Annual Environment Management Report

Name of Mine:	**Rasp Mine**
Mining Titles / Leases:	**Consolidated Mining Lease 7, Broken Hill** **MPLs 183, 184, 185, 186**
AEMR Reporting Period	**1 April 2012** **31 March 2013**
Name of Leaseholder:	**Broken Hill Operations Pty Ltd**
Name of Mine Operator:	**Broken Hill Operations Pty Ltd**
Reporting Officer:	
Title	
Signature	**……**
Date	

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1 INTRODUCTION

Broken Hill Operations Pty Ltd (BHOP) (a wholly owned subsidiary of CBH Resources Ltd (CBH)), purchased the Rasp Mine from Normandy Mining Investments in 2001 (NMI). The Rasp Mine consists of the Consolidated Mining Lease 7 (CML7) and Mining Purpose Leases 183, 184, 185 and 186. These leases occupy a central region of the historic Broken Hill Line of Lode orebody and incorporate the original mine areas that commenced operations in the 1880s including a substantial amount of mining infrastructure from various mining phases.

The Rasp Mine is located centrally within the City of Broken Hill and is surrounded by transport infrastructure, areas of commercial and industrial development and some residential housing. The Rasp Mine is bounded by Eyre Street and Holten Drive to the south and east, Menindee Road (MR 66) to the northeast, Crystal Street to the northwest and Bonanza Street and South Road (Silver City Highway SH 22) to the southwest. These roads form part of the existing road train and B-double route through Broken Hill. Broken Hill railway station located directly to the north of the mine lies on the main Sydney – Perth railway line. Residential and commercial areas are located to the west, south and north of CML7, Perilya mine developments to the north-east (North Mine) and south-west (Southern Operations) and the Blue Metal Quarry to the east. An aerial view of the Rasp Mine is provided in **Figure 1**.

A Mine Operations Plan (MOP) was approved by Industry and Investment NSW (I&I NSW) in November 2006 for the development of an exploration decline. An extension to this decline was approved by a MOP amendment in May 2008. The MOP, which also included underground mining and stockpiling of ore (120,000 tpa) was approved by I&I NSW in December 2009 for a period of twelve months. In December 2010 the MOP was extended to 28th February 2011.

In January 2011 BHOP received approval from the Department of Planning (DoP) under the *Environment Planning and Assessment Act 1979* (EP&A Act) for the expansion of mining production to 750,000 tpa and the construction and operation of a processing plant and rail load out facility for despatch of concentrates. This application was supported by an Environmental Assessment Report (EAR) (July) and a Preferred Project Report (PPR) (September 2010). Approval Conditions are provided at **Annexure 1**.

A modification to the Project Approval was sought in November 2011 from the DoPI to accommodate the relocation of the ventilation shaft from Kintore Shaft in Little Kintore Pit to a central area north west of the Lease. This relocation was required as heavy rains in early 2011 damaged the Kintore Shaft and rehabilitation of the Shaft to enable the construction of the ventilation shaft was no longer possible. The modification was granted by DoPI on the 16th March 2012. An amendment to the MOP for the relocation of the ventilation shaft was approved on the 30th March 2012 by DRE.

Annual Environment Management Report

The Annual Environment Management Report (AEMR) details the environment and community performance of the Rasp Mine for the period ending 1st April 2012 to 31st March 2013. These dates have been selected to align with the MOP.

This Report has been prepared in accordance with guideline EDG03 provided by the DRE.

The scope and purpose of this Report is to:

- Provide a summary of major project activities from 1st April 2012 till 31st March 2013.
- Address the controls and management procedures used for the protection of the environment with respect to water, air, noise and other environmental factors.
- Detail consultation initiatives.
- Describe land management objectives and review rehabilitation planning.

Figure 1 Aerial view of the Rasp Mine

1.1 Consents, Leases and Licences

1.1.1 Consents

Table 1 presents the consents held by BHOP.

Table 1 Development Consents

Approval Number	Date Issued	Duration	Purpose
Part 3A Application: 07-0018	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 a minerals processing plant and rail loadout facility. Supported by an EAR.
MOP 06/6483	1 April 2011	31 March 2014	Mining production of 750,000 tpa from Western Mineralisation, Centenary Mineralisation and Main Lode Pillars. Construction and operation of a minerals processing plant and rail loadout facility. Supported by an EAR prepared for DoPI Part 3A Project Approval.
Part 3A Project Approval Amendment	March 2012	31 Dec 2026	Relocation of ventilation shaft.
MOP 06/6463	March 2012	31 March 2014	Relocation of ventilation shaft.

1.1.2 Leases

Table 2 and **Plan 1** present the mineral authorities held by BHOP in the vicinity of the Rasp Mine. For the purposes of this document, the area covered by CML7 and MPLs 183, 184, 185 and 186 is referred to as the "Rasp Mine".

Table 2 Mineral Authorities

Mineral Authority	Grant Date	Last Renewed	Renewal Date	Holder	Purpose
CML7	8 Oct 1987	17 Jan 2007	31 Dec 2026	BHOP	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 tailings, development of roads (**Annexure 1**)
MPL 183	4 Feb 1981	24 Apr 2007	31 Dec 2026	BHOP	Dumping of ore and mine residues, treatment of tailings
MPL 184	4 Feb 1981	24 Apr 2007	31 Dec 2026	BHOP	Dumping of ore and mine residues, treatment of tailings
MPL 185	4 Feb 1981	24 Apr 2007	31 Dec 2026	BHOP	Dumping of ore and mine residues, treatment of tailings
MPL 186	4 Feb 1981	24 Apr 2007	31 Dec 2026	BHOP	Dumping of ore and mine residues, treatment of tailings

1.1.3 Licences

Table 3 presents the licences held by BHOP in relation to the Rasp Mine.

Table 3 Licences Held

Licence	Issued By	Date of Expiry/ Renewal	Purpose
EPL 12559 (**Annexure 2**)	Office of Environment and Heritage	2 Nov 2016	Crushing, grinding or separating >100000-500000T Mining for Minerals >100000-500000T
Dangerous Goods and Explosives Notification	Work Cover	22 Feb 2015	Storage and use of dangerous goods, including explosives.
Radiation	Office of Environment and Heritage	18 July 2014	Sell and/or possess radiation apparatus Sell and/or possess radioactive or items containing radioactive substances
Water Extraction	NSW Office of Water	29 March 2017	Water extraction from Shaft 7 and underground mine dewatering for site use and use by Perilya – CML5.

1.2 Mine Contacts

The contact names and phone numbers for key personnel are listed in **Table 4,** together with telephone number of the Pollution Complaint Line, as required by EPL 12559.

Table 4 Mine Contacts

Name	Title	Contact Details
Visko Sulicich	BHOP Director CBH Chief Operating Officer	T: 08 8088 9106 viskosulicich@cbhresources.com.au
Tony Davis	BHOP General Manager	T: 08 8088 9106 tonydavis@cbhresources.com.au
Paul Walson	BHOP Manager of Health, Safety & Environment	T: 08 8088 9106 paulwalson@cbhresources.com.au
Ben Jones	Senior Environment and Community Officer	T: 08 80889106 benjones@cbhresources.com.au
Rasp Minesite telephone complaint line		08 80881211

1.3 Actions Required at the Previous AEMR Review

Table 5 lists the actions from the last AEMR meeting/ site inspection on 13th July 2012.

Table 5 Actions Required

Action Required	Where dealt with in this AEMR
Update actions required table	Sec 1.3
All drilling to be entered as per MOP	Sec 2
More detail to be included in land preparation. Include information of infrastructure plans	Sec 2.2
More information in production and waste summary table including where waste rock is being stored.	Sec 2.6.1
Confirm if consistent with MOP	Sec 2.6.2
Update ore stockpile number	Sec 2.7
Update figures 2,3,4,5,6,7,8,9 with more information	Sec 3.1.3
Review table 17 and add performance	Sec 3.3
No further studies added to flora and fauna	Sec 3.6-3.7
More information about blast readings	Sec 3.9
Table 22 more information	Sec 3.10.2
Define reportable incidents and outcomes	Sec 20
Update table 23 with prevention measures and investigation	Sec 5.2
Table 25 rehabilitation summary needs explanation	Sec 5.4
Land title and land tenure information needs addressing	Sec 5.4
Activities for next AEMR need updating	Sec 6
Table 29 needs updating with project approval requirements	Sec 6.4
Storage pond at workshop needs adequate freeboard	Water level has been dropped, markers have installed
Waste oil removal needs correct paper work	Annexure 4
Correct bunding in mill processing area	Bunding has been checked
Drilling standards in line with MOP approval	All drilling now completed to MOP standards
Under rig protection, dust management	All drilling now completed to MOP standards

2 SUMMARY OF OPERATIONS

The following activities have occurred since the previous AEMR in March 2012.

2.1 Exploration

There has been no exploration drilling in the reporting period.

2.2 Land Preparation

An additional 0.6ha was disturbed during the reporting period. This was due to tailings and waste emplacements. The development of the ventilation shaft for underground operations attributed to .2ha of disturbed ground. Construction drawings can be seen in **annexure 3**

Due to the highly disturbed nature of the CML7 mining lease no virgin ground has been disturbed.

2.3 Construction

2.3.1 New Buildings / Structures

The following buildings and structure were constructed in the reporting period:

- Ventilation shaft also used for emergency egress.
- Modification of building for store purpose
- Developed Backwoods Pit (TSF2) as a tailings storage facility. This includes plastic lining of the northern end and construction of various earthen bunds to encourage beaching and re-use of process water.

2.3.2 Roads and Fencing

A contractor was employed to fix certain parts of the sealed roads which had deteriorated due to machine movements. This work was completed in February 2013. Ongoing maintenance is required on the haul road to keep is condition at a high standard.

A new fence was installed around the CML7 at the block 10/Ryan street area..

2.4 Mining

Underground development activities recommenced during the reporting period.

2.4.1 Underground decline development

Underground decline development continued throughout the reporting period. A further 425m has been extended from the 10 level to the 12 level.

2.4.2 In pit / underground mining

Underground mining started during the reporting period. A total of 9 stopes have been mined with a total of 338,412t of ore coming from those stopes.

No in pit mining occurs on the CML7.

2.5 Mineral Processing

Table 6- Mineral Processing Summary

	2012									2013			
	April	May	June	July	August	September	October	November	December	January	February	March	**total**
tonnes milled	0	11231	43318	45945	59834	49332	52873	49571	46510	58550	53406	58263	**528833**
Pb con	0	176	1232	1591	2583	2408	2219	1772	1708	2293	2176	3124	**21282**
Zn con	0	249	2088	2986	4716	4337	4681	3165	2992	4125	4081	4942	**38362**
tailings	0	10806	39999	41368	52535	42588	45973	44633	41810	52132	47149	50197	**469190**

The mineral process facility started producing concentrate in May 2012. A total of 528,833t of ore was milled. Out of this ore total of 21,282t of lead concentrate and 38,362t of zinc concentrate was produced.

2.6 Waste Management

Waste rock is either stored in Kintore Pit, Backfill in mined out stopes or used for road base. Over the next reporting period more waste will be back filled underground as more stopes become available.

2.6.1 Waste Rock

Table 7- Production and Waste Summary

	Cumulative Production (tonnes)		
Item	**Start of reporting period**	**At end of reporting period**	**End of next reporting period**
Topsoil stripped	N/A	N/A	N/A
Topsoil used / spread	N/A	N/A	N/A
Waste rock	147,934	398053	500000
Ore	72170	557112	1,000,000
Processing waste	N/A	469190	1,000,000
Product	N/A	59,644	200,000

Due to all underground operations there is no topsoil stripped or re used anywhere.

