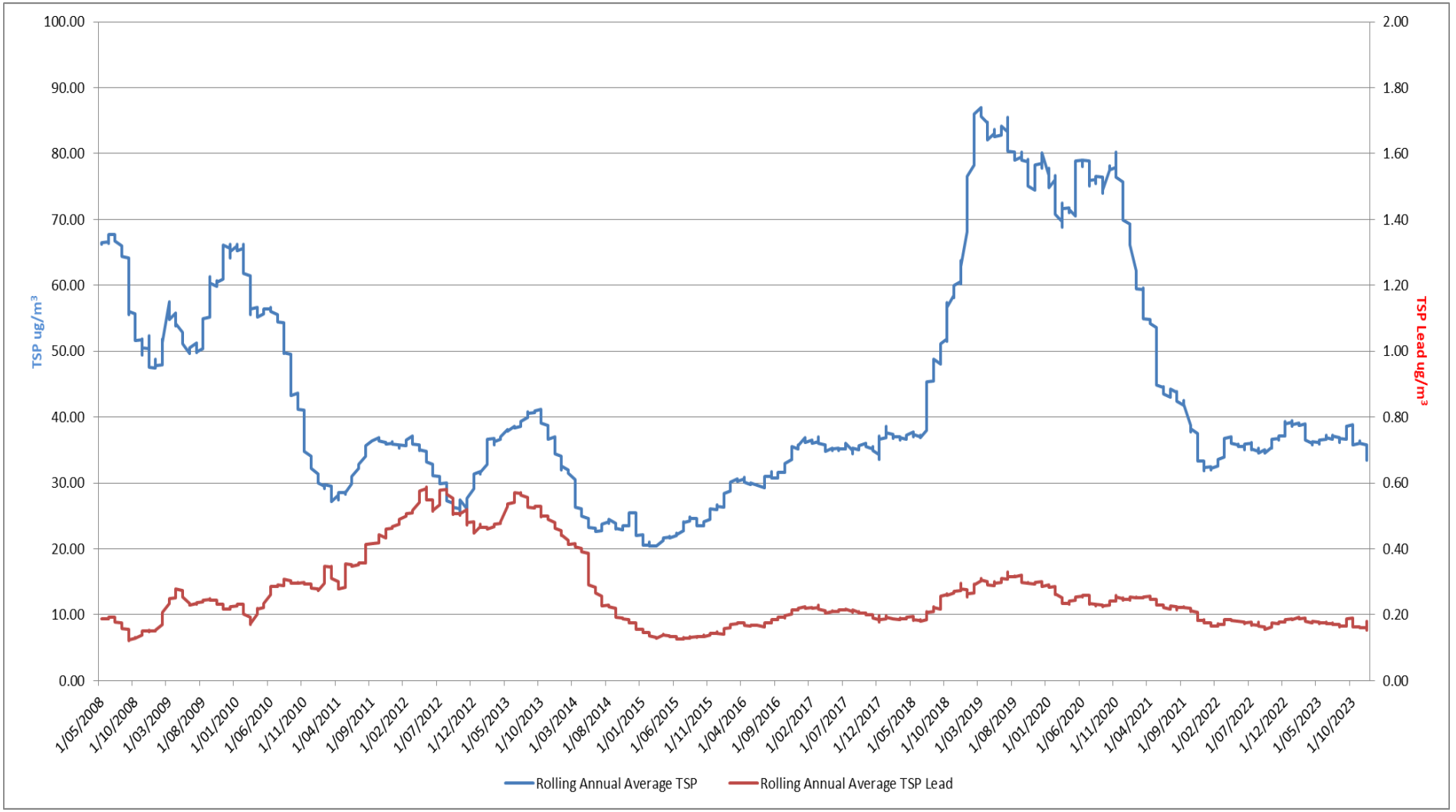
Figure 5-8 HVAS TSP-Lead Results for the Reporting Period



The original EA did not include a receptor close to HVAS in predictions for total suspended particles.

As can be seen in **Figure 5-9,** there is an increase in dust levels recorded in HVAS after 2016 due to the period of drought. Dust levels decreased at the beginning of 2022 due to the heavy rainfall and increased in the 2023 summer and spring months due to the hotter and windier weather. Lead levels have fallen with slight elevation in levels towards the end of the period. This can indicate contribution from site activities but it has been found that lead levels can be elevated at this location on the southern boundary of the site when winds are predominantly from the South.

Figure 5-9 HVAS TSP and TSP-Lead Results for the Period 2008 to 2023

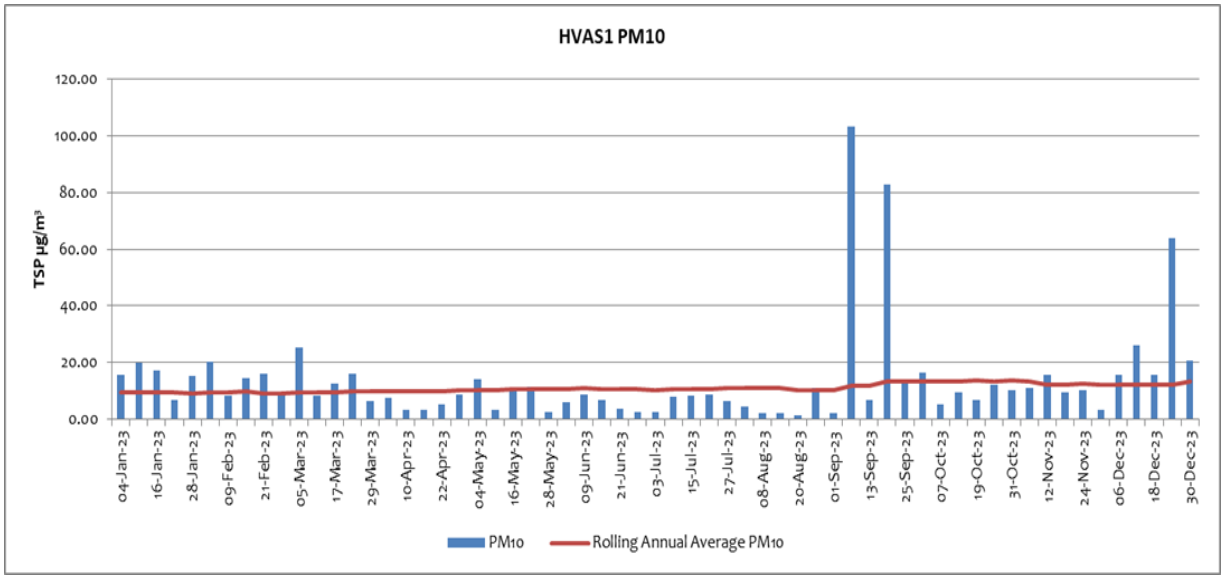


HVAS1 (EPL11)

HVAS1 is used for sampling PM_{10} and PM_{10}-lead. The average annual PM_{10} level recorded at this monitoring point at the end of the reporting period was 13.3µg/m^3, which has decreased from the 9.8µg/m^3 at the beginning of January 2023 and is well below the background level of 29.1µg/m^3 reported in the EA. The average annual PM_{10} level calculation includes data collected during extreme events. Results for the reporting period are shown in **Figure 5-10** which indicates that the rolling annual average for PM_{10} is below the criteria of 25 µg/m^3, and has remained consistently low during the reporting period.

Results for the period 2011 to 2023 are shown in **Figure 5-16**.

Figure 5-10 HVAS1 PM_{10} Results for the Reporting Period



The highest PM10 dust level recorded was 103µg/m^3 on 7 September when winds were predominantly from the West. While there may have been contribution from Little Kintore Pit, it was likely a regional dust event on this day that contributed the bulk of the dust. Another dust storm occurred on 19 September, with winds from the WSW, when a PM10 dust level of 82.7µg/m^3 was recorded.

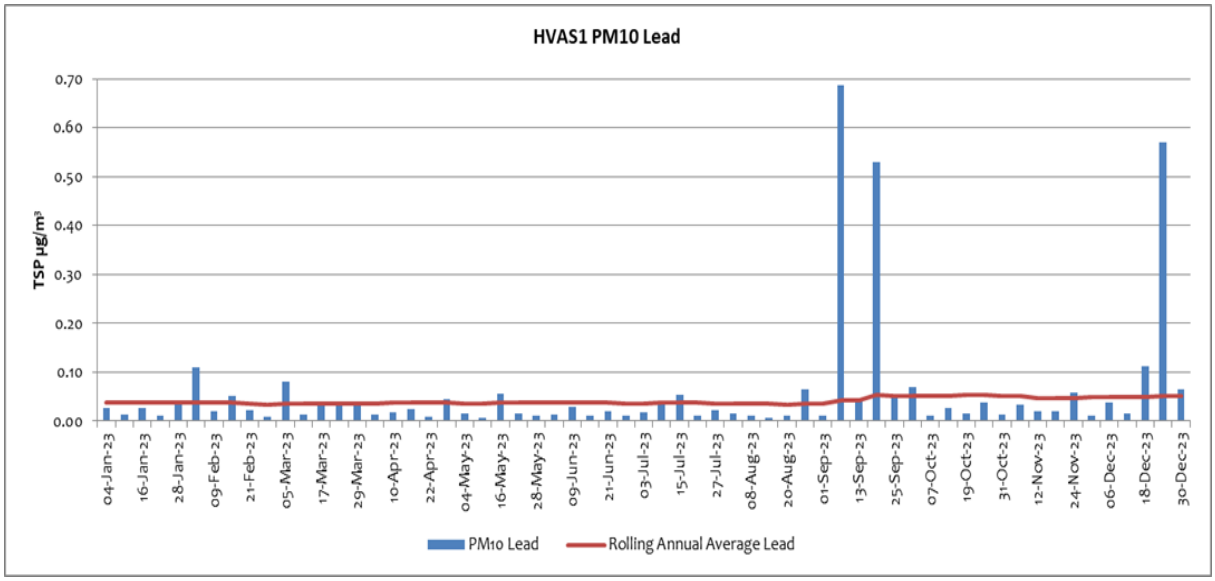
The annual rolling average for PM10 dust at this location is 13.3 µg/m3 at the end of December 2023, higher than the annual rolling average of 9.8 µg/m3 at the beginning of January 2023. External and extreme dust events are recorded in measurements.

HVAS1 PM10 Lead results for the reporting period are shown in **Figure 5-11**.The highest Lead PM10 result recorded was 0.69µg/m3 on 7 September when winds were predominantly from the West and a regional dust event was experienced in Broken Hill. It is possible that Little Kintore Pit and the Haul Road contributed dust recorded on this day. Another dust storm, with winds from the WSW, occurred on 19 September when a PM10 Lead dust result of 0.53µg/m3 was recorded.

Since May 2011, when HVAS1 started operating, dust levels have fallen and then risen in the last few years due to the drought and frequent dust storms.

Results for the period 2011 to 2023 are shown in **Figure 5-17**.

Figure 5-11 HVAS1 PM_{10}-Lead Results for the Reporting period

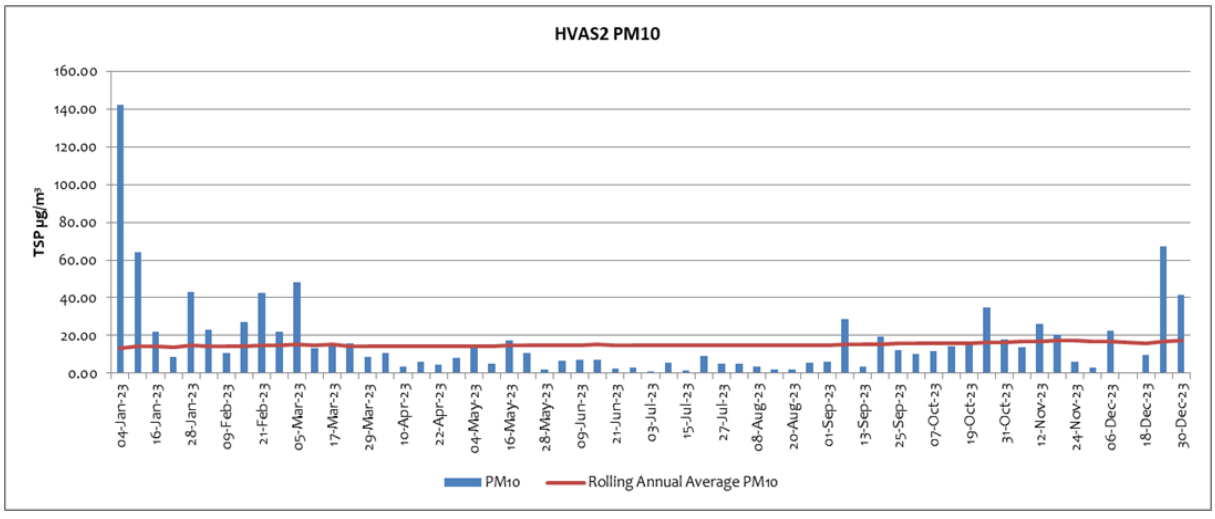


HVAS2 (EPL12)

The highest recorded PM_{10} dust reading during the period was 142.00µg/m^3 on the 4 January when winds were from the South suggesting contribution from Blackwoods TSF2. The annual rolling average for PM10 dust at this location is 17.4 µg/m^3 at the end of December 2023, up from 13.22µg/m^3 in January 2023, but below both the background level reported in the EA of 29.1µg/m^3 and the criteria of 25µg/m^3 (for off-site receptors), **Figure 5-12**. Data presented includes that which may be result of external events, particularly dust storms which are expected in the spring and summer months.

Trends for the period 2011 to 2023 are shown in **Figure 5-16**. Since September 2013 when HVAS2 started operating, dust levels rose during the drought period of 2018 to 2021, fell during the wet year of 2022, then have risen in the last year due to the drier weather and dust storms.

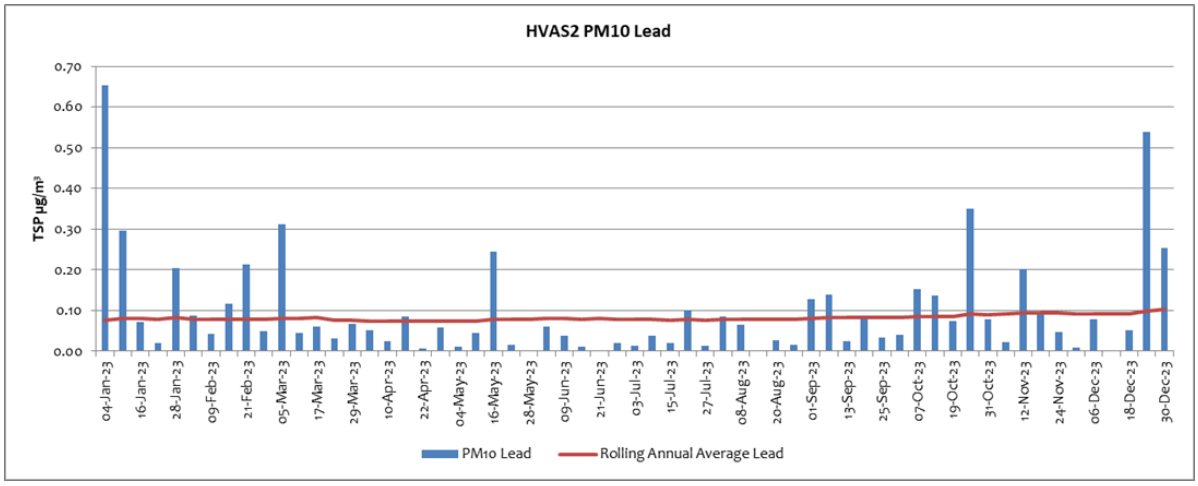
Figure 5-12 HVAS2 PM_{10} Results for the Reporting Period



The highest recorded PM_{10} Lead dust reading for the period was 0.65µg/m^3 on the 4 January when winds were from the South suggesting Blackwoods TSF2 was the likely source of the dust. The rolling annual average for PM_{10} Lead in December 2023 was 0.10µg/m^3, higher than the value of 0.08µg/m^3 in January 2023. **Figure 5-13**.

Results for the period 2011 to 2023 are shown in **Figure 5-17**. Since September 2013 when HVAS2 started operating PM10-lead levels have tracked with PM_{10} trends at HVAS2.

Figure 5-13 HVAS2 PM_{10}-Lead Results for the Reporting Period

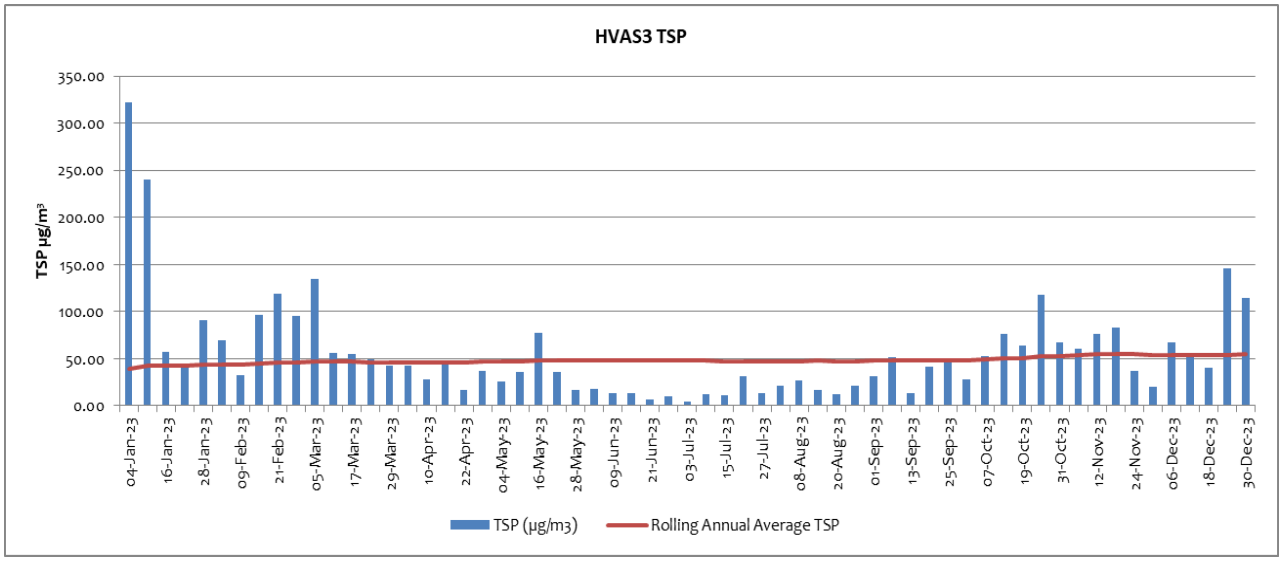


HVAS3 (EPL57)

HVAS3 (EPL57) was included in EPL 12559 on 14 March 2019 to provide for monitoring of TSP Dust on the northern boundary of the site at Blackwoods Pit TSF2.

The highest TSP level recorded at HVAS3 during the reporting period was on 4 January with a result of 322.00µg/m^3, when winds were from the South, suggesting that the dust source was likely Blackwoods TSF2. This was likely the result of MD6 works to redevelop TSF2 for tailings harvesting. The annual rolling average for TSP dust at this location is 55.46µg/m^3 at the end of December 2023, up from 39.72µg/m^3 in January 2023 as seen in **Figure 5-14**.

Figure 5-14 HVAS3 TSP Results for the Reporting Period



The highest TSP Lead level recorded at HVAS3 during the reporting period was on 4 January with a result of 1.50µg/m^3, when winds were predominantly from the South suggesting contribution from Blackwoods TSF2. The rolling annual average for TSP Lead in December was 0.36µg/m^3, up from

0.30µg/m^3 in January 2023. Elevated lead levels were recorded sporadically throughout the reporting period, usually as a result of site activities around TSF2.

Figure 5-15 HVAS3 TSP-Lead Results for the Reporting Period

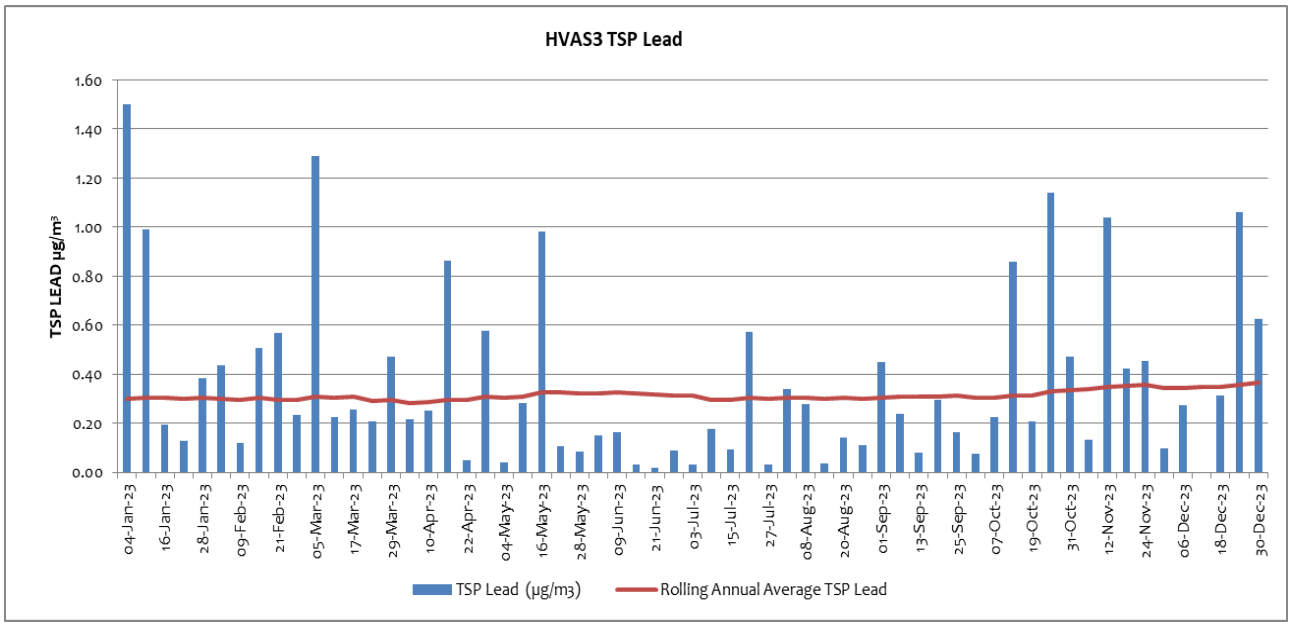


Figure 5-16 HVAS1 & HVAS2 PM10 Annual Average Results for the Period 2011 to 2023

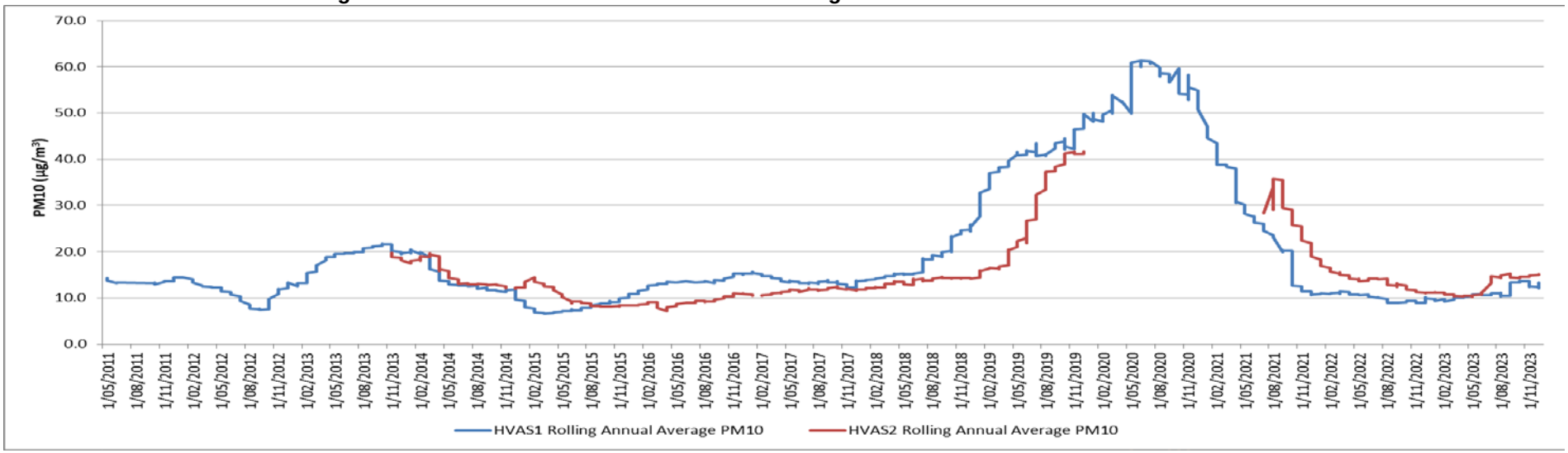


Figure 5-17 HVAS1 & HVAS2 PM10-Lead Annual Average Results for the Period 2011 to 2023

