

**Portia Gold Project**

**QUARTERLY COMPLIANCE REPORT**

**COMPLIANCE REPORT NO. 13 Q2 2018**



26 July 2018

Portia ML 6346 Compliance Report No. 13 Q2 2018 (Quarterly)

Document / Project Summary Information	
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# 1. Introduction

The Portia Gold Mine (i.e. the 'Site') is located approximately 430km north-northeast of Adelaide, South Australia and is owned by Benagerie Gold Pty Ltd (Benagerie Gold), a wholly owned subsidiary of Havilah Resources. Portia Gold Mine is operated by Consolidated Mining and Civil (CMC).

The Portia Mining Lease (ML 6346) was originally granted to Benagerie Gold by the Department of Energy and Mining (DEM) on 2 October 2009 for a period of seven years. A Mining Lease renewal application was submitted to DEM on 20 June 2016 and extension has been granted for a further 12 years commencing on 2 October 2016.

Approval conditions on the current Program for Environment Protection and Rehabilitation (PEPR, Version 4.2, dated 9 December 2016) (PEPR2016/021) require compliance reports to be submitted to DEM each quarter covering the following:

- Monitoring of groundwater in relation to drawdown from dewatering and re-injection into the Shylock Palaeochannel, including validation of monitoring results against the numerical groundwater model.
- Monitoring results of head pressures for re-injection.
- Monitoring of extraction rates from the Shylock Palaeochannel.
- Water chemistry analysis (arsenic and major ions) of injectant (mine water).

This quarterly compliance report, covers the period of operations from 1 April 2018 to 30 June 2018 (i.e. Q2 2018) and is aligned with the reporting requirements detailed above.

Subsequent to the period this report covers, the Benagerie Gold subsidiary has been sold by Havilah Resources to CMC. This will therefore be the final Portia Compliance Report issued by Havilah Resources as CMC will take over all compliance related reporting duties.

## 2. Summary of Monitoring Results

### 2.1 Operational Groundwater Monitoring

The locations of all performance and environmental monitoring well locations are shown in Appendix A. Monitoring frequencies and parameters were undertaken in accordance with the approved *Portia Groundwater Monitoring and Management Plan* (GMMP) under PEPR2016/021. Supporting explanatory notes are provided below.

#### 2.1.1 Pressure (Head Impress) Monitoring

Pressures heads in Shylock Palaeochannel re-injection wellfield monitoring wells PTIW17, PTIW21 and W5 were at zero at the start of the reporting period (see Figure 1). No re-injection occurred during the reporting period of 1 April 2018 to 30 June 2018. Pressures recorded at re-injection and monitoring wells remained at zero.

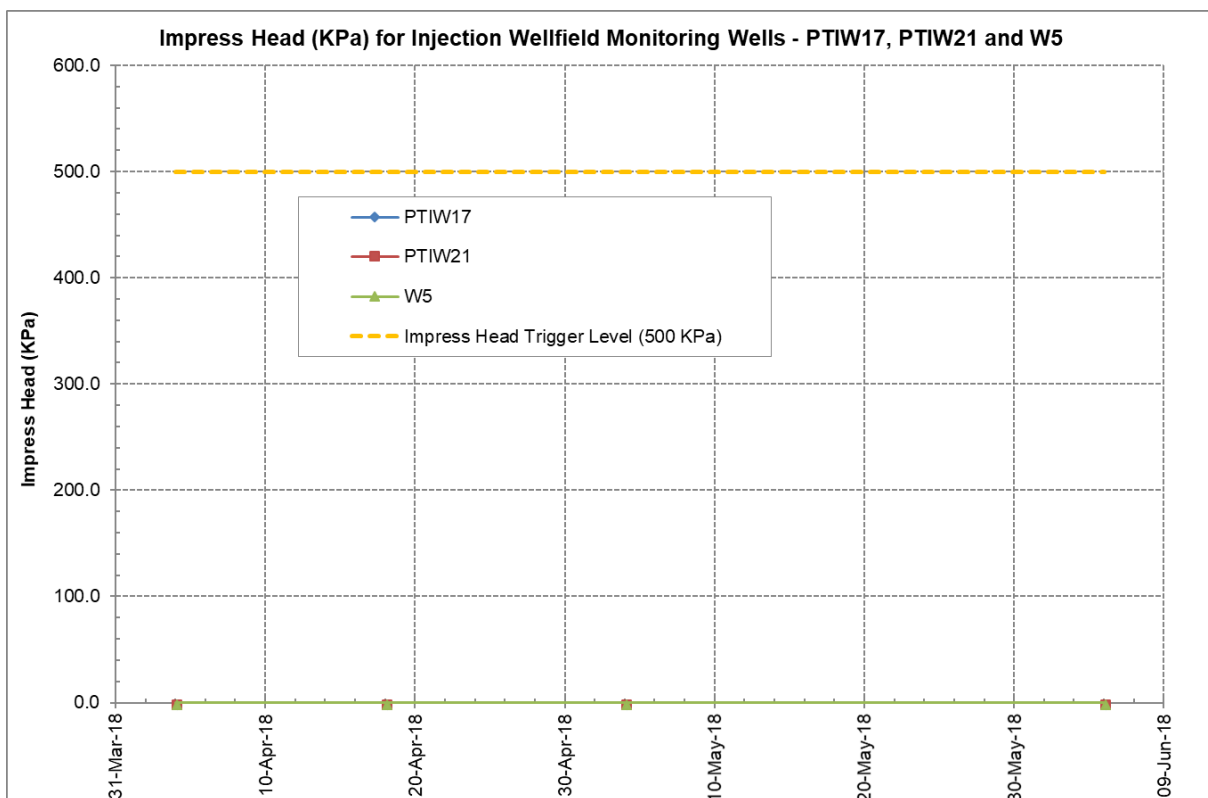


Figure 1: Impress Head (KPa) for injection wellfield monitoring wells – April to June 2018

## 2.1.2 Shylock Palaeochannel Extraction Monitoring

No extraction occurred from the Shylock Palaeochannel wells during the reporting period.