2.6.2 Tailings

A total of 469,190t of tailing was produced during the reporting period. All tailing has been stored in TSF2 (Blackwoods Pit). Water is pumped from TSF2 and re used throughout the processing facility.

Initial pumping of tailings into TSF2 resulted in water seeping into old workings and moving throughout the lease. This was evident with the increase of water height in shaft 7. Significant earthworks including lining

the northern section of pit with plastic was completed to stop this from happening. BHOP also purchased and commissioned a pump to keep shaft 7 level at a determined level.

2.6.3 Recyclable Waste

Recyclable waste is collected on site in either approved bins or collection containers. Products recycled on-site include scrap metal, tyres, aluminium cans, glass bottles and toner cartridges. Once collected products are disposed off-site by a licensed contractor.

2.6.4 Regulated Waste

All regulated waste including oils, grease, rags, filters are stored on-site in designated areas in designated bins. Waste is then removed off-site by a licensed contractor. A total of 29, 800L was removed off-site by Transpacific Oil. A consignment authorisation is required for the movement of controlled wastes between states. **(Annexure 4)**

2.7 Ore and Product Stockpiles

All ore is transported by truck and stored at the ROM facility before being put through the processing mill. The ROM pad is 32m by 80m as indicated in the MOP. The Rom is also surrounded by 5m wind breaks and has additional water sprays to control dust.

All concentrate is loaded directly into sealed storage containers within the filtration shed where it is then transported by truck to the rail load out facility and loaded onto the train.

2.8 Water Management

2.8.1 Water supply

Raw water and potable water are supplied by Essential Water with take off valves at the Eyre Street entrance.

Raw water is used for fire fighting and specific parts of mill processing. Hydrants are located adjacent to the office buildings on Eyre Street, the truck wash facility, workshop and Kintore Pit portal.

Potable water is supplied to the offices, workshop, core shed and processing facility.

2.8.2 Stormwater management

Storage ponds have been constructed as per criteria in the Site Water Management Plan. Stormwater hasn't been an issue throughout the reporting period due to a very dry season and lack of rain.

2.8.3 Stored water

The Site Water Management Plan outlined numerous stormwater storage and drainage changes to the CML7. Although a number of the stored water ponds seem to be at 100% capacity all have an overflow event pond to cater for a 100 year event. This will therefore allow for no off site discharge.

The storage ponds are listed in **Table 8**

Table 8- Storage Ponds

		Volumes held (cubic metres)			
	Pond Identification	Start of reporting period (April 1 2012))	At end of reporting period (31st March 2013)	Storage Capacity	
Clean Water					
	Workshop	14	14	14	
	Boom Gate	2	2	2	
	Mill	0	8000	8000	
	Delprat's Shaft	9	9	9	
	Kintore Pit	18	18	18	
	Silver Tank	8000	8000	8000	
Dirty Water					
	S2	0	20	5003	
	S14	2000	0	7813	
	S17	3000	0	4265	
	S31	200	0	225	
	S49	1951	0	1951	
Controlled discharge					
	N/A	N/A	N/A	N/A	
Contaminated water					
	Horwood Dam	6000	6000	7663	2000
	Plant Water Pond	0	2000	2000	1000
	S22 Mine Settlement Ponds	0	1000	1000	1500
	S22-A	0	2000	2000	1500
	Vehicle Wash	20	20	20	800

2.9 Hazardous Material Management

Hazardous materials required for the mining development are stored on site. These include diesel, lubricants / oils and explosives. BHOP has a current Workcover licence for the storage of dangerous goods.

The Rasp Mine maintains two Safety Data Sheets registers, one is located in the main administration building and the other in the workshop where most of the chemicals are used and stored. BHOP also has a Hazardous Material database in which all materials names and amounts are stored. The register was produced as part of the Pollution Incident Repose Management Plan.

A storage area for hazardous materials and reagents built to AS 1940 is being used at the processing plant. SDS's an in placed in the process plant control room and chemical storage areas.

All storage areas have spill kits secured to them.

2.9.1 Explosives magazines

Two portable explosive magazines are located at the southern end of BHP Pit; they are separated by an earth bund and are fenced. Both magazines comply with AS2187.1-1998 and are licenced to hold:

(1) External Magazine Class 1.1D 5000 kg capacity
- UN 0065 Cord, detonating 1500 m
- UN 0082 Explosive, Blasting, Type B 4000 kg
- UN 0241 Explosive, Blasting, Type E 1000 kg

(2) External Magazine Class 1.1B 100kg capacity
- UN 0030 Detonators, Electric 500No
- UN 0030 Detonators, Non-Electric 6000No

Explosives are also stored underground in two purpose-built Transtank Explosive Magazines deigned and manufactured in accordance with AS2187.1-1998.

(1) M2 is used for detonators and has a storage capacity of 2,000 kg.

(2) M3 is used for explosives and has a storage capacity of 3,500 kg.

2.9.2 Diesel storage

Diesel is stored in two tanks each with a capacity of 68,000L. These self bunded transtanks are located east of 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. BHOP has provision for diesel storage on its Dangerous Goods Licence, UN 00C1 Diesel 150,000 L.

2.9.3 Lubricants and oils

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 incorporating drainage to a sump to facilitate cleaning.

2.9.4 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
- Methyl isobutyul carbinol

- Sodium metabisulphite
- Sodium ethyl xanthate
- Sodium isopropyl xanthate
- Flocculant

All quantities and map with locations are reference in the Pollution Incident Response Management Plan.

2.10 Other Infrastructure

2.10.1 Eyre Street Seepage Trench

As part of BHOP's Pollution Reduction Program in the Environment Licence a seepage trench was constructed along the TSF1 to collect water before it entered Eyre Street. A total of 6101m^3 has been pumped from this trench into Horwoods Dam over the reporting period.

3 ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

BHOP has a number of environment management plans in place to address potential environmental impacts from activities on the Rasp Mine site. These include:

- Environment Management Strategy
- Air Quality Management Plan
- Air Quality Monitoring Program
- Noise and Blasting Management Plan
- Noise Monitoring Program
- Blasting Vibration and Overpressure Monitoring Program
- Site Water Management Plan
- Waste Management Plan
- Conservation Management Plan (September 13th 2013-BHOP)
- Community Lead Management Plan
- Closure Management Plan (September 13th 2013-DRE)

3.1 Air Pollution

3.1.1 Dust control measures

BHOP developed an Air Quality Management Plan that outlines the requirements to manage and monitor dust at the mine. **Table 9** outlines the activities that were undertaken during the period that had the potential to generate dust and the dust mitigation measures undertaken.

Table 9 Dust Mitigation Measures

Operation	Description	Control
Vehicles utilising roads	Unsealed roads	Unsealed roads are coarse rolled gravel. Water sprinklers have been installed on roads from the workshop to the Kintore Pit and down the Pit ramp. Water trucks are also spraying all roads with water throughout operations
Operations	Sealing of high volume and haul roads	Sealing of all haul roads with bitumen.
Free Areas	Applying a dust suppression to the 'free areas' on the CML7	Dust suppression has been applied to all free areas. These areas are monitored to determine when it needs to be re-applied. (Figure 2)
Processing	Conveyers enclosed, Crusher house enclosed	All design criteria for mill has been applied

Figure 2- Aerial displaying free areas and dust suppression

Outline of Free Areas determined in the EA

Areas sprayed with Dust Suppression

3.1.2 Dust monitoring

Dust monitoring was undertaken during the period as per MOP and licence commitments.

The parameters required to be monitored are detailed in **Table 10.**

Table 10- EP Licence/ MOP – Dust Monitoring Requirements

Location	Parameter	Unit	Frequency	Equipment	Sampling Method
HVAS1	Total Lead	µg/m^3	Every 6 days	HVAS	AS2800-1985
HVAS2	PM 10	µg/m^3	Every 6 days	HVAS	AS2800-1985
HVAS3	PM10	ug/m3	Every 6 days	HVAS	AS2800-1985
D1, D2, D3, D4, D5, D6, D7	Total Lead Lead (dissolved) Particulates – deposited matter	g/m^2/m	Monthly	Dust deposition gauge	AM-19
TEOM1	PM10	Ug/m3	Every 5 mins	TEOM	AM-19
TEOM2	PM10	Ugm/3	Every 5 mins	TEOM	AM-19

Monitoring locations include:

Location HVAS1 (TSP)	Silver Tank area
Location PM10-HVAS1 (PM_{10})	Silver Tank area
Location PM10-HVAS2 (PM_{10})	Blackwoods Pit
Location D1 (Dust deposition)	RSPCA – St Johns
Location D2 (Dust deposition)	Block 10 Hill
Location D3 (Dust deposition)	Thompson Shaft area
Location D4 (Dust deposition)	Browne's No. 1 Residence
Location D5 (Dust deposition)	Silver Tank area
Location D6 (Dust deposition)	Casuarina Ave
Location D7 (Dust deposition)	Blackwoods Pit
Location TEOM 1 (PM_{10})	Essential Energy Enclosure- Lawton Street
Location TEOM 2 (PM_{10})	Blackwoods Pit

3.1.3 Dust Monitoring Results

3.1.3.1 High volume samplers (TSP HVAS1, PM10 HVAS1 and PM10 HVAS2)

Criteria for pollutant levels for air quailty are noted in Schedule 3 Condition 3, in the Project Approval. Details are provided in **Tables 11, 12 and 13.**

Table 11 Long Term Criteria for Particulate Matter

Pollutant	Averaging Period	Criterion
Total solid particles (TSP)	Annual	90 ug/m^3
Particulate matter < 10um (PM10)	Annual	30 ug/m^3

Table 12: Short Term Criterion for Particulate Matter

Pollutant	Averaging Period	Criterion
Particulate Matter < 10um (PM10)	24 hour	50 ug/m^3

Table 13: Long Term Criteria for Deposited Dust

Pollutant	Averaging Period	Maximum Project Contribution	Maximum Total Deposited Dust Level
Deposited dust	Annual	2 g/m^2/month	4 g/m^2/month

Table 14- TSP HVAS 1 Results Overview

PERIOD	TSP (µg/m^3)			Total Lead (µg/m^3)		
	MIN	MAX	MEAN	MIN	MAX	MEAN
2008	3	208	48	0.01	1.21	0.142
2009	11	415	65	0.01	1.64	0.222
2010	3	87	32	0.02	2.11	0.284
2011/ Mar 2012	1	141	35.8	0.01	3.52	0.53
2012/Mar 2013	1.0	165.65	38.24	0.08	1.83	.50

The results from TSP HVAS1 indicate that the average TSP level for the reporting period of 38ug/m^3 is well below the criteria of 90ug/m^3. The total lead average for 12 months has reduced from 0.53ug/m^3 to 0.50ug/m^3.

Table 15- PM10 HVAS1 Results Overview

PERIOD	PM10 (µg/m^3)			Total Lead (µg/m^3)		
	MIN	MAX	MEAN	MIN	MAX	MEAN
2010	1	50	13.8	0.01	1.13	0.21
2011/March 2012	1	48	12.21	0.01	1.56	0.34
2012/Mar 2013	0.54	78.63	17.61	0.02	1.67	0.40

The results from PM10 HVAS1 indicate the average PM10 level for the reporting period of 17.61ug/m3 came under the criteria of 30ug/m3.

Table 16- PM10 HVAS2 Results Overview

PERIOD	PM10 (µg/m^3)	Total Lead (µg/m^3)

	MIN	MAX	MEAN	MIN	MAX	MEAN
2012/ Mar 2013	1.01	86.73	31.00	0.08	0.86	0.083

PM10 HVAS2 was installed in October 2012. Results indicate the average PM10 for the reporting period of 31ug/m^3 was just over the criteria of 30ug/m3. This is due to earthworks completed in Blackwoods pit for tailings disposal.