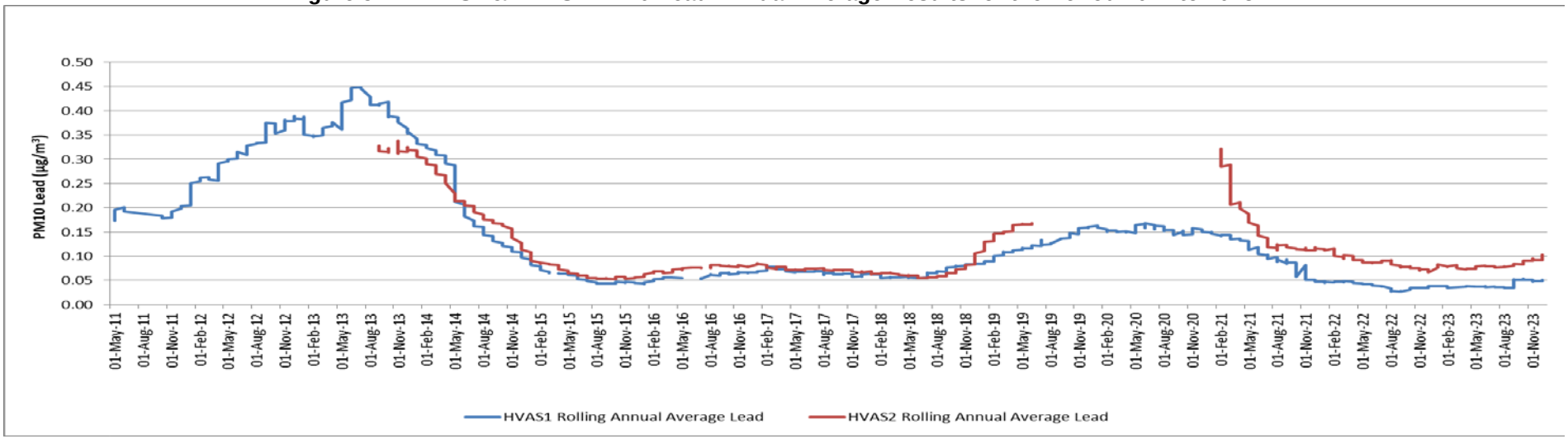


Figure 5-18 HVAS & HVAS3 TSP Annual Average Results for the Period 2008 to 2023

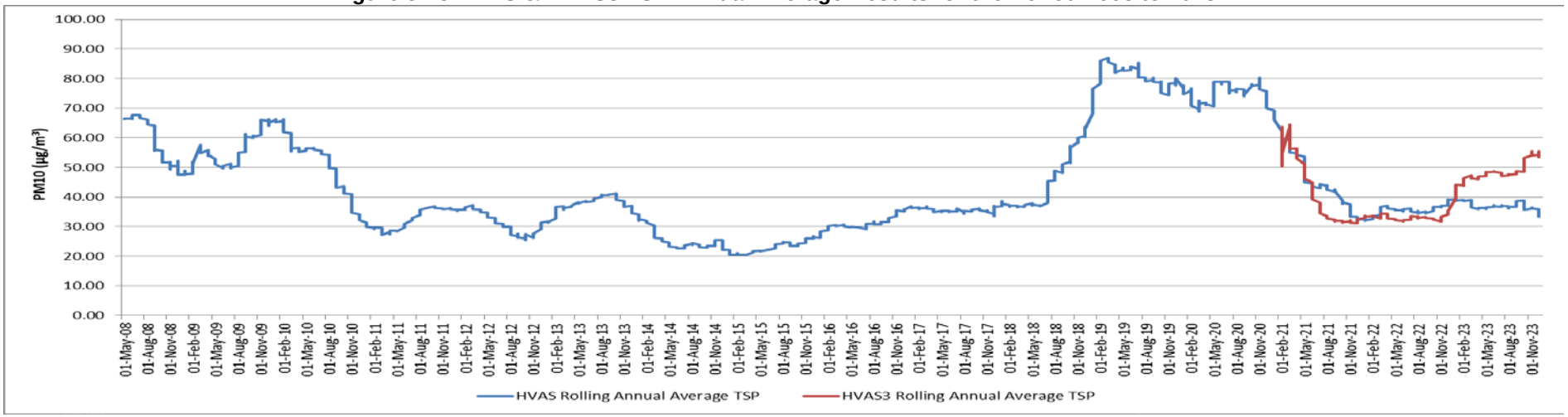
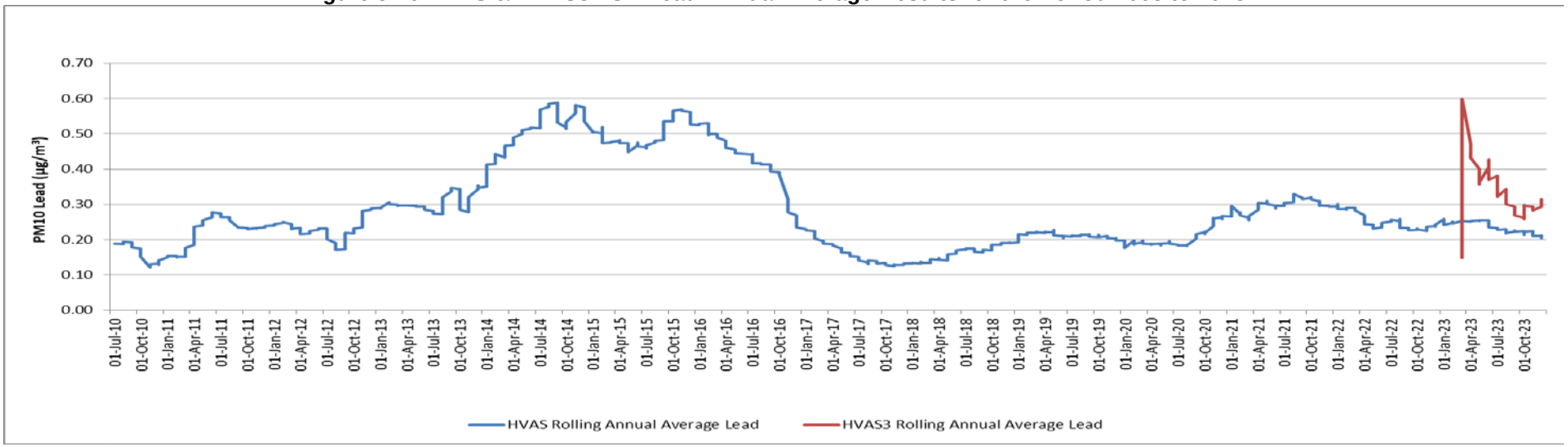


Figure 5-19 HVAS & HVAS3 TSP-Lead Annual Average Results for the Period 2008 to 2023



5.3.4 TEOM monitors

The Rasp Mine has two Tapered Element Oscillating Microbalance (TEOM) air quality monitors which record real time PM_{10} data and two Beta Attenuated Membrane (BAM) air quality monitors which record real time $PM_{2.5}$ data. Figure 5-2 shows the location of these monitors.

Pollutant	Averaging Period	Criterion
Particulate matter < 10 µm (PM_{10})	24 hour	50 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	25 µg/m^3
Particulate matter < 2.5 µm ($PM_{2.5}$)	24 hour	25 µg/m^3
Particulate matter < 2.5 µm ($PM_{2.5}$)	Annual	8 µg/m^3

Note: Criteria changed from 30 µg/m^3 to 25 µg/m^3 in September 2017

The monitors operate continuously over a 24-hour period and provide a real time data read out on a kiosk computer in the ESO office. The monitors also provide auto-generated notifications when triggers are exceeded (when the level exceeds 100µg/m^3 expressed as a 1 hour rolling average) the cause is investigated and controlled by the use of the water truck or by modifying work methods.

In August 2022, as a required by the MOD6 Development Approval BHO began real-time monitoring for $PM_{2.5.}$ Dichotomous TEOM units replaced the existing PM_{10} TEOM units at both monitoring locations. In March 2023 the original PM_{10} TEOM units were reinstalled along with $PM_{2.5}$ BAM units. During the reporting period an Acoem technician serviced the TEOM and BAM units in March and September.

The recorded annual average $PM_{2.5}$ results for both TEOM1 and TEOM2 (8.00 µg/m^3) are below the listed 24-hour averaging criteria of 25 µg/m^3 and at the annual averaging criteria of 8.00 µg/m^3.

The corrected results with storm events excluded for TEOM1 PM_{10} 24-hour average for the reporting period are provided in **Figure 5-20.** A number of dust storm events were recorded on TEOM 1 and 2 during the period. As can be seen in the graphs in **Figure 5-18** and **Figure 5-19**, high-dust events are captured by both monitors so they are unlikely to be the result of site activities.

The PM10 annual rolling average at the TEOM1 monitor at the end of the reporting period was 11.19µg/m^3 (9.18 µg/m^3 in the previous year) and is below the listed criteria of 25µg/m^3. The annual rolling average PM_{10} at TEOM2 was 11.4µg/m^3 (10.12 µg/m^3 in the previous year) which is below the criterion 25µg/m^3 required at the nearest residential location. A graph of results for TEOM1 and TEOM2 are provided in Figure 5-25**.**

The corrected results with storm events excluded for TEOM2 PM_{10} 24-hour average for the reporting period are provided in **Figure 5-21**. The highest recording for the reporting period was on 12 October 2023 (136.6µg/m^3). The corrected results with some storm events removed for PM2.5 at either location has not exceeded the 24 hour average of 25 µg/m^3 as set out in PA07_0018 as seen in **Figure 5-22** and **Figure 5-23**.

The recorded annual average PM_{10} result at TEOM2 (11.4 µg/m^3) is below the prediction for R28, the closest receptor to this monitoring point (30 m) reported in the EA for MOD4 at 17.54 µg/m^3.

Annual average PM_{10} results for TEOM1 and TEOM2 have increased slightly after the heavy rainfall received throughout 2022 reduced dust levels.

Air Quality Management Plan BHO-PLN-ENV-001 lists the controls that were in place during the reporting period. In summary, the major controls include:

- The use of chemical dust suppressant on non-active mining areas and roads;
- Sealing of all major roads and the use of a street sweeper and water truck;
- An enclosed crusher building and water sprays on the apron feeder to the crusher;
- Fully enclosed conveyors and transfer points prior to the Sag Mill with installed dust collectors;
- Restricted access to non-active mining areas;
- Concentrate loading into containers occurs in an enclosed building and containers are covered prior to exiting the building; and
- All vehicles leaving site are washed, including trucks taking containers to the rail loadout area.
- Traffic light system informing all staff and contractors of wind speeds on a daily basis.
- Wind speed alerts from the onsite weather station notifying of wind speeds greater than 35 km/hr

Monitoring results indicate that controls have been adequate to manage dust levels during the reporting period.

Figure 5-20 TEOM1 PM_{10} 24-hour Average Results for the Reporting Period

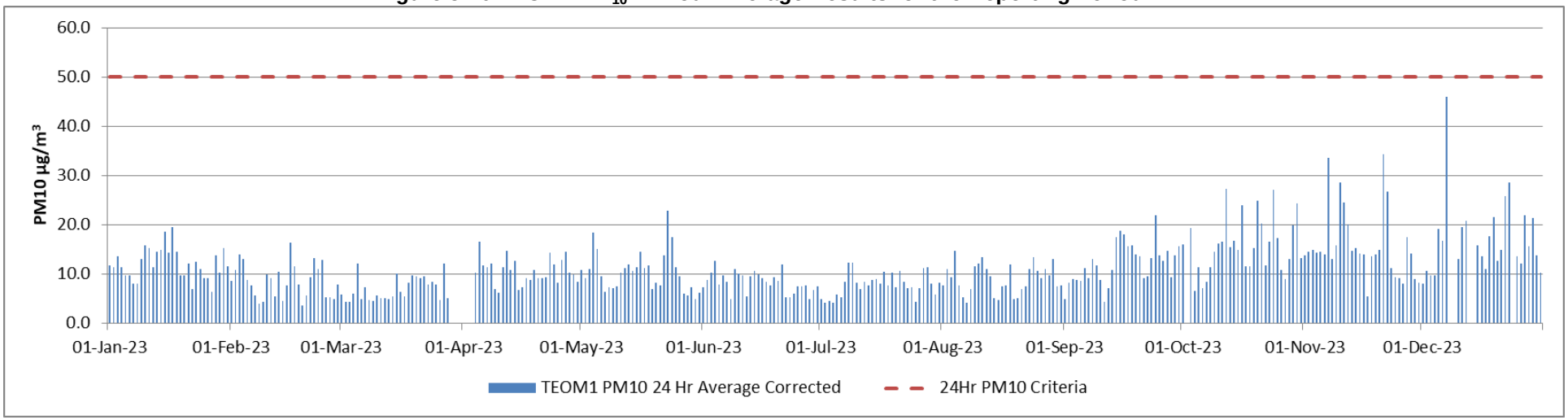


Figure 5-21 TEOM2 PM_{10} 24-Hour Average Results for the Reporting Period

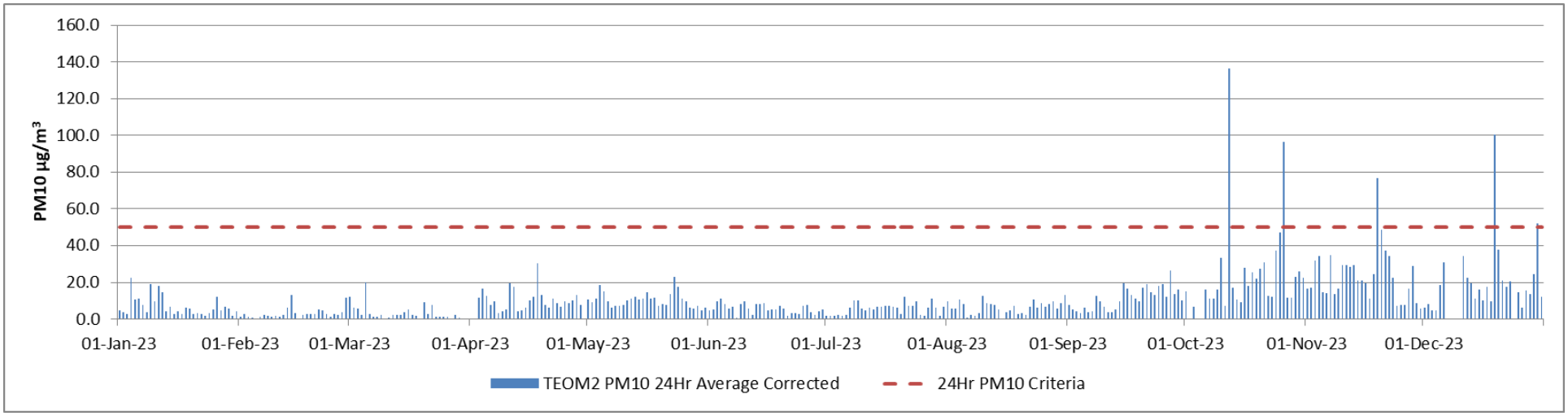


Figure 5-22 TEOM/BAM1 $PM_{2.5}$ 24-hour Average Results for the Reporting Period

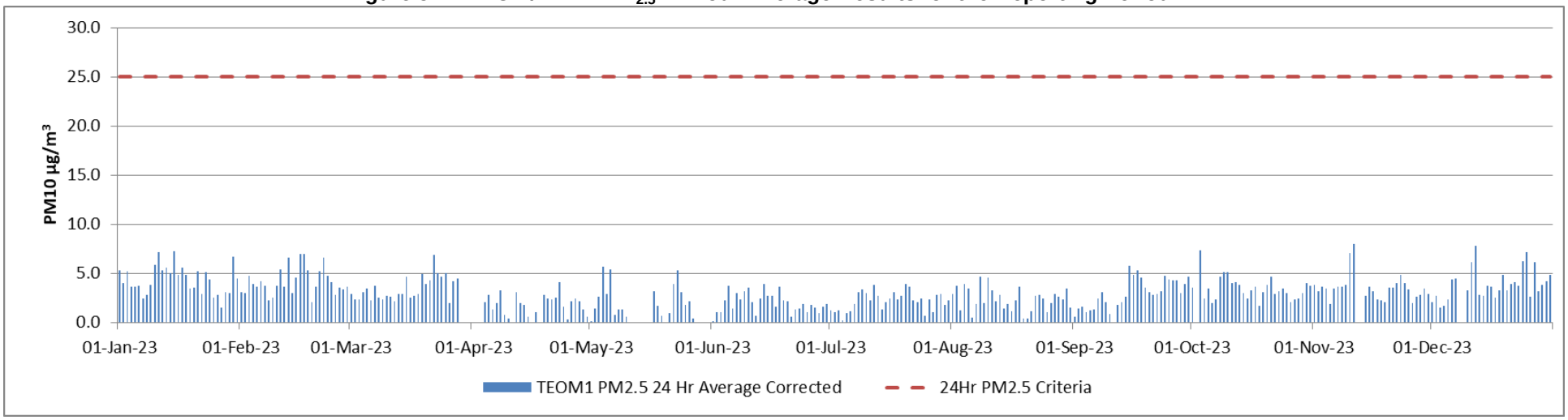


Figure 5-23 TEOM/BAM2 $PM_{2.5}$ 24-Hour Average Results for the Reporting Period

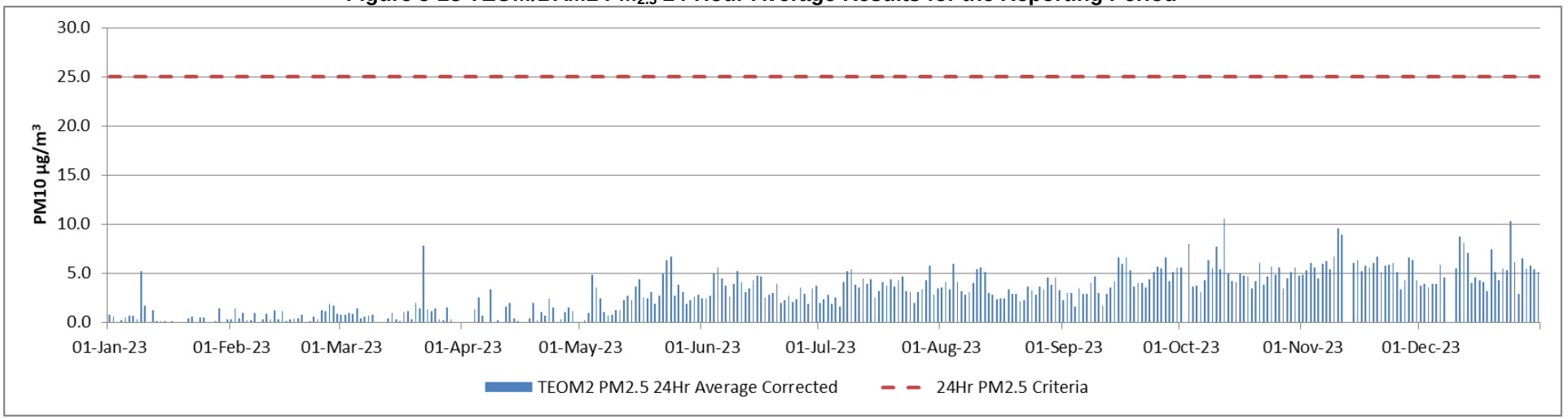


Figure 5-24 TEOM1 & TEOM2 PM10 Annual Rolling Average for the Reporting Period

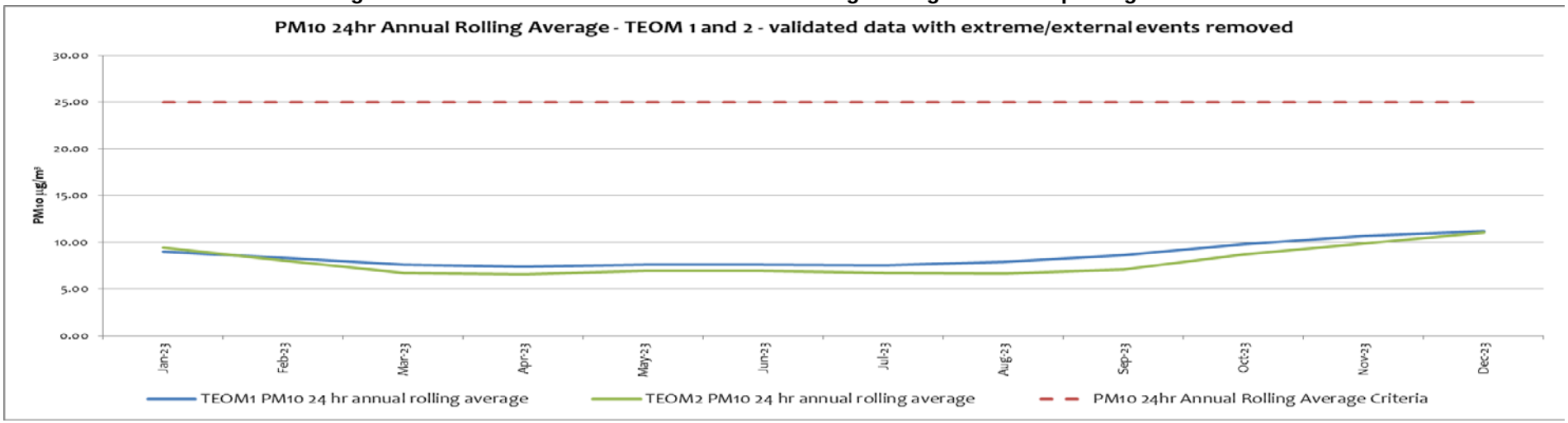
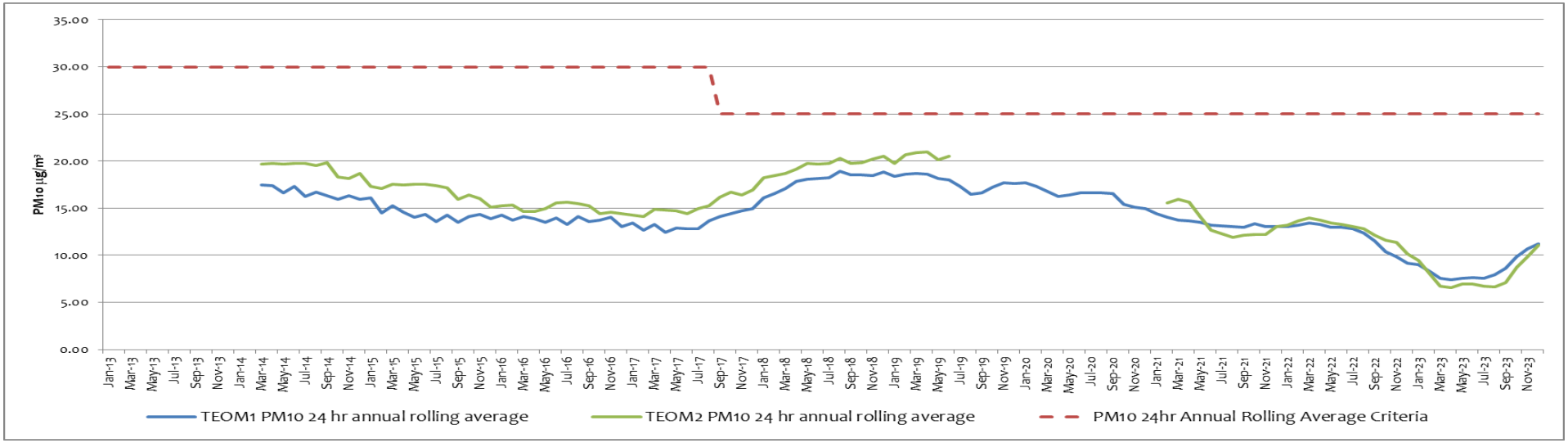


Figure 5-25 TEOM1 & TEOM2 PM10 Annual Rolling Average Results for the Period 2013 to December 2023



5.4 Erosion and Sediment

The majority of the existing batters were constructed during former mining operations and consequently the surfaces of the batters consist predominantly of weathered rock. It is not practical to reshape the slopes, as most of the slopes are steep, on the mine lease boundary and predominantly comprise of large rock aggregate. The process of erosion over the years since the slopes were formed has removed most of the finer materials and the existing surface now comprises relatively large and coarse rock resulting in a self- armoured surface with limited erosion potential.