## 2.1.3 Injectant Water Quality Monitoring

No re-injection took place into the Shylock Palaeochannel well field between April and June 2018. During this period liquor samples were collected from the PDD and tested for field pH, field Total Dissolved Solids (TDS) and field Arsenic (As) concentrations. Full compliance was achieved during this period, as described in detail below.

### pH

Field pH measured from the PDD during the reporting period ranged from 7.29 to 7.46 (Figure 2), within the compliance trigger levels of 4.5 and 8.5. A quarterly duplicate sample (PDD\_20180605) was sent for analysis to the ALS Laboratory on 5 June and returned a pH reading of 7.58.

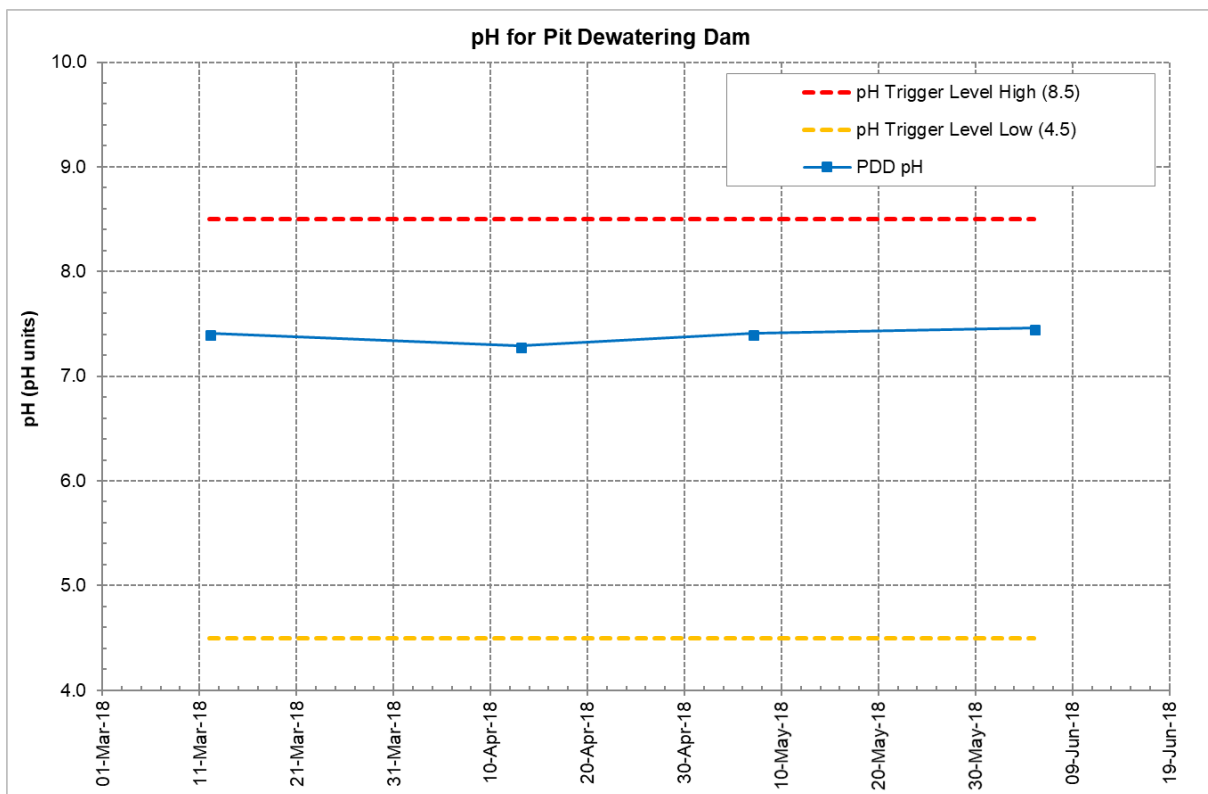
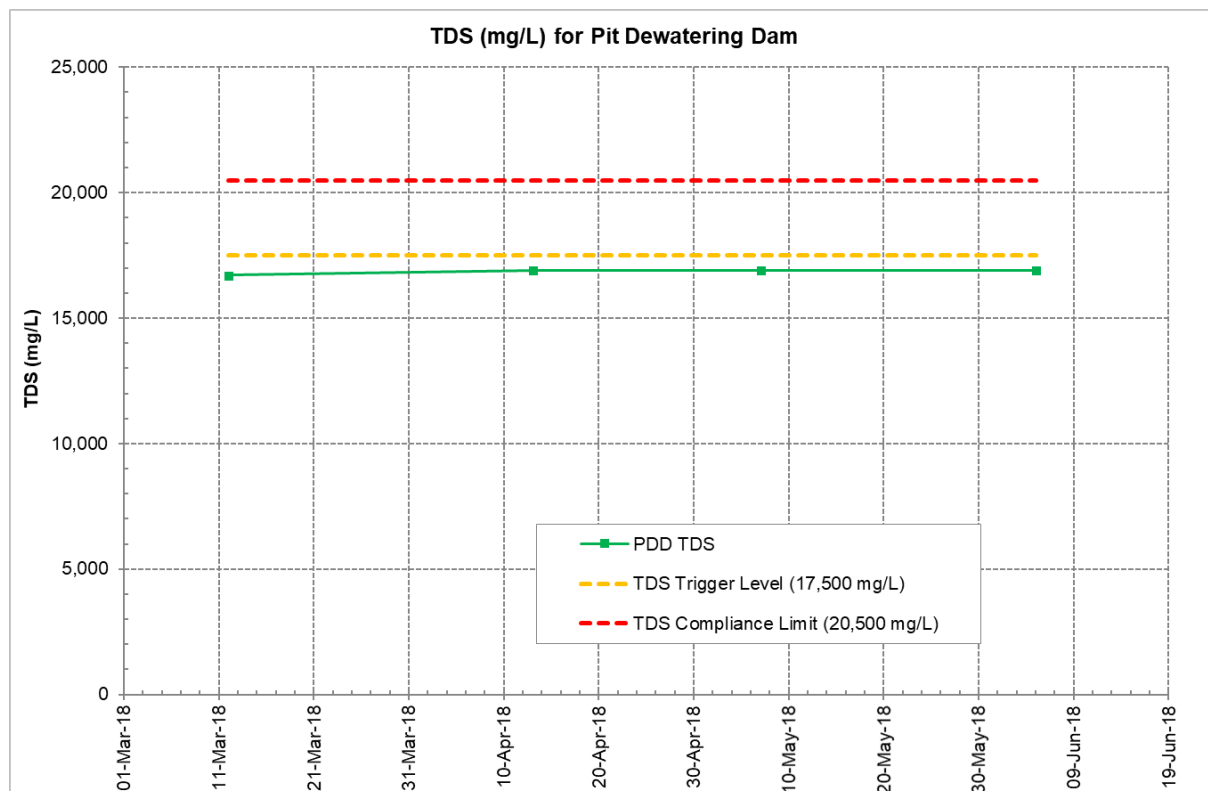


