2022

2022 Annual Review

TOMINGLEY GOLD OPERATIONS

ENVIRONMENTAL PERFORMANCE

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Definitions / Acronyms

Term	Definition
CCC	Community Consultative Committee
EEC	Endangered ecological community
EC	Electrical Conductivity
EPA	Environment Protection Authority
EP&A	*Environment Planning and Assessment Act 1979*
EPL	Environment Protection Licence
DPE	Department of Planning and Environment (formerly DPIE)
ha	Hectares
HVAS	High volume air sampler
LFA	Landscape function analysis
MEG	Mining, Exploration and Geoscience (MEG) – A Division of the Department of Regional NSW
Mining Act	*Mining Act 1992*
MOP	Mining Operations Plan
ML	Mining Lease
NSC	Narromine Shire Council
NOW	NSW Office of Water
OEH	Former NSW Office of Environment and Heritage
PM10	Particulate matter
TEOM	Tapered Element Oscillating Microbalance
TGO	Tomingley Gold Operations
TSP	Total suspended particulates
WAD	Weak acid dissociable cyanide
WAL	Water access licence
WHS	*Work Health & Safety Act 2011*
WRE	Waste rock emplacement

Title Block

Table 1: Annual Review Title Block

Name of operation	Tomingley Gold Operations
Name of operator	Tomingley Gold Operations Pty Ltd
Development consent I project approval #	PA 09_0155 (MOD 7)
Name of holder of development consent I project approval	Alkane Resources Ltd
Mining lease #	ML 1684, ML 1821
Name of holder of mining lease	Tomingley Gold Operations Pty Ltd
Water license #	WAL20270; WAL28643; WAL29266
Name of holder of water license	Alkane Resources Ltd
RMP start date	2 July 2022
RMP end date	11 February 2034
Annual Review start date	1 January 2022
Annual Review end date	31 December 2022

I, David Pritchard, certify that this audit report is a true and accurate record of the compliance status of Tomingley Gold Operations for the period 1 January to 31 December 2022 and that I am authorised to make this statement on behalf of Alkane Resources Pty Ltd.

Note.

a) The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the *Environmental Planning and Assessment Act 1979.* Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.

b) The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement-maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents- maximum penalty 2 years imprisonment or $22,000, or both).

Name of authorised reporting officer	David Pritchard
Title of authorised reporting officer	Environment and Community Manager
Signature of authorised reporting officer	
Date	31st March 2022

1 Statement of Compliance

Table 2 provides a statement of compliance status for Tomingley Gold Operations Pty Ltd (TGO) with its project approval (PA) and mining lease (ML), as at the end of the reporting period.

Table 2: Statement of Compliance

Were all conditions of the following approvals complied with?	
PA 09_0155	No
ML 1684	Yes
ML 1821	Yes

Table 3 provides a summary of approval conditions not complied with as at the end of the reporting period.

Table 3: Non-compliances

Relevant approval	Condition #	Condition description (summary)	Compliance status	Comment	Relevent Section
PA 09_0155	Schedule 3. Condition 17	Particulate matter emissions assessment criteria	Administrative non-compliance	PM_{10} values exceeded the 24 hour average criteria	5.3.2
PA 09_0155	Schedule 5. Condition 5(d)	Review/ revise plans within 3 months of the approval of a modification	Administrative non-compliance	Submission of some revised plans was not within the 3 month plus 4 weeks post revision timeframe	10.2

Compliance status key for Table 3		
Risk level	**Colour Code**	**Description**
High	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-compliant	Non-compliance with: • potential for serious environmental consequences, but is unlikely to occur; or • potential for moderate environmental consequences, but is likely to occur

Low	Non-compliant	Non-compliance with: • potential for moderate environmental consequences, but is unlikely to occur; or • potential for low environmental consequences, but is likely to occur
Administrative non-compliance	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

2 Introduction

2.1 Tomingley Gold Mine

This Annual Review reports on the environmental management activities undertaken at Tomingley Gold Operations Pty Ltd (TGO) during the calendar year 2022, and provides details on activities proposed for 2023. The report has been produced in accordance with the *Post-approval requirements for State significant mining developments. Annual Review Guideline* (DP&E, October 2015) to meet the annual reporting requirements conditioned in the TGO Mining Lease (ML 1684) and Project Approval (PA09_0155). TGO is a wholly owned subsidiary of Alkane Resources Ltd.

The Tomingley area has a long history of gold mining and exploration, with gold first discovered and mined from the Tomingley Goldfield in the 1880s. Numerous underground mining operations were subsequently located in the McPhail area, immediately south of the TGO minesite. The last economic 'mining' activities were completed in the late 1990s and involved the re-treatment of tailings from the McPhail Mine.

TGO's process plant, with associated residue facilities were commissioned between December 2013 and February 2014.

In January 2019 the Tomingley Mine commenced development for underground mining with the establishment of 2 portals from the base of Wyoming 1 open cut pit. Development and processing of stope material continued throughout 2022.

In June 2022, the now Department of Planning and Environment approved Modification 6 to PA 09_0155 to allow an increase in capacity for RSF1 and a 2m increase in the approved maximum elevation of Cell 2 of RSF1.

In December 2022, the Department of Planning and Environment approved Modification 7 to PA 09_0155 which approves the construction of a new access ramp (Northern Ramp) for the Wyoming 1 Open Cut, and allows for minor changes to the approved final landform.

Open cut operations continued throughout 2022 in the Caloma 1 pit on the Eastern Cut Back which has recovered ore from the eastern perimeter and now the base of the Caloma 1 pit.

Waste rock from the operations was hauled in pit with some waste being placed in temporary surface dumps and also used for various activities such as the Staged lifts of the Residue Storage Facility (RSF), while ore was transported to the existing ROM pad for processing at the processing plant.

Other operations on site during the reporting period included the ongoing completion of regular site monitoring and maintenance activities in accordance with the Project Approval and site management plans.

TGO hosted three Community Consultative Committee (CCC) meetings and did so in accordance with the relevant State and Local Government COVID 19 safe operating protocols.

2.2 Mine Contacts

The primary contacts for the TGO during the review period are detailed in Table 4.

Table 4: Tomingley Gold Operations Key Contacts

Key Contact	Position	Contact Details
Jason Hughes	General Manager Operations	**PO Box 59 Peak Hill, NSW, 2869 Phone: (02) 6867 9780**
Andrew Brown	Underground Manager	
Daniel Short	Open Cut Manager	
David Pritchard	Environment and Community Manager	
James Didovich	Processing Manager	
Community Information Line		**(02) 6865 6116**