Inspections consist of a visual assessment for erosion, flooding, rubbish, algal growth or significant sediment build up. No major works were required as a result of these inspections.

Baseline erosion monitoring using terrestrial scanning was conducted on a number of Rasp Mine waste dumps in December 2023. Future scans will be conducted to monitor the rates of erosion on waste dumps on site.

5.5 Surface Water

There are no natural watercourses or creeks flowing through the site. The drainage network layout restricts runoff leaving active mine areas of the site for a 1 in 100year 72 hour ARI rainfall event.

Surface water monitoring includes a weekly visual inspection of water storage facilities, freeboard and structural integrity. The tailings storage facility and the processing events dam are inspected and levels checked monthly. Quarterly water quality samples are taken from dams when the water levels are above 20% capacity. Samples are couriered to ALS, a NATA accredited laboratory for analysis.

There are seven sampling locations for surface water, these include surface water basins located on the mine lease to capture and retain rainfall and two locations up and down stream of an ephemeral creek located south of the mine lease boundary. Sampling requirements are provided in **Table 5-7** and locations of sampling points are shown in **Figure 5-2**.

Table 5-7 Surface Water Monitoring Requirements

Description	Frequency	Parameters to be Analysed
Federation Way Culvert EPL29/S31-1	2 x per year , six months apart	cadmium (Cd), chloride (Cl), electrical conductivity (EC), lead Pb), manganese (Mn), pH, sodium (Na), sulphate (SO4), total dissolved solids (TDS) and zinc (Zn)
Ryan Street Dam EPL31/S49	2 x per year , six months apart	
Adjacent Olive Grove EPL32/S1A	2 x per year , six months apart	
Adjacent Bowls Club EPL33 /S9-B2	2 x per year , six months apart	
Horwood Dam EPL34/Horwood Dam	2 x per year , six months apart	
Upstream Bonanza St EPL35	2 x per year , six months apart	
Downstream Sydney Rd EPL36	2 x per year , six months apart	

Ponds are sampled following rainfall events and the volume of stored water is at least 20% of the pond capacity. Sampling is most likely to be undertaken in April and October, as these are the highest rainfall months as recorded by Bureau of Meteorology. Sufficient rain fell in the first half of 2023 to enable sampling to be conducted on four occasions from most of the monitoring locations. Results of the surface water analysis for the reporting period are provided in **Table 5-8**.

Lead, Manganese and Zinc levels were slightly elevated in South Road Overpass S1-A and Federation Way S31-1 in February and March 2022 following heavy rainfalls, which was likely due to receiving contaminated water from adjacent roadways and waste dumps. Levels of these parameters returned to historic levels in 2023. Ryan St Dam S49 returned elevated Lead, Manganese and Zinc

levels due to it capturing water from Block 10 which, as the former site of a mill, is contaminated. Horwood Dam recorded elevated results which is to be expected as it captures water from a number of areas on site before the contained water is pumped to the Mill process pond.

Table 5-8 Stormwater Pond Water Quality Results for the Reporting Period

Sample Point	Sample Date	pH	EC	TDS	Alkalinity ($CaCO_3$)	SO4	Cl	Ca	Mg	Na	Cd	Pb	Mn	Zn	Fe
			(µS/cm2)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
S31-1 (EPL29)	30/01/2023	6.29	343	298	10	144	4	41	1	5	0.172	1.01	3.87	17.3	<0.05
	23/03/2023	Insufficient volume for sample													
	5/06/2023	6.79	491	386	10	249	5	31	2	6	0.721	1.74	12.2	82.6	<0.05
	5/07/2023	7.48	211	158	11	81	2	18	<1	8	0.155	0.79	3.39	16.4	0.08
S49 (EPL31)	30/01/2023	5.83	2080	2310	8	1220	27	213	24	43	1.78	0.973	95	249	<0.05
	23/03/2023	Insufficient volume for sample													
	5/06/2023	7.18	411	294	8	191	4	36	3	6	0.225	0.176	11.2	28	<0.05
	5/07/2023	7.05	1810	1660	4	974	27	236	24	49	1.39	0.685	83.1	173	<0.05
S1A (EPL32)	30/01/2023	Insufficient volume for sample													
	23/03/2023	Insufficient volume for sample													
	5/06/2023	7.47	243	166	8	85	8	27	2	10	0.0686	0.18	1.87	8.46	<0.05
	5/07/2023	Insufficient volume for sample													
S9B-2 (EPL33)	30/01/2023	Insufficient volume for sample													
	23/03/2023	Insufficient volume for sample													
	5/06/2023	7.34	377	251	9	138	23	32	6	23	0.125	0.355	2.96	11.6	<0.05
	5/07/2023	Insufficient volume for sample													
Horwood Dam (EPL34)	30/01/2023	6.06	8700	8570	6	3660	1270	343	196	1060	2.18	2.51	187	398	<0.05
	23/03/2023	Insufficient volume for sample													
	5/06/2023	6.24	13700	11800	13	5100	2200	475	385	1900	2.46	1.7	302	515	<0.05
	5/07/2023	7.06	10700	9120	31	4140	1530	473	318	1660	1.76	0.901	234	339	0.1
Upstream (EPL35)	30/01/2023	7.53	695	442	116	87	104	47	11	61	0.0017	0.004	0.408	0.181	<0.05
	23/03/2023	Insufficient volume for sample													
	5/06/2023	7.73	116	37	26	12	10	10	2	7	0.0043	0.048	0.181	0.765	<0.05
	5/07/2023	Insufficient volume for sample													
Downstream (EPL36)	30/01/2023	Insufficient volume for sample													
	23/03/2023	Insufficient volume for sample													
	5/06/2023	Insufficient volume for sample													
	5/07/2023	Insufficient volume for sample													

5.5.1 Water containment structures

All surface runoff on site is captured by diversion trenches or berms and channelled to site water storage structures. No changes were made to this system during the reporting period. **Table 5-9** provides the capacities and estimated stored water volumes at the end of the reporting period. Aerial surveying of the water storages was conducted in 2023.

A review of site water structures by WSP was completed in June 2023 and recommendations for the improvement and increase of structures were made. These recommendations and findings were incorporated into the updated Site Water Management Plan in 2023. Follow-up engineering reviews to confirm capacities and options will be conducted in 2024.

After the heavy rainfall events of 2023 and the resulting issues with containing and managing runoff in surface structures, improvements in pumping capability were made, particularly with S14 and Ryan St Dam ponds where automatic electric pumps were installed.

Table 5-9 Water Containment Structures

	Pond Identification	Start of reporting period m^3 (1-Jan-2023)	At end of reporting period m^3 (31-Dec-2023)	Storage Capacity m^3
Potable and Raw Water	Workshop	9	9	14
	Mill	1400	1400	1400
	Delprats Shaft	22.5	22.5	22.5
	Kintore Pit	14	14	18
	Silver Tank	6500	6500	6500
Dirty Water (rain runoff)	S2	100	0	5003
	S14	100	0	4754
	S17	100	0	4320
	S31-1 and S31-2	10	0	5130
	S49	200	0	3638
	S35	10	0	263
	Little Kintore Pit	0	0	30000
Process, underground and used water	Horwood Dam	1000	10000	33524
	Plant Water Pond	1000	1000	2000
	S22 Mine Settlement Ponds	3000	7000	9446

5.6 Groundwater

The regional groundwater near the site is depressed due to long term pumping from the underground mines in the area. This results in the depressed groundwater level below the site being more than 100m below the surface level, with a hydraulic gradient into the site at depth. The groundwater monitoring program is undertaken with the purpose of recording perched groundwater movement. Perched groundwater refers to surface water that has infiltrated into the near surface moderate to high permeability material generally comprising of granular soils and rock dill. The perched ground water exists for short periods of time after rainfall events and generally seeps laterally over the low permeability bedrock surface below the near surface permeable material. The rainfall events at Rasp mine site indicate that the perched groundwater has the potential to surface seep rather than seep into the regional groundwater. Considering the depth of the regional groundwater, it is concluded that there is little interaction between the shallow perched groundwater and the regional groundwater.

Rasp's groundwater monitoring plan is outlined in the Site Water Management Plan.

The monitoring program includes eighteen sampling locations for groundwater, GW01 (EPL37) to GW16 (EPL52) are installed piezometers at various locations around the mine site and are sampled

quarterly. There are also two sampling locations for water pumped from underground mining, Shaft 7 (EPL53) and Kintore Pit (EPL54), sampled monthly. The locations for these monitoring points are shown in **Figure 3-2**. Groundwater monitoring is scheduled for March, June, September and December. A number of parameters are required to be analysed including: alkalinity (calcium carbonate ($CaCO_3$)), cadmium (Cd), calcium (Ca), chloride (Cl), electrical conductivity (EC), iron (Fe), lead Pb), magnesium (Mg), manganese (Mn), pH, sodium (Na), sulphate (SO4), total dissolved solids (TDS) and zinc (Zn). **Table 5-10** lists the location and function of each borehole.

Table 5-10 Location and Function for Groundwater Monitoring Points

Bore ID	Location	Function
GW01, GW02	Southeast of Mt Hebbard	Monitor potential seepage from Mt Hebbard
GW03 – GW09	East of TSF1	Monitor potential seepage from TSF1 towards CML7 boundary
GW10	Downstream of Horwood Dam	Monitor potential seepage north of Eyre St Dam
GW11, GW12	East of Blackwood Pit	Monitor perched groundwater mounding from TSF
GW13-GW15	Adjacent to storage areas S44, S31-1 and S31-2	Monitor movement of perched groundwater occurring from the storages
GW16	West of S49	Monitor potential seepage from S49
Shaft 7	Shaft 7	To maintain safety for underground mining at both the Rasp and Perilya South Mines
Kintore Pit (UG) - Mine dewatering	Kintore Pit decline	To maintain safety for underground mining at the Rasp Mine

Groundwater quality monitoring was undertaken in May 2007 and August 2011 at Shaft 7 to establish an initial baseline for parameters and trigger levels for the monitoring program (30% above 2011 results).

The site's groundwater is deep and is extracted as part of mining. The underground extraction system results in inward flow of the groundwater into the mine. Hence, groundwater at the mine is likely to be impacted by off-site sources due to the inward hydraulic gradient into the mine.

The majority of piezometers showed an increase in water levels during the reporting period, which can be attributed to the high rainfall in 2022 as shown in **Table 5-11**.

Quarterly samples were obtained from 12 of the 16 bores and no samples could be obtained from bores GW2, GW13, GW14 or GW15 and results were within historic ranges. **Table 5-12** provides a summary of groundwater monitoring results for 2023.

Table 5-14 provides a summary of water monitoring results for Shaft 7 and mine dewatering (Kintore Pit), indicating samples above baseline trigger in orange.

Figures 5-20 and **5-21** provide a summary of water monitoring results for the period 2012, commencement of operations, to 2023.

Table 5-11 Bore Piezometer Depths

Sample point	Depth mbTOC										
	Avg 2023	Avg 2022	Avg 2021/22	Avg 2020/21	Avg 2019	Avg 2018	Avg 2017	Avg 2016	Avg 2015	Avg 2014	Trend
GW01	5.09	6.05	8.96	Dry	8.42	8.35	6.85	7.39	7.25	7.25	Rising
GW02	Dry	Dry	Dry	Dry	Dry	Dry	3.33	Dry	Dry	Dry	Stable
GW03	3.6	3.52	3.66	3.66	3.83	3.6	3.58	3.64	3.62	3.61	Stable
GW04	2.83	2.92	3.03	3.42	2.99	2.73	2.87	2.94	2.9	2.83	Rising
GW05	2.91	3.25	3.48	4.16	3.76	3.65	3.49	3.53	3.5	3.4	Rising
GW06	2.59	2.77	3.26	3.21	3.16	3.1	2.96	2.85	2.76	2.66	Rising
GW07	2.54	2.68	3.25	3.8	3.14	3.15	2.58	2.74	2.8	2.54	Rising
GW08	1.5	1.48	2.22	3.08	2.53	2.36	1.88	1.81	1.87	2.11	Rising
GW09	2.62	2.46	3.34	4.31	3.89	3.84	3.5	2.94	3.07	1.79	Rising
GW10	1.8	2.44	4.1	5.2	4.2	3.46	1.9	1.49	1.725	0.83	Rising
GW11	9.51	9.9	11.42	13.3	12.17	12	10	10.1	10.4	10.69	Rising
GW12	26.8	34.1	Dry	21.52	21.53	20.47	19.19	34.49	37.1	21.6	Stable
GW13	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Stable
GW14	Dry	0.34	0.34	Dry	Dry	Dry	1.3	Dry	Dry	Dry	Stable
GW15	Dry	Dry	Dry	Dry	Dry	Dry	2.8	Dry	Dry	Dry	Stable
GW16	Dry	1.29	1.14	Dry	Dry	Dry	Dry	1.55	Dry	Dry	Stable

The following provides a discussion of results.

GW01 and GW2 Located Downstream of Mt Hebbard

These water bores are intended to monitor the sub-surface water fluctuations south of Mt Hebbard. GW1 had sufficient water to monitor each quarter while GW2 was dry through the year. GW1 sample results were consistent with results from previous years with slight decreases in TDS, EC and SO_4, likely due to the influx of water from 2022 rainfall and storage of runoff in the S17 ponds. GW2 did not contain water in previous years except for 2017 but this was at bore depth. **Figure 5-26** indicates that results remain within historic ranges.

GW03, GW04, GW05, GW06, GW07, GW08, GW09 and GW10 Located Adjacent to TSF1 and Horwood Dam

Groundwater bores are located near the eastern side of the unused historic TSF1 and extend to Horwood Dam. The intent of the monitoring bores is to monitor perched water in the area that may impact on Eyre Street Dam. The monitoring is in response to surface seepage noted in the area during intense 2011 rainfall events. All bores in the series were able to be monitored each quarter. Water levels were rising in these bores due to the heavy rainfall in the previous year. Manganese, Zinc and Cadmium results from GW10 were elevated at times in 2022 and likely due to seepage from Horwood Dam, but were falling back towards historic levels in 2023.

GW11 and GW12 located south east of Blackwood Pit

Blackwood Pit is used for the storage of tailings. It forms part of the mining area and is surrounded by historic mine workings. Due to these historic workings, any seepage from the Pit will be intercepted and collected by the underground mine water management system. Due to the north east and south west length of the pit there is a possibility for the formation of a perched aquifer as a result of groundwater mounding around the south east site of the pit once it receives tailings. If a perched water table is measured in the two bores, consideration will be given to the installation of additional bores to assess the local hydrogeological conditions and risk of migration of seepage. On the advice of Golder, bores were installed to the south east of the facility in order to detect any seepage.

The ground water level in GW11 was higher than previous periods due to the infiltration of rainfall to the local water table. GW12 has gone dry which may be due to nearby exploration drilling intercepting an old working in the area. TDS, EC and SO4 levels in GW11 were elevated in 2022 but have returned to historic levels in 2023.

GW13 and GW14 (adjacent 31-1), GW15 (adjacent rail load out) and GW16 (adjacent S49)

As perched water seepage may occur from ponds located near the CML7 boundary when these ponds store water, bores have been installed adjacent to these locations. All bores were dry in the period.

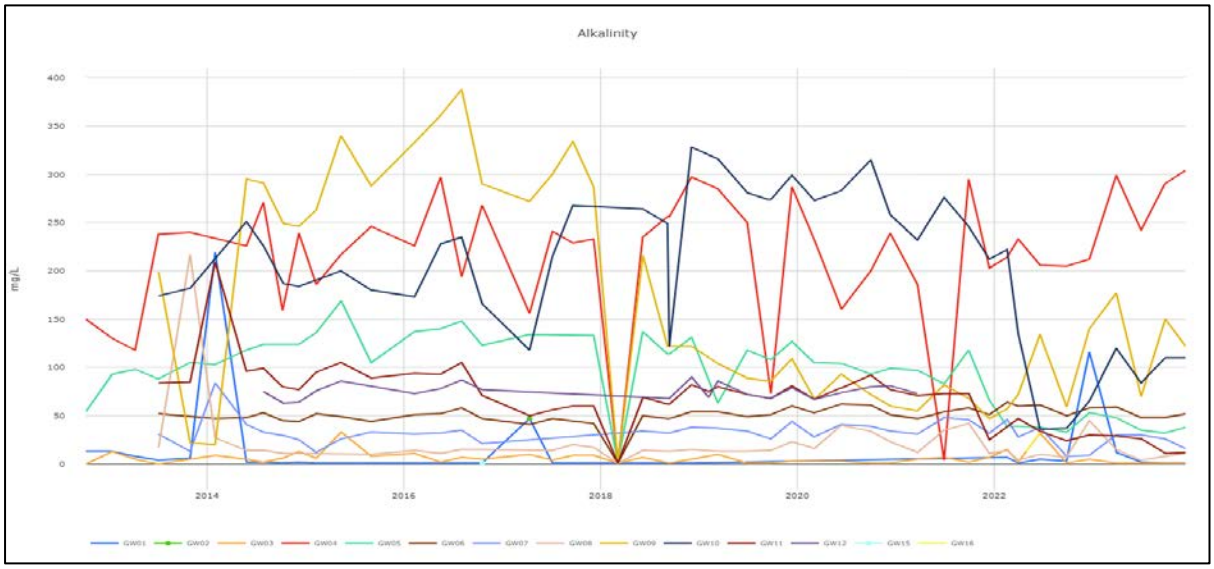
Table 5-12 Piezometer Monitoring Results for the Reporting Period

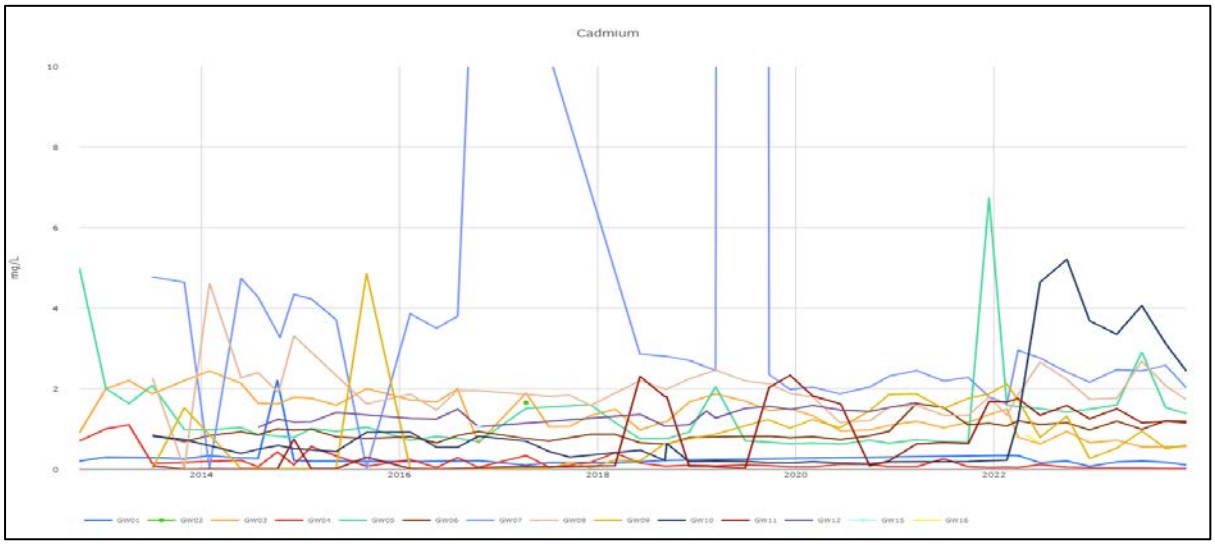
Sample Point	Sample Date	pH	EC	TDS	Alkalinity ($CaCO_3$)	SO4	Cl	Ca	Mg	Na	Cd	Pb	Mn	Zn	Fe
			(µS/cm2)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
GW1 (EPL37)	11/12/2023	4.54	8130	8400	1	4240	526	204	335	1310	0.11	0.03	224	168	<0.05
	29/09/2023	4.49	8360	8300	1	4480	722	238	380	1360	0.17	0.041	288	238	<0.05
	30/06/2023	4.59	9800	9430	2	4950	941	294	446	1500	0.201	0.05	276	225	0.17
	31/03/2023	6.13	8620	7770	12	4460	819	263	355	1170	0.181	0.06	225	174	<0.05
GW2 (EPL38)	11/12/2023	Dry													
	29/09/2023	Dry													
	30/06/2023	Dry													
	31/03/2023	Dry													
GW3 (EPL39)	11/12/2023	5.7	14500	14000	<1	4830	2710	580	380	2300	0.558	3.2	454	366	0.44
	29/09/2023	5.49	14700	13500	<1	4770	2890	551	362	2170	0.559	3.47	491	425	0.22
	30/06/2023	5.53	14700	13100	<1	4970	2920	594	399	2380	0.552	3.62	434	362	0.5
	31/03/2023	6.09	14100	12500	<1	5140	2980	502	332	2120	0.717	3.46	365	285	4.17
GW4 (EPL40)	11/12/2023	6.48	15000	12300	304	4630	2410	554	559	2340	0.018	0.002	18.8	10.2	<0.05
	29/09/2023	5.57	14700	12000	290	4610	2480	554	567	2370	0.0197	0.004	20.6	9.89	<0.05
	30/06/2023	6.62	14700	11500	242	4790	2520	599	582	2480	0.035	0.005	32.4	16.3	0.24
	31/03/2023	6.34	13900	11400	299	4840	2650	519	516	2260	0.0404	0.168	21.3	13	<0.05
GW5 (EPL41)	11/12/2023	5.89	13800	12400	38	4590	2220	568	419	2210	1.38	0.533	270	210	<0.05
	29/09/2023	5.88	13600	12000	32	4600	2380	546	406	2130	1.53	0.597	286	260	<0.05
	30/06/2023	5.82	13400	11600	35	4770	2450	566	430	2220	2.91	0.511	231	252	0.3
	31/03/2023	5.9	13400	11500	48	4950	2590	472	354	1910	1.59	0.942	255	225	<0.05
GW6 (EPL42)	11/12/2023	5.78	14400	13600	52	5000	2390	557	516	2400	1.19	0.071	327	219	<0.05
	29/09/2023	5.91	14300	12800	48	4900	2460	534	479	2210	1.2	0.072	341	227	<0.05
	30/06/2023	5.89	14100	12400	48	5030	2600	576	508	2380	0.988	0.069	283	185	0.33
	31/03/2023	5.83	13800	12200	59	5460	2720	481	441	2110	1.19	0.095	305	194	<0.05