Figure 2: Field pH of Pit Dewatering Dam – April to June 2018

## Total Dissolved Solids

Results during the reporting period show that field TDS<sup>1</sup> measurements in the PDD were less than the 17,500 mg/L trigger level (see

Figure 3). A quarterly duplicate sample collected on 5 June 2018 (PDD\_20180605) was sent for analysis at ALS Laboratory and results are shown in Table 1. The laboratory determined a TDS concentration of 18,700mg/L. While this is above the trigger level (17,500 mg/L) it remains well within the compliance limit of 20,500 mg/L. Benagerie Gold will monitor this closely to ensure continuing compliance going forward.

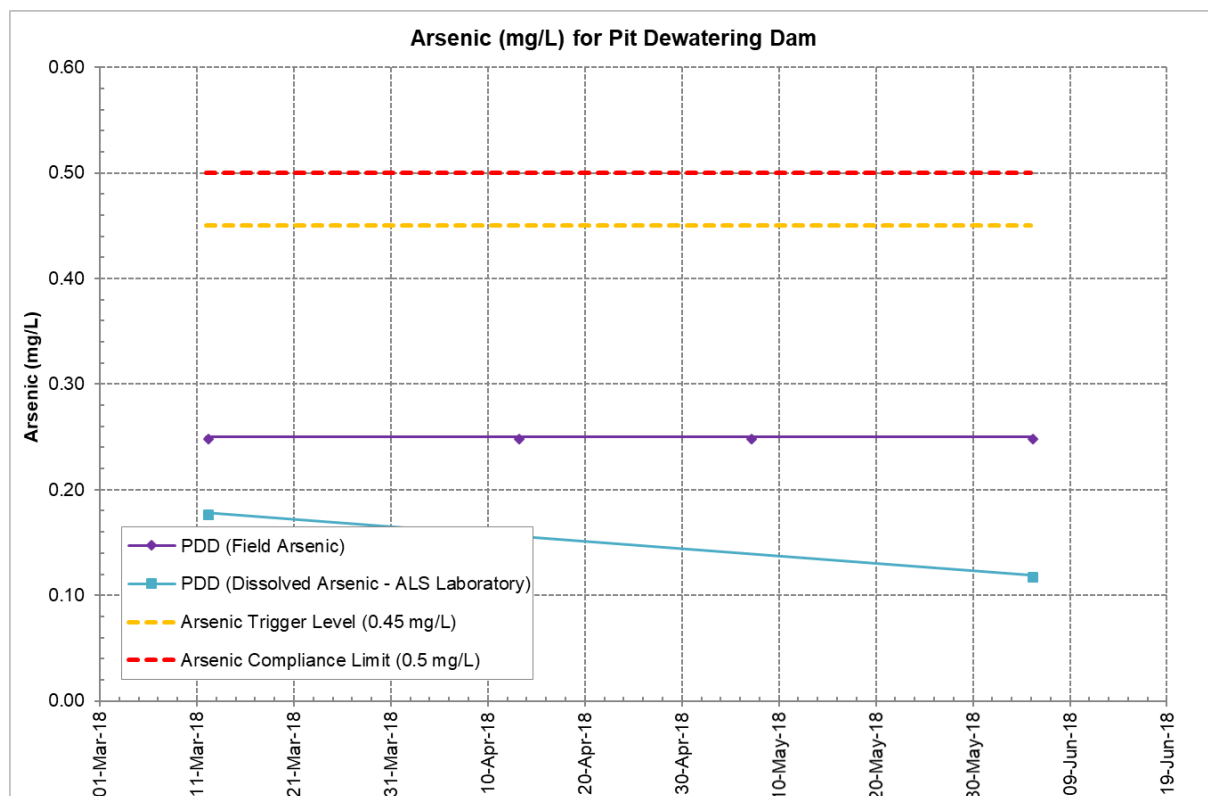


**Figure 3: Field Total Dissolved Solids (TDS) for Pit Dewatering Dam – April to June 2018**

<sup>1</sup> EC (mS/cm) converted to TDS (mg/L) by multiplying EC by 1000 then by 0.65.

## Arsenic Concentration

Monthly field arsenic measurements taken from the PDD during the reporting period were <0.5 mg/L (typically 0.25 mg/L), with 0.45 mg/L being the latest trigger level defined in the updated approved PEPR (PEPR2016/021) (see Figure 4). The quarterly duplicate sample collected 5 June 2018 (PDD\_20180605) was sent for analysis of dissolved arsenic and major cations at ALS Laboratory, with the reported dissolved arsenic being 0.119mg/L, well below the 0.45 mg/L trigger level (Table 1).



**Figure 4: Field vs Laboratory Arsenic Concentration for Pit Dewatering Dam – April to June 2018**



**Table 1: Laboratory dissolved arsenic and major ion results for PDD samples**

			pH Value	Electrical Conductivity @ 25°C	Total Dissolved Solids (Calc.)	Total Hardness as CaCO <sub>3</sub>	Hydroxide Alkalinity as CaCO <sub>3</sub>	Carbonate Alkalinity as CaCO <sub>3</sub>	Bicarbonate Alkalinity as CaCO <sub>3</sub>	Total Alkalinity as CaCO <sub>3</sub>	Sulfate as SO <sub>4</sub> - Turbidimetric	Chloride	Calcium	Magnesium	Sodium	Potassium	Arsenic (Dissolved)	Fluoride
Units			pH Unit	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