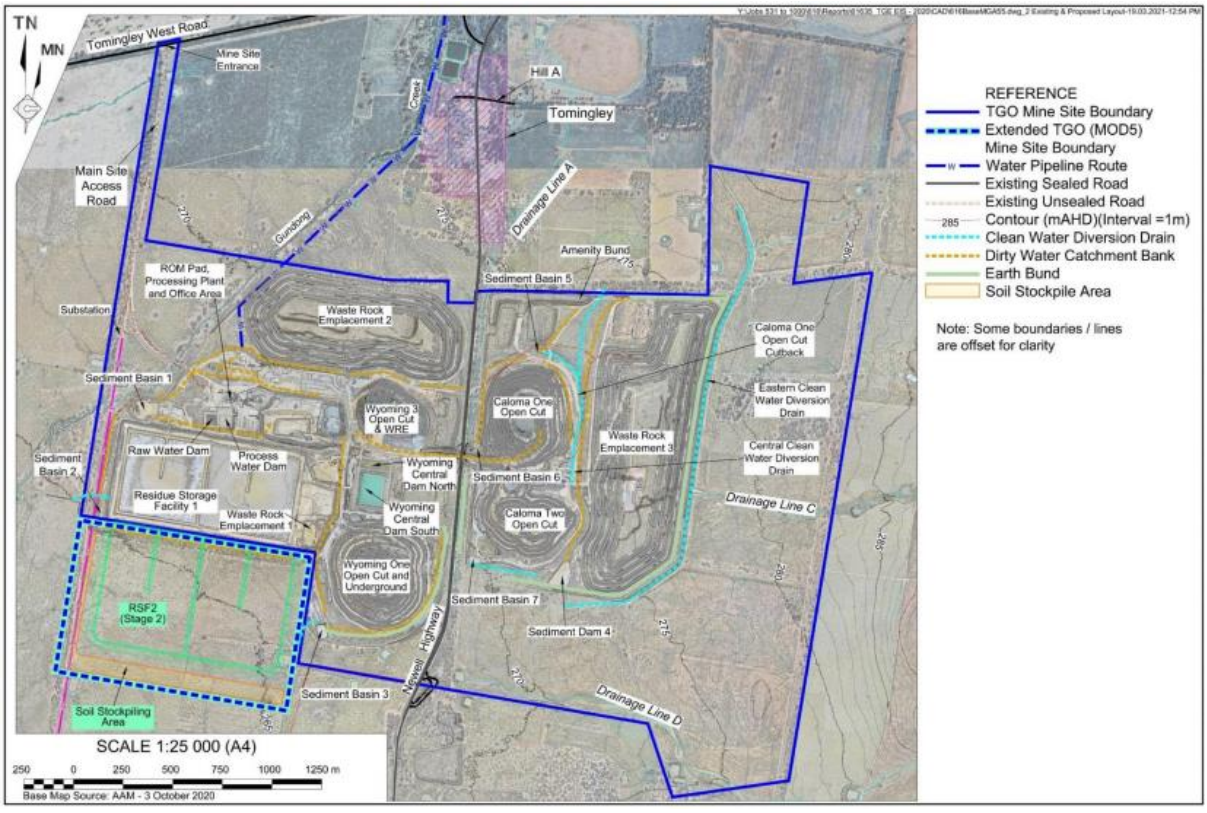


Figure 1 – Tomingley Gold Operations Site Layout

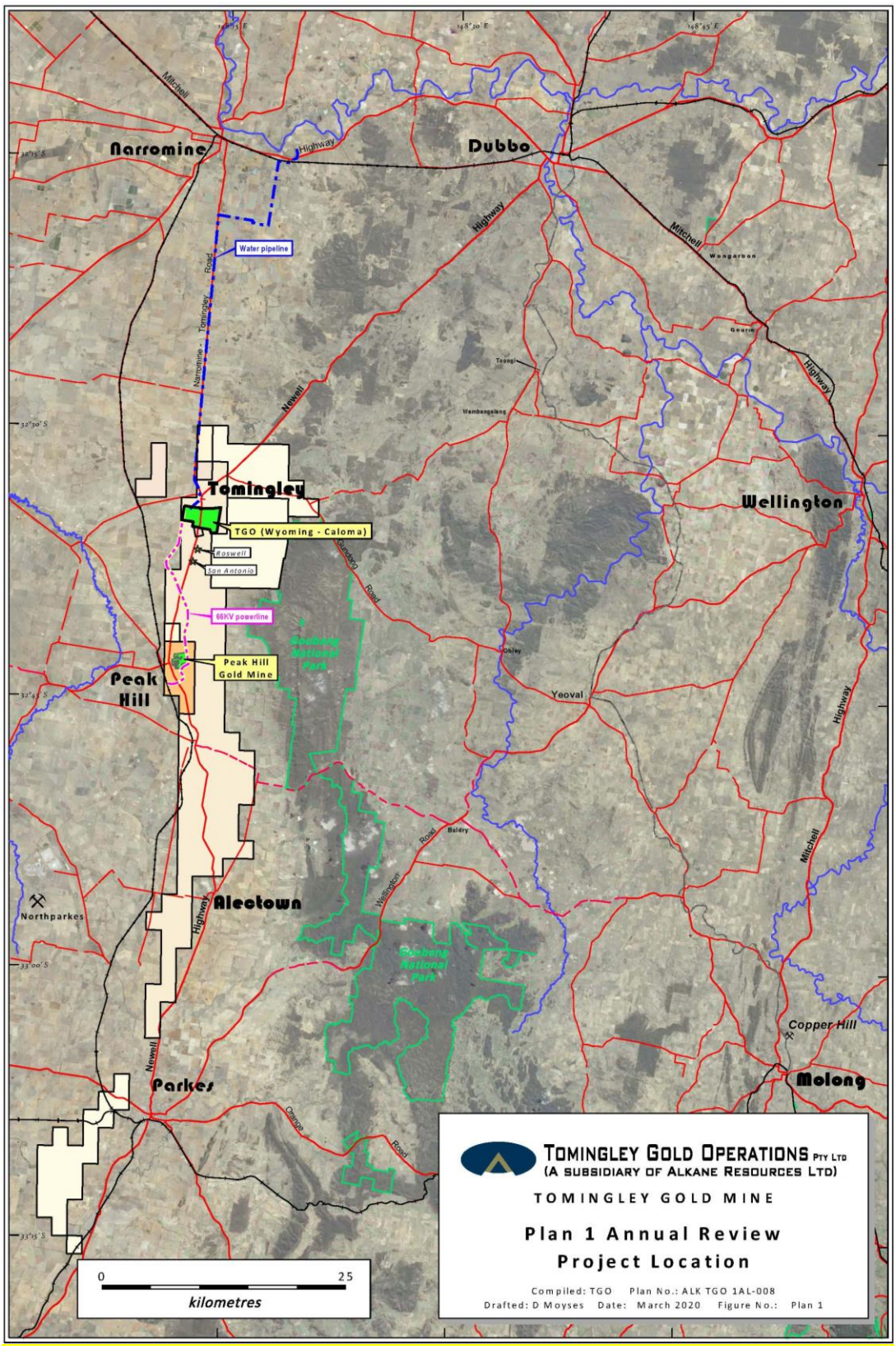


Figure 2 – Tomingley Gold Operations Regional Setting

Figure 1 – Tomingley Gold Operations Environmental Monitoring Locations

3 Approvals

TGO operates under the environmental consents, leases and licences specified in Table 5.

Table 5: Consents, Leases and Licences

Title	Legislation	Regulatory Authority	Approval Duration/ Expiry
Project approval 09_0155 (MOD 1 – 24 July 2012) (MOD 2 – 13 May 2015) (MOD 3 – 5 July 2016) (MOD 4 - 25 May 2020) (MOD 5 – April 2021) (MOD 6 – June 2022) (MOD 7 – December 2022)	Environmental Planning & Assessment (EP&A) Act 1979	DPE	31 December 2025
Mining Lease 1684	Mining Act 1992	Regional NSW – Mining, Exploration and Geoscience (MEG)	11 February 2034
Mining Lease 1821	Mining Act 1992	Regional NSW – Mining, Exploration and Geoscience (MEG)	11 February 2034
Environment Protection Licence (EPL) 20169	Protection of the Environment Operations (POEO) Act 1997	NSW Environment Protection Authority (EPA)	Ongoing until surrendered
Flood Works Approval 80FW723901 (Gundong Creek levy)	Water Management Act 2000	NSW Office of Water (NOW)	2 January 2028
Groundwater licences WAL20270, WAL28643 and WAL29266	Water Management Act 2000	NSW Office of Water (NOW)	N/A
Notification of Dangerous Goods NDG200150	Work Health & Safety Act (WHS) 2011	WorkCover NSW	N/A

4 Operations Summary

4.1 Mining

Underground mining continued with the extraction of the Wyoming 1 and Caloma ore bodies through open stoping. The development of additional levels at Caloma and Wyoming has continued. TGO have continued the development of the San Antonio / Roswell exploration drive to access new high grade ore zones in the coming years.

Waste was hauled in-pit and some to temporary surface dumps. Waste was also used to backfill stope voids and this material was taken from surface and in-pit dumps. Ore was transported to the existing ROM pad for processing at the processing plant.

Allowing for replacement plant and temporary introduction of additional plant for short projects, the TGO open cut mobile plant fleet remained generally consistent with the indicative mining fleet presented in *'MOD 3 Environmental Assessment'* (RW Corkery, 2015) (EA) during the reporting period.

Opencut mining re-commenced on dayshift only mining in October 2020 in the Caloma 1 cutback. Waste was stockpiled for future Residue Storage Facility (RSF) raises or backfilled in pit. The cut back of the approved Caloma 1 Open Cut was approved in MOD 2 (April 2015). Opencut mining of Coloma 1 is expected to be complete by Q2 of 2023 CY.

As proudction values are tracked in regards to the financial year instead of the calendar year, a summary of production during the last financial year is provided in Table 6.