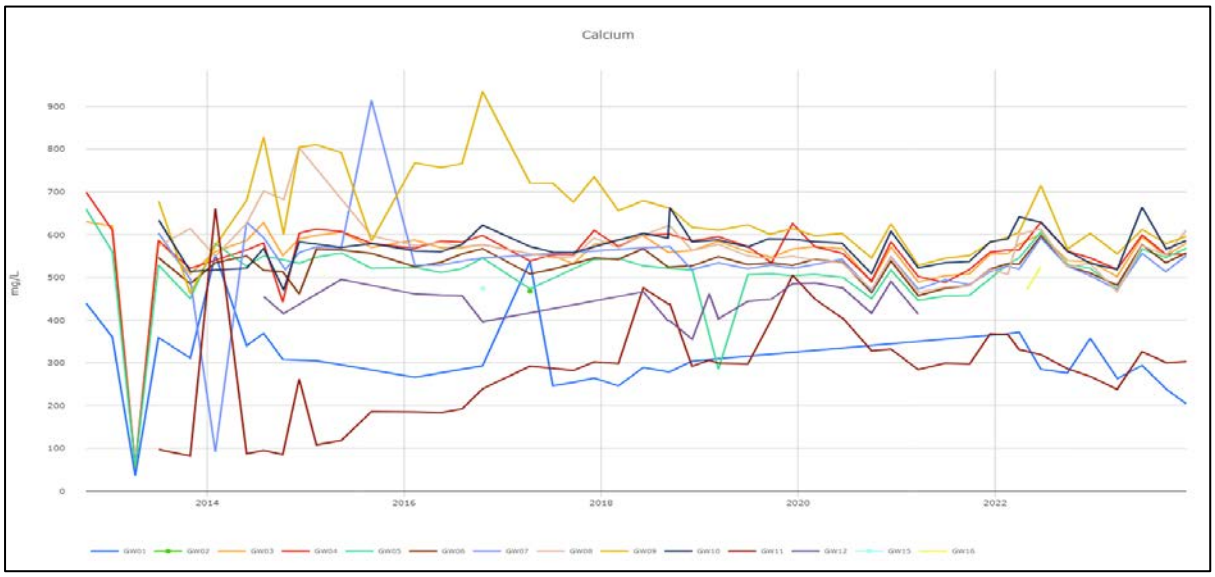
Sample Point	Sample Date	pH	EC	TDS	Alkalinity ($CaCO_3$)	SO4	Cl	Ca	Mg	Na	Cd	Pb	Mn	Zn	Fe
			(µS/cm2)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
GW7 (EPL43)	11/12/2023	6.01	12600	11800	16	4490	1880	551	354	2010	2.02	1.76	312	302	<0.05
	29/09/2023	6.1	12500	11900	26	4620	1780	513	328	1810	2.58	1.78	326	428	<0.05
	30/06/2023	5.95	12500	11300	30	4930	1820	556	355	1930	2.44	1.28	294	370	<0.05
	31/03/2023	5.98	12200	10800	30	5280	1940	471	312	1790	2.47	1.33	320	298	<0.05
GW8 (EPL44)	11/12/2023	5.68	10100	9990	11	3310	1650	610	240	1250	1.73	0.368	256	457	<0.05
	29/09/2023	5.92	10400	9840	8	3680	1640	552	255	1320	2.06	0.485	320	535	<0.05
	30/06/2023	5.93	12600	11500	4	4580	2250	574	351	1780	2.68	0.604	279	498	<0.05
	31/03/2023	6.14	9140	8360	15	4120	1380	466	188	1110	1.76	0.343	292	432	<0.05
GW9 (EPL45)	11/12/2023	6.34	11100	9820	122	3810	1610	596	519	1520	0.598	0.005	63.3	86.5	<0.05
	29/09/2023	6.59	10700	8900	150	3650	1700	579	446	1380	0.508	<0.001	49.2	52.9	<0.05
	30/06/2023	6.42	11000	9630	70	4490	1550	612	508	1520	0.948	0.001	88.4	130	<0.05
	31/03/2023	6.2	10400	8520	177	3850	1780	555	403	1350	0.52	0.006	40.7	53.6	<0.05
GW10 (EPL46)	11/12/2023	6.17	15800	13400	110	4670	2840	586	568	2540	2.43	0.005	115	243	<0.05
	29/09/2023	6.11	15700	13200	110	4630	2980	566	528	2430	3.1	<0.001	153	294	<0.05
	30/06/2023	6.15	16700	14600	84	5080	3430	664	615	2780	4.06	0.003	154	318	<0.05
	31/03/2023	6.03	14900	12600	120	4980	3190	518	487	2330	3.35	0.002	150	270	<0.05
GW11 (EPL47)	11/12/2023	6.16	3210	2880	12	1340	298	303	82	365	1.15	0.609	9.32	56.9	<0.05
	29/09/2023	5.99	3180	2670	11	1360	272	300	75	336	1.19	0.547	9.24	54.6	<0.05
	30/06/2023	6.11	3150	2630	26	1450	290	326	78	350	1.15	0.576	9.04	53.2	<0.05
	31/03/2023	6.24	4020	3250	29	1820	452	238	92	435	1.5	0.597	18.3	61.2	<0.05
GW12 (EPL48)	11/12/2023	Dry													
	29/09/2023	Dry													
	30/06/2023	Dry													
	31/03/2023	Dry													

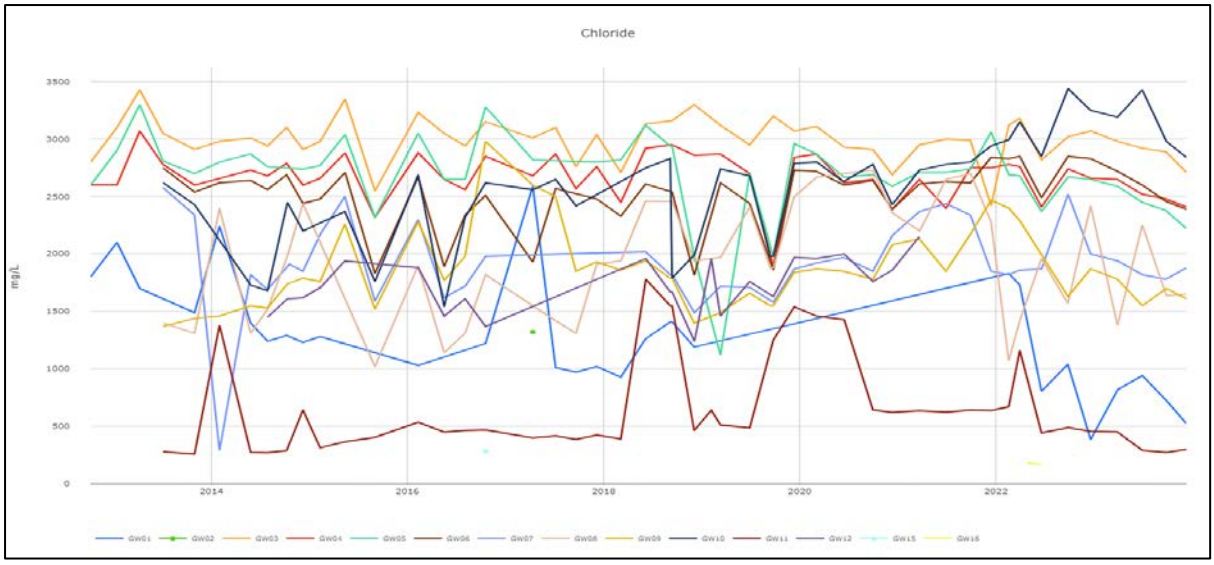
Sample Point	Sample Date	pH	EC	TDS	Alkalinity ($CaCO_3$)	SO4	Cl	Ca	Mg	Na	Cd	Pb	Mn	Zn	Fe
			(µS/cm2)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
GW13 (EPL49)	11/12/2023	Dry													
	29/09/2023	Dry													
	30/06/2023	Dry													
	31/03/2023	Dry													
GW14 (EPL50)	11/12/2023	Dry													
	29/09/2023	Dry													
	30/06/2023	Dry													
	31/03/2023	Dry													
GW15 (EPL51)	11/12/2023	Dry													
	29/09/2023	Dry													
	30/06/2023	Dry													
	31/03/2023	Dry													
GW16 (EPL52)	11/12/2023	Dry													
	29/09/2023	Dry													
	30/06/2023	Dry													
	31/03/2023	Dry													

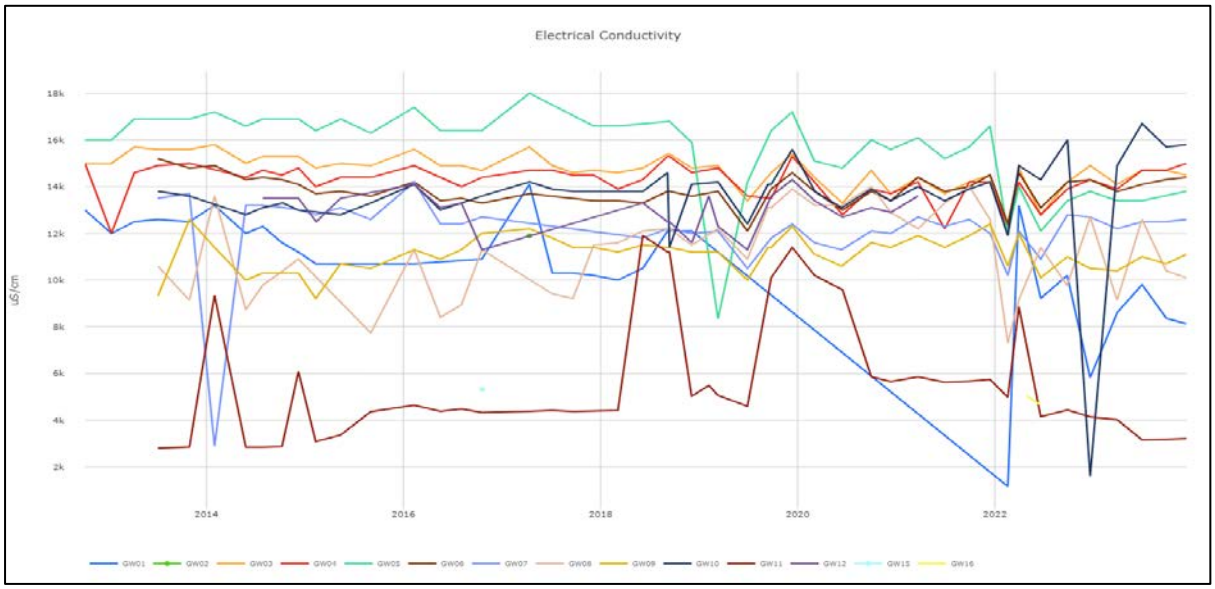
Figure 5-26 Groundwater Quality Results for the Period 2012 to December 2023

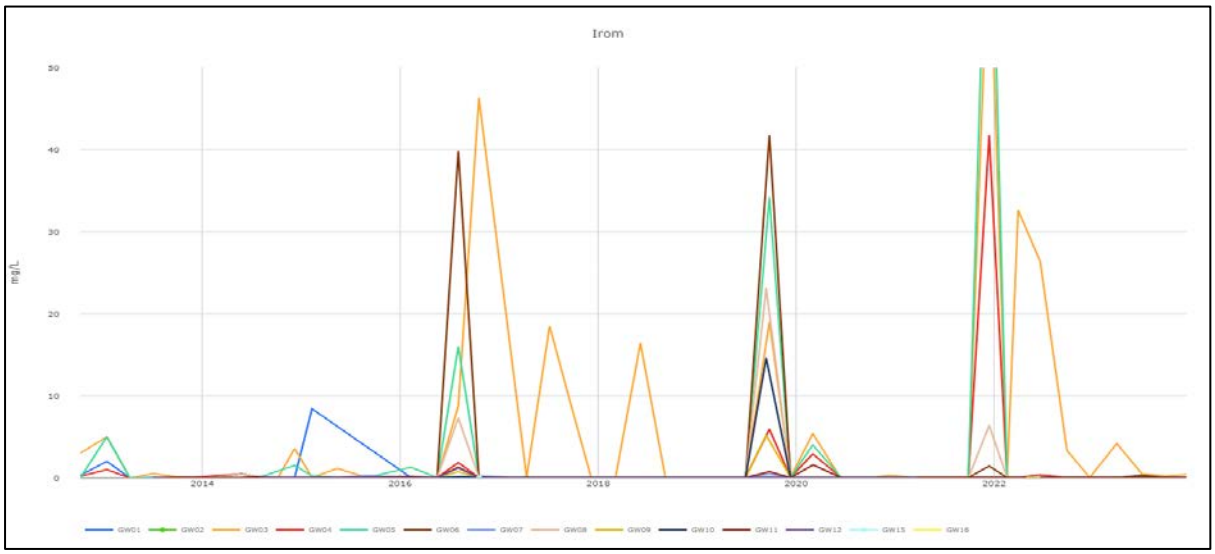


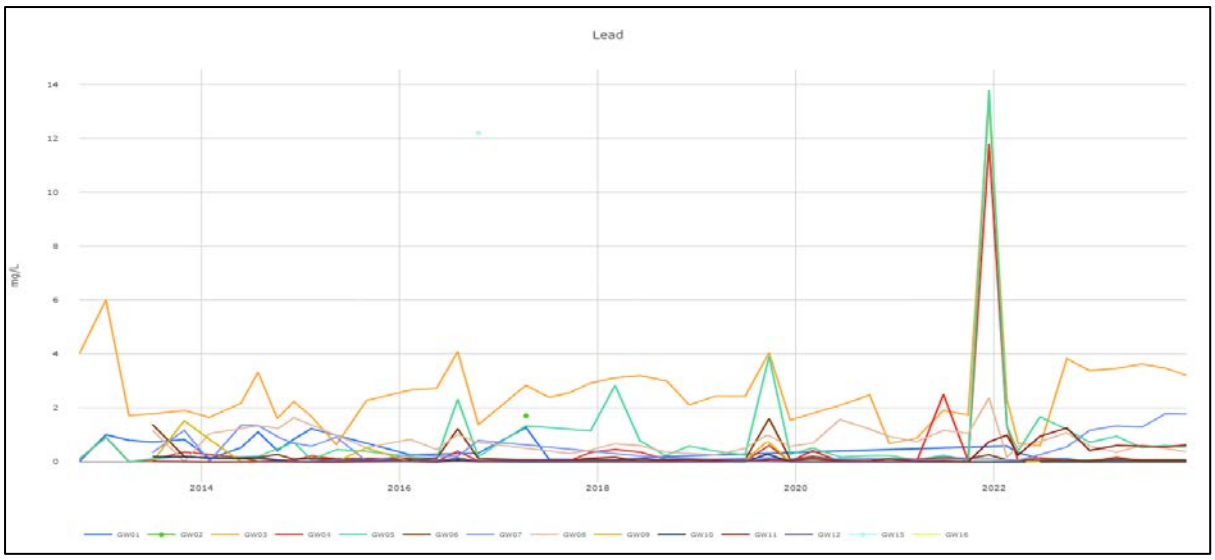


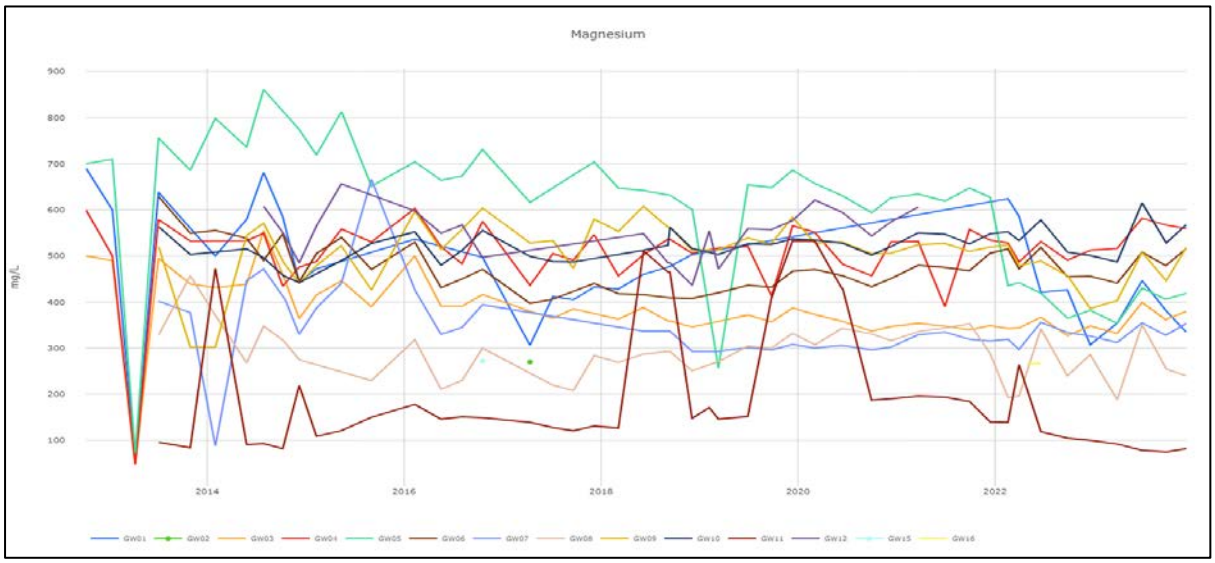


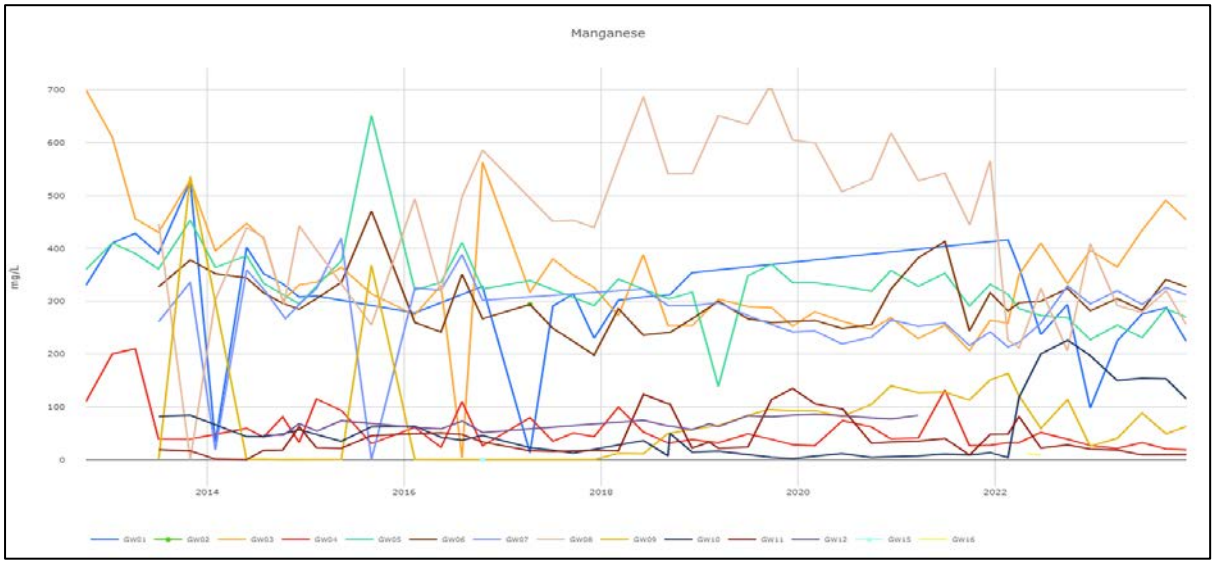

Chloride
mg/L
3500
3000
2500
2000
1500
1000
500
0
2014
2016
2018
2020
2022
GW01 GW02 GW03 GW04 GW05 GW06 GW07 GW08 GW09 GW10 GW11 GW12 GW15 GW16

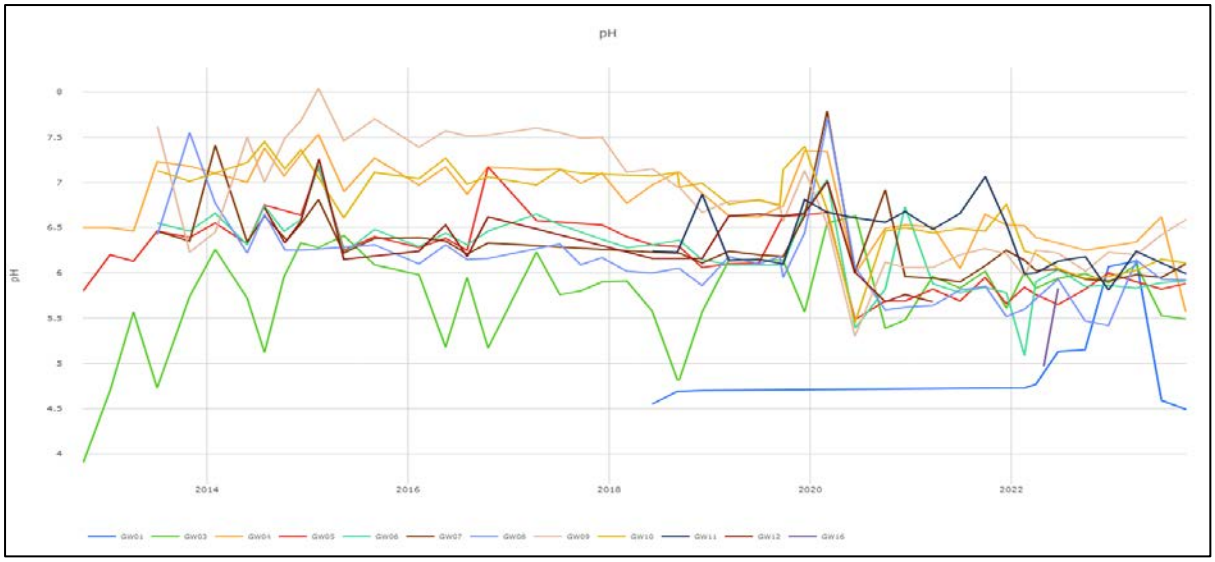

Electrical Conductivity
uS/cm
18k
16k
14k
12k
10k
8k
6k
4k
2k
2014
2016
2018
2020
2022
GW01 GW02 GW03 GW04 GW05 GW06 GW07 GW08 GW09 GW10 GW11 GW12 GW15 GW16

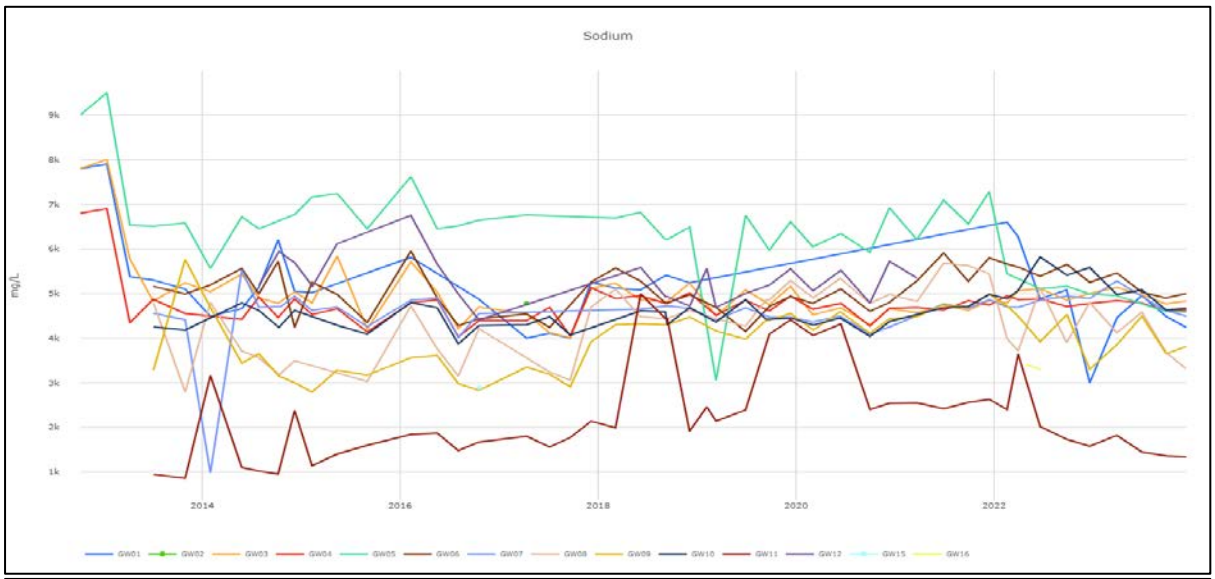

Irom
mg/L
50
40
30
20
10
0
2014
2016
2018
2020
2022
GW01 GW02 GW03 GW04 GW05 GW06 GW07 GW08 GW09 GW10 GW11 GW12 GW15 GW16

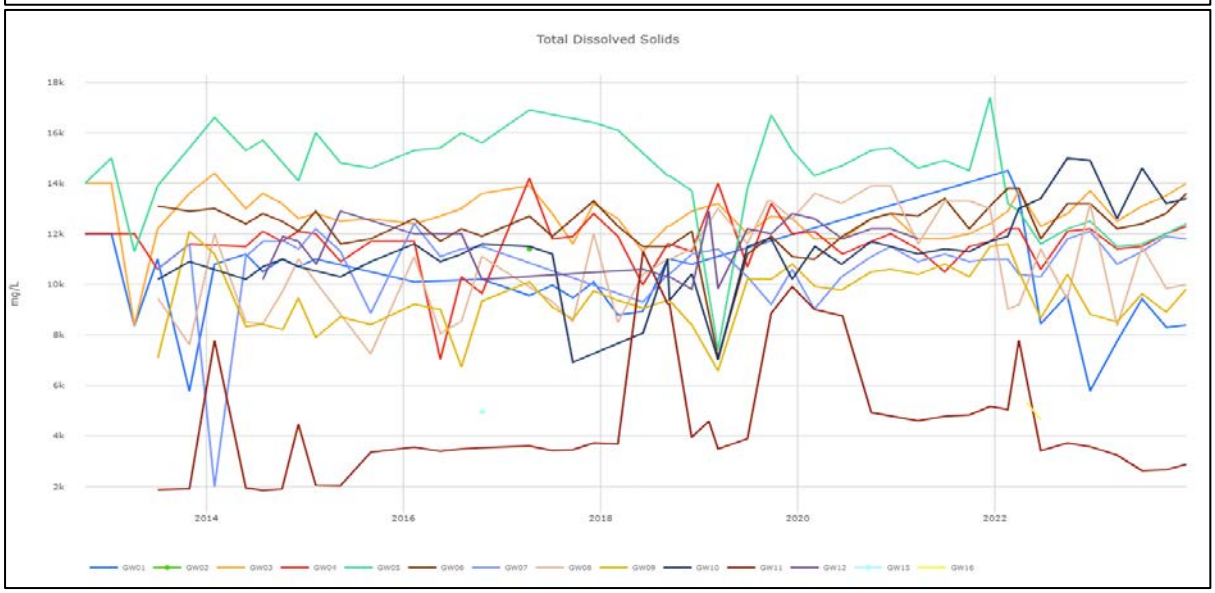

Lead
mg/L
14
12
10
8
6
4
2
0
2014
2016
2018
2020
2022
GW01 GW02 GW03 GW04 GW05 GW06 GW07 GW08 GW09 GW10 GW11 GW12 GW15 GW16