LOR			0.01	1	1	1	1	1	1	1	1	1	1	1	1	1	0.001	0.1
Work Order	Sample Date	Sample ID																
ES1521592	5/05/2015	PDD_20150505	7.89	21,500	14,000	3,070	<1	<1	135	135	1,900	6,710	591	388	4,450	25	0.335	1.0
ES1527438	30/07/2015	PDD_20150731	8.07	21,800	14,200	2,590	<1	<1	143	143	1,870	4,730	509	320	3,810	25	0.318	1.0
ES1532232	24/09/2015	PDD_20150924	8.31	23,100	15,000	2,780	<1	2	122	123	1,910	6,570	555	338	4,340	28	0.295	0.8
ES1538081	3/12/2015	PDD_20151203	7.31	21,700	14,100	2,420	<1	<1	121	121	1,980	6,700	470	303	3,540	21	0.296	0.8
ES1605621	10/03/2016	PDD_20160310	7.51	22,300	14,500	2,780	<1	<1	110	110	1,880	6,910	540	347	4,060	24	0.306	0.7
ES1613148	14/06/2016	PDD_20160614	6.51	23,200	15,100	2,810	<1	<1	168	168	1,910	7,190	531	360	4,150	25	0.247	1.0
EM1611791	16/09/2016	PDD_20160916	7.59	28,300	18,400	3,340	<1	<1	154	154	2,040	9,470	635	425	5,130	22	0.132	2.2
EM1615709	20/12/2016	PDD_20161220	7.70	27,500	17,900	3,030	<1	<1	144	144	2,170	9,640	570	390	5,300	21	0.077	2.0
EM1703804	4/03/2017	PPD_20170304	7.49	25,900	16,800	2,680	<1	<1	144	144	1,830	7,620	484	358	4,500	23	0.474	1.2
EM1707995	7/06/2017	PPD_20170607	7.64	25,400	16,500	2,960	<1	<1	141	141	1,920	7,950	548	386	4,810	22	0.385	1.1
EM1713316	15/09/2017	PDD_20170915	7.58	27,800	18,100	3,750	<1	<1	148	148	2,000	9,740	715	478	5,420	31	0.118	1.8
EM1717576	8/12/2017	PPD_20171208	7.73	27,400	17,800	3,300	<1	<1	141	141	2,370	8,840	648	408	4,650	17	0.108	1.7
EM1805546	12/03/2018	PPD_20180312	7.68	28,400	18,500	3,670	<1	<1	148	148	2,320	8,260	704	464	5,290	40	0.178	1.6
EM1810438	5/06/2018	PDD_20180605	7.58	28,800	18,700	3,800	<1	<1	148	148	2,340	10,200	729	480	5,200	39	0.119	1.8

## 2.1.4 Groundwater Drawdown Monitoring

Wallbridge Gilbert Aztec (WGA) previously undertook numerical model updates in support of the LoM for Portia extending to at least the end of June 2018 with additional updated model predictions to the end of December 2018. Updated model predictions will be presented to DEM as part of the updated PEPR to be submitted in September 2018.