Table 6: Production Summary

Material		Approved Limit (specify limit)	Previous Reporting period (actual) (CY 2021)	This reporting period (actual) (CY 2022)	Next reporting period (forecast) (CY 2023)
Waste Rock (t)	Underground	-	322,962t	442,000	504,700
	Open Cut	-	3,200,000t	1,200,000	500,000
Ore (t)	Underground	1.5 million tonnes*	778,417t	839,223	799,000
	Open Cut		252,900t	200,000	200,000
Process Residue (tailings) (t)		-	944,158	1,033,634	1,102,290
Saleable Product (Oz)		-	58,618	66,802	62,000
Note: No coarse process waste produced at TGO * PA 09_0155 Schedule 2 Condition 6 (not process more than 1.5 million tonnes of ore at the site in a calendar year)					

4.2 Next Reporting Period

During the next reporting period, underground mining will continue with further development and mining of stopes in Wyoming 1 and Caloma orebodies on a 24/7 basis.

Open cut mining will be complete in the Caloma 1 pit by Q2 of 2023

Processing of ore will continue on a 24-hour roster.

Rehabilitation will consist of revegetation on the northern and western buttresses of RSF 1.

Rehabilitation elsewhere will likely be minimal as remaining disturbed areas are still required for ongoing operations.

The development of the San Antonio / Roswell exploration drive will continue.

4.3 Actions Required from Previous Annual Review

The NSW Department of Planning, and Environment (DPE) approved the 2021 Annual Review in its correspondence dated 20 April 2022. No additional actions were required from the above correspondence.

5 Environmental Performance

5.1 Noise Management

5.1.1 Statutory Attended Monitoring

Statutory attended noise monitoring to meet the requirements of EPL 20169 Condition M4.1 and PA 09_0155 Schedule 3 Condition 3A was completed over three consecutive day, evening and night periods between 07-10 November 2022 (available on the companies website at https://www.alkane.com.au/projects/tomingley-gold-project/tomingley-gold-operations/tgo-reports/environmental-reports/). The monitoring indicated noise generated by TGO complies with PA noise limits at all six monitored locations as shown in Table 7.

To address Condition 6 of Schedule 3 of PA 09_0155 a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results has been completed. The validation compares monthly attended monitoring results against the closest assessed unattended monitoring location.

TGO has one unattended real-time monitoring terminal installed at the Brooklands property (nearest to R23). Figure 1 identifies the location of the monitor which is situated 600m west of the attended noise monitoring location R23, therefore, background (LA90) noise levels are significantly lower due to offset distance to highway traffic.

Muller Acoustic Consulting Pty Ltd (MAC) states that a comparison of mine noise contributions between attended and unattended noise monitoring demonstrates a general consistency between attended and unattended results (available on the companies website at https://www.alkane.com.au/projects/tomingley-gold-project/tomingley-gold-operations/tgo-reports/environmental-reports/).

Table 7: Attended Noise Monitoring Summary 2022

Noise Receiver Locations	DAY Approval criteria[1] LAeq 15 min (dBA)	DAY Results (dBA)	EVENING Approval criteria[1] LAeq 15 min (dBA)	EVENING Results (dBA)	NIGHT Approval criteria[1] LAeq 15 min (dBA)	NIGHT Results (dBA)	Key management implications
R2	36	[2]	35	[2] - 29	35	26 - 35	Compliance with PA 09_0155/ EPL 1684 noise limits
R3/29	45	[2]	35	[2]	35	[2]	
R4	35	[2]	35	[2]	35	[2]	
R5	35	[2]	35	[2]	35	[2]	
R6	35	[2] -35	35	[2]	35	[2]	
R23	43	[2]	38	[2]	36	[2]	

Notes:

1. Approval Criteria from Schedule 3 Condition 3A of PA 09_0155 which applies from 30 June 2019.
2. Mine inaudible. See full report available on the companies website at https://www.alkane.com.au/projects/tomingley-gold-project/tomingley-gold-operations/tgo-reports/environmental-reports/.

5.1.2 Supplementary Attended Monitoring

As required by PA 09_0155 supplementary attended monitoring is undertaken for the 11 months each year that statutory EPL attended monitoring does not occur (see TGO web page for all

reports) https://www.alkane.com.au/projects/tomingley-gold-project/tomingley-gold-operations/tgo-reports/environmental-reports/.

All months showed no exceedances of PA noise criteria during this supplementary monitoring.

TGO's noise consultant also reviews real time monitoring data on a weekly basis to monitor compliance. Whilst this is only an indicator due to not being able to validate data in the field, nil exceedances were recorded during the reporting period.

Whilst TGO does not consider the number of complaints to be a measure of compliance, TGO received nil noise related complaints for the reporting period (available on the companies website at https://www.alkane.com.au/projects/tomingley-gold-project/tomingley-gold-operations/tgo-reports/environmental-reports/).

5.1.3 Proposed Improvements

TGO will continue to monitor noise levels however it is not envisaged that any additional improvements will be required to maintain compliance.

5.1.4 EA Predictions

TGO's night time noise levels were consistent with and/or below those predicted in Table 14 of Section 4.2.6 of the MOD3 EA (2016) including: NAG A 37 dBA, NAG B 36 dBA, NAG C 38 dBA and NAG D 38 dBA. Note: EA critieria are higher than EPL and PA 09_0155 Schedule 3 Condtion 3A noise criteria which are defined as follows: NAG A 35 dBA, NAG B 35 dBA, NAG C 35 dBA and NAG D 36 dBA.

5.2 Blasting

Blasting at TGO is managed in accordance with the TGO Blast Management Plan (BMP), which was prepared to meet relevant conditions of EPL 20169 and PA 09_0155.

During the reporting period TGO fired 67 blasts in the Open Cut, and 144 production blasts underground. All blasts were below the prescribed levels for over pressure and vibration (PA 09_0155, Schedule 3, Condition 7) as presented in Table 8.

Table 8: Blasting Criteria

Location	*Airblast Overpressure (dB(Lin Peak))*	*Ground Vibration (mm/s)*	*Allowable Exceedance*	Exceedances during reporting period
Residence on privately-owned land	*120*	*10*	*0%*	0
	115	*5*	*5% of total blasts over any 12 month period*	0
All Public Infrastructure	-	*50, or alternatively, a specific limit determined to the satisfaction of the Secretary by the structural design methodology in AS 2187.2-2006, or its latest version*	*0%*	0
RSF 1 and RSF 2 embankments		*49*	*0%*	0

*Approval Criteria from PA 09_0155, Schedule 3, Condition 7.

With regards to blast timing, TGO complied with Condition L5.6 of EPL 20169 for all underground blasting which states that underground blasting is permitted at anytime. In accordance with Schedule 3 Condition 8 of PA 09_0155, surface blasting was undertaken between the hours of 9:00am and 5:00pm with no blasts being carried out on Sundays or public holidays.

Consistent with Schedule 3, Condition 9 of PA 09_0155 and Condition L5.9 of EPL 20169, less than three surface blasts per day occurred.

5.2.1 Management Measures

Blasts are designed and scheduled to ensure air blast overpressure and ground vibration levels remain within PA blast criteria. Weather conditions are also monitored to avoid blasting in conditions that will enhance offsite impacts, such as south westerly winds and low cloud cover. These management measures have been successful in the prevention of any exceedances during 2022.

5.2.2 Proposed Improvements

TGO will continue to monitor and record blast results. Open cut blasts during 2022 were conducted in accordance with PA 09_0155 Blasting Conditions. No exceedance of blast limits was recorded and accordingly TGO is not considering any further improvements.

Whilst TGO does not consider the number of complaints to be a measure of compliance, TGO received nil blast related complaints for the reporting period (available on the companies website at https://www.alkane.com.au/projects/tomingley-gold-project/tomingley-gold-operations/tgo-reports/environmental-reports/).

5.2.3 EA Predictions

TGO's over pressure and vibration levels are consistent with and/or below those predicted in the EA for PA MOD 3 (2016).

5.3 Air Quality

The TGO Air Quality and Greenhouse Gas Management Plan (AQGGMP) was prepared to describe dust control and monitoring measures at TGO and meet Schedule 3, Condition 19 of PA 09_0155.