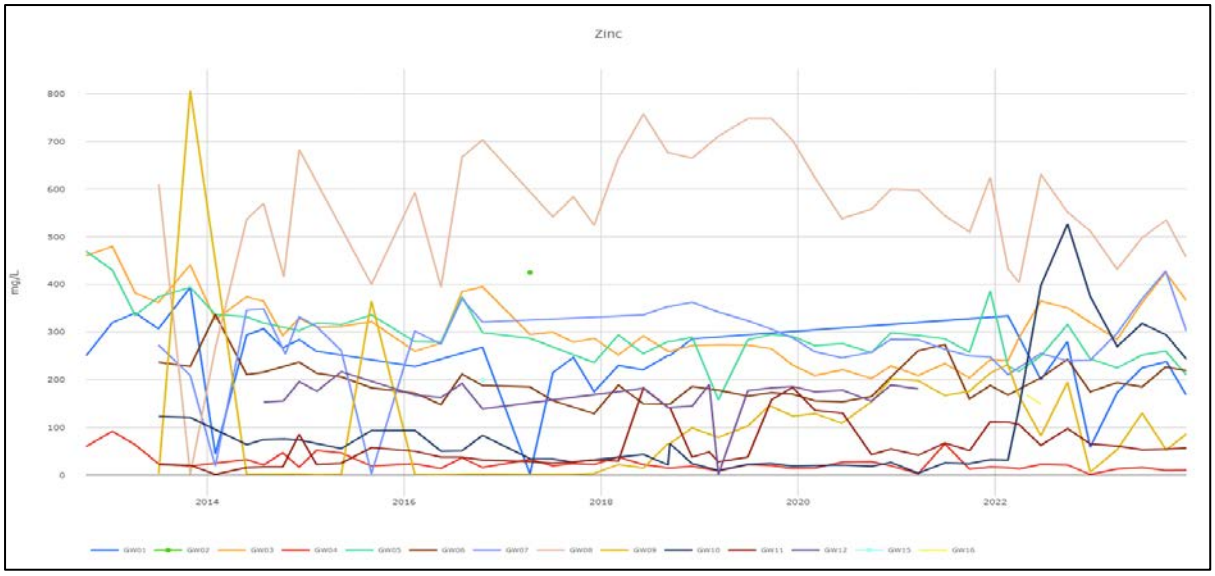

Magnesium
mg/L
900
800
700
600
500
400
300
200
100
2014
2016
2018
2020
2022
GW01 GW02 GW03 GW04 GW05 GW06 GW07 GW08 GW09 GW10 GW11 GW12 GW15 GW16


Manganese
mg/L
700
600
500
400
300
200
100
0
2014
2016
2018
2020
2022
GW01 GW02 GW03 GW04 GW05 GW06 GW07 GW08 GW09 GW10 GW11 GW12 GW15 GW16


pH
pH
9
7.5
7
6.5
6
5.5
5
4.5
4
2014
2016
2018
2020
2022
GW01 GW03 GW04 GW05 GW06 GW07 GW08 GW09 GW10 GW11 GW12 GW16


Sodium
mg/L
9k
8k
7k
6k
5k
4k
3k
2k
1k
2014
2016
2018
2020
2022
GW01 GW02 GW03 GW04 GW05 GW06 GW07 GW08 GW09 GW10 GW11 GW12 GW15 GW16


Total Dissolved Solids
mg/L
18k
16k
14k
12k
10k
8k
6k
4k
2k
2014
2016
2018
2020
2022
GW01 GW02 GW03 GW04 GW05 GW06 GW07 GW08 GW09 GW10 GW11 GW12 GW13 GW16



Underground Feed Sampling

Results for UG Feed have recently exceeded trigger thresholds for Chloride, Magnesium and Lead but are variable and likely the result of differing mine locations being developed. Total dissolved solids (TDS) results were above the trigger threshold for all UG Feed results and all Shaft 7 results, however results were within the historic range for TDS. Water from both sources is used on site and not discharged. Samples from both locations were interrupted throughout 2023 as pumping from each location was sporadic.

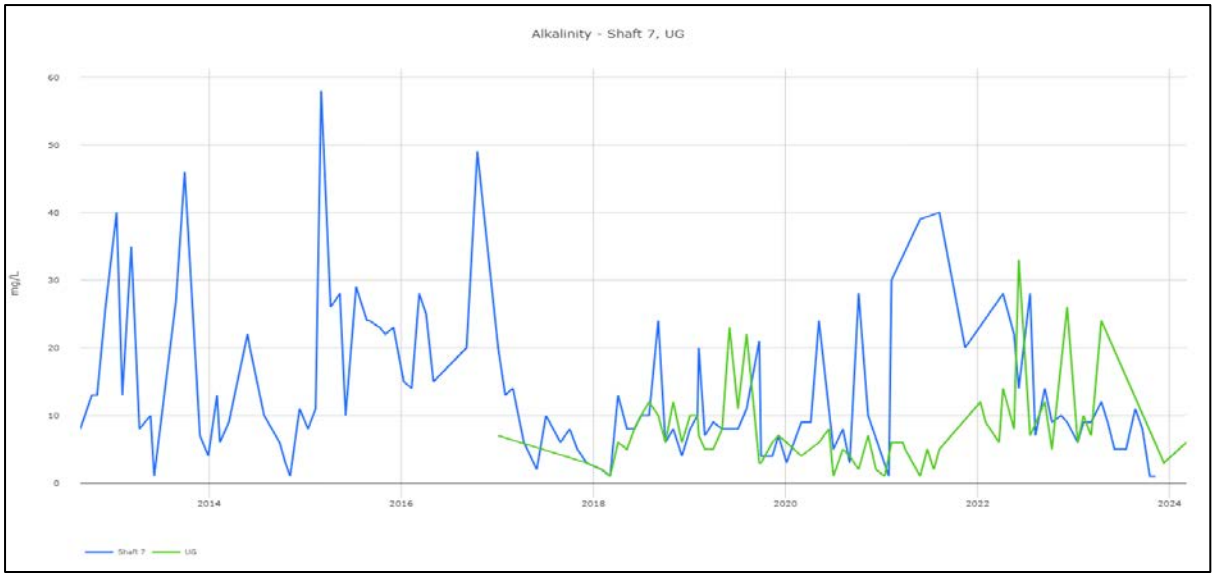
Figure 5-27 provides a series of graphs indicating results from commencement of operations to present (2012-2023). Results are within the historic range for all parameters.

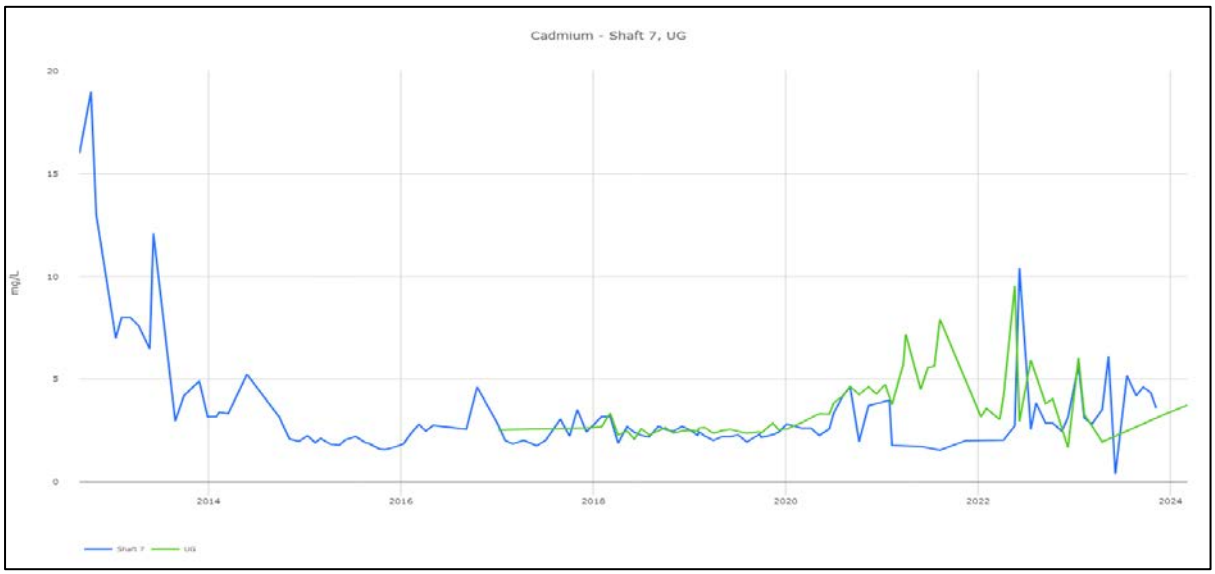
Table 5-13 Groundwater Monitoring Results for Shaft 7 and Mine Dewatering 2023

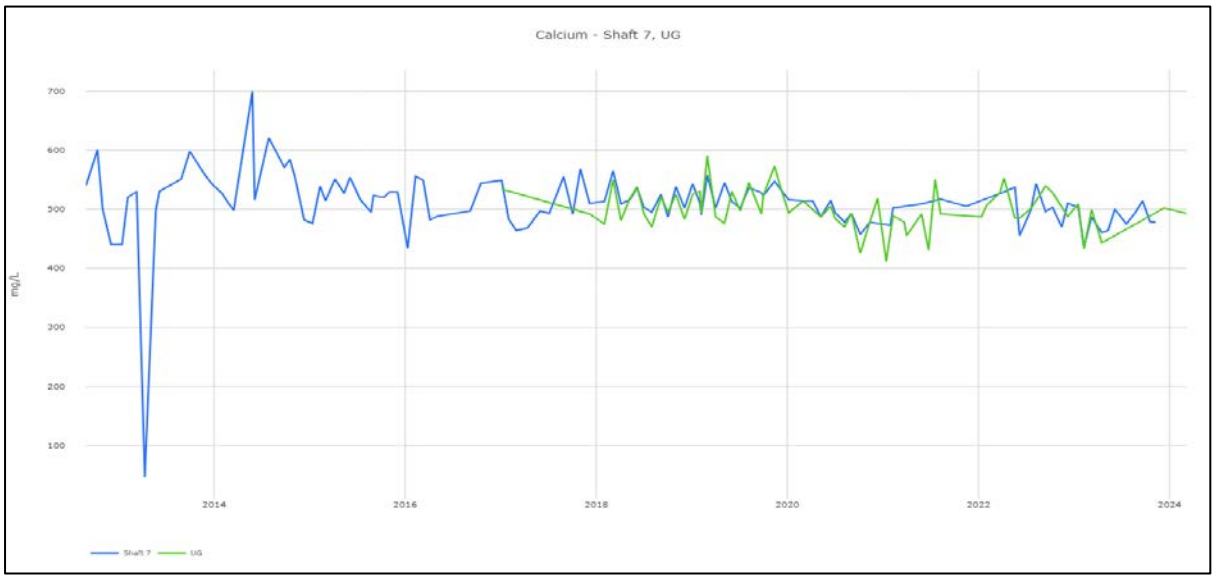
Sample Point	Date	pH	EC	TDS	Alkalinity ($CaCO_3$)	SO4	Cl	Ca	Mg	Na	Cd	Pb	Mn	Zn	Fe
			(µS/cm2)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
Shaft 7	17/01/2023	5.69	14000	18900	6	6590	1940	503	560	1910	5.67	3.22	390	1300	<0.05
	8/02/2023	6.11	12700	13400	9	5810	1550	436	356	1590	3.11	1.73	266	1050	<0.05
	9/03/2023	5.85	12000	12900	9	5300	1520	487	324	1600	2.81	1.9	271	1020	<0.05
	17/04/2023	5.79	13800	15100	12	6500	2170	460	410	1790	3.52	2.93	335	1040	0.82
	11/05/2023	5.79	14600	15400	9	5460	1760	464	554	1740	6.12	3.91	388	1440	<0.05
	6/06/2023	5.84	14200	14000	5	5770	1890	500	45.6	1760	0.373	2.34	382	101	<0.05
	20/07/2023	6.31	15500	17500	5	8070	2280	475	568	2260	5.17	3.25	468	1250	<0.05
	17/08/2023	5.82	13100	14300	11	6140	1580	495	483	1780	4.2	1.59	356	1160	<0.05
	20/09/2023	6.02	14100	29400	8	6120	1680	514	529	1840	4.62	3.78	383	1320	0.08
	18/10/2023	6.23	13400	14900	1	6310	1670	479	510	1710	4.34	1.71	325	1310	<0.05
	8/11/2023	6.39	13800	15300	<1	6740	1630	478	444	1780	3.58	2.86	327	1220	0.4
	11/12/2023	No extraction Shaft 7													
UG/Kintore	17/01/2023	5.62	14000	20000	6	6760	1940	509	592	1880	6.03	3.43	392	1350	<0.05
	8/02/2023	6.28	12600	13500	10	5870	1570	433	379	1630	3.28	1.84	276	1110	<0.05
	9/03/2023	5.9	12200	12800	7	5410	1590	499	336	1640	2.73	2.04	292	987	<0.05
	17/04/2023	5.62	11000	12200	24	5600	1420	443	350	1320	1.94	1.42	254	918	<0.05
	11/05/2023	No extraction Underground													
	6/06/2023	No extraction Underground													
	20/07/2023	No extraction Underground													
	17/08/2023	No extraction Underground													
	20/09/2023	No extraction Underground													
	18/10/2023	No extraction Underground													
	8/11/2023	No extraction Underground													
	11/12/2023	6.09	13700	14800	3	5870	1640	502	399	1920	3.29	2.57	345	1180	<0.05
Baseline		5.8	13900	8000	40	9660	1360	472	395	3550	6.32	2.25	907	3330	1.57
Trigger		7.54	18070	10400	52	12558	1768	614	514	4615	7.57	2.93	1179	4329	2.04

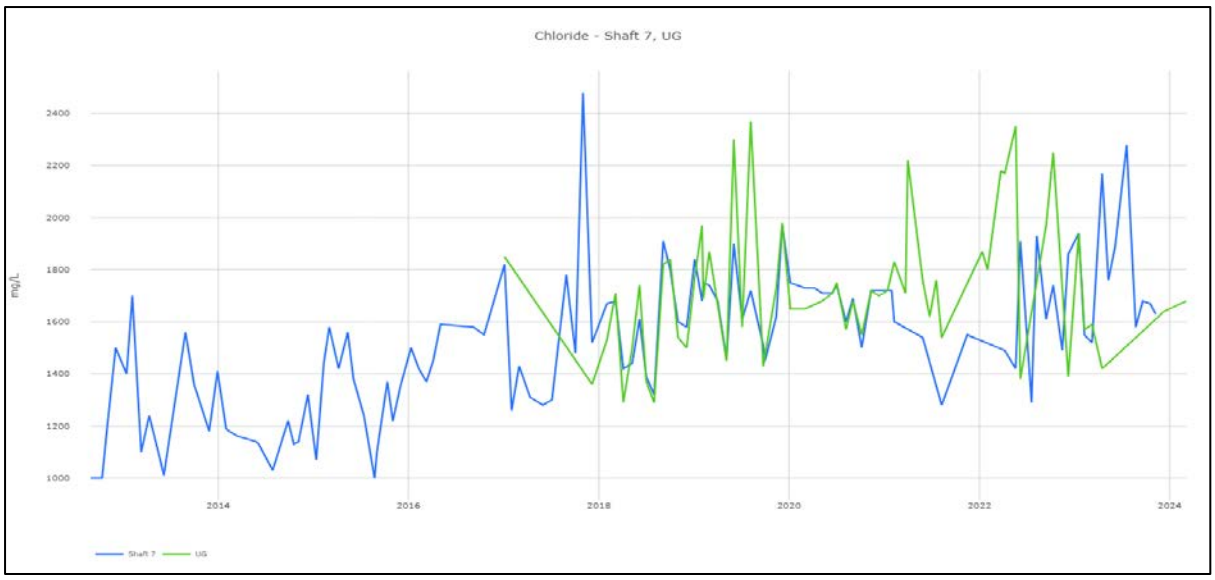
Trigger = Baseline + 30%

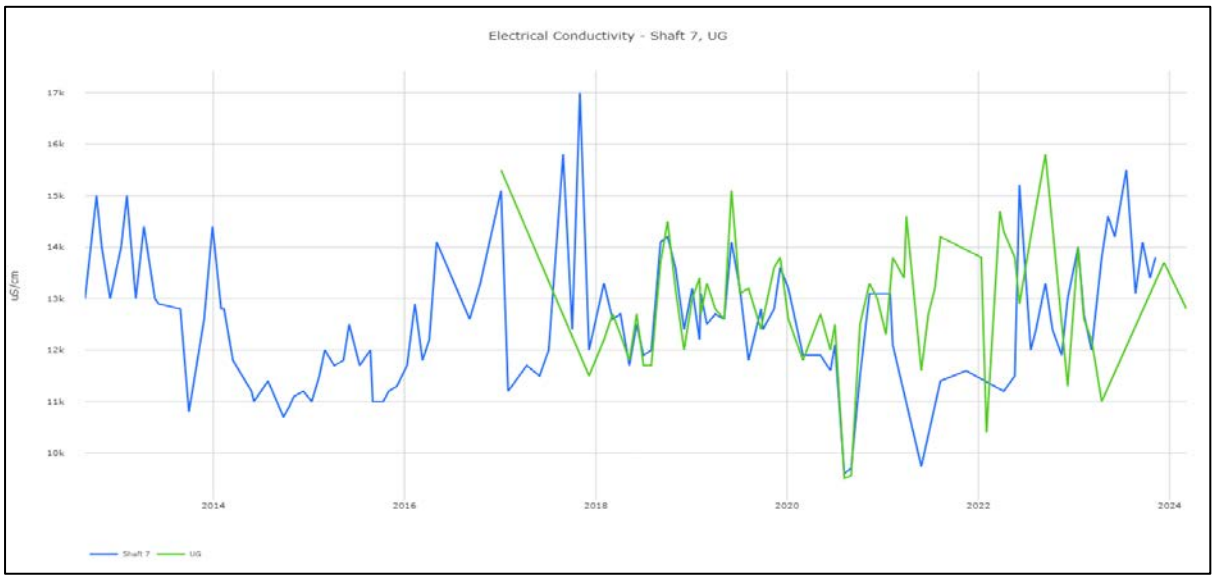
Figure 5-27 Shaft 7 & Mine Dewatering Results for Sampled Parameters - Period 2012 to Dec 2023