Figure 3- TSP-HVAS Results

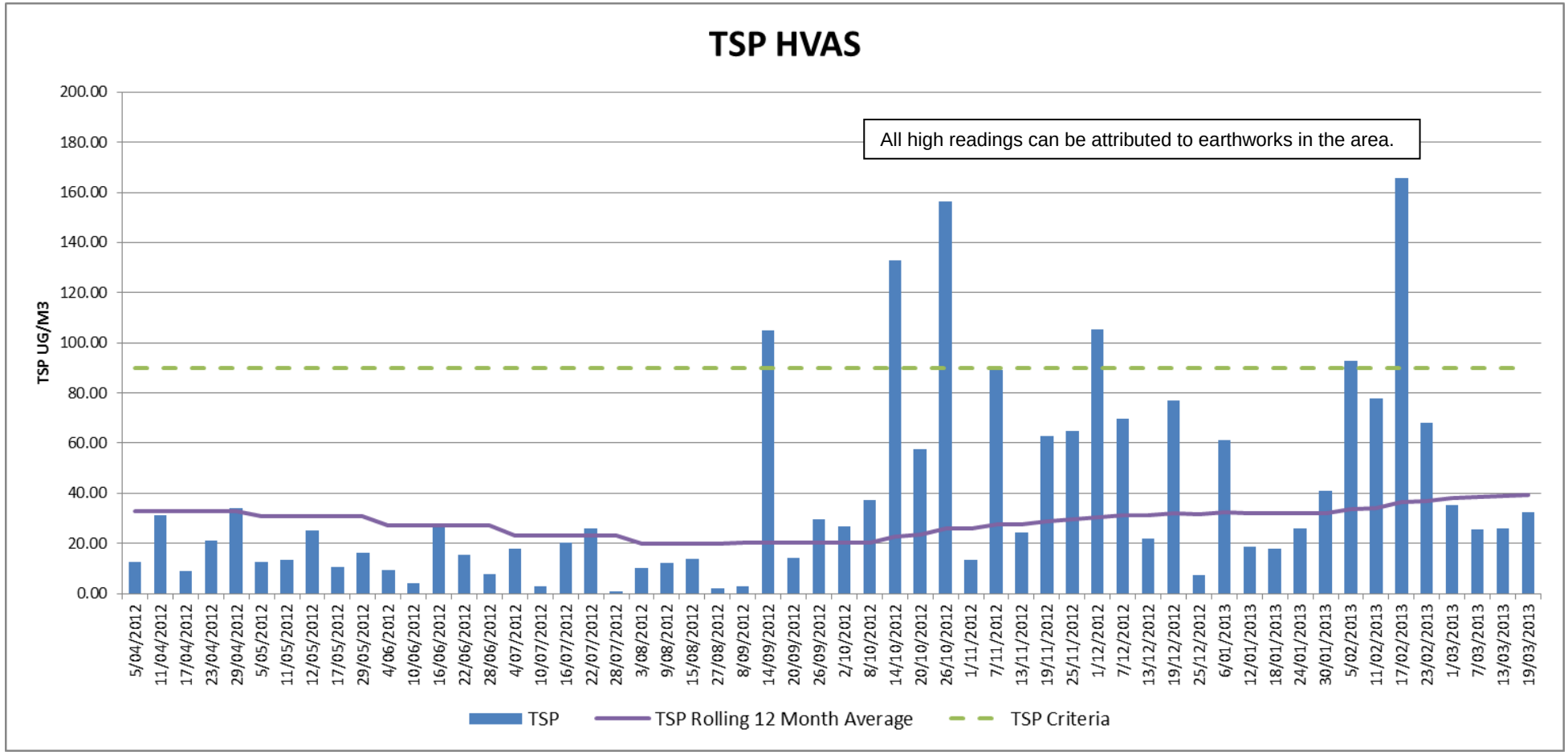


Figure 4- TSP-HVAS Lead Results

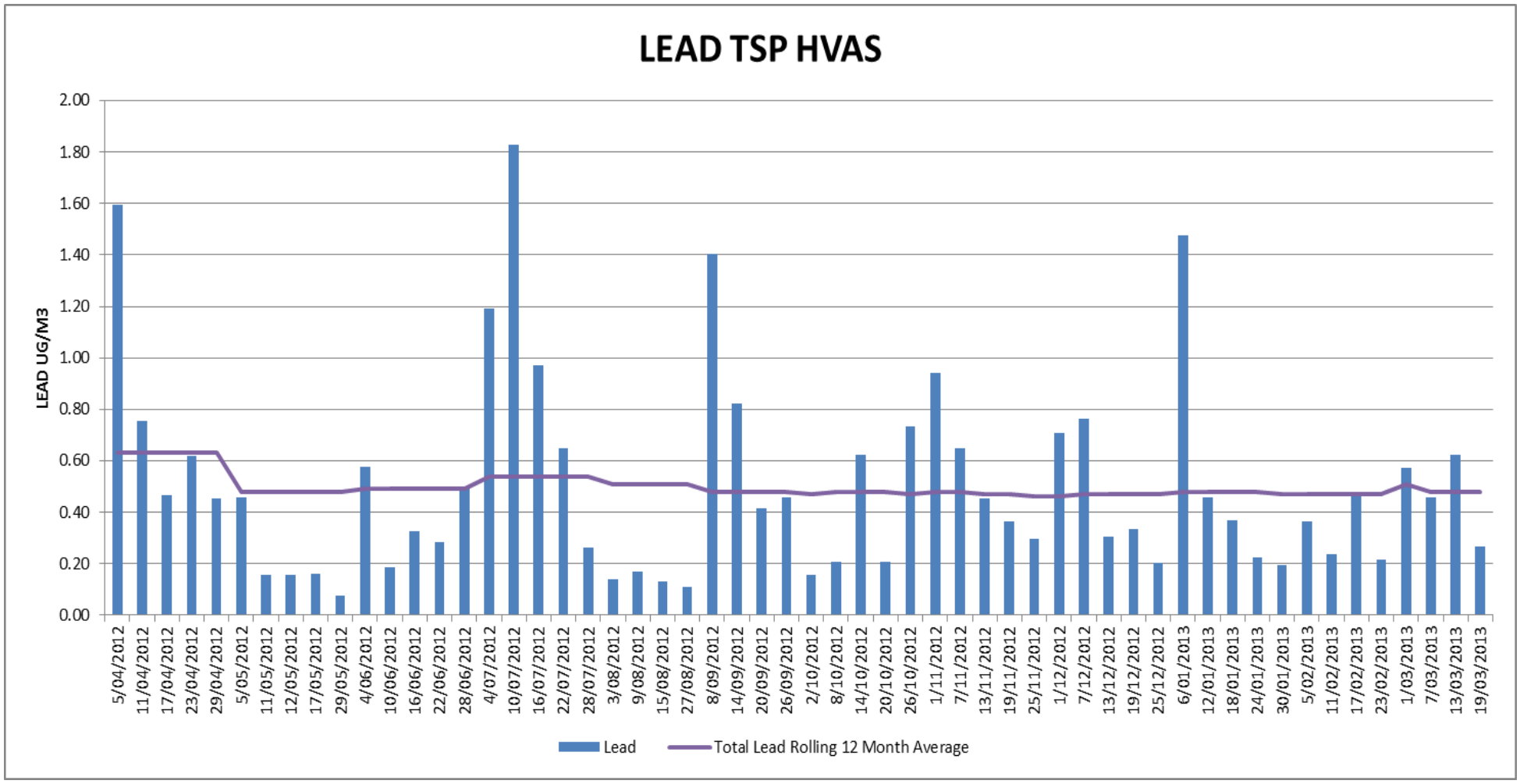


Figure 5- PM10 HVAS1 Results

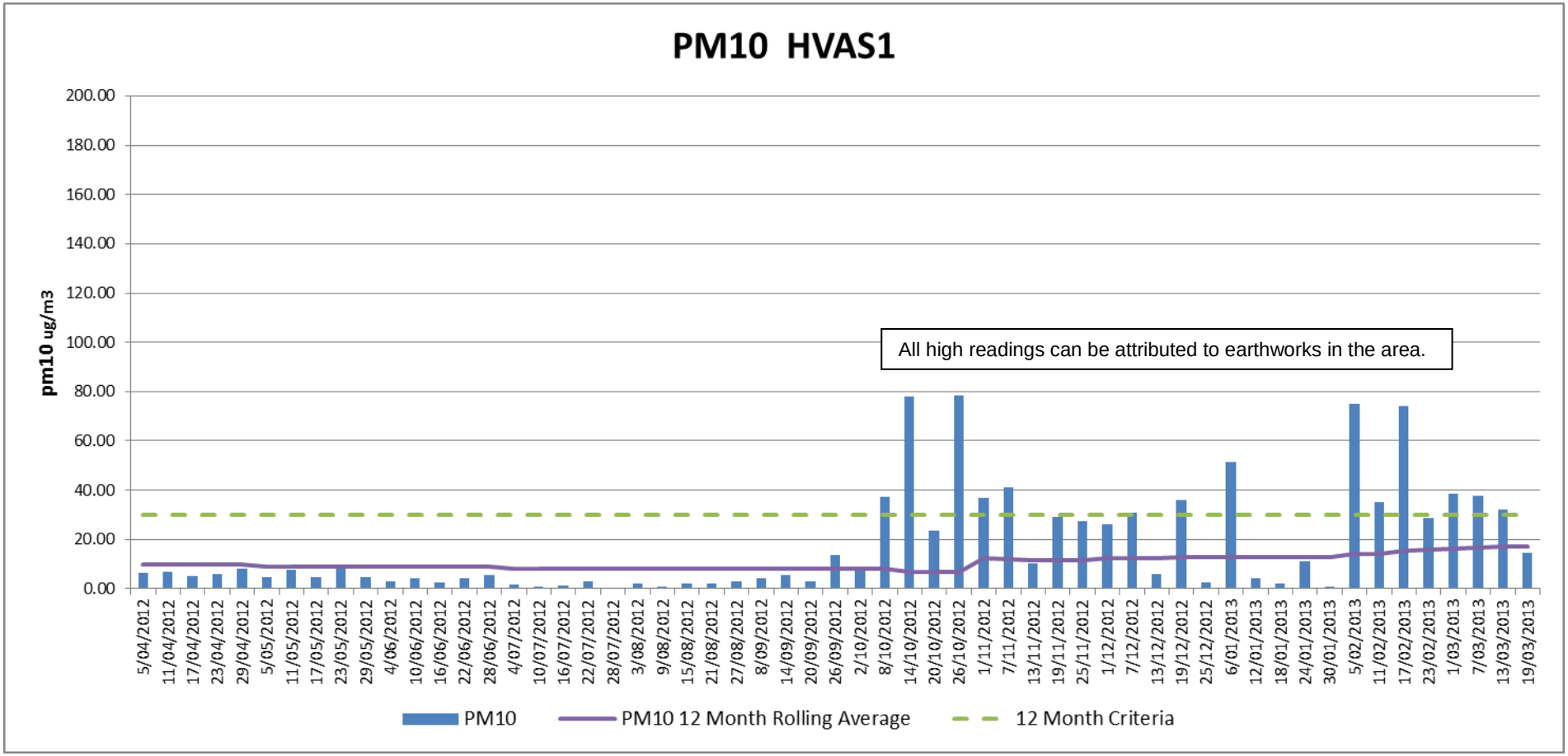


Figure 6- PM10 HVAS1 Lead Results

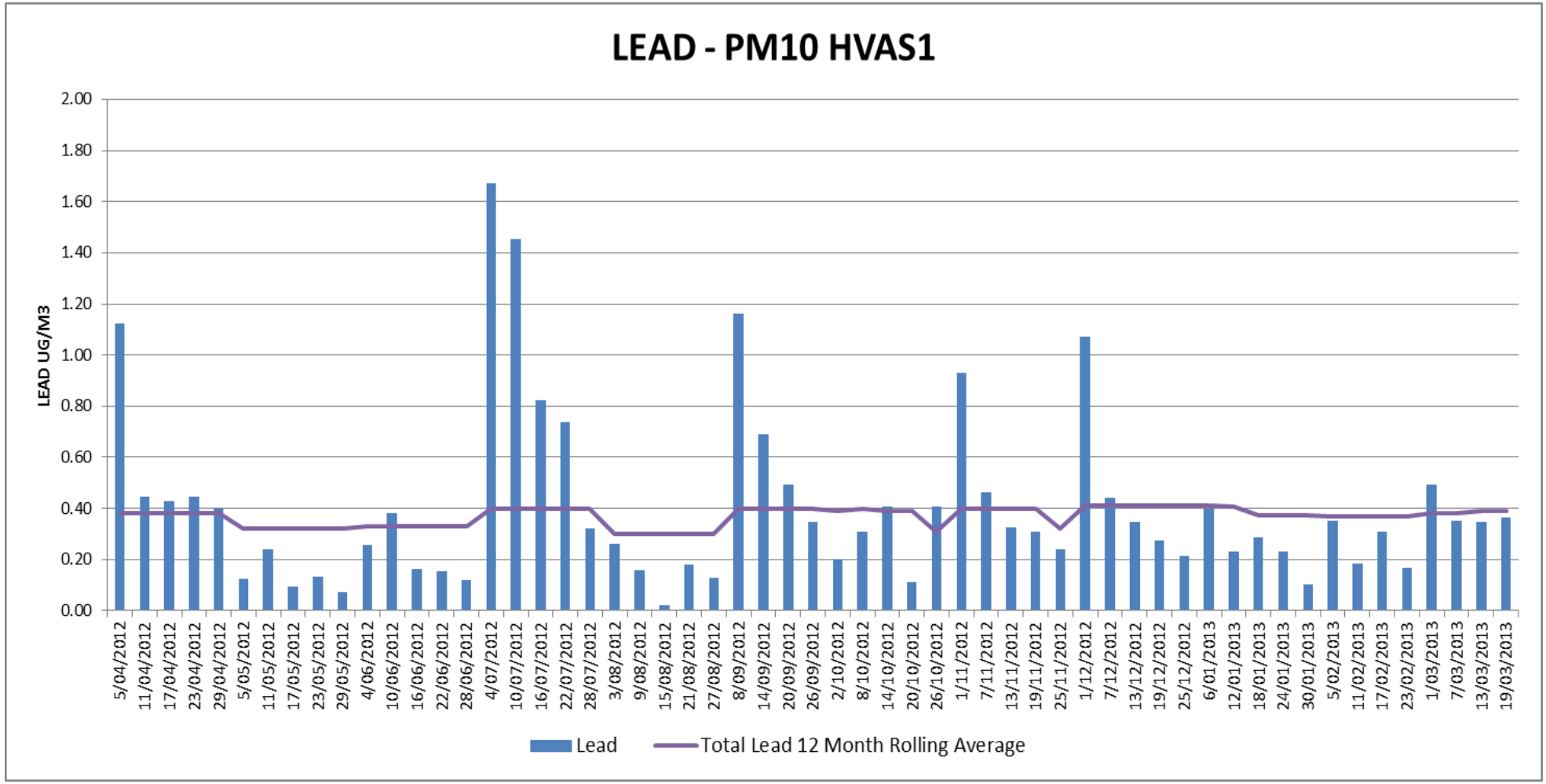


Figure 7- PM10 HVAS 2 Results

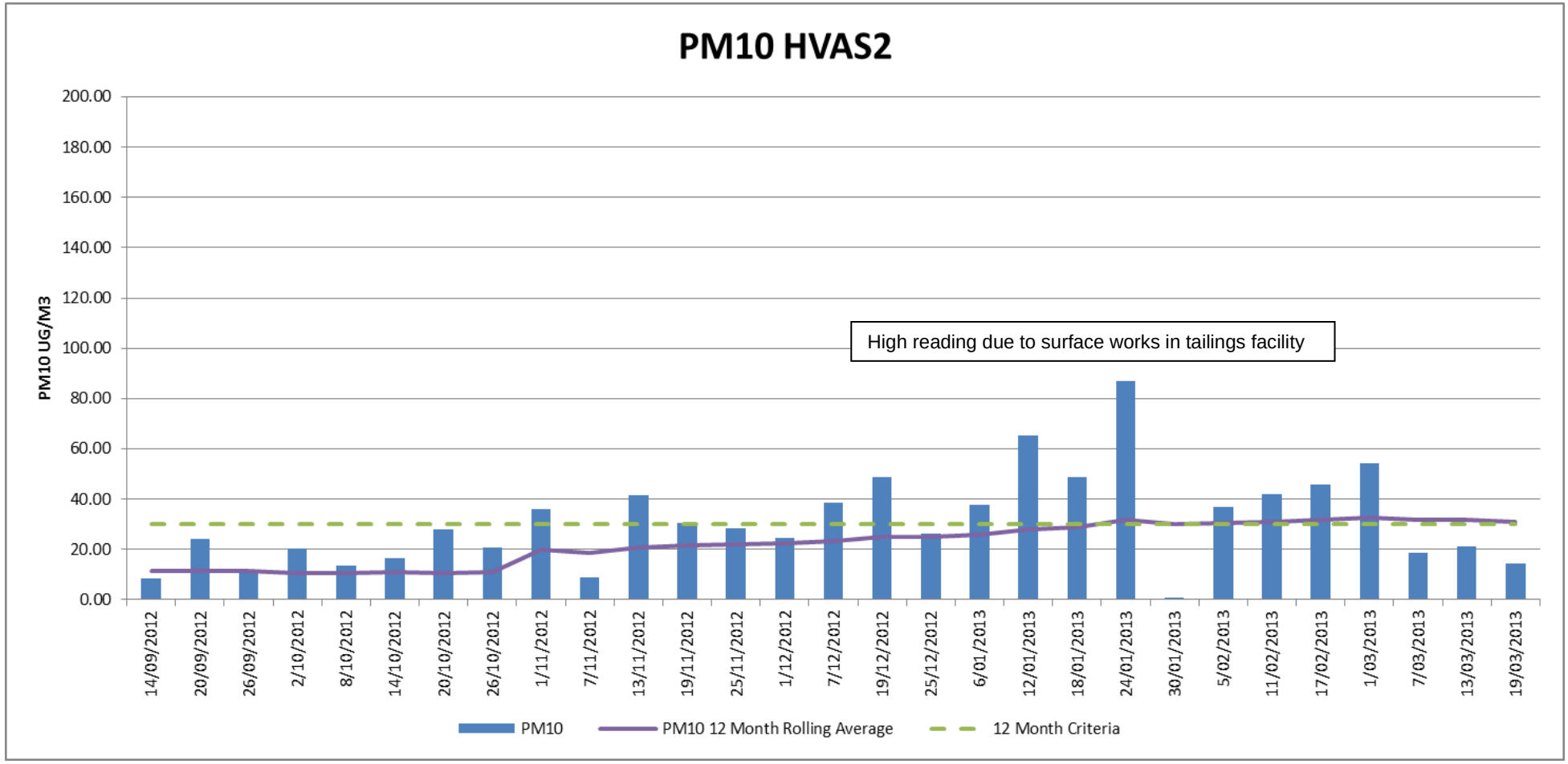
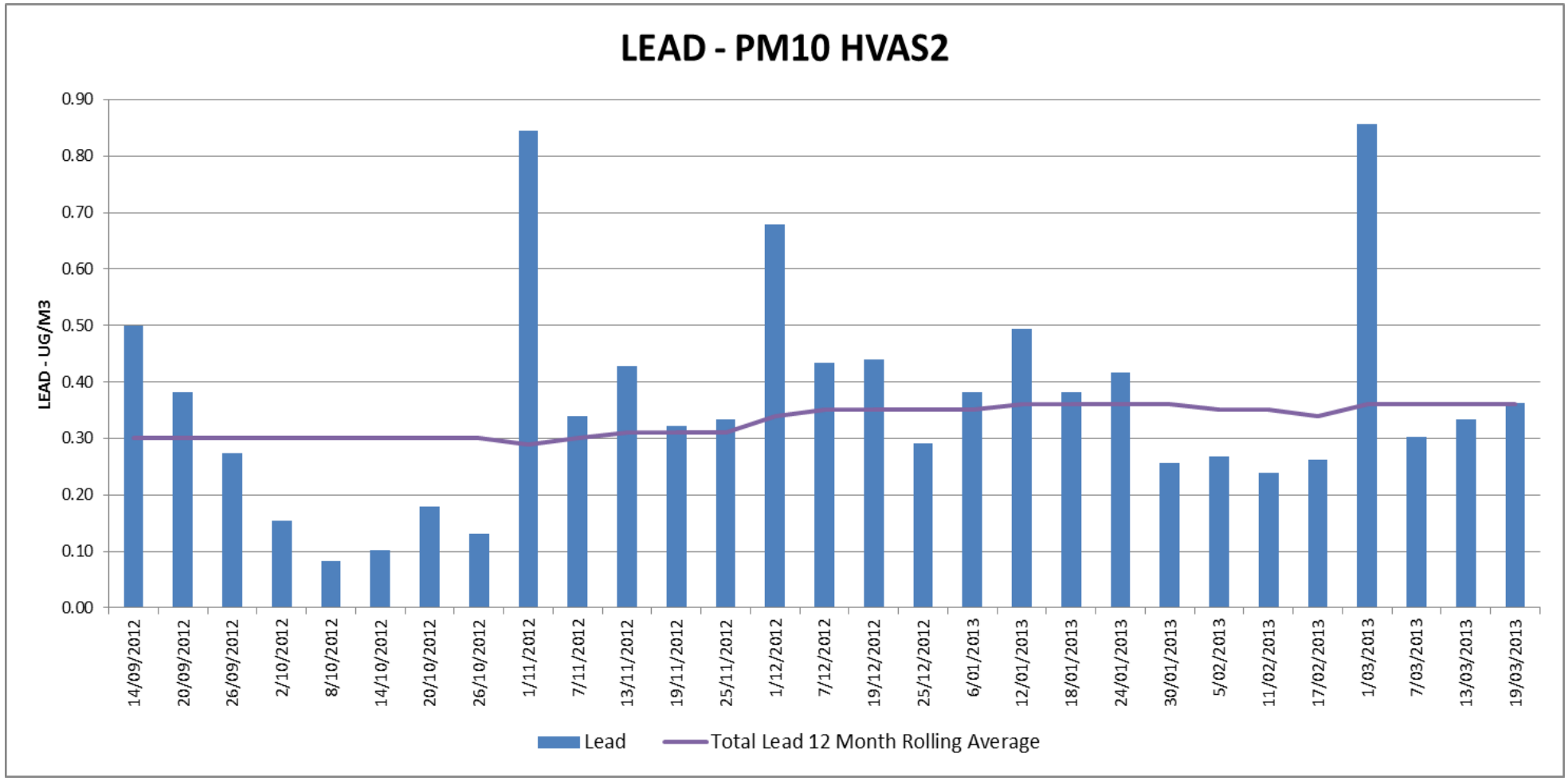


Figure 8- PM10 HVAS2 Lead Results



3.1.3.2 Dust Deposition Gauges

Table 17- Dust Deposition Monitoring Results

Site	Particulates – deposited matter ($g/m^2/m$)					Total Lead ($g/m^2/m$)		
	MIN	MAX	MEAN	BACKGROUND (from EA 2010)	DIFFERENCE	MIN	MAX	MEAN
D1	0.45	1.81	1.20	4.0	-2.8	0.002	0.005	0.003
D2	0.28	2.490	1.01	3.01	-2	0.001	0.006	0.003
D3	1.30	21.44	6.02	4.3	1.72	0.006	0.048	0.016
D4	1.47	4.58	2.58	5.7	-3.12	0.002	0.008	0.006
D5	1.13	7.86	2.83	N/A	N/A	0.003	0.017	0.007
D6	0.62	10.86	4.56	5.8	-1.24	0.002	0.014	0.004
D7	0.79	4.3	1.85	N/A	N/A	0.003	0.011	0.007

Dust deposition data came in under the criteria. All locations have not got an added $2g/m^2/m$ from the EA. The highest difference was $1.72g/m^2/m$ at location D3.