Operational drawdowns measured between April and June 2018 in model calibration wells W1A, W2A and W3A were reviewed and compared with the updated model predictions of WGA (2017) using the  $\pm 4.6$  m (2 standard error) limits. These results are shown in Figure 5 (W1A), Figure 6 (W2A) and Figure 7 (W3A).

When compared with the re-calibrated model predictions of WGA (2017), observed drawdowns in model calibration wells (W1A, W2A and W3A) are within compliance limits and showing a good overall 'fit' to the model predictions. Relatively low inflows into the pit were constant at approximately 23 L/s at the end of June.

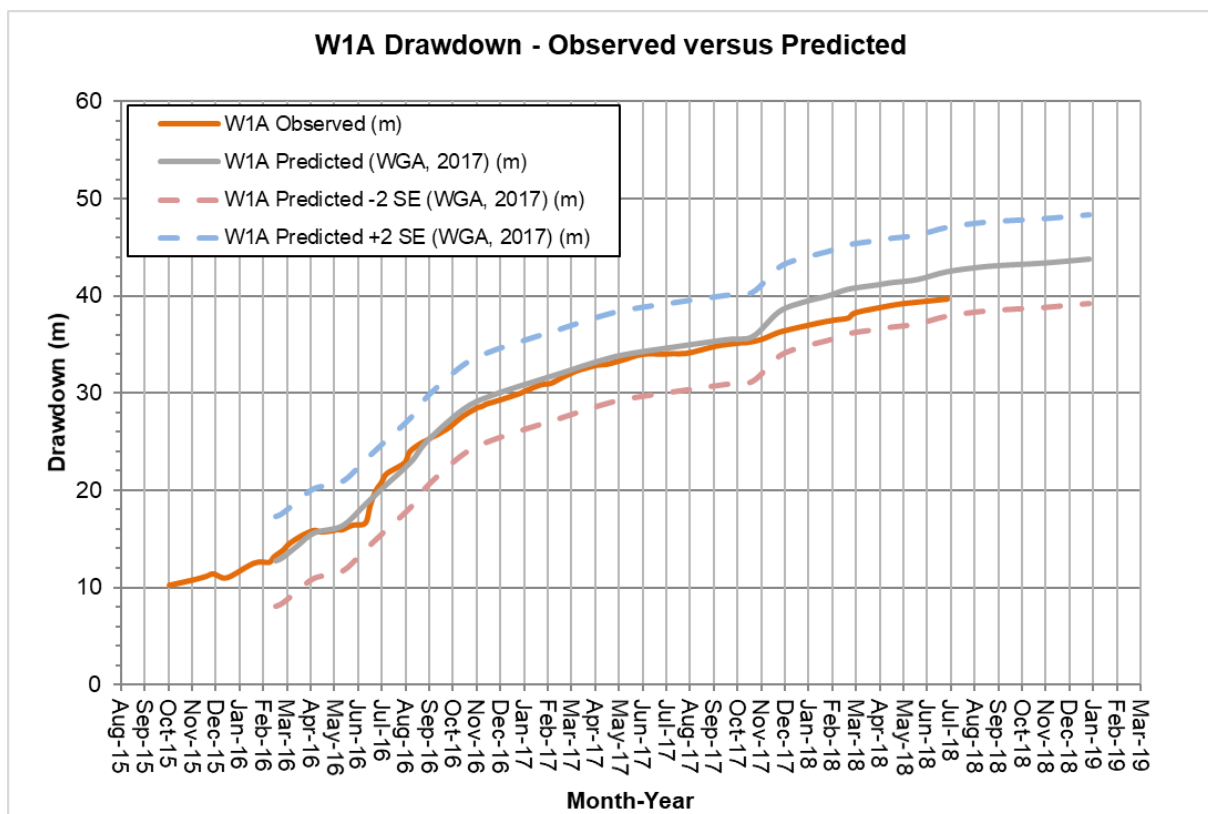


Figure 5: Operational drawdown (observed) versus modelled drawdown (predicted) for W1A