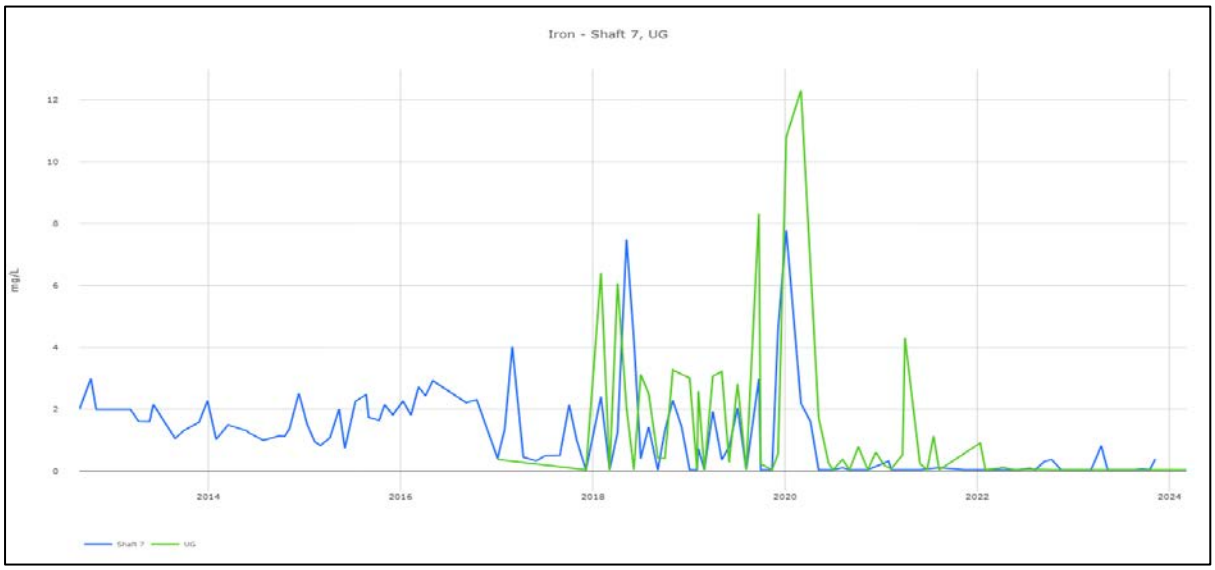


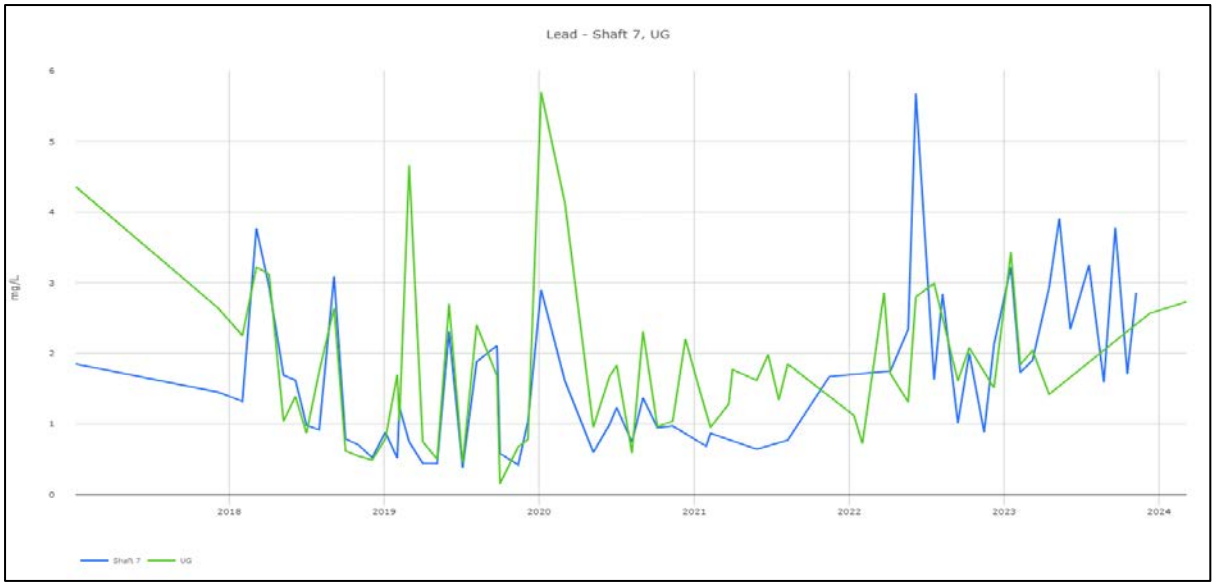


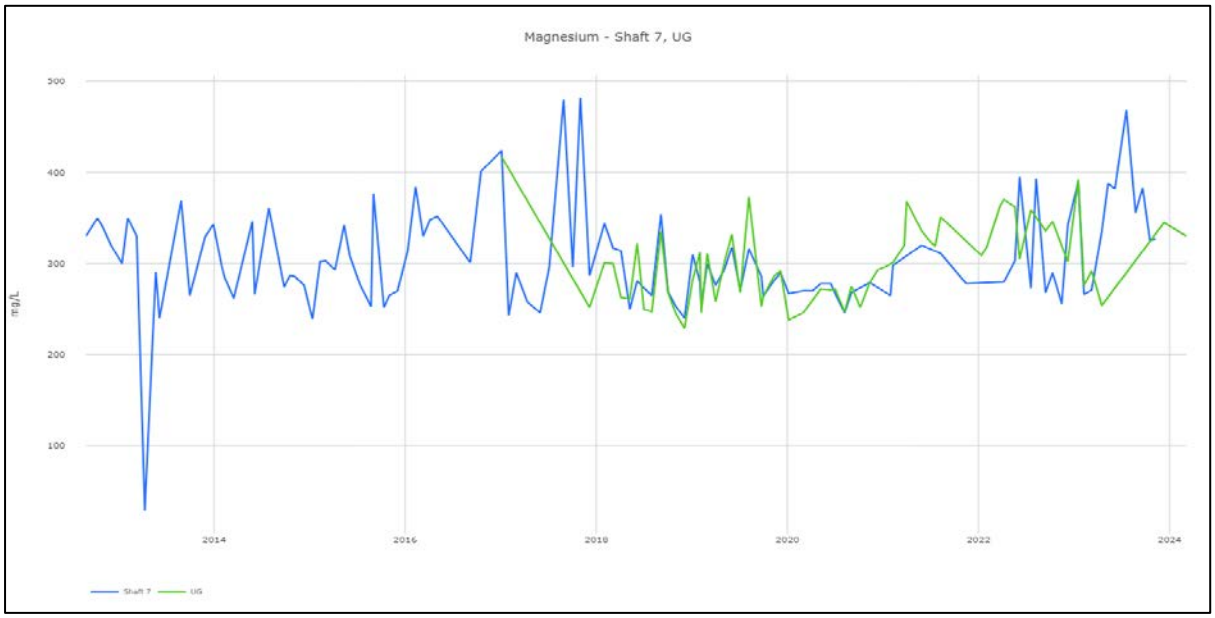


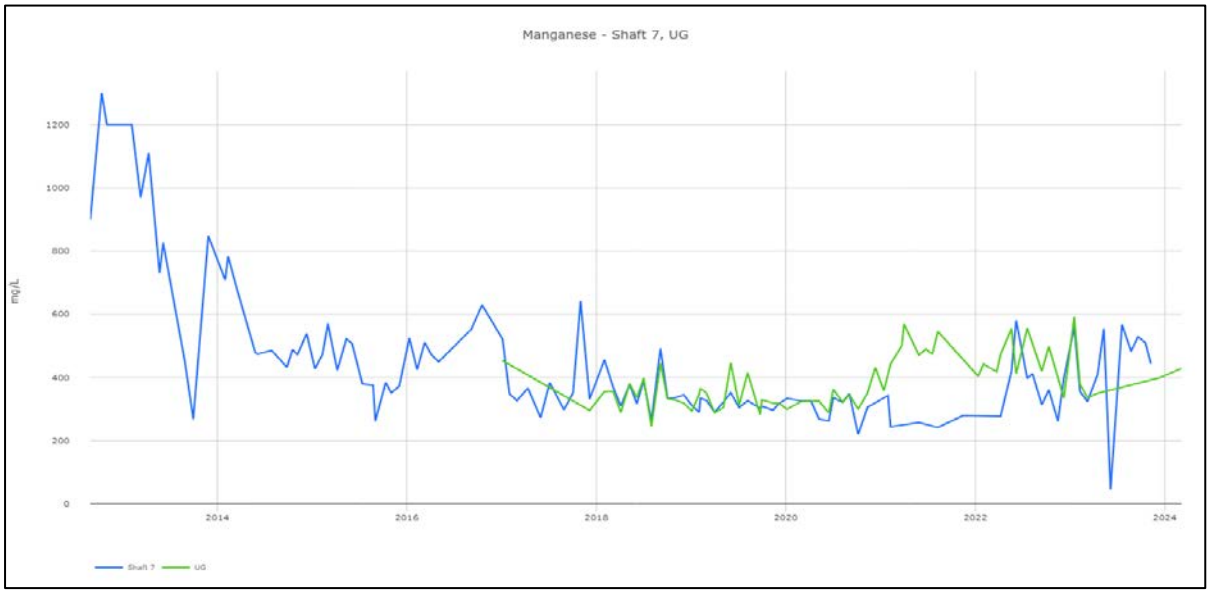

Chloride - Shaft 7, UG
mg/L
2400
2200
2000
1800
1600
1400
1200
1000
2014
2016
2018
2020
2022
2024
Shaft 7
UG

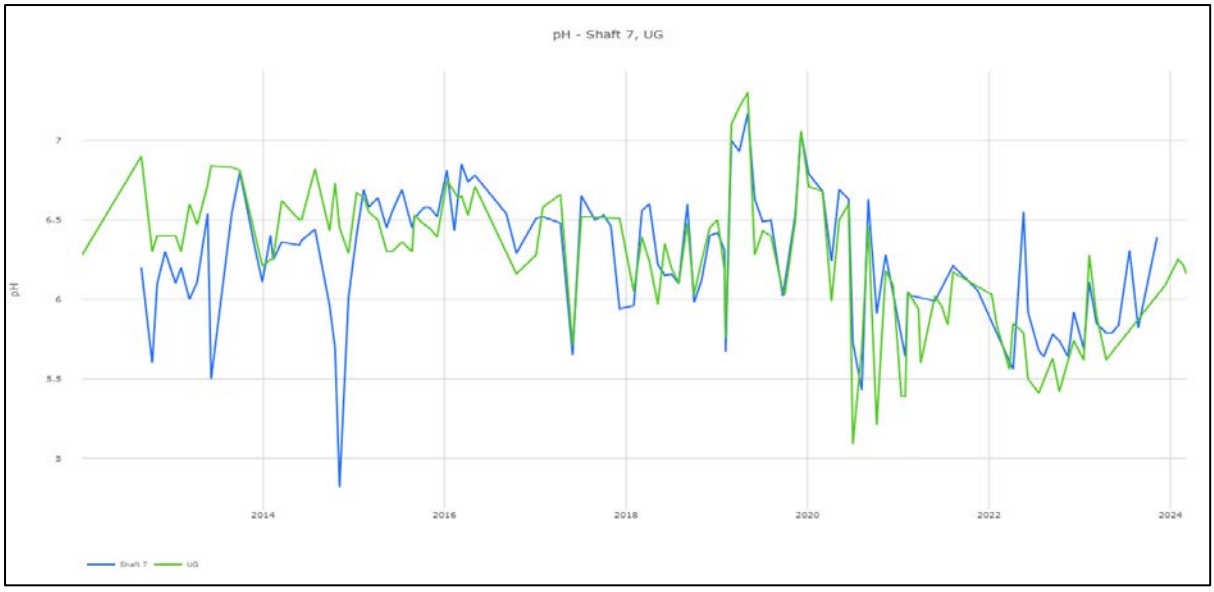

Electrical Conductivity - Shaft 7, UG
uS/cm
17k
16k
15k
14k
13k
12k
11k
10k
2014
2016
2018
2020
2022
2024
Shaft 7
UG

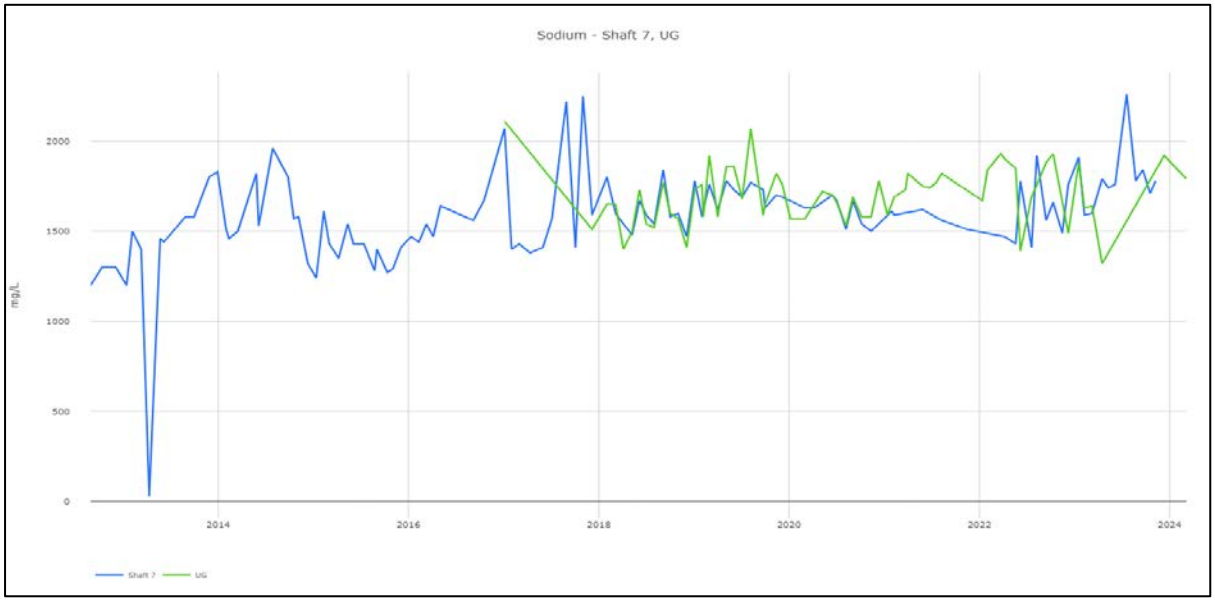

Iron - Shaft 7, UG
mg/L
12
10
8
6
4
2
0
2014
2016
2018
2020
2022
2024
Shaft 7
UG

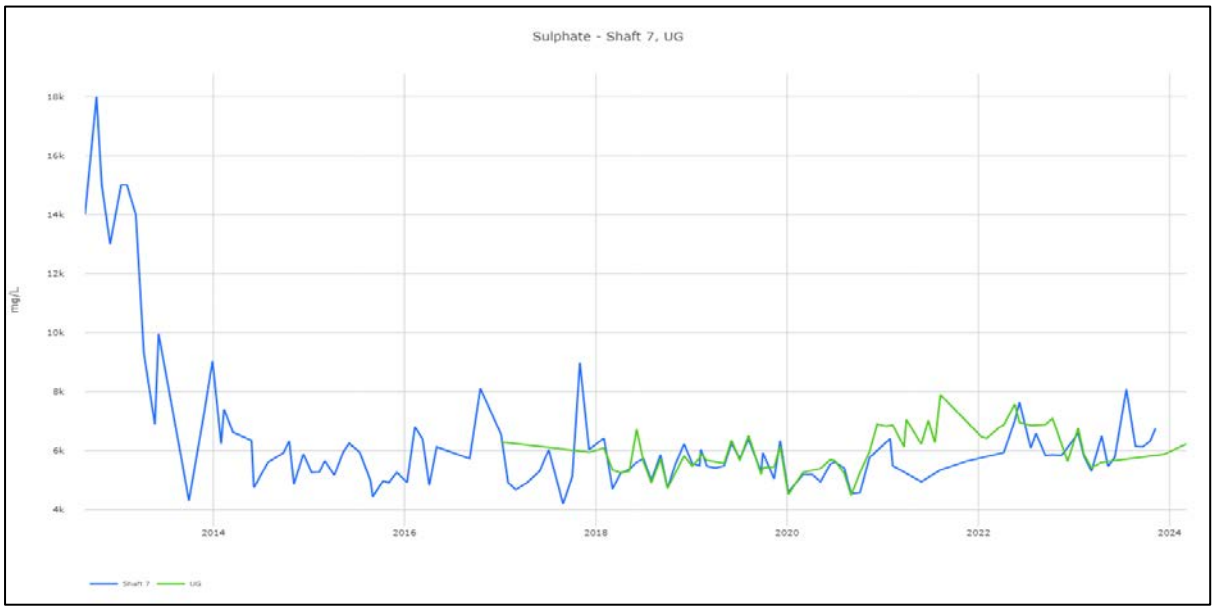

Lead - Shaft 7, UG
mg/L
0
1
2
3
4
5
6
2018
2019
2020
2021
2022
2023
2024
Shaft 7
UG

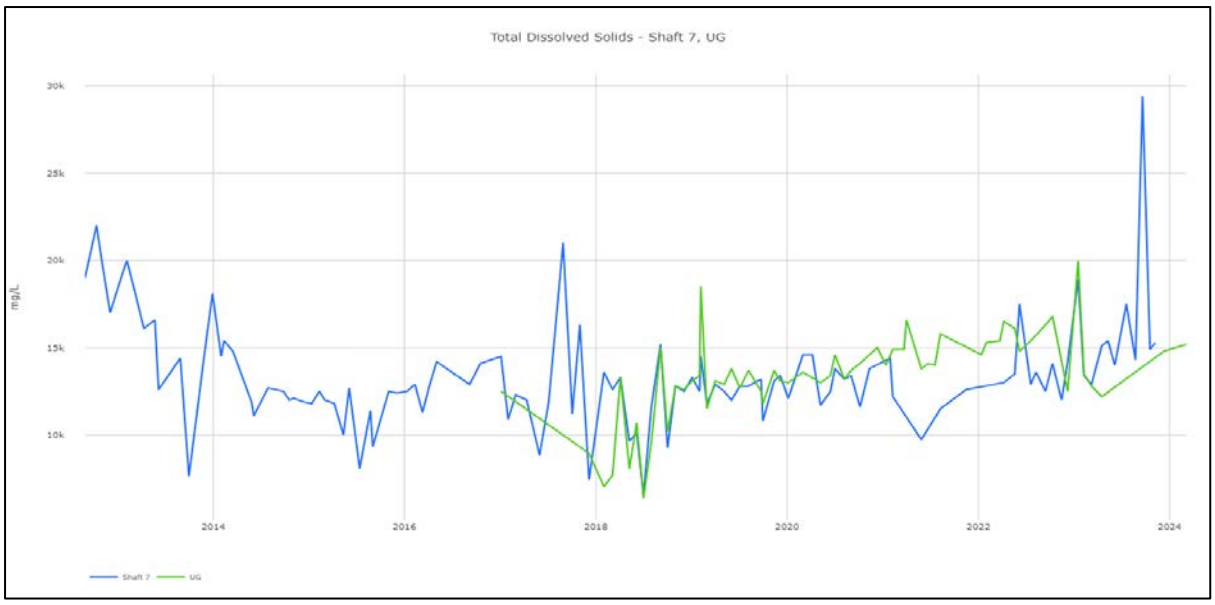

Magnesium - Shaft 7, UG
mg/L
100
200
300
400
500
2014
2016
2018
2020
2022
2024
Shaft 7
UG

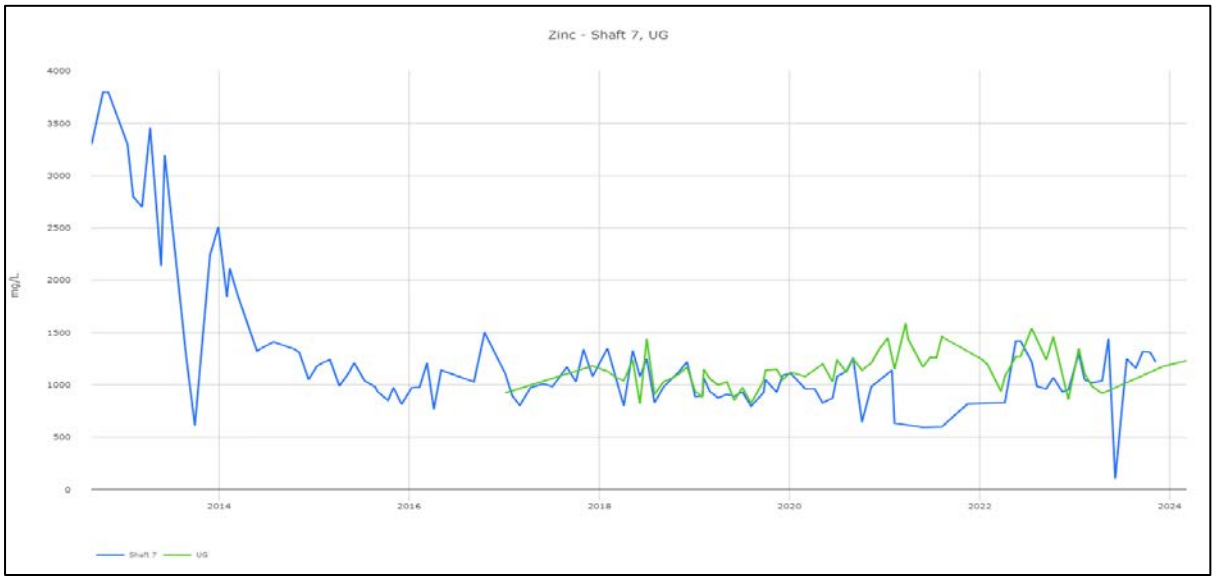

Manganese - Shaft 7, UG
mg/L
0
200
400
600
800
1000
1200
2014
2016
2018
2020
2022
2024
Shaft 7
UG


pH - Shaft 7, UG
pH
7
6.5
6
5.5
5
2014
2016
2018
2020
2022
2024
Shaft 7
UG


Sodium - Shaft 7, UG
mg/L
2000
1500
1000
500
0
2014
2016
2018
2020
2022
2024
Shaft 7
UG


Sulphate - Shaft 7, UG
mg/L
18k
16k
14k
12k
10k
8k
6k
4k
2014
2016
2018
2020
2022
2024
Shaft 7
UG





5.7 Contaminated Land

The majority of the surface land area that makes up the Rasp Mine is contaminated historic mining waste material including waste rock emplacements and tailings.

The storage and handling of diesel fuels, lubricants and oils, and waste rock material are the only aspects of the operation, which have the potential to contribute to contaminated land. The sections below outline how dangerous goods are handled onsite and procedures in place for managing and reporting spills.

On 24 December 2022 there was an offsite release of tailings (further explained in Section 10) to an area accessible to public north of TSF2 which was quickly remediated. No lasting contamination as a result of this event is likely. The area was capped with clean loam and seeded in 2023 and assessed by EMM contaminated land specialists to be satisfactorily remediated.

5.8 Hydrocarbon and Chemical Management

The main streams of hydrocarbons managed on site include:

- Fuel (diesel) - storage and distribution;
- Grease oils and lubricants - storage distribution and recovery for recycling; and

- Solvents used in the parts washer.

5.8.1 Fuel

Diesel is stored in two tanks each with a capacity of 68,000L. These self-bunded trans-tanks are located adjacent to the workshop and are sitting on a constructed concrete re-fuelling station. The facility has been designed and manufactured in accordance with AS1940 and AS1692. BHO has provision for diesel storage on its Dangerous Goods Licence, UN 00C1 Diesel 150,000 L. Surface distribution of diesel is by direct collection from the fuel browser. The tanks operate on a float and cut-off system that prevents overfilling of the tanks.

Rasp's fuel management system enables monitoring of fuel usage by each vehicle and piece of plant. This assists with maintenance and security as well as providing an accurate reporting mechanism for the collecting of data for NPI and NGERS reporting.

The tanks were removed from site for their ten-year test and inspection and returned in 2023.

5.8.2 Grease, oils and lubricants

Lubricants and oils are stored in individual pods located on a portable bund. A storage facility for these lubricants and oils has been constructed on the western side of the main workshop. It consists of a raised concrete pad topped by a steel enclosure.

5.8.3 Solvents

Oil solvents used for cleaning of mechanical parts at the workshop are removed by a contractor on a fixed maintenance schedule.

5.8.4 Processing reagent storage

All reagents are stored in a purpose built storage facility designed to prevent contamination and capture spillage.

The reagents stored here include:

- Hydrated Lime
- Copper Sulphate
- Sodium metabisulphite
- Sodium ethyl xanthate
- Flocculant
- InterFroth F228
- Cytec S9232 (zinc collector)
- Antiscalant
- Defoamer
- Zinc Sulphate

All quantities and map with storage locations are reference in the Pollution Incident Response Management Plan which is tested annually and available on the CBH website.

5.9 Hazardous Material Management

5.9.1 Licensing

Rasp holds Licence XSTR100095 for the storage and handling of dangerous goods and Radiation Management Licence 5063802. Additionally, Rasp holds an explosives licence (licence number XMNF200003) to manufacture, possess, store explosives and ammonium nitrate emulsion on site.

5.9.2 Dangerous goods management

Site dangerous goods are managed according to the site Chemical Management Procedure BHO-PRO-SAF-020.

A Safety Data Sheet (SDS) database for each chemical is maintained. SDS's are kept at each location where chemicals are stored and in the mines rescue room. SDS's are also electronically available on the intranet.

General and contractor inductions outline the required actions in the event of a spill, including completing an Incident Report.

All quantities and a map with storage locations are referenced in the Pollution Incident Response Management Plan, which is tested annually and updated as required.

Storage, management and access to explosives onsite is outlined in the Store, Manage and Access Explosives Standard BHO-STD-MIN-001. A security plan compiled and submitted by the supervising licensee detailing the security measures for explosives on the Broken Hill Operations Pty Ltd, Rasp Mine site. (Site Security Plan BHO-PLN-MIN-015)

Explosives are stored both on the surface and underground. The surface explosive magazines (SEM) are located within the BHP Pit approx. 3 km north from the main office on Eyre Street. The area encompasses one detonator magazine (IE), one packaged explosives magazine (HE) and one emulsion bulk storage compound. The magazines are separated by a minimum of 7 metres and are bunded in accordance with AS 2187.1. All gates and magazines are secured with locks, and signage that meet the minimum required standards.

The underground explosive magazines (UEM) are located within the underground operations of Broken Hill Operations Pty Ltd, Rasp Mine. Separate storages are utilised for the storage of (IE) and (HE) Explosives Magazines are secured with locks, and signage that meet the minimum required standards.

SEM & UEM keys are locked in a secured key cabinet in the Broken Hill Operations Pty Ltd, Rasp Mine Site Emergency Services Officer (ESO) Office and are to be issued only by the Emergency Service Officers, who must check the identity and authority of the person wishing to take possession of the keys. The SEM & UEM Explosive Magazine Access Log Book BHO-TRN-REG-004 must be completed prior to issuing and returning the keys. Personnel will only be granted access if they possess a Security Clearance and their name appears on the Key Register (Section 7 of the Site Security Plan).

5.10 Waste Management

Waste management at the mine is classified into two broad categories: mineral wastes (mining and mineral processing wastes discussed above), and non-mineral wastes which include recyclables and non-recyclables.

5.10.1 Mineral wastes

Mineral wastes consist of waste rock from underground workings and tailings residue from the processing of ore.

Waste rock is managed on site through the Waste Rock Management Plan BHO-PLN-ENV-014. Waste rock that cannot be returned underground to fill voids is stored in Kintore and BHP Pit (for embankment material crushing), following testing and confirmation that it contains less than 0.5% lead. In the reporting period 181,537 t of waste rock was placed underground and 45,309 t was placed on the stockpile/tipple in Kintore and BHP Pits.

Tailings is discharged into Blackwood Pit (TSF2) with water recycled for use in processing where possible. In the reporting period 342,618 t of tailings was placed in Blackwood Pit.

5.10.2 Non-mineral waste

Rasp Mine has four main laydown areas where used parts and equipment are stored for future use. The recyclable area has dedicated sections for scrap metal, timber, batteries, rubber, electronic goods and used pods. Used 1000L pods are returned to the manufacturer for reconditioning and reuse or removed by a waste contractor for recycling or disposal.

Waste oil, oily water, coolant, hydrocarbon-contaminated solids (rags, spill control material, etc), grease, oil filters, hydraulic hoses, and batteries are collected by a waste contractor for disposal or recycling.

Paper and cardboard are disposed on in blue recycling bins and skips which are collected by City Council. Printer cartridges are collected in “Planet Ark” disposal bags and delivered to the local Post Office for recycling. Scrap Metal is sold to a local scrap metal merchant.

BHO sent 25 decommissioned desktop computers to Dell for disposal in 2023.

Waste disposed of in the period is summarised in **Table 5-14**.

No tyres were disposed in underground workings during the reporting period. Tyres for heavy mobile equipment have been stored or reused around the mine site for barricades on roadways and within the laydown yards. All other LV and light truck tyres are removed from site under arrangement with the tyre supplier.

Table 5-14 Non-mineral Waste Summary for reporting period

Waste	Quantity Disposed
Oil	25,200 L
Oily water	16,000 L
Coolant	1,000 L
Scrap metal	171.25 t
Grease	2,000 L
Oil filters, hoses,	10 m^3
Contaminated drums/IBC’s	56 drums
Printer cartridges	4 bags
E-waste	25 desktop computers
Waste to Landfill	125 t

5.11 Flora and Fauna

The site is a highly disturbed environment that provides little value as native flora and fauna habitat. There have been no threatened flora, fauna or species habitat identified at the Rasp Mine. Goats frequent the site and removal is planned in 2024.