Air quality monitoring results for the reporting year are presented in available on the companies website at https://www.alkane.com.au/projects/tomingley-gold-project/tomingley-gold-operations/tgo-reports/environmental-reports/

During the reporting period, TGO did not receive any complaints relating to dust.

5.3.1 Depositional Dust

The AQGGMP includes five depositional dust gauges used for compliance monitoring: DDG1, DDG2, DDG3, DDG4, and DDG5.

All depositional dust gauges were below the annual average criteria of 4g/m^2/month with annual averages as follows.

Location	DDG1	DDG2	DDG3	DDG4	DDG5
Annual Average (g/m^2/month)	0.85	0.97	0.71	3.3	0.8

The maximum increase in deposited dust levels was below the criteria of 2g/m^2/month for all five (5) depositional gauges.

5.3.2 PM10

As at 31 December 2022, the rolling annual average PM_{10} measured at the RTA1 TEOM was 11.4 ug/m^3 which was under the annual average criteria for PM_{10} of 30 ug/m^3.

During the reporting period, 1 result measured at the RTA1 TEOM exceeded the PM_{10} 24 hour average criteria of 50 ug/m^3 (as stipulated in Schedule 3 Condition 17). On the 26th March, PM10 emissions were recorded at 56.5 µg/m3. A review of this event was conducted at the time, and the reasons found were noted with the montly environmental reports that are produced.

The review found that at the time of the incident, winds were predominately of a northerly and north easterly direction (indicating an approach from Tomingley town relative to the monitor).

Wind speeds were consistent with the previous several days which recorded much lower PM_{10} values, as such, it is unlikely that the wind speeds were a cause of the exceedance. At the same time, a series of earthworks was being undertaken in town, with two service stations under construction in addition to several residents conducting their own property maintenance.

It is believed that dust created in town as a result of these activities has been blown south towards site, resulting in the exceedance. While technically in breach of the licence condition, it is not considered relevant as it has been caused by factors unrelated to TGOs operation.

The previous reporting period, in comparison recorded nil exceedances, although dust on average was much lower this reporting period, partly due to above average rainfall and an abundance of groundcover in the region..

PM_{10} results for January to December 2022 are shown in

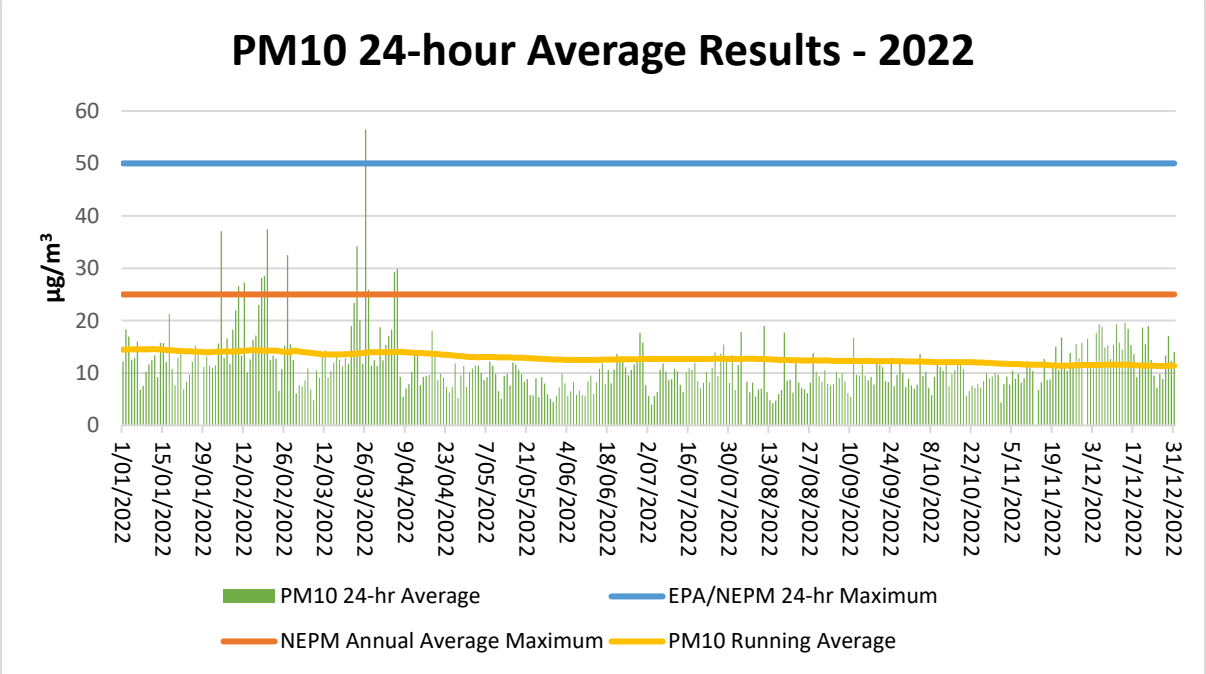


Figure 2.

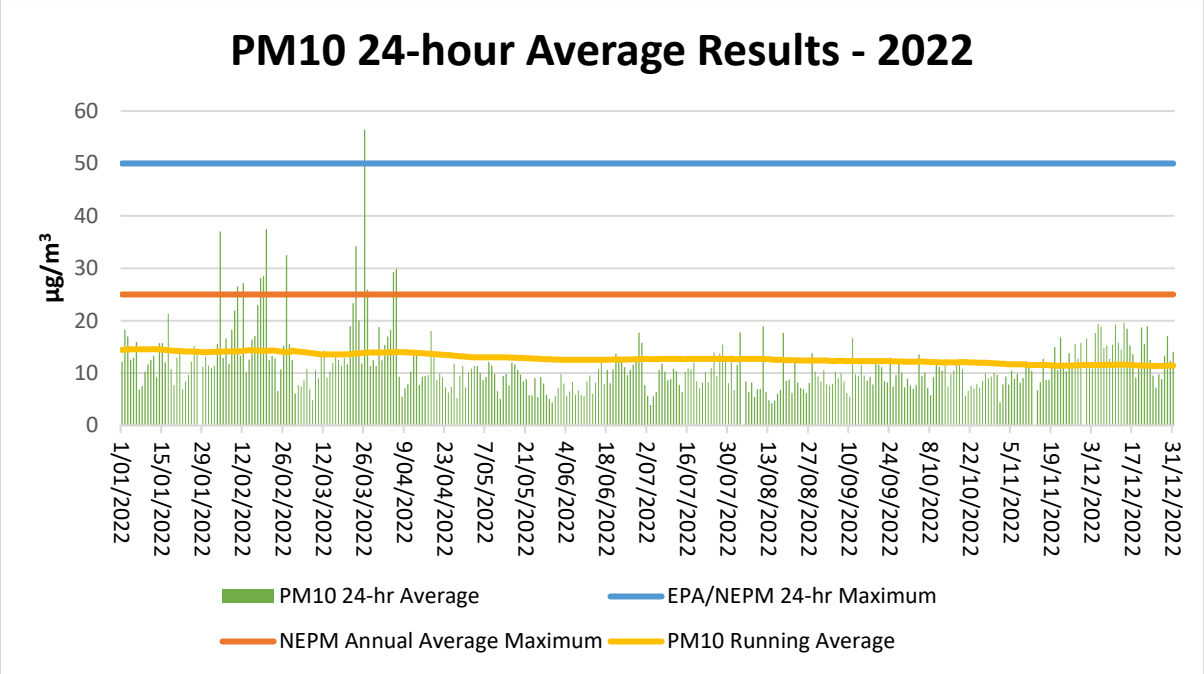


Figure 2 – PM10 RTA1 TEOM 24hr Results Jan-Dec 2022

5.3.3 TSP

Total Suspended Patrticulates (TSP) are measured at one high volume air sampler (HVAS) HVAS1, and are compared with the annual average criteria of 90 µg/m^3.

The annual average for TSP for 2022 was 24.88 µg/m^3 which is below the annual average criteria and lower than the previous four reporting periods.

The annual average for TSP in 2021 was 42.94 µg/m^3, 2020 was 69.84 µg/m^3, 2019 was 89.96 µg/m^3, 57 µg/m^3 in 2018, 58 µg/m^3 in 2017, 38 µg/m^3 in 2016 and 59 µg/m^3 in 2014.