3.1.3.3 TEOM Monitors

BHOP has two TEOM monitors operating transferring live data back to the office. These monitors have alerts attached so if PM10 level hits 50ug/m3 an alarm will be triggered and the result can be investigated. No breaches have recorded at either TEOM during the reporting period. Data for both TEOM's can be seen in **Annexure 5**.

3.2 Erosion and Sediment

The Rasp Mine has a number of bunds, water diversion channels, drains and storage ponds to control erosion and sedimentation. Monitoring during the reporting period did not expose any major erosion issues. A small amount of rill erosion occurred along the Broken Earth Café road. This was maintained in consultation with the lease holders of the café.

To monitor erosion an after rainfall checklist is completed around site after every major rainfall event.

3.3 Surface Water

Due to lack of rainfall over the 2012-13 reporting period surface water has not been an issue. All surface water ponds have been constructed as per the Site Water Management Plan. The monitoring of the required ponds has occurred with samples been taken from Horwoods dam and S22 on a monthly basis.

3.4 Groundwater

Groundwater bores GW11-GW16 were installed over the last 12 months. These bores are targeting seepage from TSF1 and monitor the surface water pond S49. Bores were constructed as per the Site Water Management Plan. There are a total of 16 monitoring bores across the CML7 which are monitored on a quarterly basis. There have been no significant anomalies recorded.

Figure 9 Bore Piezometer depths for GW01 to GW08

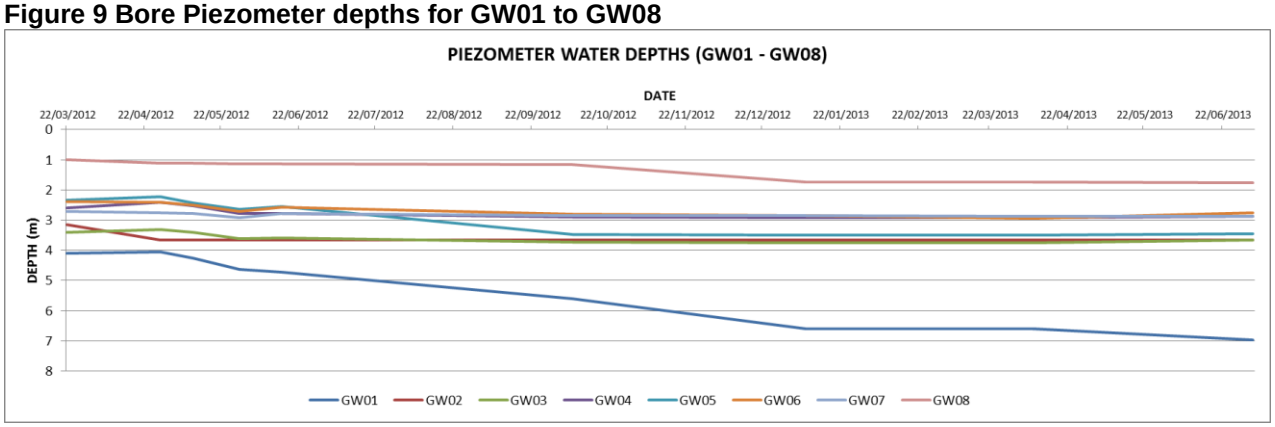
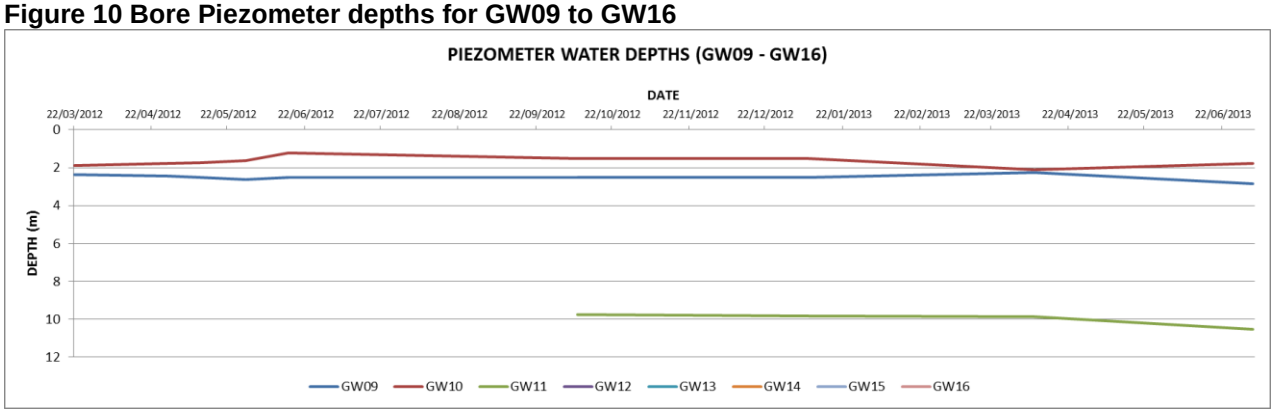


Figure 10 Bore Piezometer depths for GW09 to GW16



Water depths from all bores have shown the trend to drop over the reporting period. This can relate to the drier weather and less rainfall the Broken Hill has receoived.

3.5 Contaminated Polluted Land

The storage and handling of diesel fuels, lubricants and oils, and waste rock material are the only aspects of the operation which has the potential to contribute to contaminated land.

A total of 6 incidents involving a total of 140L of hydrocarbon were spilled over the reporting period. All contaminated soil was cleaned up and placed in the hydrocarbon spill bins for removal.

3.6 / 3.7 Threatened Flora, Fauna and Species Habitats

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.

3.8 Weeds

BHOP conducted its annual weed control in February 2013. Trevor Hicks Pest Control again undertook this work and three mesquite plants were sprayed.

3.9 Blasting

Blast monitors are installed at three locations around site as per licence requirements. A roving blast monitor was also purchased in November with the purpose of moving it around to various locations to determine more information about ground conditions and vibration movement. A total of 12 different locations have been recorded since November. These locations can be seen in figure 8

Figure 11- Roving Monitor Previous Locations

As per Project approval, blasting times are stipulated for production blasting which shall only occur between 6.45am and 7.15pm on any day. Development firing usually occurs at the end of every shift however under certain circumstances firings are completed during the shift.
Criteria for blasting and overpressure from the Project Approval and Environment Protection Licence are shown in **Tables 18 and 19**

Table 18- Airblast Overpressure Criteria

Airblast Overpressure (dB(Lin Peak))	Allowable Exceedance
115	5% of total number of blasts over 12-month period
120	Never

On three occasions the overpressure reading at location V2 triggered 120dB. These results were investigated and it was concluded they were because of equipment failure. All 4 monitors were then sent away for calibration as per the yearly requirements.

Table 19- Peak Particle Velocity Criteria

Peak Particle Velocity (mm^{-1})	Allowable Exceedance
5	5% of the total number of blasts over 12-month period
10	Never

Blasts monitors are set to trigger at an event greater than .5mm/s. If the blast is not greater than this an event wont be recorded. The blasts which are displayed in figures 9,10,11,12,13 and 14 are for blasts greater than .5mm/s.

A total of 313 blasts were fired at the Rasp mine site over the reporting period. 3 blasts went over 5mm/s or 0.95% of all blasts over 12 months.

Since blasting operstions have commenced at Rasp there have been significant steps to the way blasts are managed. These include

- Internal vibration limits- BHOP has set an internal target of 3mm/s. Any exceedence of this the blast in fully investigated.
- Blast design limits- All blast are internal designed for a maximum reading of 2.5mm/s
- Blasting approval process- Each balst is required to go through a comprehensive approval process with final approval being granted by the mining manager.
- Explosive products- Alternative blasting products have been sought including IKON detonstors and the use of emulsion.
- Geological mapping- estensive mapping has been completed looking for structures which contripute to high vibration readings.
- Training and awareness- all person invloved in the blasting process have undergone significant training and awareness regarding the impacts of blasting on the community.
- Community Consultation- individual and group sessions have been held with targeted people in the community.
- Media Campaigns- discussions with the media have been had on numerous occasions to further inform and educate the wider public.

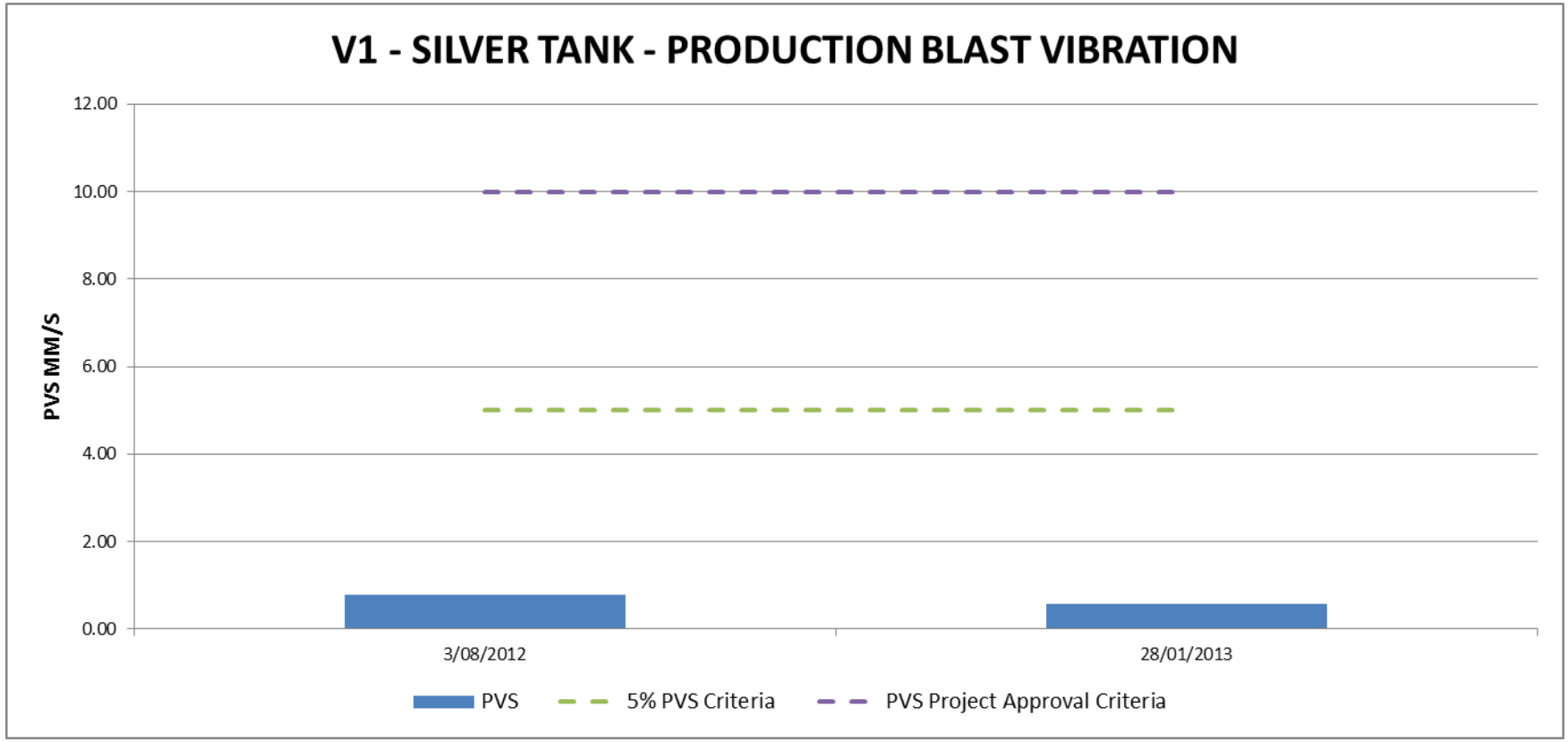

V1 - SILVER TANK - PRODUCTION BLAST VIBRATION
12.00
10.00
8.00
6.00
4.00
2.00
0.00
PVS MM/S
3/08/2012
28/01/2013
PVS
5% PVS Criteria
PVS Project Approval Criteria