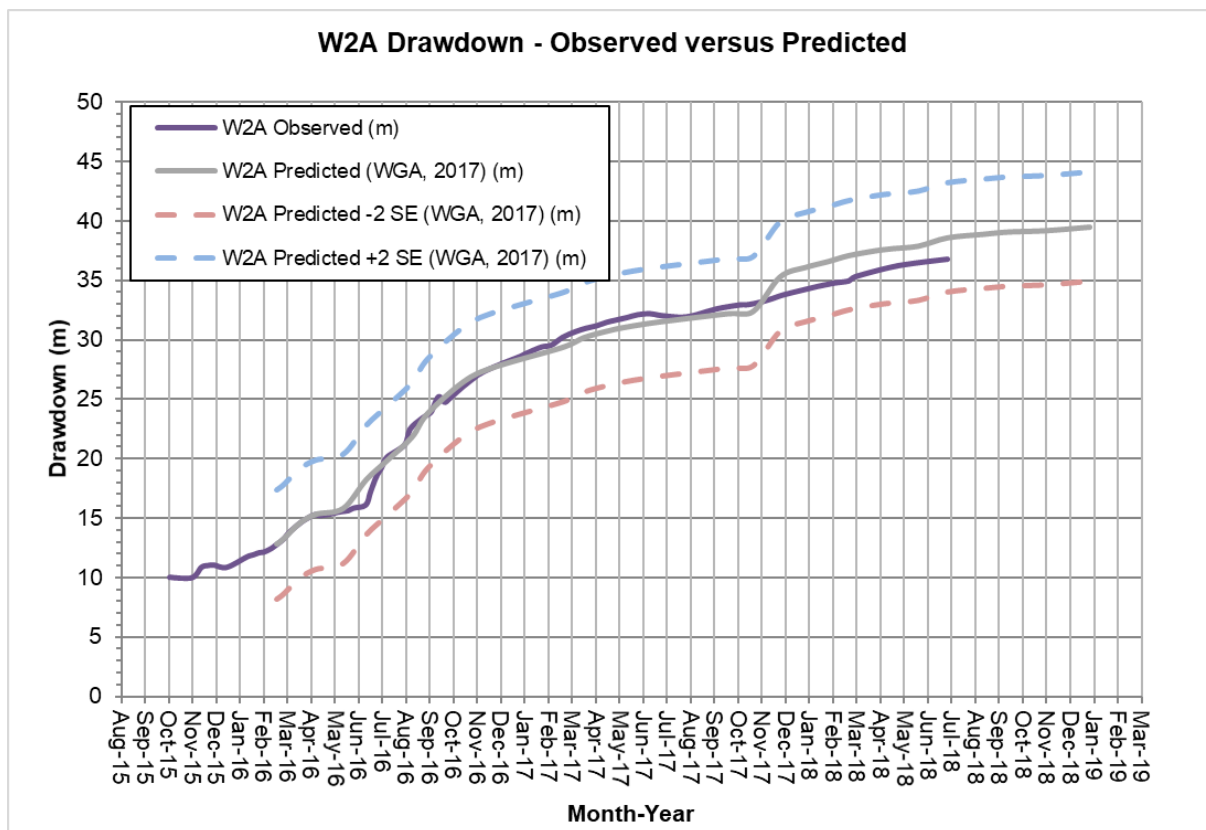


Figure 6: Operational drawdown (observed) versus modelled drawdown (predicted) for W2A