5.3.4 Management Measures

As is described in the Dust Site Specific Procedure (SSP), Shift supervisors, and the mining production team are provided with forecasts of high dust risk weather (such as hot, dry south westerly winds) in pre-shift meetings, sourced from the TGO Weatherzone portal.

During these conditions, PM_{10} levels measured at RTA1 are monitored online and, where required, modifications are made to mining operations until conditions improve. Such modifications include the:

- Reduction, cessation or relocation of dust generating activities;
- Increased watering of the operational footprint.

5.3.5 Proposed Improvements

TGO will continue with its current dust management systems so as to maintain its ongoing level of compliance. It is not proposed that there will be any changes to the Dust SSP unless there is a new issue identified.

5.3.6 EA Predictions

TGO's performance in relation to dust emissions is consistent with and/or below those predicted in the EA for PA MOD 3 (2016).

5.4 Biodiversity

Biodiversity at TGO is managed under the Biodiversity Management Plan (BMP), completed in accordance with Schedule 3, Condition 37 of PA 09_0155. The BMP details the actions implemented at TGO to mitigate impacts on native fauna and vegetation from mining related activities such as storage of potentially hazardous process residue and the clearing of native vegetation.

Along with mitigation of mining impacts, the major biodiversity enhancement measure at TGO is the establishment, management and long-term protection of biodiversity offset areas in accordance with Schedule 3, Conditions 33 and 34 of PA 09_0155.

To facilitate long-term security for the offset areas, a Property Vegetation Plan (PVP) was agreed to by TGO and approved by Local Land Services NSW in April 2015. The BMP incorporates measures and activities to manage and enhance TGO biodiversity offset areas, as required by the PVP.

5.4.1 Management Measures

5.4.1.1 Clearing Management

Approximately 4ha of vegetation to the south of RSF1 were cleared for the construction of RSF2. Prior to clearing the vegetation, which consisted of 60 established trees, TGO engaged AREA Environmental & Heritage Consultants (AREA) to conduct a preclearing survey to assess the presence of nesting/roosting species. All habitat trees were inspected for hollows, signs of occupation before and immediately after they were felled by AREA's qualified ecologist. No wildlife was injured in the tree clearing, and no wildlife required capture and relocation.

5.4.1.2 Offset Management

In accordance with the authorised activities and management actions required by the PVP, the offset areas continued to be managed to enhance and maintain their biodiversity values during the reporting period.

Specific management measures within the biodiversity offset areas included:

- Spraying of African boxthorn (Lycium ferocissimum) and other common pasture weeds such as Bathurst Burr (Xanthium spinosum);
- Maintenance and repair of fencing to separate offset areas from cropping/grazing;
- Exclusion of grazing livestock and native herbivores where possible to reduce potential impacts on replanted native tubestock.
- Exclusion of grazing livestock to increase natural regeneration, and
- Regular inspections to monitor overall condition of all offset areas.

5.4.2 Biodiversity and Rehabilitation Monitoring

TGO biodiversity and rehabiltation monitoring was completed by DNA Environmental to assess the condition and development of remnant and re-established native vegetation communities (DNA Report).

The DNA Report presents tables for the performance of the woodland biodiversity monitoring sites and pasture monitoring sites against "Primary Performance Indicators".

Monitoring methodology is based on Landscape Function Analyses (LFA) and ecosystem diversity / habitat value measurements adapted from the Biometric Assessment Methodology (BAM).

Monitoring sites have been established (year established), consisting of:

- Six remnant woodlands sites (2014): Poplar1, Belah1, Belah2, Grey1, Grey2 and Fuzzy1;
- Two EEC woodland revegetation sites (2014): Reveg 1 and Reveg 2;
- Two riparian woodland sites along Gundong Creek (2014): Creek1 and Creek2;
- Two pasture reference sites (2014): Pasture1 and Pasture2;
- Two pasture rehabilitation sites (2017): WRE2-1; and WRE3-1;
- One rehabilitation monitoring site (2016): Noise Bund1;
- One pasture rehabiltation site (2020): WRE3-2; and
- One woodland rehabiltation site (2020): WRE2-2.

Biodiversity and rehabilitation monitoring has been undertaken during August in all monitoring years and was completed from 8 - 11 August 2022.

Key observations from the DNA Report are summarised below.

5.4.2.1 General Observation

Data indicates that the various biodiversity monitoring sites are different in structure and function and have recovered to varying degrees from a long disturbance history largely associated with clearing, grazing and cultivation. Sites with intact woodland typically occur along the roadsides and within farm laneways as well as sections along Gundong Creek and most of these sites were recovering relatively well after the removal of livestock. During 2017 – 2019 prolonged drought conditions combined with the simultaneous increase in grazing and disturbance by wildlife, typically caused a decline in ecological function in all monitoring sites. Since 2020 however, improved seasonal conditions resulted in an abundance of annual and perennial ground covers and overall ecological function has typically improved.

The soils in the WRE rehabilitation areas were low in organic matter, phosphorous and nitrates and some were slightly alkaline and sodic. While soils in some WRE rehabilitation sites may have previously had elevated EC and Sulfur these have now declined to acceptable levels. Rehabilitation strategies however should include the regular testing and classification of all topsoil stockpiles and/or topsoil prior to use on rehabilitation areas to ensure only weed-free and good quality topsoil is used. Regular monitoring of soil of the WREs will ensure anomalies are detected and can be ameliorated if required

5.4.2.2 Remnant Woodlands Sites (Poplar1, Belah1, Belah2, Grey1, Grey2 and Fuzzy1)

The reference sites (Fuzzy 1, Grey 2 and Grey 3) were structurally and functionally different to each other, but all had relatively high perennial plant components due to the mature eucalypts and perennial grassy understorey. They had a well-developed leaf litter layer and/or patches of hard crusted soil which were typically stabilised by cryptogams. During 2018 and 2019 there was a reduction in perennial ground covers and increased disturbances by animals as a result of the ongoing drought, however there continued to be high functional patch area or Landscape Organisation (LO). Since 2020, the improved rainfall conditions resulted in a significant increase in plant growth, with 100% LO recorded in all reference sites this year. The biodiversity enhancement area, Poplar 1 was structurally similar to the woodland reference sites and while there was some minor disturbance by animals, LO increased to 98% LO this year.

The most ecologically functional sites this year continued to be old growth woodlands, with Fuzzy 1 having a total sum of scores of 212, closely followed by Poplar 1 with a score of 200, with the ecological function in these two sites being significantly higher than the remaining monitoring sites. The Grey 2 and Grey 3 reference sites were the next most functional of the woodlands scoring a

total function of 182 – 183, and this was closely followed by WRE2-2 with 168. There were little differences being recorded in the remaining sites with scores of 144 – 158. Creek 2 which had been affected by the floods was the least functional area this year.

5.4.2.3 Belah Revegetation Sites (Belah 1 and Belah 2)

Belah 1 and Belah 2 had previously also suffered from a long grazing history with the ridges of the gilgais being predominantly bare and eroding and perennial plant cover was particularly low. Since the removal of domestic livestock in 2013, there has been an increase in vegetative covers in both Belah sites, however in 2018 and 2019 the prolonged drought and heavy macropod grazing caused a significant loss of integrity of the litter layers and other protective ground covers. Improved seasonal conditions over the last few years has resulted in improved levels of ground covers, and this year Belah 1 continued to have 100% functional patch area, while Belah 2 had some minor animal disturbance with an LO of 95%.

5.4.2.4 Two EEC Woodland Revegetation Sites (Reveg 1 and 2)

Reveg 1 and Reveg 2 were old cropping paddocks which were essentially recovering native grasslands that had been direct seeded with local woodland species in 2013. In the early development stages, there were rows of bare soil as a result of the ground preparation techniques such as scalping, cultivation and direct seeding. Within the second year of monitoring, the ground cover vegetation and cryptogams had colonised the exposed soils and significantly increased the functional patch areas to 100%. This year, high functional area was maintained in Reveg 1, however Reveg 2 continues to be affected by some animal disturbance, but LO had increased to 90%.