Figure 12

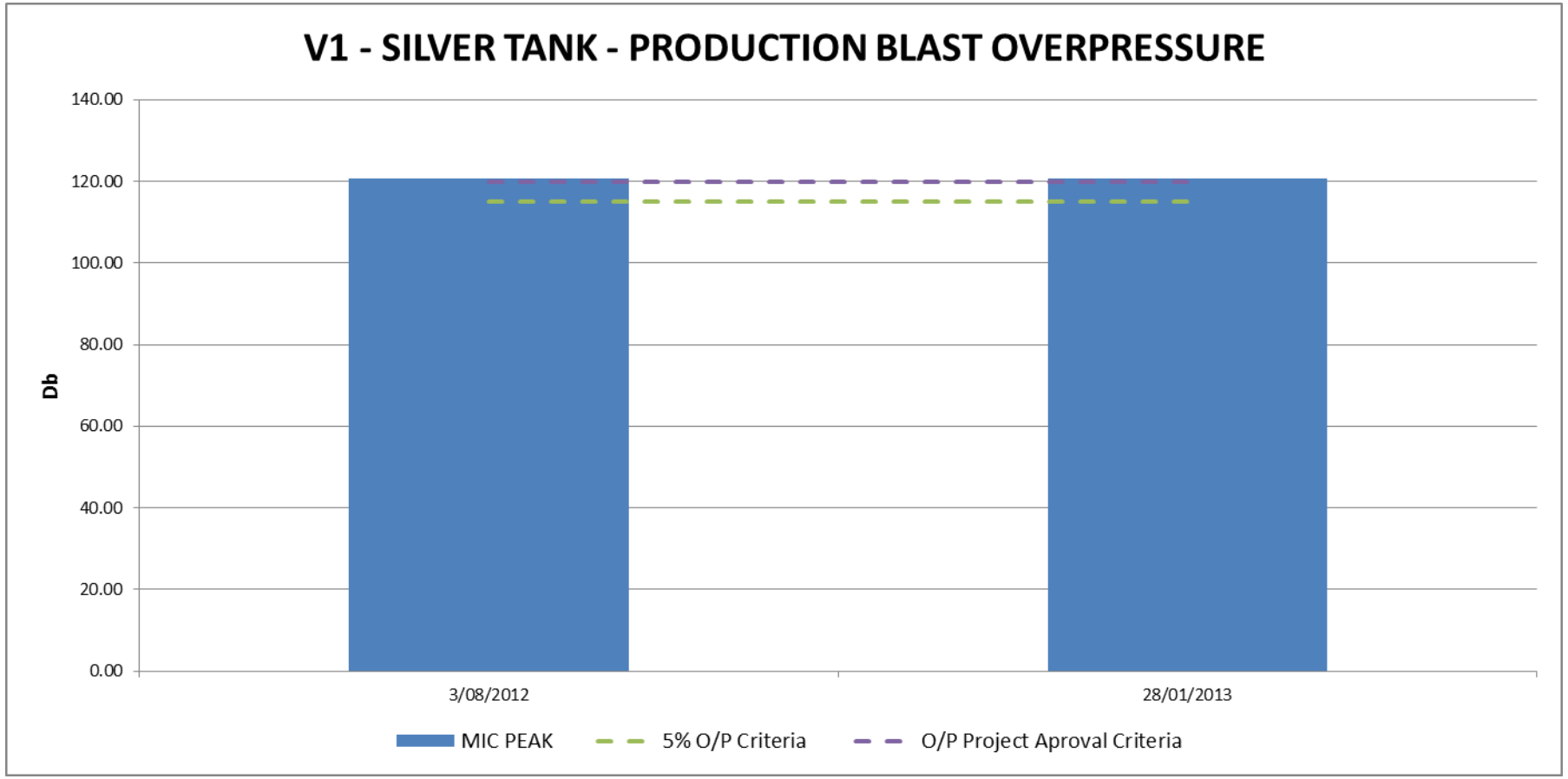


Figure 13

Only 2 blasts events were triggered at the V1- Silver Tank Location.

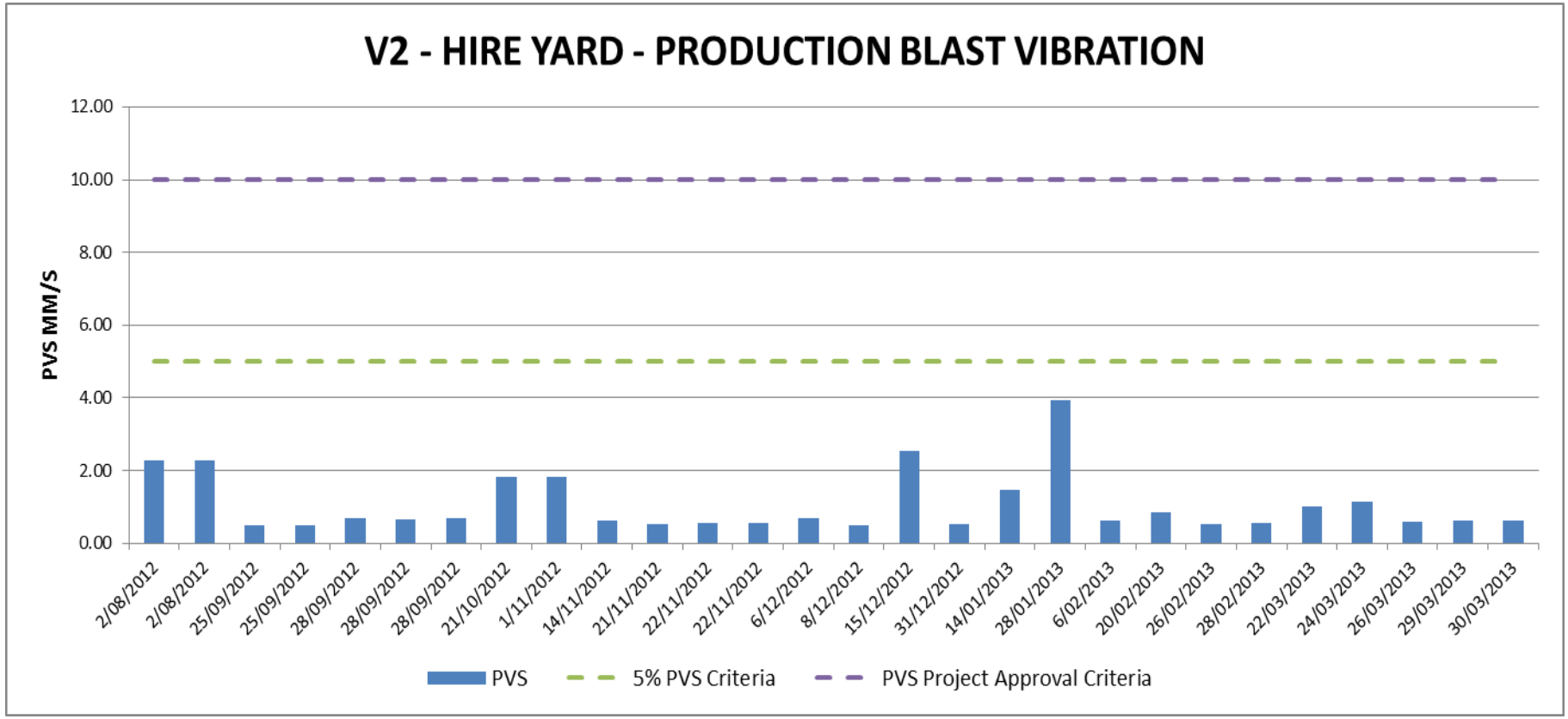

V2 - HIRE YARD - PRODUCTION BLAST VIBRATION
PVS MM/S
12.00
10.00
8.00
6.00
4.00
2.00
0.00
2/08/2012
2/08/2012
25/09/2012
25/09/2012
28/09/2012
28/09/2012
28/09/2012
21/10/2012
1/11/2012
14/11/2012
21/11/2012
22/11/2012
22/11/2012
6/12/2012
8/12/2012
15/12/2012
31/12/2012
14/01/2013
28/01/2013
6/02/2013
20/02/2013
26/02/2013
28/02/2013
22/03/2013
24/03/2013
26/03/2013
29/03/2013
30/03/2013
PVS
5% PVS Criteria
PVS Project Approval Criteria