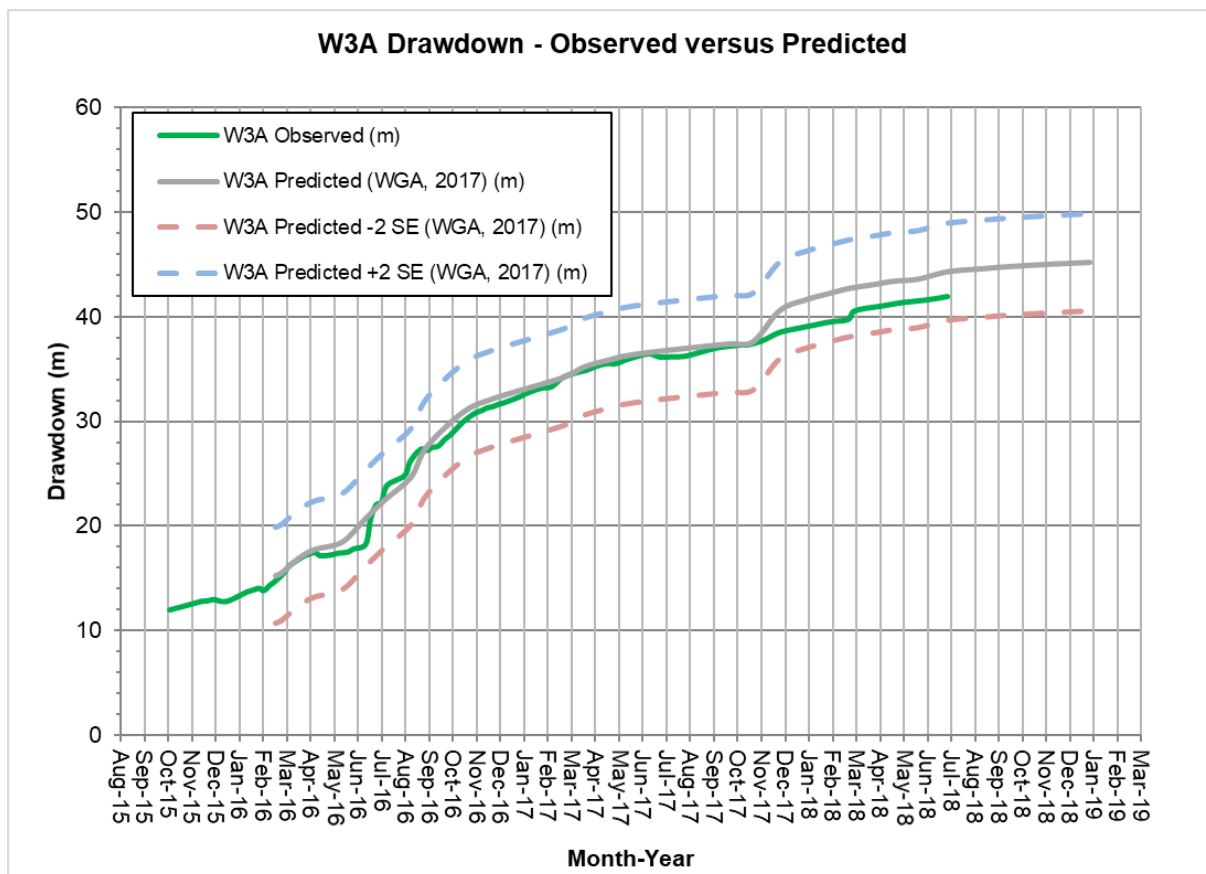


Figure 7: Operational drawdown (observed) versus modelled drawdown (predicted) for W3A

### 3. References

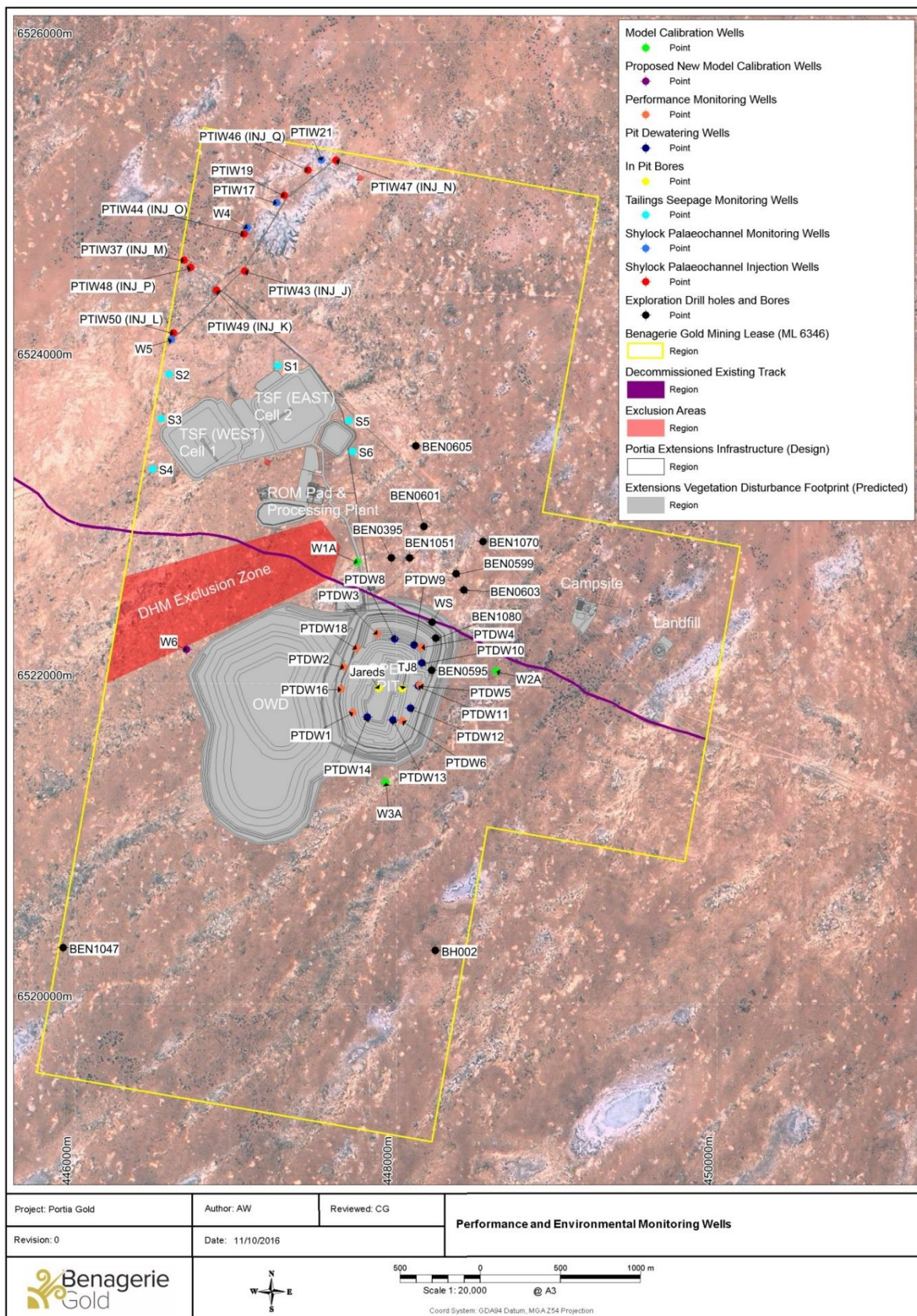
Wallbridge Gilbert Aztec (WGA) (2017): *2017 Updated Model Predictions for the Portia Gold Project*. WGA Job No: ADL171484. Unpublished letter report prepared for Benagerie Gold Pty Ltd. Adelaide, South Australia.

Aqueon Pty Ltd (2016): *Portia Gold Project – Numerical Model Update & Hydrogeological Review to Support Open Pit Expansion Plans*. Aqueon Report No: 0113-16-HAE. Unpublished report prepared for Benagerie Gold Pty Ltd. Adelaide, South Australia.