5.12 Weeds

During site inspections in 2020, individual Bush Tobacco (*Nicotiana glauca*) trees and a stand of rhizomatous bamboo (likely *Phyllostachys spp*) were identified. The Bush Tobacco, which grows around water storages and some isolated locations on dumps, will be removed by cutting at the stump. Native tobacco around the S17 pond were removed in 2019 by mechanical means but have regrown and will have to be targeted with herbicide. The bamboo growing in the Eyre St trench and will likely be controlled with a Glyphosate-based herbicide.

5.13 Blasting

There are six compliance monitors installed to record blasting vibration and over pressure at five locations around Broken Hill and one monitor located on-site near the core shed (this is used to monitor blast impacts at South Road). Locations are shown on **Figure 6-2**. When a blast complaint is received, the person is given the opportunity to have a roving monitor placed at their location. By doing so BHO can monitor the impact at the location for a time. Normally, a roving monitor is placed at the complainants’ location for at least two months to record blast vibration levels and develop an accurate K Factor used in blast design modelling to predict ground vibration at a set location. BHO

maintains a spare monitor to replace compliance monitors removed for calibration or due to fault, and in 2020 has purchased four new monitors to be employed as compliance monitors. In April 2018, blast monitor V4 at 123 Eyre St was removed at the residents request and placed at the Eyre St Bowls Club.

Three blast monitors are installed on each of the Blackwoods TSF2 embankments to monitor vibration in each embankment to trigger inspections if vibration levels are high enough and inform bank integrity reviews.

One blast monitor is installed adjacent to TSF1 vibrating-wire piezometers and was originally placed to monitor vibrations a result of boxcut surface blasting and blasting for Blackwoods development works. This monitor provides data to monitor dump stability at TSF1 going forward as blasting occurs in the Northern portions of the site.

Two surface blasts were conducted at the boxcut location on 11 and 28 June 2023. Exclusion zones extending to Federation Way, the Line of Lode Café and Miners Memorial, Holten Drive, and Eyre St, were in place during each blast and established by local traffic control contractors supported by BHO staff. Each surface blast was monitored for vibration and overpressure at 397 Eyre St and 332 Crystal St.

No blasting was conducted in the Zinc Lodes/Block 7 in 2023.

Table 5-16 and **Table 5-17** lists the criteria for blasting ground vibration and overpressure for Western Mineralisation / Main Lodes (Western Min/Main Lodes) and Block 7, respectively**.**

Table 5-15 Overpressure and Ground Vibration Western Min/Main Lodes (excluding Block 7)

Location	Airblast Overpressure (dB(Lin Peak))	Ground Vibration (mm/s)	Allowable Exceedance
Residence on privately owned land (7am-7pm)	115	5	5% of the total number of blasts over a 12-month period[ab]
(7am-7pm)	120	10	0%
(7pm-10pm)	105	-	-
(10pm-7am)	95	-	-
Public Infrastructure[d]	-	100	0%

Table 5-16 Overpressure and Ground Vibration Block 7 (includes Zinc Lodes)

Location	Airblast Overpressure (dB(Lin Peak)	Ground Vibration (mm/s)	Allowable Exceedance
Residence on privately owned land (7am-7pm)	115	3 (interim)[c]	5% of the total number of blasts over a 12-month period[a]
(7am-7pm)	120	10	0%
(7pm-10pm)	105	-	-
(10pm-7am)	95	-	-
Broken Hill Bowling Club, Italio (Bocce) Club, Heritage Items within CML7	-	50	0%
Perilya Southern Operations	-	100	0%
Public Infrastructure[d]	-	100	0%

The Project Approval provides the following notes to these **Table 5-15** and **Table 5-19:**

a) The allowable exceedance must be calculated separately for development blasts and production blasts;
b) The 5% allowable exceedance does not apply to production blasts until the Proponent has successfully completed a Pollution Reduction Program aimed at achieving this goal, as required by the EPA under the Proponent's EPL (No. 12559), or as otherwise agreed with the EPA;
c) The interim criteria applies unless and until such time that the Proponent has written consent from the Secretary to apply site specific criteria in accordance with condition 19 of this approval; and
d) The Proponent must close South Road to pedestrians if blasts are expected to exceed a peak particle velocity ground vibration of 65 mm/s at the road reserve surface, while the blast firing occurs.

In addition the following conditions also apply:-

- Production blasts may occur between 6.45 am and 7.15 pm on any day
- 1 production blast per day, with 6 per week averaged over a calendar year
- 6 development blasts per day, with 42 per week averaged over a calendar year

In accordance with Project Approval and EP Licence conditions:

- All production-blasting times were fired between 6.45am and 7.15pm on any day.
- Production blasts averaged 1.98 per week over the previous calendar year
- Development blasts averaged 15.87 per week over the previous calendar year

A total of 928 blasts were fired during the reporting period, 825 for development and 103 for production. **Table 5-17** and **Table 5-18** lists the total number of blasts for each area per month during the reporting period and **Table 5-19** and **Table 5-20** summarise the blasts over 5 mm/s (Western Min/Main Lodes) and 3 mm/s (Block 7). "No Trigger" are the number of blasts that did not trigger vibration monitors.

In the Western Mineralisation/Main Lodes mining areas (external to Block 7), 928 blasts were fired. Of these, 825 were for development and 103 were for production (including two surface blasts). No blasts exceeded 5 mm/s. The percentage of production blasts exceeding 5 mm/s was 0.0% and the percentage of development blasts exceeding 5 mm/s was 0.0%.

Table 5-17 Western Mineralisation/Main Lodes Summary of Blasts 2023

	Western Mineralisation / Main Lode									
	Production					Development				
	Blasts	< 5	>= 5	>= 10	No Trigger	Blasts	< 5	>= 5	>= 10	No Trigger
Jan-23	4	3	0	0	1	101	0	0	0	101
Feb-23	6	3	0	0	3	84	0	0	0	84
Mar-23	14	13	0	0	1	80	0	0	0	80
Apr-23	10	4	0	0	6	82	0	0	0	82
May-23	9	6	0	0	3	108	0	0	0	108
Jun-23	11	8	0	0	3	88	0	0	0	88
Jul-23	8	5	0	0	3	100	0	0	0	100
Aug-23	12	5	0	0	7	61	0	0	0	61
Sep-23	11	10	0	0	1	43	0	0	0	43
Oct-23	7	5	0	0	2	51	0	0	0	103
Nov-23	4	3	0	0	1	23	0	0	0	51
Dec-23	8	7	0	0	1	4	0	0	0	4
TOTAL	103	72	0	0	12	825	0	0	0	825

Table 5-18 Western Mineralisation/Main Lodes Blasts > 5 mm/s for the reporting Period

Production	Blasts >5 mm/s	Exceedance Result
103	0	0%

For the annual period January 2023 to December 2023, Western Mineralisation/Main Lodes production blast levels was compliant with the 5% allowance for ground vibration with 0% of blasts recording ground vibration over 5mm/s.

In the Block 7 mining areas (including the Zinc Lodes), no production blasts were fired during the reporting period. Block 7 was 0% compliant for the reporting period.

Table 5-19 Block 7 (and Zinc Lodes) Summary of Blasts 2023

	Block 7 (includes Zinc Lode)									
	Production					Development				
	Blasts	< 3	>= 3	>= 10	No Trigger	Blasts	< 3	>= 3	>= 10	No Trigger
Jan-23	0	0	0	0	0	0	0	0	0	0
Feb-23	0	0	0	0	0	0	0	0	0	0
Mar-23	0	0	0	0	0	0	0	0	0	0
Apr-23	0	0	0	0	0	0	0	0	0	0
May-23	0	0	0	0	0	0	0	0	0	0
Jun-23	0	0	0	0	0	0	0	0	0	0
Jul-23	1	0	1	0	0	0	0	0	0	0
Aug-23	0	0	0	0	0	0	0	0	0	0
Sep-23	0	0	0	0	0	0	0	0	0	0
Oct-23	0	0	0	0	0	0	0	0	0	0
Nov-23	0	0	0	0	0	0	0	0	0	0
Dec-23	0	0	0	0	0	0	0	0	0	0
TOTAL	1	0	0	0	0	0	0	0	0	0

Table 5-20 Block 7 Blasts Exceeding 3 mm/s for Reporting Period

Production Blasts	Blasts >3 mm/s	Exceedance Result
0	0	0%

Table 5-21 lists the highest recorded results for ground vibration (mm/s) at each of the vibration monitors.

Table 5-21 Ground Vibration Results at Vibration Monitors for the Reporting Period

Vibration Monitor/Location	Highest Recorded Ground Vibration (mm/s)
V1 Silver Tank (located on CML7)	1.91
V2 Hire yard	3.83
V3 Air Express	4.24
V4 123 Eyre St / Bowls Club	0.99
V5 80 Eyre St	0.67
V6 BHO Core Shed (located on CML7)	1.36

All blasts recorded at off-site monitors were under 10 mm/s.

5.14 Operational Noise

During the reporting period, noise was generated by operational activities, movement of heavy vehicles and delivery trucks leaving and entering site.

Random noise monitoring is conducted by BHO Environmental staff to monitor project noise emissions. Real-time noise monitors are located at the SE and SW corners of TSF1 to monitor the

MOD6 construction operations. Attended noise monitoring is completed annually by consultants at noise monitoring locations shown together with the relevant location criteria in Error! Reference source not found.

Table 5-22 Operational Noise Criteria

Location	Day (dB(A))	Evening (dB(A))	Night (dB(A))
A1 – Piper Street North	40	37	35
A2 – Piper Street Central	40	37	35
A3 – Eyre Street North	44	41	39
A4- Eyre Street Central	44	41	39
A5 – Eyre Street South	44	41	39
A6 – Bonanza and Gypsum Streets	48	41	39
A7 – Carbon Street	45	42	36
A8 – South Road	48	39	39
A9 – Crystal Street	46	39	39
A10 – Barnet and Blende Streets	42	41	35
A11 – Crystal Street	46	39	39
A12 – Crystal Street	46	39	39
A13 – Eyre Street North 2	40	35	35
A14 – Piper Street North	40	35	35
Additional Construction Noise Criteria for the Boxcut Construction			
A1 – Piper Street North	43	NA	NA
A2 – Piper Street Central	45	NA	NA
A3 – Eyre Street North	47	NA	NA
A13 – Eyre Street North 2	48	NA	NA
A14 – Piper Street North	47	NA	NA

During the reporting period EMM Consulting Pty Ltd conducted a noise assessment for these receptors, **Figure 5-28**.

Figure 5-28 Noise Receptors

Attended noise monitoring was conducted 18 December 2023 to quantify off-site noise levels from the Rasp Mine. While the EPL nominates noise limits for day, evening and night, attended monitoring was completed during the night-time period to minimise the contamination of monitoring data by extraneous noise sources (e.g. domestic and road traffic noise).

Operator-attended noise measurements were completed at each of 14 monitoring locations set out in PA07_0018 Condition 17.

The wind speed was below 3 m/s during the attended measurements.

Noise monitoring results are shown in **Table 5-23**.

Low frequency noise was assessed by using the Noise Policy for Industry (NPfI) (EPA 2017) methodology for each attended measurement and for audible contributions only. Low frequency noise, as defined in the NPfI, was not identified during the attended measurements.

Rasp Mine LAeq,15min noise contributions (including the addition of the relevant modification factor) satisfied the relevant night-time noise limits at all assessment locations.

Table 5-23 Noise Monitoring Results

Location	Start date and time	Wind		Stability class	Limits apply? [1]	Limits, dB	Site levels, dB	Exceedances, dB [1]
		Speed m/s	Direction [3]			$L_{Aeq,15minute}$	$L_{Aeq,15minute}$ [2]	$L_{Aeq,15minute}$
A12	18/12/2023 22:17	0.6	56	E	Y	39	33	Nil
A13	18/12/2023 22:46	1.6	85	E	Y	35	IA	Nil
A14	18/12/2023 23:07	1.3	87	D	Y	35	IA	Nil
A10	18/12/2023 23:13	1.7	62	E	Y	35	IA	Nil
A1	18/12/2023 23:28	3.0	24	D	Y	35	IA	Nil
A9	18/12/2023 23:34	3.0	24	D	Y	39	30	Nil
A2	18/12/2023 23:48	1.9	52	E	Y	35	IA	Nil
A8	18/12/2023 23:52	3.1	356	D	N	39	30	Nil
A3	19/12/2023 0:09	1.9	10	E	Y	39	IA	Nil
A7	19/12/2023 0:10	1.9	10	E	Y	36	30	Nil
A4	19/12/2023 0:30	1.7	60	E	Y	39	34	Nil
A6	19/12/2023 0:33	1.7	60	E	Y	39	30	Nil
A5	19/12/2023 0:49	1.7	23	E	Y	39	34	Nil
A11	19/12/2023 0:55	1.7	23	E	Y	39	IA	Nil

Noise attenuation measures on site include:

- Plant and equipment operator training. This included correct gear selection to minimize noise emission, retraining in travelling haul road procedure and educating personnel of the noise criteria for site.
- The use of an “ice-creaming” technique when loading the crusher allows the crusher to be loaded to maximum capacity at all times reducing the noise generated by rock fall onto the grizzly. “Ice-creaming” is where the crusher bin volume is maintained at a high level by the ROM front end loader.
- Optimisation of haul truck speed and gear changing via the use of intermediate markers along haulage route.
- Extension of both length and height of the existing earth bund along the southern haul road (from Kintore Pit to ROM pad).
- Installation of noise abatement material in the crusher house.
- A 2.5 m high by 6 m long tyre wall was constructed to reduce noise transition from the filtration area of the processing plant.

5.15 Visual, Stray Light

Light towers around machinery, where practicable, are designed to face light away from residents.

There were no light complaints for the reporting period.

5.16 Indigenous Heritage

There are no known significant indigenous sites within CML7.

5.17 Natural and Social Heritage

5.17.1 Conservation management strategy

The Conservation Management Strategy draft was being developed at the end of the reporting period and is expected to undergo BHO review early in 2024.

An Options Analysis Study for mine closure has been developed along with recommendations for rehabilitation methods.

5.18 Spontaneous Combustion

Products with high sulphur content (tailings, ore and concentrate) are prone to spontaneous combustion. Combustion is caused by the oxidation of the sulphides, which is an exothermic chemical reaction that causes heat build-up, and the remaining sulphides begin to start smouldering. In extreme cases the sulphides may burn producing a flame. Requirements for combustion to occur are high sulphur material, oxygen, moisture and sufficient material to generate heat build-up.

No incidences occurred during the period.

5.19 Bushfire

No bushfires affected the site during the reporting period. Broken Hill and surrounding areas have limited potential for bushfires due to the lack of suitable fuel.

The Rasp Mine has a fully equipped fire truck available at all times to respond to fires and has a trained mines rescue team for firefighting. There are fire hydrants and hoses installed at strategic locations across the mine site and within vehicles with deluge systems installed on loaders and in the underground fuel bay.

5.20 Mine Subsidence

Monitoring occurs on Bonanza St/South Road to detect any movement that may be associated with mining activities in the Zinc Lodes.

Surveying results indicate that most of the detected “movement” is due to instrument set-up errors, atmospherics etc. This is evidenced by the fact that the plot for each prism vector looks very similar to the same vector for the other prisms (i.e. all northing plots look the same, all easting plots look the same) indicating that the errors affect all prisms. Mining in the area of the Zinc Lodes has now been completed and BHO will continue to monitor road movement and has back-filled the mining/production voids in this area.

No subsidence from mining activities was detected in the reporting period. Minor subsidence occurred in a lay-down yard adjacent to the South Mill which was backfilled with waste rock and is being monitored by Geo-technical staff.

5.21 Methane Drainage/Ventilation

As the nature of the mine is not gassy (e.g. coal mine), there are no permanent methane monitoring locations. However, all personnel carry gas monitors while performing the following underground activities to monitor any hazardous gases:

- All production rigs while drilling;
- All production loaders (Boggers) while bogging;
- All Jumbos;
- Vent Officer while doing vent surveys;
- Re-Entry Crews while performing re-entry; and
- Service crew when required.

5.22 Public Safety

All active mine areas of the Rasp Mine site are signposted and fenced to restrict any unauthorised access. Perimeter fencing is inspected weekly by Emergency Services Officers.

Visitors to the mine are only allowed on site with management approval and are required to undertake a visitor briefing (induction), and are accompanied by a site representative at all times. Visitor briefing cards are distributed to ensure key information is readily at hand for visitors. Visitors must follow site policies and conform to personal protective equipment (PPE) requirements.

All employees and contractors complete a general induction and work area specific inductions where required (e.g. underground, mill).

5.23 Radiation

BHO has a Radiation Management Licence, RML5063802 current until 26 July 2025. The Licence permits BHO to "sell, possess, store or give away regulated material (including radiation apparatus, radioactive substances or items containing radioactive substances)".

Radiation is used in gauges in the processing plant to measure slurry density and identify the percentage of lead/zinc/iron. Radiation is used by technical services to identify the percentage of lead/zinc or other materials. The Rasp Mine Radiation Management Plan outlines how radiation and radiation equipment must be used, stored and disposed. An external contractor conducts biennial inspections of the individual radiation gauges on site while the site RSO conducts semi-annual inspections. During the reporting period no issues were identified during inspections and audits in relation to their use.

The Rasp Mine Radiation Store meets the requirements for storage of fixed radiation gauges, Code of Practice for the Safe Use of Fixed Radiation Gauges, ARPANSA. The Radiation Store is of solid construction (historically in the early 1900's it was used as an explosives magazine store) and is located on the side of a hill so it is not prone to flooding. It is clearly signed and is not accessed by the public.

No radiation apparatus was dismantled during the reporting period.

Table 5-24 lists the regulated materials (fixed radiation gauges) that make up the schedule to the licence.

Table 5-24 Regulated Radiation Equipment

Location	Rasp Mine Asset Number	Type	Equipment	Components	Purpose
Mill - Flotation building	2321727346	Radiation apparatus	X-RF	- Control console / generator - X-ray tube insert	Analysis of materials
Primary cyclone feed	1566643388	Sealed source device	Fixed Radiation Gauge	- Container - Sealed source	Density gauge
Radiation Store 'REMOVED FROM SERVICE'	1570661547	Sealed source device	Fixed Radiation Gauge	- Container - Sealed source	Density gauge
Admin Bld, Geological vault	2321727385	Radiation apparatus	X-RF	- Control console / generator	Analysis of materials
Radiation Store 'REMOVED FROM SERVICE'	1570661354	Sealed source device	Fixed Radiation Gauge	- Container - Sealed source	Density gauge

5.24 Emissions, Greenhouse Gasses and Energy Efficiency

Rasp Mine reported data to the National Pollution Inventory (NPI) for the 2022/2023 year.

In this period 2,117,181L of diesel and 43,083 MW-hr of energy were used.

Emissions data is presented in **Table 5-25**.

Reductions in emissions are produced by:

- Application of dust suppressant;
- Construction of wind breaks around stockpiles;
- Improved maintenance scheduling and record keeping;
- Operations of dust monitors;
- Operation of baghouses on crushing stations; and
- Use of water carts and spray systems around dust-generating activities.

Table 5-25 NPI Emissions Data

Substance	Usage (t/yr)	Air Fugitive (kg/yr)
Carbon monoxide	0	36469.67
Copper & compounds	591.41	4.93
Cumene (1-methylethylbenzene)	21.05	0.67
Fluoride compounds	0	0
Hydrochloric acid	0	0
Lead & compounds	10515.2	78.46
Oxides of Nitrogen	0	79743.88
"Particulate Matter	0	48336.21
10.0 um"	0	5620.15
Particulate Matter 2.5 um	7.77	2.2
Polycyclicaromatic hydrocarbons (B[a]Peq)	0	48.71
Sulfur dioxide	164.11	5853.23
Total Volatile Organic Compounds	16356.98	143.04
Zinc and compounds	0	36469.67

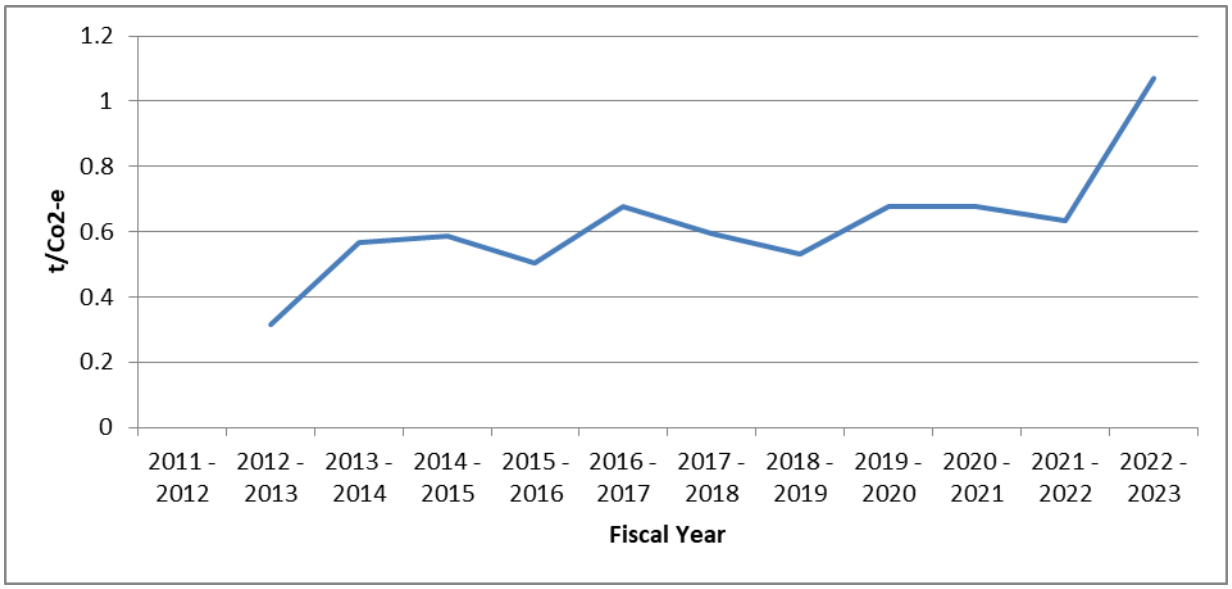
Rasp Mine participates in the National Greenhouse and Energy Reporting scheme and the emissions and energy consumption figures reported for the 2022-2023 fiscal year are provided below in **Table 5-26**.

Table 5-26 NGERs Data 2022-2023 Fiscal Year

GREENHOUSE GAS EMISSIONS (t CO2-e)						
Scope 1		**Scope 2**		**Total of Scope 1 and Scope 2**		
6,185		36,701		42,886		
ENERGY PRODUCED AND ENERGY CONSUMED (GJ)						
Energy Consumed Total		**Energy Consumed Net**		**Energy Produced**		
270,254		270,254		-		
GREENHOUSE GAS SCOPE 1 EMISSIONS BY GAS (t CO2-e)						
Carbon Dioxide CO2	**Methane CH4**	**Nitrous Oxide N2O**	**Perfluoro carbons PFCs**	**Hydro Fluoro Carbons HFCs**	**Sulphur Hexafluoride SF6**	**Total**
6,085	8	17	-	-	75	6,185

Rasp Mine monitors emissions by tracking CO_2 emissions against the tonnes of concentrate produced as shown in **Figure 5-29**. The 2022-2023 fiscal period saw an increase in emissions of CO_2/tonne concentrate due to the MOD6 construction works which included the construction of the boxcut mine access portal and TSF2 embankments.

Figure 5-29 CO_2 emissions/tonne concentrate produced



6. WATER MANAGMENT

Raw water and potable water are supplied by Essential Water with take off valves at the Eyre Street entrance to the Rasp Mine. Raw water, water from the town supply, is supplied untreated to the mine site via existing connections.

Potable water is supplied direct from the town supply and is used for drinking, safety showers and in the crib rooms and change houses. Water from the town supply is treated at the Mica Street treatment plant and supplied to the Project via existing connections and is used for showers, toilets, and laundry. Average annual usage of potable water is 9 ML supplying the offices, workshop, core shed and processing facility.

BHO are required to dewater the mine workings to ensure the safety of both the employees at the adjacent Perilya South Mine and its own employees. This water is extracted under licence and can be used on the Rasp Mine site or transferred for use at the Perilya operations.

Water is reclaimed onsite from various sources to be recycled for the Project, mainly from underground dewatering. If necessary, the reclaimed water is treated onsite to ensure that it is suitable for use as process water in both the processing plant and underground operations. Reclaimed water is returned after treatment to the process water tank which has a three hour holding capacity or to the Silver Tank which has a capacity of 8ML.

The sources for the reclaimed water include:

- No. 7 Shaft dewatering;
- Underground mine operations dewatering;
- TSF decant pond; and
- Stormwater containment dams (only during extreme rain events)

The Rasp Mine has installed a number of water meters to monitoring water supplies and movements.