Figure 14

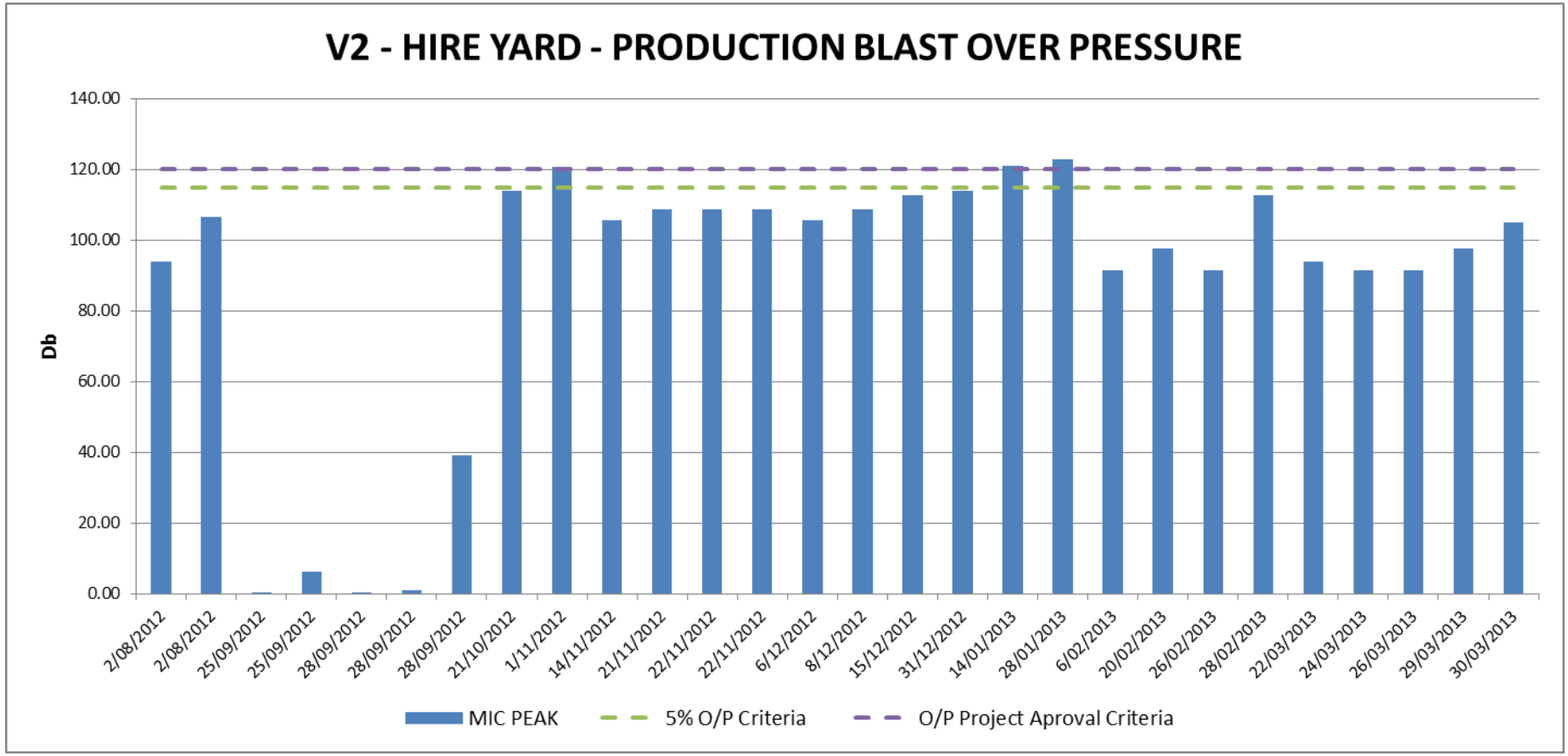


Figure 15

A total of 28 production blasts triggered at the V2- hire Yard location. The maximum being 4.2mm/s on the 28/1/13.

The 3 blasts that recorded readings on the 1/11, 14/1 and 28/1 were all due to equipment failure. This has now been rectified.

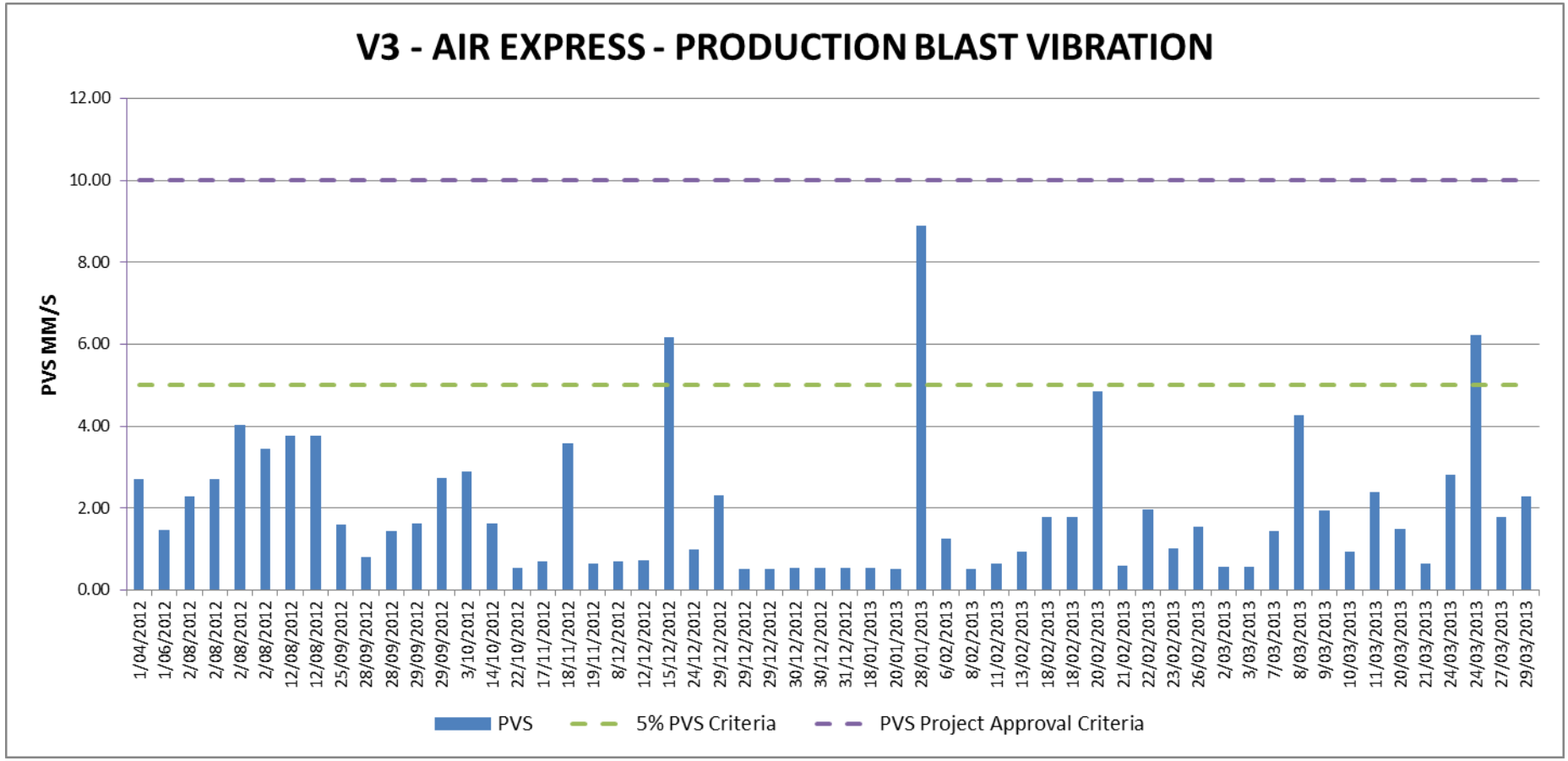

V3 - AIR EXPRESS - PRODUCTION BLAST VIBRATION
PVS MM/S
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1/04/2012
1/06/2012
2/08/2012
2/08/2012
2/08/2012
2/08/2012
12/08/2012
12/08/2012
25/09/2012
28/09/2012
28/09/2012
29/09/2012
29/09/2012
3/10/2012
14/10/2012
22/10/2012
17/11/2012
18/11/2012
19/11/2012
8/12/2012
12/12/2012
15/12/2012
24/12/2012
29/12/2012
29/12/2012
29/12/2012
30/12/2012
30/12/2012
31/12/2012
18/01/2013
20/01/2013
28/01/2013
6/02/2013
8/02/2013
11/02/2013
13/02/2013
18/02/2013
18/02/2013
20/02/2013
21/02/2013
22/02/2013
23/02/2013
26/02/2013
2/03/2013
3/03/2013
7/03/2013
8/03/2013
9/03/2013
10/03/2013
11/03/2013
20/03/2013
21/03/2013
24/03/2013
24/03/2013
27/03/2013
29/03/2013
PVS
5% PVS Criteria
PVS Project Approval Criteria

Figure 16

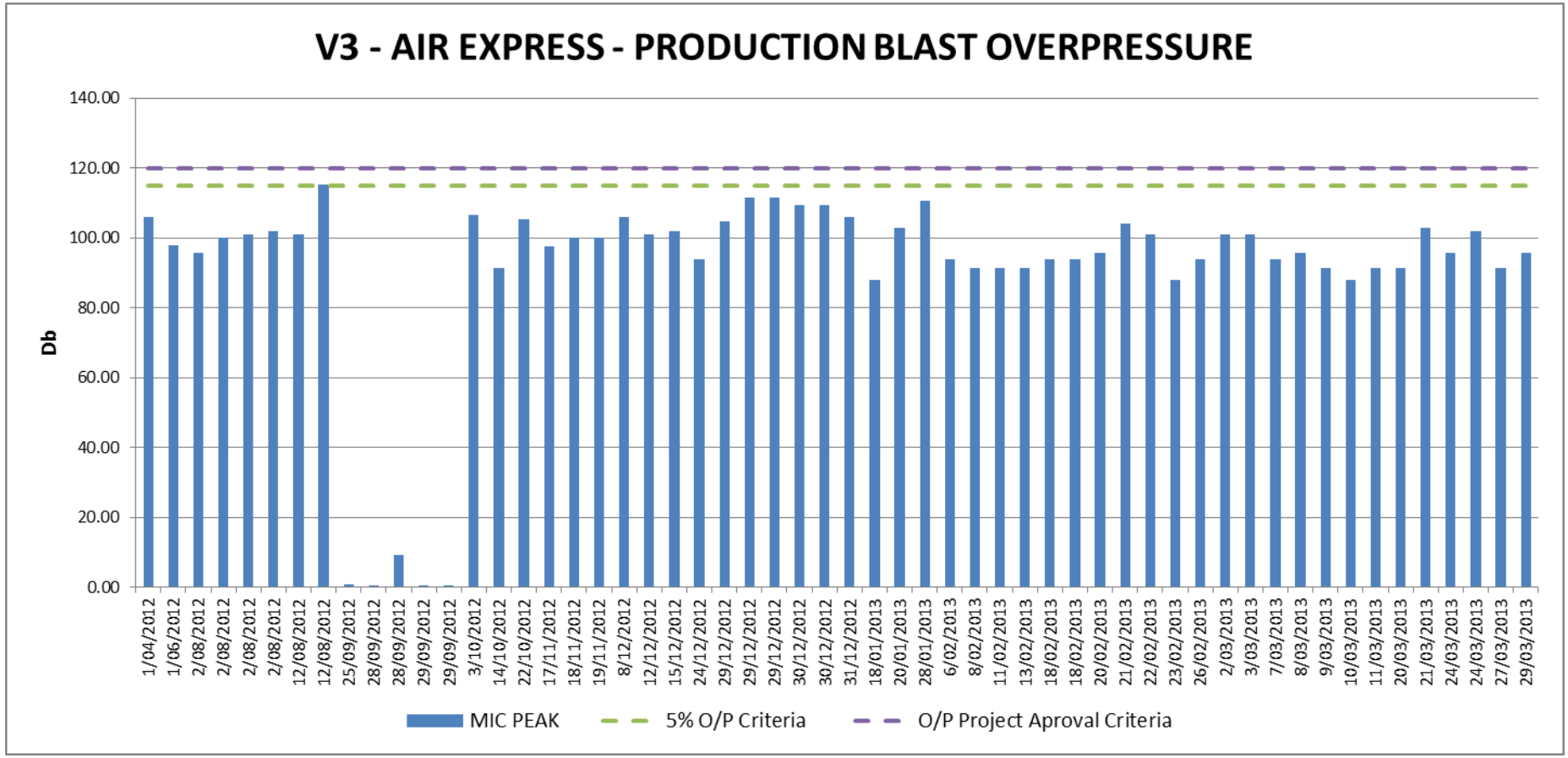


Figure 17

A total of 56 blasts were triggered at V3- Air Express location. The highest being 8.76mm/s on the 28/1/13.

3.10 Operational Noise

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

3.10.1 Operational Noise Criteria and Control Measures

Noise control measures which have been introduced include enclosing various infrastructure at the processing mill. This includes the crusher building, conveyer belts, flotation and filtration buildings.

Earthen bunding has been constructed around haul roads and the processing facility. All bund heights are as per MOP conditions.

Low noise reversing squawkers have been installed on haul trucks and front end loaders.