Benagerie Gold (2016): *Program for Environment Protection and Rehabilitation for the Portia Gold Project* (9 December 2016, Version 4.2). Benagerie Gold, Adelaide, South Australia.





# Attachment A: Environmental Monitoring Locations





# Attachment B: Quarterly Topsoil Stockpile Photo Monitoring Assessment

Name:	D Sawers	Date:	06/06/2018
1. New Process Dam Stockpile			
<ul style="list-style-type: none"><li>• Stable stockpile</li><li>• Minimal vegetation</li><li>• Minimal erosion gullies</li><li>• Minimal surface erosion</li></ul>			
2. Plant Stockpile – Northern Side			
<ul style="list-style-type: none"><li>• Stable stockpile</li><li>• Slight surface erosion</li><li>• Large, established saltbush</li><li>• Medium vegetation</li><li>• Erosion gully evidence from sediment gathered at base of stockpile</li><li>• One large erosion gully forming</li><li>• White crust visible from dust output from plant</li></ul>			

### 3. Mine Stockpile – Northern Side

- Stable stockpile
- Some major erosion gullies
- Minimal vegetation evident
- Some machinery parts visible
- Some disturbance from machinery
- Slight surface erosion





### 4. OWD – Northern Stockpile



- Generally stable
- One very large erosion gully evident
- Slight surface erosion
- Minimal vegetation observed
- Sediment collected at base of stockpile







5. OWD – Western Stockpile	
<ul style="list-style-type: none"> <li>• Stable stockpile</li> <li>• Surface erosion evident</li> <li>• Minimal vegetation observed</li> <li>• Some erosion gullies becoming evident</li> </ul>	
6. Camp Stockpile	
<ul style="list-style-type: none"> <li>• Stable stockpile</li> <li>• Moderate vegetation observed</li> <li>• No erosion on surface</li> <li>• No erosion gullies</li> <li>• Vegetation blending with surrounding area</li> </ul>	



7. Waste Repository Stockpile	
<ul style="list-style-type: none"> <li>• Stable stockpile</li> <li>• Moderate vegetation observed</li> <li>• Slight surface erosion evident</li> <li>• No major erosion gullies</li> </ul>	
8. TFS – East Stockpile	
<ul style="list-style-type: none"> <li>• Stable stockpile</li> <li>• Slight surface erosion</li> <li>• No major erosion gullies</li> <li>• Minimal vegetation observed</li> </ul>	

9. TFS – West Stockpile	
<ul style="list-style-type: none"> <li>• Stable stockpile</li> <li>• Some small gullies</li> <li>• Minimal vegetation observed</li> <li>• No surface erosion evident</li> </ul>	 <p>A photograph of a reddish-brown soil surface under a clear blue sky. A white rectangular sign is placed on the ground, reading 'Topsoil Photo' and 'Monitoring Point 9'. The soil appears relatively stable with minimal vegetation.</p>
10. ROM – Western Stockpile	
<ul style="list-style-type: none"> <li>• Stable stockpile</li> <li>• Some surface erosion evident</li> <li>• Good vegetation observed</li> <li>• No erosion gullies</li> </ul>	 <p>A photograph of a reddish-brown soil surface under a clear blue sky. A white rectangular sign is placed on the ground, reading 'Topsoil Photo' and 'Monitoring Point 10'. The soil shows some surface erosion and has more sparse vegetation compared to the previous point.</p>



**11. TBA**

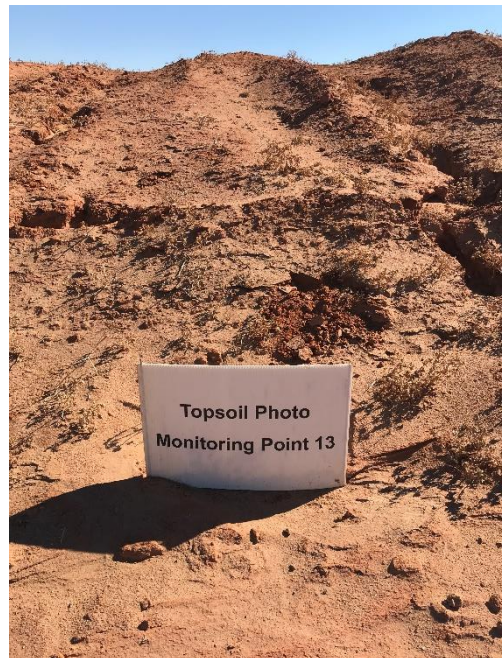
**12. Open Pit – Northern Stockpile**

- Stable stockpile
- Extensive surface erosion evident
- Moderate vegetation observed
- Some juvenile vegetation growth
- No large erosion gullies



**13. Open Pit – South Eastern Stockpile**

- Stable stockpile
- Large erosion gullies becoming evident
- Some surface erosion observed
- Minimal vegetation observed



#### 14. Open Pit Stockpile – Between Pit and OWD

- Stable stockpile
- Erosion gullies becoming more prominent
- Minimal vegetation observed
- Slight surface erosion
- Sediment build up at base of stockpile



#### 15. OWD Extension – Southern Extent Stockpile

- Stable stockpile
- Surface erosion evident
- Saltbush regeneration evident
- No erosion gullies
- Some sediment build up at base of stockpile