5.4.2.5 Riparian Woodland Sites along Gundong Creek (Creek1 and Creek2)

Creek 1 was also positioned on the floodplain adjacent to Gundong Creek in an old cropping paddock which was similar in composition to Reveg 1 and Reveg 2, with most of the rip lines having a good grassy ground cover. Creek 2 incorporated a flat upper floodplain of the old cropping paddock and extended down the sloping creek banks. While these sites were also drought affected, periodic flooding also caused some bank erosion and or mobilisation of sediments, however the improved seasonal conditions over the last few years has overall increased the grassy ground cover, resulting in a slight improvement in functional patch areas with 93 – 95% LO this year.

5.4.2.6 Pasture Reference Sites (Pasture1 and Pasture2)

Both pasture reference sites continued to be comprised of scattered native perennial grasses and sub-shrubs and exotic annual grasses and herbs. The ongoing drought also caused a decline in live plant growth and a deterioration of the litter layer with minor bare patches developing in Pasture 1 in 2019, but both sites continued to have a high functional patch area. Over the past few years improved conditions resulted in a significant increase in annual and perennial plant growth and both pastures sites continued to have 100% functional patch areas.

Pasture Rehabilitation Sites (Noise Bund1, WRE 2-1, WRE 3-1, and WRE3-2)

On WRE2-1, there has been adequate establishment of exotic pasture grasses and good ground cover has been maintained despite the limited active plant growth during the drought and there was less disturbance by macropods compared to the other rehabilitation sites. On Noise Bund 1 and WRE3-1 small bare patches had also developed during the drought as a result of macropod grazing, howeverhowever, there has since been an increase in plant and litter cover on the Noise Bund and both WRE2 and WRE3 rehabilitation areas. While most pasture rehabilitation sites had 100% functional patch area, some minor bare patches have persisted in WRE3 – 2 but 93% functional patch area was recorded this year.

The most ecologically functional site continued to be Pasture 2 which scored a sum of LFA indices of 172. This was followed by rehabilitation site WRE3-1 with a score of 169, followed by Pasture 1 with

164 and WRE2-1 with 162. The Noise Bund had a sum of scores of 159, while WRE3-2, the newest area of rehabilitation continued to be the lowest functional grassland community with a score of 140.

Native plants provided 38 – 44% of the live plant cover in the pasture reference sites. On the Noise Bund, native plant cover has decreased to 11%, while native plants had slightly increased in abundance in both sites on the WRE3 with 16 - 24% endemic cover being recorded this year. In WRE2-1, no native plant cover was recorded this year.

Compared to the reference sites, all pasture rehabilitation sites had a low diversity of grasses and there was a low diversity of herbs in WRE2-1 and WRE3-2. There were some scattered shrubs, including Lycium ferocissimum in all sites except WRE3-1 and all sites had 3 – 5 species of subshrubs. There were no trees, reeds, vinesvines, or ferns in the pasture rehabilitation areas

5.4.3 Fauna Monitoring

TGO engaged Advanced Regional Environmental Assessments (AREA) to complete its biannual field survey for the fauna monitoring program. The previous assessment occurred on 14 to 17 December 2021. With the next one scheduled for December 2023.

The fauna survey in 2011 recorded 134 vertebrate species, a substantially higher number than recorded in the following survey years. The 2011 survey however was conducted under a much higher degree of survey over a broader study area to meet project approvals. The 2016 proceeded to record 41 species showing a declining trend of fauna from 2011. The 2019 survey recorded 38 and followed three years of below average rainfall. Opposed to the 2021 survey which was conducted during a high volume of rain fall throughout NSW in 2011, and December 2016. A bat survey was undertaken in 2014.

The 2021 monitoring event aimed to address the following criteria as outlined in TGO's Biodiversity Management Plan:

- Grey-crowned Babbler population census;
- Bat monitoring;
- Fat-tailed Dunnart monitoring;
- Cyanide impacts on native fauna; and
- Amphibian survey.

Key observations from the 2021 AREA Report are summarised below.

TGO has 127 ha of biodiversity offset areas (BOA) in place secured under a PVP. Amelioration planting has been carried out to improve biodiversity across these areas where the previous use was cropping and grazing.

39 species were recorded. Of these 39 species, 18 were birds, 14 were bats, four were amphibians, two were mammals, and one was a reptile. No fauna was detected on camera traps or in the Elliot traps.

Two threatened species were recorded, Grey-crowned Babbler and Southern Myotis. The Southern Myotis was possibly recorded for the second time in 2021 - the first being in 2019 however identification of this species has not been confirmed through other survey methods.

The 2021 survey of bat species positively identified nine species with a further five species possibly recorded.

The Fat-tailed Dunnart was not recorded in the area

Many Eastern Grey Kangaroos were sighted along Gundong creek. A European Hare was sighted near the dam adjacent to Gundong creek. A European Red Fox scat was recorded within the biodiversity offset area.

Cyanide does not appear to be significantly affecting fauna. Fauna observations on and around the RSF are recorded twice daily.

Four amphibian species were detected in healthy population levels, water levels for Gundong creek were healthy and the creek was flowing at the time of the survey. One of these species, Broad Palmed Rocket Frog, has been recorded for a second time.

There has been an increase in fauna activity within TGO since the last monitoring event in 2021 which is likely to be linked to improved weather conditions and regular rainfall throughout 2020 and 2021.

Survey indicated there is still moderate diversity in the fauna within the mine site which is on par with previous assessments. The trend is likely linked to rainfall rather than disturbance. The result reflects the environments capacity to provide resources depending on rainfall. Fauna numbers should increase as the quality of habitat improves and rainfall becomes more abundant and regular.

The next survey for the fauna monitoring program is due to be completed in 2023.

5.4.4 Proposed Improvements

During the next reporting period, TGO will continue to implement the biodiversity conservation and enhancement measures outlined in the BMP.

Management actions, such as livestock exclusion in the areas to the east and feral animal/weed controls will be continued.

5.5 Heritage

The Cultural Heritage Management Plan (CHMP) outlines measures to manage Aboriginal and Non-Aboriginal heritage sites at TGO.

The CHMP was developed from a previous assessment, which identified 60 Aboriginal sites and eight Non-Aboriginal heritage features.

With all existing or relocated sites adequately maintained, no active cultural heritage management occurred during the reporting period.

5.5.1 Management Measures

As recorded heritage sites are located away from site operational areas, and no new sites or items were identified during the reporting year, the management of existing sites consisted of weed control and ensuring approriate signage remains in place.

5.5.2 Proposed Improvements

No improvements to the management of cultural heritage sites and items is proposed in the next reporting period.

5.6 Contaminated Land

As TGO is a relatively new site with compliant bunding structures in place, the risk of site contamination remains relatively low. The contamination assessment completed as part of the EA, also determined risk of land contamination onsite to be very low.

One bulk diesel spill has occurred since TGO's commencement and this occurred in 2021 and was documented in the previous Annual Review. The spill occurred adjacent to the TGO bulk diesel storage tanks while a fuel contractor was unloading a bulk diesel delivery.The remediation of hydocarbon contaminated soil was carried by a remediation specialist engaged by the fuel contractor with 657 tonnes of contaminated soil material removed and transported to a licenced waste facility in Dubbo. Approximately 300t of saprolite and 300t of road base were used to backfill the excavated area.

There has also been three minor hydrocarbon spills in 2018, seven minor hydrocarbon spills in 2017, six hydrocarbon spills in 2016, and four minor hydrocarbon spills in 2015.

No spills were reported within the reporting period.

5.6.1 Management Measures

Following the previous diesel spills, reviews of processes took place with TGO implementing more controls to manage the risk of spills on site.

The safe and responsible storage and handling of hazardous materials remains the key strategy to preventing, and therefore managing, land contamination.

All chemical and hydrocarbon storage at TGO has been designed and constructed in accordance with the relevant Australian Standard, including:

- AS/NZS 4452: The Storage and Handling of Toxic Substances; and
- AS 1940-2004: The storage and handling of flammable and combustible liquids

Vehicle washdown and re-fuelling facilities were upgraded in 2017, which have assisted in the prevention of land contamination.

5.6.2 Proposed Improvements

No improvements to the management of contaminated sites is proposed in the next reporting period.

5.7 Waste Management

As part of TGOs waste management, TGO aims to minimise the volume of waste generated by reusing and recycling where possible. Waste generated on site is appropriately stored until it is collected by a licenced contractor for disposal.