Raw water used during the period was 255.6ML, a decrease from 295.9ML used in 2022, likely due to the heavy rainfall in 2022 providing useable water stocks for operations and the use of mine water for dust suppression where possible.

Potable water used during the period was 9.28 ML, similar to the 9.3 ML used in the previous period which was a reduction in the volume used in the 2021 period due to a decrease in personnel and contractors.

BHOP has a water extraction licence, 85BL256102, to extract by active pumping 370ML pa. In the reporting period, approximately 537.9ML was extracted and 203.2ML returned to Underground for a Net Extraction of 334.7MLpa. Higher than average rainfall was received in 2022 and in order to maintain capacity in surface water storages much of the collected water was returned underground using portable, unmetered pumps. As this raised water levels underground the water had to be pumped back to surface as required so there was a recirculation of water between surface and underground which may account for the elevated rate of extraction.

An independent review of the site water balance by EMM in 2021 included investigation into flow meter data records and descriptions of day to day water movements provided by site operators. It was determined that the groundwater take at Rasp Mine is estimated using the water balance as: Groundwater take = Dewatering (pumping from underground to surface) minus the Underground supply (pumping water underground for use in the mining process). During a consultation session between BHO, EMM and DPIE Water held on 15 November 2021, this methodology was discussed and endorsed by DPIE Water representatives as appropriate given the nature of the operation and associated water balance. In 2020, approximately half of the water removed from the underground workings via dewatering pumps was directly attributable to water taken underground for the purposes of operating underground machinery and ancillary uses such as fire water. This water was used in mining activities, collected in sumps within the excavated shafts and drives, and returned to the surface for settling in pond S22 before being recycled. The remainder of the water removed from the underground workings is attributed to groundwater inflows.

Flow meters have been installed on dewatering lines in 2022 as part of the NSW non-urban water-metering framework. BHO subsequently engaged a Duly Qualified Person to install and verify pattern approved flow meters. In 2023, telemetered flow meters supplied by Water NSW were installed on the Shaft 7 and Mine Dewatering lines.

No water was transferred to Perilya South Mine Operations, during the reporting period.

7. REHABILITATION

7.1 Buildings

No buildings were constructed on CML7 in the reporting period. The most recent building construction was the extension of the site warehouse in 2019. BHO are currently in the process of sourcing Building Information Certificates for both the Stores Extension and Concrete Batch Plant.

7.2 Rehabilitation and Disturbed Land

A trial to cap Mt Hebbard with waste rock was agreed to by the Resources Regulator to be undertaken in 2018. As BHO was still developing a waste rock testing procedure and were unable to crush extracted material (waste rock) on the surface, waste rock was not applied to the surface of Mt Hebbard in 2019. Waste rock capping operations were further postponed as a site-wide Instability and Inrush Risk Assessment, and slope stability investigation, were conducted on waste dumps in 2020.

Dust deposition gauges were installed on top of the Mt Hebbard waste dump in October 2017 as part of the waste rock trial to be. It was proposed in the MOP to install the gauges to monitor current dust conditions for a 12 month period, then place waste rock capping and re-install the gauges to monitor for another 12 month period and compare results. As 12 months of dust results had been collected from the Mt Hebbard dust gauges, dust suppressant was applied annually to control dust. The surface of Mt Hebbard is one of the “free areas” identified on the site to be potential contributors of dust to the surrounding environment.

Waste rock capping of the railway dump surface to the NW of Kintore Pit is expected to be conducted in 2024 in line with the Forward Program.

In December 2023 baseline terrestrial scanning of waste dumps was conducted to enable monitoring erosion rates on waste dump batters over coming years as outlined in the Rehabilitation Management Plan available for review on the CBH website.

The Rehabilitation Strategy was updated in 2023, provided to stakeholders for comment, and submitted to the Secretary for approval. The approved version is available to review on the CBH website.

The Department of Premier & Cabinet Broken Hill Post Mining Interagency Meeting was held in Broken Hill on 13 and 14 August 2019. During the Interagency meeting there was agreement that paddock dumping of waste rock on free areas may be a suitable method of capping them following comments from David Williams, Director of Geotechnical Engineering, University of Queensland.

The Department of Premier & Cabinet held another set of meetings in Broken Hill on 27 February 2023 with staff of local mining companies, Broken Hill City Council and NSW Regional team members to familiarise officers with community lead controls and remediation works in Broken Hill.

In 2023 BHO had meetings with NSW RR to discuss rehabilitation objectives and post-closure land use on 4 May, 13 July and 27 July. NSW RR officers conducted a site visit on 12 October to familiarise themselves with rehabilitation methods and constraints.

8. COMMUNITY RELATIONS

8.1 Environmental Complaints

During the reporting period, BHO has maintained a register for community complaints and concerns which is available on the CBH website.

Seven complaints were received over the reporting period. Of those complaints, all related to blast vibration, and others related to sediment control and noise, **Table 8-1**. All complainants were contacted by BHO if requested and if details were provided.

All blasts were found to be compliant with the applicable licence limits. The finalised data was distributed to the EPA and the affected resident.

Table 8-1 Complaints register

Date of Complaint	Reason for Complaint	Comment
January 2023	No complaints	
February 2023	No complaints	
March 2023	No complaints	
April 2023 INX 8912	Vibration	• A complainant contacted BHOP about a blast vibration on 27 April. • BHOP contacted the complainant on 28 April to discuss and no further follow up was required. • No blast monitor recorded vibration above licence limits for this blast.
May 2023 INX 8998	Vibration	• A complainant contacted the BHOP complaints line about a blast on 8 May. The complainant did not leave return contact details. • No blast monitor recorded vibration above licence limits for this blast.
June 2023 INX 8998 INX 9097	Vibration Vibration	• A complainant contacted the NSW EPA about blast vibration from 6th June and that blasts are occurring on a daily basis. • BHOP provided details of ground vibrations and overpressure to the EPA for this occasion. • No blast monitor recorded vibration above licence limits for this blast. • No details of the complainant were provided to BHOP. • The NSW EPA received a complaint from a resident of Wills Street about a blast on 25 June. • BHOP provided details of ground vibrations and overpressure to the EPA for this occasion. • No blast monitor recorded vibration above licence limits for this blast. • No details of the complainant were provided to BHOP.
July 2022	No complaints	
August 2023 INX 9163	Vibration	• A complainant contacted BHOP main phone line, leaving a message with a complaint about blast vibration on 3 August 2023. • The complainant did not leave any return contact details. • No blast monitor recorded vibration above licence limits for the blast on this day.

Date of Complaint	Reason for Complaint	Comment
September 2023 INX 9232	Vibration	• A complainant contacted BHOP main phone line, leaving a message with a complaint about blast vibration on 5 September 2023. • The complainant was contacted by BHO on 6 September 2023 to discuss their complaint and no further action was required. • No blast monitor recorded vibration above licence limits for the blast on this day.
October 2023 INX 9336	Vibration	• A complainant contacted the NSW EPA about blast vibration from 14 October. • BHOP provided details of ground vibrations and overpressure to the EPA for all blast for 2 month prior to this occasion. • No blast monitor recorded vibration above licence limits for this blast. • No details of the complainant were provided to BHO.
November 2023 INX 9421	Vibration	• A complainant contacted BHOP complaints phone line with a complaint about blast vibration on 20 November 2023 causing cracking in their bathroom tiles. • A BHO representative visited the complainant's home on 29 November to discuss their concerns and inspects bathroom tiles. • No blast monitor recorded vibration above licence limits for the blast on this day.
INX 9412	Vibration	• A complainant contacted BHO complaints phone line, leaving a message with a complaint about noise and blast vibration on 22 November 2023. • BHO contacted the complainant on 29 November to discuss their concerns. • No blast monitor recorded vibration above licence limits for the blast on this day.
INX 9423	Vibration	• A complainant contacted BHOP complaints phone line, with a complaint about blast vibration on 22 November 2023 causing cracking in concrete and other damage at their residence. • A BHO representative visited the complainant's home on 23 November to discuss their concerns and inspects damage. • No blast monitor recorded vibration above licence limits for the blast on this day. • BHO has installed a blast monitor at a nearby residence to monitor vibration in this location.
December 2023	No complaints	

8.2 Stakeholder Liaison

During the period of the Annual Review, BHO has conducted direct and indirect consultation with neighbours, members of the public, local community organisations, state government agencies and local council.

The major stakeholders include:

- Broken Hill Lead Reference Group (BHLRG) – meetings held on 2 March, 25 May, 24 August and 23 November.
- Environment Protection Authority (EPA) – Site visit to familiarise new officers with the site and inspect installed stormwater control measure on 31 October.
- Department of Planning Housing and Infrastructure (DPHI) – TSF2 and underground inspection conducted on 22 February.
- Resources Regulator within the Department of Regional NSW (RR) – rehabilitation objectives and post-closure land use discussions on 4 May, 13 July, 27 July, and a site inspection on 12 October.
- NSW Premier and Cabinet – Line of Lode site meeting to discuss remediation options and community lead response on 27 February.
- Premier and Cabinet Line of Lode Interagency Panel – meeting to discuss community lead response on 12 December.
- NSW RR MEG - site visit on 28 September.

The following community communication activities occurred during the period:

- BHO was represented at quarterly meetings of the BHCC Lead Reference Group (BHLRG) during the reporting period.

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8.3 Community Support

During the reporting period, Rasp Mine provide support and funding to the following groups.

Organisation	Activity	Support
AFL BH Association	Auskick launch	Donation
The Science Collective	Science Fair in BH 30/4/23	Sponsorship
BH City Council	Heritage Festival 7-10/4/23	Donation
AFL BH Association	Auskick finale	Donation
Willyama High School	Annual Presentation Night	Donation
BH High School	Annual Presentation Night	Donation
BH Aquatic Swimming Club	Swimming Carnival Nov 2023	Sponsorship
BH Public School (Central)	Annual Presentation Night	Donation

Far West Health did not apply for funding for public blood lead monitoring and public health under Schedule 3 Condition 12 in 2023.

9. INDEPENDENT AUDIT

An independent audit was conducted by Integrated Environmental Systems Pty Ltd in the week of 3 to 7 July 2023. The audit was commissioned by BHO to satisfy Schedule 4, Conditions 7 of the Project Approval, to commission an independent environmental audit of the Project within one year of physical commencement of development under Modification 6 (approved on 16 March 2022), and once every three years afterwards.

The audit was conducted in accordance with the NSW Government's Independent Audit Post Approval Requirements, issued in May 2020 (IPAR).

The audit period was 12 March 2022 to 7 July 2023.

All 75 conditions in the consolidated Project Approval 07_0018 (as of 13 December 2022) were audited. As recorded in the audit report, the audit identified 47 'compliant' findings, 16 'non-compliant' findings, and 12 'not triggered' findings.

Copies of the Independent Audit report and Action Plan are available on the CBH Website and have been provided to DPHI.

Following the independent audit conducted in July 2023, BHO were found to be non-compliant against 16 applicable Project Approval conditions, related to individual incidents across site, Management Plans review and approval, and implementation of programs outlined in Management Plans. Corrective actions related to a number of these non-compliances were undertaken at the time of the non-compliance, others were reviewed and actioned following the audit.

All actions related to the following have been completed:

- Building Inspection Certificates were obtained for the Batch Plant and Stores Extension
- Gain Secretary's endorsement of the Human Health Risk Assessment suitably qualified expert
- Actions required for Plant Maintenance Schedule 2 Condition 10
- Actions related to Schedule 3 Condition 3 recommendations have been completed
- The Air Quality Management Plan has been revised and amended as recommended
- Report annual emissions and implement measures in AQMP
- Measures have been implemented to prevent off site releases of contaminated water
- The Site Water Management Plan has been updated to address recommendations related to Schedule 3 Condition 23c
- Revision history tables included in Management Plans

As at December 2023, 4 actions to address Project Approval non-compliances remain in progress, related to:

- Negotiate with owners to exceed criteria in Schedule 3 Condition 18
- Waste management monitoring and auditing
- Review of Management Plan requirements and application to remove unwarranted conditions
- Conservation Management Plan to be approved and uploaded to website

10. INCIDENTS AND NON-COMPLIANCES

Environmental incidents are reported using the Rasp Incident Reporting Procedure BHO-SAF-PRO-101. BHO maintains a Pollution Incident Response Management Plan BHO-ENV-PLN-002 on the CBH website in accordance with EPA requirements.

The Pollution Incident Response Management Plan was tested and updated in September 2023, in accordance with the requirements of EPL 12559.

There were six reportable incidents/non-compliance during the reporting period.

1) TEOM2 lack of data capture INX 8776 (Ref MP07_0018-PA-44)

As reported on 21 March 2023, at approximately 8:00pm on 14 March 2023 power was lost to the TEOM2 enclosure situated on Embankment 2 of TSF2 Blackwoods Pit. Power was not restored until 8:00am on 15 March 2023. As TEOM2 was not collecting data for 12 hours, the data capture from TEOM2 for the 24-hour period was below the required 75% or 18 hours.

The environmental officer conducted checks of monitoring equipment status upon starting work at 7:00am on the morning of 15 March 2023 and noticed that TEOM2 could not be connected to using the ePort software. The environmental officer inspected TEOM2 and determined power to the location was lost.

Power was restored to the monitoring location at Embankment 2 of TSF2 Blackwoods Pit with the assistance of the Mill Electrician who detected the power supply board at the rail loadout (supplying the Embankment 2 monitors) had tripped due to a fault. TEOM 2 recommenced monitoring at 8:00am on 15 March 2023, one hour after detection of the issue.

Additional actions were taken in relation to the non-compliance:

- Three-hourly remote inspections of equipment status were conducted by site Emergency Services Officers until additional alerts can be arranged.
- Additional recipients for email alerts from the Aeroqual monitor collocated with TEOM2 were added so that a power loss to the monitoring location is communicated.

2) TEOM2 PM_{10} limit exceedance INX 9431 (MP07_0018-PA-64)

As reported on 7 December 2023, PM_{10} dust levels due to dust lift-off from the surface of TSF2 exceeded the PA07_0018 Schedule 3 Condition 3 limit for PM_{10} dust in the 24-hour period of 12 October 2023.

The 24-hour average of PM10 data for TEOM2 on 12 October 2023 was 136.6 ug/m^3 (data validated by Acoem ERS), exceeding the allowable level of 50 ug/m^3 PM10 dust averaged over a 24-hour period as specified by PA07_0018 Schedule 3 Condition 3.

Upon review of the 12 October 2023 TEOM2 PM10 data when the validated data report from Acoem ERS on 29 November 2023 it was apparent that the 24-hour average had exceeded the 24-hour limit for PM10 specified in PA07_0018 Schedule 3 Condition 3.

This event is a non-compliance with PA07_0018 Schedule 3 Condition 3 Table 2 Short Term Criterion for Particulate Matter, dust monitoring requirements as detailed in BHO-PLN-ENV-001 Air Quality Management Plan, and EPL 12559 Condition O3.1 to operate to minimise emissions of dust from the premises.

Dust lift-off from Cells 1 and 3 of TSF2 were observed by the site Senior Environmental Advisor during an inspection at approximately 11am. The Senior Environmental Advisor contacted the Mill Supervisor to request the water cart service TSF2 to control dust and the response was the water cart would attempt to enter the TSF and apply water.

The site water cart was able to access the TSF to apply water throughout the day but was restricted in the areas it could access due to the unstable and boggy conditions in some sections of the TSF surface. Dustbinder dust suppressant was applied to the sides of the Cell 1 tailings stockpile where the water cart was able to gain access.

Environmental harm was not likely as a result of this event as the downwind area consist of mining lease.

No complaints were received from the public or nearby residents concerning the generation of dust in this period.

The PM2.5 limit for the 24 hour period as measured at the collocated BAM unit was not exceeded.

Winds were high on the day, reaching 39.6 Km/hr during the period of dust lift-off, and were from a south-westerly direction.

It must also be noted that dust levels measured at TEOM1 (to the South and upwind of TEOM2) during this period were also regularly over 50 ug/m^3 and at times almost as high as 200 ug/m^3, so it is likely there was some contribution due to regional dust levels.

3) TEOM2 PM_{10} limit exceedance INX 9432 (MP07_0018-PA-65)

As reported on 7 December 2023, PM_{10} dust levels due to dust lift-off from the surface of TSF2 exceeded the PA07_0018 Schedule 3 Condition 3 limit for PM_{10} dust in the 24-hour period of 26 October 2023.

The 24-hour average of PM10 data for TEOM2 on 26 October 2023 was 96.3 ug/m^3 (data validated by Acoem ERS) exceeding the allowable level of 50 ug/m^3 PM10 dust averaged over a 24-hour period as specified by PA07_0018 Schedule 3 Condition 3.

Upon review of the 26 October 2023 TEOM2 PM10 data when the validated data report from Acoem ERS on 29 November 2023 it was apparent that the 24-hour average had exceeded the 24-hour limit for PM10 specified in PA07_0018 Schedule 3 Condition 3.

This event is a non-compliance with PA07_0018 Schedule 3 Condition 3 Table 2 Short Term Criterion for Particulate Matter, dust monitoring requirements as detailed in BHO-PLN-ENV-001 Air Quality Management Plan, and EPL 12559 Condition O3.1 to operate to minimise emissions of dust from the premises.

Dust lift-off from Cells 1 and 3 of TSF2 and recorded by TEOM2 was reported by the Airodis Alerts system and the site Emergency Services Officer contacted the Mill Supervisor to request the water cart service TSF2.

The site water cart was able to access the TSF to apply water throughout the day but was restricted in the areas it could access due to the unstable and boggy conditions in some sections of the TSF surface.

An additional water cart from a local contractor was sourced to assist in controlling dust in the work area if needed.

Environmental harm was not likely as a result of this event as the downwind area consist of mining lease.

No complaints were received from the public or nearby residents concerning the generation of dust in this period.

The PM2.5 limit for the 24 hour period as measured at the collocated BAM unit was not exceeded.

Winds on the day were predominantly from the SSW.

4) High Volume Air Samplers failed to sample INX 9380 (MP07_0018-PA-62)

As reported on 9 November 2023, on 6 November the site High Volume Air Samplers were scheduled to sample from midnight to midnight. At 6:45am when sample day inspections of High Volume Air Samplers were conducted, it was found that two co-located High Volume Air Samplers, HVAS and HVAS1, were not running. HVAS and HVAS1 were restarted and resumed their sample collection at approximately 6:55am.

At some point before 6:45am a fault occurred (supply over-voltage or under-voltage) which likely affected the AC drives of both High Volume Air Samplers and set them in a protective mode, producing a Blockage Error upon attempted restart.

A power surge was the likely cause of the interruption to sampling. This is supported by the collected runtimes of both units indicating they monitored for approximately 240 minutes less than normal for a 24-hour period and a disruption to power supplies earlier in the morning.

This event is a non-compliance with PA07_0018 Schedule 3 Condition 3, dust monitoring requirements as detailed in BHO-PLN-ENV-001 Air Quality Management Plan, and EPL 12559 Condition M2.3 for Points 10 and 11.

Environmental harm was not likely as a result of this event, as average measured PM_{10} dust levels for the day at the nearest PM_{10} monitor, TEOM1 on Lawton Street, were 14.05mg/m^3. Filter papers for this sampling event were sent for analysis as normal.

Environmental personnel continue to inspect High Volume Air Samplers on sampling days to ensure they have started and have not been interrupted. Electrical personnel will inspect High Volume Air Samplers post power disruptions to ensure they do not experience faults that would prevent them from sampling when required. BHO has been investigating options for surge protection for High Volume Air Samplers to ensure that power disruptions do not interrupt monitoring.

5) TEOM2 PM_{10} limit exceedance INX 9408 (MP07_0018-PA-63)

As reported on 24 November 2023, the 24-hour average of PM10 data for TEOM2 on 19 November 2023 was 76.7ug/m^3 (validated by Acoem) exceeding the allowable level of 50ug/m^3 averaged over a 24-hour period.

This event is a non-compliance with PA07_0018 Schedule 3 Condition 3 Table 2 Short Term Criterion for Particulate Matter, dust monitoring requirements as detailed in BHO-PLN-ENV-001 Air Quality Management Plan, and EPL 12559 Condition O3.1 to operate to minimise emissions of dust from the premises.

The site Emergency Safety Officer (ESO) began receiving alarms from TEOM2 at 10:48am indicating that PM_{10} dust levels were high, exceeding the 15-minute average. At 11:19am the ESO contacted the Mill Supervisor requesting that the water cart be sent out to combat the lift off. At approximately 1pm the ESO made contact with the Tails Harvesting Supervisor who advised that they were working on controlling the dust. PM10 dust levels were reduced by 2:00pm with alarms clearing from 1:28pm.

An additional water cart was sent to the area to assist with treating the dust lift-off to try to prevent the non-compliance. Following detection of the non-compliance with the Licence limit, the non-compliance was raised in the pre-start meeting, workers have been informed that if there is dust lift off the job is to be suspended. An additional water cart continues to operate in the work area.

6) TEOM2 PM_{10} limit exceedance INX 9455 (MP07_0018-PA-66)

As reported on 8 January 2024, PM10 dust levels at TEOM2 exceeded the PA07_0018 Schedule 3 Condition 3 limit for PM10 dust in the 24-hour period of 30 December 2023. The wind direction on the day was from the South/South West at speeds of up to 30km/h for periods.

Upon review of the 30 December 2023 TEOM2 PM_{10} data on the morning of 2 January 2024 it was identified that the 24-hour average had potentially exceeded the 24-hour limit for PM_{10} specified in PA07_0018 Schedule 3 Condition 3. The 24-hour average of PM10 data for TEOM2 on 30 December was 52.0ug/m^3 (validated by Acoem ERS) exceeding the allowable level of 50ug/m^3 PM10 dust averaged over a 24-hour period as specified by PA07_0018 Schedule 3 Condition 3.

Tails harvesting activities were being undertaken on the day and with winds from the South/South west. A water cart which services tails harvesting in TSF2 was out of service on the day from approximately 12:00pm for 2.5 hours due to requiring a tyre change. Harvesting operations were ceased at approximately 3pm on that day. The watercart was reinstated immediately following completion of maintenance works to control lift off. Once the tailings surface was dampened

compaction works continued to reduce the amount of loose tailings on the TSF surface with the potential for lift off.

Environmental harm was not likely as a result of this event given the short duration of elevated dust levels, and the light winds which would have limited the dispersal of the dust.

No complaints were received from the public or nearby residents concerning the generation of dust in this period.

The PM2.5 limit for the 24 hour period as measured at the co-located BAM unit was not exceeded.

7) Failure to have Rehabilitation Strategy approved by required timeframe

On 22 November 2023 BHO were issued with a non-compliance assessment notice for failure to have the Rehabilitation Strategy for the RASP Project (MP07_0018, as modified) approved by the required timeframe.

Schedule 3 condition 34A of MP07_0018 states that:

Within 6 months from approval of Modification 6, the Proponent must prepare a Rehabilitation Strategy for the site to the satisfaction of the Secretary.

MOD 6 was approved on 16 March 2022, hence the Rehabilitation Strategy was to have been submitted to the satisfaction of the Secretary within 6 months of that date. It was noted that a draft Rehabilitation Strategy was submitted to the department on 15 September 2022. The department also noted that the Rehabilitation Strategy version 6 was approved on 21 November 2023.

8) Failure to comply with Schedule 8A of the Mining Regulation 2016 (LETT0008639)

On 24 October 2023, NSW RR provided BHO with a “Commence Investigation Letter” alleging that BHO had failed to comply with the provisions of Schedule 8A of the Mining Act 1992 in failing to prepare a Forward program and provide it to the Secretary before 60 days after the last day of each annual reporting period. The failure to prepare and submit a Forward program to the Secretary in the specified timeframe may have constituted a contravention of section 378D of the Mining Act 1992 – Contravention of Condition of Authorisation.

BHO responded to the allegations on 17 November 2023.

On 13 December 2023, NSW RR responded (LETT0008787) that they had considered the circumstances of the 17 November 2023 submission and decided that no enforcement action would be taken. The matter was considered finalised.

11. ACTIVITIES PROPOSED IN THE NEXT REPORTING PERIOD

The following lists the proposed activities during the next reporting period:

- MOD11 works.
- Installation of an automated sprinkler system for dust suppression on TSF2.
- Audit actions implementation.
- Waste-rock capping as specified in the Forward program and Rehabilitation Management Plan.
- Undertake on-going maintenance and inspections of heritage buildings as required.
- Continue application of chemical dust suppressant to ‘free areas’ and unsealed roads.
- Stormwater pond maintenance, including sediment removal.