3.10.2 Operational Noise Monitoring

Noise monitoring was taken at 5 locations quarterly as per noise monitoring protocol. Noise readings were also completed on a 'as need' basis when a complaint was received. The 4 noise complaints received in the reporting period were all investigated and readings came back under criteria limits. Noise results can be seen in **Table 20**

Table 20- Noise Results

Location	Min	Max	**AVG**
A1	47.0	86.0	66.5
A3	51.0	86.0	68.5
A12	49.0	82.0	65.5
A13	49.0	79.0	64.0
A14	47.0	86.0	66.5

All noise results were recorded at higher levels than the set criteria. When recording the observer also notes any external noise which is occurring. External noise noted during the monitoring included wind, car movements, dogs barking and it is this noise which is resulting in higher readings being recorded. Further investigation is ongoing.

3.11 Visual, Stray Light

All light towers around machinery have been designed to face light away from residents. There were no light complaints for the reporting period.

3.12 Indigenous Heritage

There are no known significant indigenous sites within CML7.

3.13 Natural and Social Heritage

BHOP engaged Austral Archaeology Pty Ltd to prepare a Conservation Management Plan. This work is ongoing and is anticipated to be completed in 2013. This is to allow for sufficient consultation to occur. Discussion have occurred with DoPI and BHOP has sought an extension to the completion of this work.

The initial review has been completed and BHOP has engaged an external consultant to develop and align with the Mine Closure Plan.

3.14 Spontaneous Combustion

No incidences occurred during the period.

3.15 Bushfire

No incidences occurred during the period.

3.16 Mine Subsidence

No incidences occurred during the period.

3.17 Hydrocarbon Management

Two diesel transtanks as well as oil storage are located at the workshop. All tanks are stored in concrete bunds or self bunded pallets. These areas are inspected monthly and are pumped out on a routine basis. This waste oil/water is pumped by a licenced contractor and taken to the Broken Hill Waste Facility located on Depot Road. A bunded concrete pad was constructed on the north side of the workshop. This is to collect any spills or leaks that may occur from any parked equipment.

Originally fuel and oils were also stored at the GRES construction site. Inspection of the area identified that modifications were needed for hydrocarbon storage. This was addressed by the construction of a containment bund and purchasing of more bunded pallets

Spill kits are located at both the workshop and process plant near the hydrocarbon storage areas and personnel are trained in their use.

3.18 Methane / Ventilation

Not applicable.

3.19 Public Safety

CML7 is surrounded by fencing and locked gates to discourage access.

Regular inspections are completed of the lease boundary to observe for any damages or tampering with the fences and gates.

3.20 Reportable incidents

BHOP had a reportable vibration breach on 21st of December. Investigation was completed on the blast and it was concluded that the reading occurred from a seismic event.

Strong communication has been open with EPA and DRE throughout the reporting period involving blasting complaints.

An overview of all monthly monitoring reports can be seen in **Annexure 5** as well as CBH resources website cbhresources.com.au

4 COMMUNITY RELATIONS

4.1 Community Complaints

During the period of the AEMR BHOP has maintained a register for community complaints and concerns. A total of 68 complaints were received over the reporting period with 55 of these related to blasting vibration. BHOP has made significant steps to improve blasting over the reporting period. These are listed in section 3.9 of the document. All complainants were contacted and these improvements were discussed with them. All concerns are listed in **Table 21.**

Table 21- Community Complaints Register Summary

What date did the incident occur?	Reason for Call	Company Response
5/7/2012	Noise	Noise limits measured. They came under licence criteria
13/7/2012	Blasting (Vibration)	
17/7/2012	Blasting (Vibration)	
17/7/2012	Blasting (Vibration)	
17/7/2012	Blasting (Vibration)	
17/7/2012	Blasting (Vibration)	
18/7/2012	Blasting (Vibration)	
18/7/2012	Blasting (Vibration)	
18/7/2012	Blasting (Vibration)	
20/7/2012	Blasting (Vibration)	
24/7/2012	Blasting (Vibration)	

25/7/2012	Blasting, Dust, Water	Investigated dust and water issues. There was no immediate problem
1/8/2012	Received phone call early hours of morning from miner.	Spoke to complainant. Phone call didn't come from BHOP.
3/8/2012	Blasting (Vibration)	
3/8/2012	Blasting (Vibration)	
6/8/2012	Dust	Water truck sent to area in question
9/8/2012	Blasting (Vibration)	
21/8/2012	Gas Smell / Air	Re agent investigated. Processing changed the product in question
24/8/2012	Blasting (Vibration)	
18/9/2012	Bad Smell Leaving Site / Air	Re agent investigated. Processing changed the product in question
3/10/2012	Noise	Noise limits measured. They came under licence criteria
3/10/2012	Blasting (Vibration)	
8/10/2012	Blasting (Vibration)	
11/10/2012	Blasting (Vibration)	
23/10/2012	Blasting (Vibration)	
2/11/2012	Blasting (Vibration)	
10/11/2012	Smell / Air	Area investigated. No problem found
18/11/2012	Blasting (Vibration)	
18/11/2012	Blasting (Vibration)	
21/11/2012	Parking	Site notice distributed regarding parking in Eyre St.
26/11/2012	Blasting (Vibration)	
2/12/2012	Dust	Water truck sent to area in question
4/12/2012	Blasting (Vibration)	

4/12/2012	Blasting (Vibration)	
4/12/2012	Blasting (Vibration)	
15/12/2012	Noise	Noise limits measured. They came under licence criteria
15/12/2012	Blasting (Vibration)	
15/12/2012	Blasting (Vibration)	
18/12/2012	Blasting (Vibration)	
18/12/2012	Blasting (Vibration)	
18/12/2012	Noise	Noise investigated. Limits came under licence criteria
5/1/2013	Smell	Smell not coming from Rasp site
7/1/2013	Blasting (Vibration)	
7/1/2013	Blasting (Vibration)	
7/1/2013	Blasting (Vibration)	
7/1/2013	Blasting (Vibration)	
12/1/2013	Blasting (Vibration)	
14/1/2013	Blasting (Vibration)	
28/1/2013	Blasting (Vibration)	
28/1/2013	Blasting (Vibration)	
28/1/2013	Blasting (Vibration)	
17/2/2013	Noise	Noise investigated. Limits came under licence criteria
26/2/2013	Blasting (Vibration)	
24/3/2013	Blasting (Vibration)	
24/3/2013	Blasting (Vibration)	

21/4/2013	Blasting (Vibration)	
21/4/2013	Blasting (Vibration)	
21/4/2013	Blasting (Vibration)	
22/4/2013	Blasting (Vibration)	
22/4/2013	Blasting (Vibration)	
22/4/2013	Blasting (Vibration)	
26/4/2013	Blasting (Vibration)	
28/4/2013	Blasting (Vibration)	
28/4/2013	Blasting (Vibration)	
28/4/2013	Blasting (Vibration)	
5/5/2013	Blasting (Vibration)	
5/5/2013	Blasting (Vibration)	
8/5/2013	Blasting (Vibration)	

4.2 Community Consultation

During the period of the AEMR BHOP 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 City Council (BHCC)
- Department of Resource and Energy (DRE)
- Environment Protection Authority (EPA)
- Land Property Management Authority (LPMA)
- Essential Energy
- Essential Water
- Australian Rail Track Corporation Ltd (ARTC)
- Roads and Traffic Authority (RTA)

- Broken Hill Chamber of Commerce
- Broken Hill Local Indigenous Land Council
- Broken Hill Health Service, Environment Lead Centre

The following community communication activities occurred during the period:

- BHOP were represented at all meetings of the BHCC Lead Reference Group.
- Site visit by Department of Resources and Energy to discuss issues surrounding Mine Closure Plans, Rehabilitation Requirements and Relinquishment of Surface Lease areas.
- A letter drop and subsequent information session for local residents. 200 invitations were distributed along Eyre, Crystal and Argent Streets. The information session was hosted by the BHOP General Manager.
- Organised a stall in coordination with Child Health Centre to promote Lead Week.

5 REHABILITATION

Table's 22 and 23 detail disturbed areas and rehabilitation progress at Rasp over the reporting period.

Table 22- Rehabilitation Summary

	Area Affected / Rehabilitated (hectares)		
A: MINE LEASE AREA	**To date 1/4/2012-31/3/2013**	**Last Report 1/1/2011-31/3/2012**	**Next Report 1/4/2013-31/3/2014**
A1 Mine lease(s) Area	226.4		
B: DISTURBED AREAS			
B1 Infrastructure area (other disturbed areas to be rehabilitated at closure including facilities, roads)	64.5	64.5	64.5
B2 Active Mining Area (excluding items B3 – B5 below)	11.5	11.5	11.5
B3 Waste emplacements, (active / unshaped / in or out-of-pit)	1.70	1.18	2.5
B4 Tailings emplacements (active / unshaped / uncapped)	3.8	0.0	3.8
B5 Shaped waste emplacement (awaits final vegetation)	0.0	0.0	0.0
ALL DISTURBED AREAS	77.2	77.2	79.3
C REHABILITATION			
C1 Total Rehabilitated area (except for maintenance)	149.1	149.1	147
D REHABILITATION ON SLOPES			
D1 10 to 18 degrees	4.1	4.1	4.1
D2 Greater than 18 degrees	14.7	14.7	14.7
E SURFACE OF REHABILITATED LAND			
E1 Pasture and grasses	NA	NA	NA
E2 Native forest / ecosystems	1.0	1.0	1.0
E3 Plantations and crops	2.6	2.6	2.6
E4 Other (include non-vegetative outcomes)	151.3	151.3	149.1

Table 23- Maintenance Activities on Rehabilitated Land

NATURE OF TREATMENT	Area Treated (ha)		Comment / control strategies / treatment detail
	Report Period	Next Period	
Additional erosion control works (drains re-contouring, rock protection)	0	0	Use of water truck and water sprays as required. Site water management earthworks completed at various locations around site to abide Site Water Management Plan Trial of dust suppression around free areas of site
Re-covering (detail further topsoil, subsoil, sealing etc)	0	0	NA
Soil treatment (detail – fertiliser, lime, gypsum etc)	0	0	NA
Treatment / Management (detail – grazing, cropping, slashing etc)	0	0	Monthly inspections of the lease are undertaken checking stability of slopes, fallen rocks, fencing and heritage buildings. Repair work is undertaken as required.
Re-seeding / Replanting (detail – species density, season etc)	0	0	Grass planted at change house
Adversely Affected by Weeds (detail – type and treatment)	0	0	Mesquite weeds sprayed.
Feral animal control (detail – additional fencing, trapping, baiting etc)			No action during period to control goats.

5.1 Buildings

The Old Change house or (building number 285) in Austral heritage report was relined for use as an electrical workshop. No external modifications were made to the building.

5.2 Rehabilitation of Disturbed Land

There was no rehabilitation of disturbed land during the reporting period.

5.3 Other Infrastructure

Drains and stormwater earthworks were completed at various locations in as accordance with the Site Water Management Plan.

5.4 Rehabilitation Trials and Research

A rehabilitation trial for olive production is being undertaken by the Broken Hill Gourmet Products Co-Operative Limited on in the western corner of the CML7. Again attempts were made to contact this group however at the time of writing BHOP had still not received any communication from Broken Hill Products Co-operative.

6 ACTIVITIES PROPOSED FOR NEXT AEMR PERIOD

Backfill Plant

The backfill plant which has been constructed is due to come on line. Mined out stopes will be the first areas targeted to be backfilled.

Water Management

Water management around Rasp is going to be reviewed over the next reporting period. This includes new water storage areas and how water can be used more efficiently on site.

Extend Crushing Hours

BHOP will look to amend project approval and MOP conditions of the crusher operating times. Preliminary assessments have been completed by consultants and variations will be submitted to relevant stakeholders.

Surface Exploration

BHOP will be identifying exploration targets along CML7. This may involve periodic drilling and sampling campaigns across the lease.

Waste Rock Rehabilitation

Some rehabilitation trials are going to begin with waste rock around site. Mt Hebbard is going to be the first place which waste rock is going to be placed.