The total waste removede from site during the reporting period is listed below. For reporting purposes, waste is split into the following categories;

- 20,612kg of Hazardous Recycling (waste oil, oily water, waste coolant, oil filters, waste grease, empty drums)
- 32,910kg of Non Hazardous Recycling (paper and cardboard, scrap steel)
- 7,735kg of Hazardous Disposal (hydraulic hoses)
- 234,305kg of Non Hazardous Disposal (mixed solid waste)
- 98,107kg of Tyres

5.7.1 Proposed improvements

TGO will continue to reduce waste and recycle where possible.

6 Water Management

The WMP details how TGO will manage site water to comply with the *Water Performance Measures* contained in Schedule 3, Condition 27 of PA 09_0155. Table 9 presents these measures and where each measure is addressed in the WMP.

Table 9: Water Performance Measures (PA 09_0155, Schedule 3, Condition 27)

Feature	Performance measure	Where addressed
Water management – General	Minimise the use of clean water on site	Section **Error! Reference source not found.Error! Reference source not found.**
	Minimise the need for make-up water from external potable water supplies	Section **Error! Reference source not found.**
Construction and operation of infrastructure	Design, install and maintain erosion and sediment controls generally in accordance with the series Managing Urban Stormwater: Soils and Construction including Volume 1, Volume 2A – Installation of Services and Volume 2C – Unsealed Roads	Section **Error! Reference source not found.**
	Design, install and maintain the infrastructure within 40 m of watercourses generally in accordance with the: • Guidelines for Controlled Activities on Waterfront Land (DPI 2007), or its latest version • Guidelines for fish habitat conservation and management – Chapter 4 (DPI 2013), or its latest version.	Section **Error! Reference source not found.**
Clean water diversion & storage infrastructure	Design, install and maintain the clean water system to capture and convey the 100 year average recurrence interval (ARI) flood	Section **Error! Reference source not found.** and Section **Error! Reference source not found.**
	Maximise as far as reasonable and feasible the diversion of clean water around disturbed areas on site	Section **Error! Reference source not found.** and Section **Error! Reference source not found.**
Sediment dams	Design, install and maintain the dams generally in accordance with the series Managing Urban Stormwater: Soils and Construction – Volume 1 and Volume 2E Mines and Quarries	Section **Error! Reference source not found.**
	Ensure the capacity of all sediment dams is sufficient to contain rainfall up to a 10 day 90 percentile rain event	Section **Error! Reference source not found.**
Mine water management system, including residue storage facility and associated collection pond	No unlicensed or uncontrolled discharge of mine water off-site (except in accordance with condition 23)	Section **Error! Reference source not found.**
	Ensure that the capacity of the residue storage facilities (RSF1 and RSF2) and associated collection pond are designed to meet the requirements of the Australian National Committee on Large Dams' Guidelines on Tailings Dams – Planning, Design and Construction, Operation and Closure (July 2019) or its latest version, and that the floor and walls are lined	Section **Error! Reference source not found.**

Feature	Performance measure	Where addressed
	to achieve a permeability standard of at least 1 x 10^{-9} m/s and 1 metre depth (or equivalent permeability performance), unless otherwise agreed by the EPA and the Secretary;	
	Maintain adequate freeboard (i.e. minimum 500 mm) in the residue storage facilities (RSF1 and RSF2) at all times	Section **Error! Reference source not found.**
	All water storages on site that receive chemical or salt laden water, including the dewatering ponds, raw water dams and process water dams are lined to achieve a permeability standard of at least 1 x 10^{-9} m/s, unless otherwise agreed by the EPA and the Secretary	Section **Error! Reference source not found.**
	Maintain adequate freeboard (i.e. minimum 500 mm) in the process water dam and minimum of 200 mm in the raw water dam at all times	Section **Error! Reference source not found.** Section **Error! Reference source not found.**
Chemical and hydrocarbon storage	Chemical and hydrocarbon products to be stored in bunded areas in accordance with the relevant Australian Standards	Section **Error! Reference source not found.**
Gundong Creek	Maintain or improve baseline channel stability	Section **Error! Reference source not found.**
	Develop site-specific water quality trigger levels in accordance with ANZECC 2000 and Using the ANZECC Guidelines and Water Quality Objectives in NSW procedures (DECC 2006), or its latest version	Section **Error! Reference source not found.**

6.1 Water Supply

The principal source of water for TGO is a licensed production bore located approximately 7km east of Narromine, with water transported to the TGO site Raw Water Dam via the Narromine water pipeline. During extensive dry periods, emergency water haulage from Peak Hill Mine may also be used; however, this option was not utilised during the reporting period.

Maximum Harvestable Rights Dams Capacity (MHRDC) is the volume of water landholders are entitled to capture and use without need for licencing. Landholders are permitted to intercept and store a proportion of runoff from their property without a licence under the *Water Management Act 2000*. In addition, no licence is required for water stored within dams that:

- Control or prevention of soil erosion.
- Capture, contain and recirculate drainage.
- Have no catchment (i.e. “turkey’s nests”).

The existing surface water storages that are part of TGO all fall into one of the above categories and therefore do not require licensing. In addition there were no new water storages constructed during the reporting period.

Processing water (including RSF decant) is recovered and pumped to the Process Water Dam for re-use in processing. During the year, it is estimated that 525 ML was recycled process/decant water, significantly reducing the volume of water needing to be imported.

An onsite water treatment plant is used to produce potable water onsite, eliminating the requirement to import potable water.

Table 10: Water Supply

Water Licence	Water sharing plan, source and management zone (as applicable)	Entitlement (ML)	Passive take / inflows	Active pumping (ML)	TOTAL (ML)
WAL20270 (Narromine Pipeline)	Lower Macquarie Zone 6 Groundwater Source	1,000	nil	478	478
WAL28643 & WAL29266 (open cut)	NSW Murray Darling Basin Fractured Rock Aquifer	220	Negligible (not measurable)	nil	Negligible
N/A	Direct rainfall and catchment runoff captured under harvestable rights	N/A	0	nil	0
WAL 34968 (Peak Hill Gold Mine)	Upper Bogan River Water Source/ Macquarie Bogan Unregulated and Alluvial Water Sources 2012	300	nil	nil	nil

* Direct rainfall and catchment runoff volume based on modelled in WB.

6.2 Water Balance

During the current reporting period GHD was engaged to review the WMP with the site water balance included as part of this review. The water balance indicates that TGO is dependent on raw water supplied from the licensed "Woodlands" bore and conveyed to site via the Narromine pipeline.

The water balance indicates that approximately 50% of TGO's water supply is sourced from the borefield with the remaining 50% sourced from recycled water from processing and water captured and retained on site from sediment ponds.

6.3 Clean Water Management (Surface)

For reporting purposes, clean water management is divided into:

- Site Water; and
- Gundong Creek

6.3.1 Site Water

Clean water consists of through-flow from offsite and water from onsite non-mine disturbed catchments. This water is diverted away from contamination sources (mine disturbance and infrastructure) and directed offsite.

Management includes the construction of drains and bunds to collect and divert surface water flow past, or away from, mining disturbed catchments. Mangement of site drains and sediment basins is discussed in **Section 4**.

6.3.2 Gundong Creek

Gundong Creek is an ephemeral watercourse which flows along the northern and western boundaries of the TGO site. TGO sample the creek weekly during any flow, which is over and above the requirements prescribed in condition M2 of EPL 20169, which requires sampling on discharge.

Gundong Creek flowed for several months during 2022. In accordance with the TGO Water Management Plan, weekly samples were taken and analysed by ALS Laboratories. No exceedances of specified water quality parameters were recorded.

6.4 Dirty Water Management

Dirty water runoff is intercepted and managed by a series of dirty water drains and sediment basins to allow for treatment and reuse on site for various activities such as dust suppression.

6.4.1 Sediment Basins

Water collected in the sediment basins may be pumped into the partially backfilled Wyoming Three void and subsequently to the north cell of the Wyoming Central Dam for reuse in dust suppression and as process water make up.

6.4.2 Offsite Discharge

TGO has traditionally operated as a “nil discharge” site with all water captured in the site’s sediment basins being retained on site and pumped to the Wyoming 3 (WY3) open pit for storage and reuse on site. The estimated safe storage capacity of WY3 is 1200ML with an approximate freeboard of 2 metres. Following three years of above average rainfall WY3 was rapidly nearing maximum capacity with an estimated volume of 1007 ML as of 18 October 2022, with 197ML of capacity remaining.

Approval was granted on 19 October 2022 from NSW EPA to undertake an Emergency Discharge from WY3 via the Sediment Basin 1 constructed spillway (EPL Licenced Discharge Point 4).

Pumping commenced from WY3 on 21st October 2022 to Sediment Pond 1 with water passing through internal site water management drains. Sediment Basin 1 reached capacity on 24 October 2022 and discharge via the spillway into Gundong Creek until the 25 November.

The volume of water discharged from the Wyoming 3 Pit via Sediment Basin 1 was on average 9ML per day. The daily discharge rate was dependent on weather and further inputs to the pit from rainfall and other sediment basins around site. TGO were able to obtain the desired 300ML of freeboard in WY3 over a five-week period. All discharges were sampled in accordance with the EPL (on a weekly basis) with the samples analysed by a NATA approved laboratory.

6.4.3 EA Predictions

More frequent discharges were predicted in the original EA, with the suggested processes for managing discharges in the original proven to be not practical in the operational environment.

6.5 Mine Water Management

Water which has been impacted by mining operations, is considered to be not suitable for offsite discharge and requires onsite managmeent or treatment (mine water). This includes:

Open cut pit water – water collected in the Wyoming 1, Caloma 1 and Caloma 2 voids is pumped to the Wyoming 3 void and re-used for site operations;

Process water – recycled for re-use via decant from the RSF, the raw water dam and process water dam;

Oily water – treated at onsite oily water separator, with clean discharge to a site drain that reports eventually to Sediment Basin 1; and

Onsite sewerage - treated at an onsite treatment plant and used to irrigate site revegetation adjacent to the mine acces road.

Decant water from the RSF was sampled twice daily during the reporting period for Weak Acid Dissociable (WAD) Cyanide, with no WAD Cyanide concentrations above the 90th percentile limit of 20 mg/L.

Stored water is summarised in Table 11.

Table 11: Stored Water

Description and structure name	Storage Capacity (m^3)	Start of Reporting Period m^3	At end of Reporting Period m^3	Comments
Raw Water Dam[1]	10,700	10,700	10,700	
WyCD – small cell	17,900	17,000	17,000	
WyCD – large cell	162,000	94,000	117,000	
Residue Storage Facility	434,000	50,000	15,000	Design capacity for 217 ML PMF per dam = 434 ML total. Minimal water on dams at end of reporting period.
Process Water Dam[1]	9,200	8,000 (87%)	8,300	
Caloma 1 Pit	3,308,249	160,000	500	*Storage capacity to be updated once Caloma 1 pit mining is finished in 2023
Caloma 2 Pit	1,501,479	0	1,000	
Wyoming 3 Pit	1,300,000	535,000	808,000	

[1] Operational water storage - volumes fluctuate frequently based on operational demand.

6.6 Erosion and Sediment Control

Inspections of drains and sediment basins were conducted throughout the reporting period, with all sediment basins being inspected every quarter. Following heavy rain and/or dewatering, sediment basins were inspected and, when water levels allowed, sampled for reference purposes.

There were no desilting works undertaken during the reporting period and no works were required on any of the sediment ponds or associated water control structures.

6.7 Groundwater

Sampling and inspection of local district groundwater bores and RSF monitoring piezometers continued during the reporting period.

Any groundwater inflows into the open cut pits could be best described as seepage and intermitent. Ground water inflows are not measurable. This is due to the nature of the factured rock zone that the ground water is captured in. There is no water table present at TGO.

6.7.1 Depth

As shown in Table 12, four of the seven bores recorded relatively steady groundwater levels during the reporting period (i.e. less than 1 m range). WYMB 01 had a range of 4.48 m, WYMB02 had a range of 31m, and WYBM06 had a range of 5.95m. Quarterly groundwater levels since 2019 are shown in Figure 3.

The onsite meteorological station recorded 1108.4 mm of rainfall in 2022 (544.2 mm more than the annual average).

WYMB02 is a deep bore located adjacent to the Wyoming 1 Open Cut. During the previous reporting period TGO water levels in the bore had increased by 31 metres due to high rainfall on site. The new water level has persisted due to continual high rainfall this reporting period.

WYMB01 and WYMB06 are to the south of site and are influenced from rainfall and surface water inflows into the historic McPhails underground workings. Levels and water quality are not influenced by site activities.

WYMB03, WYMB04 and WYMB10 are deep bores around the perimeter of the mine and show very little movement in depth consistent with each being located in a fractured rock aquifer.

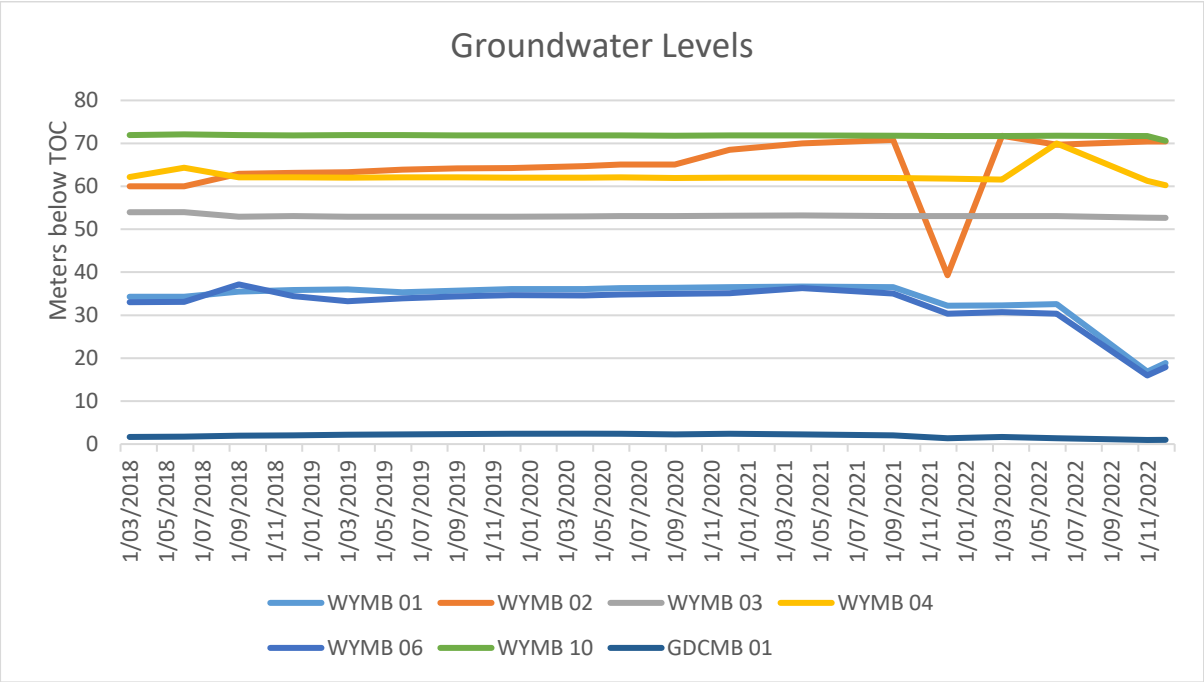
GDCMB01 is located in the shallow Gundong creek aquifer and any variations in levels are dependant on rainfall.

A summary of water chemistry results is provided in Appendix 1.

Table 12: Groundwater Bore Water Levels

Period	Groundwater level (- metres below Top of Casing)						
	WYMB 01 (EPA09)	WYMB 02 (EPA10)	WYMB 03 (EPA11)	WYMB 04 (EPA12)	WYMB 06 (EPA13)	WYMB 10 (EPA14)	GDCMB 01 (EPA15)
28/03/2022	32.3	71.76	53.07	61.6	30.74	71.7	1.64
28/06/2022	32.59	69.72	53.04	69.98	30.37	71.77	1.33
29/11/2022	16.87	70.44	52.69	61.31	15.97	71.69	0.96
13/12/22	18.89	70.42	52.66	60.25	17.88	70.61	1.01
Range (2022)	*15.72*	*2.04*	*0.41*	*9.73*	*14.77*	*1.16*	*0.68*
Range (2021)	*4.48*	*31.49*	*0.11*	*0.23*	*5.95*	*0.11*	*0.89*
Range (2020)	*0.40*	*3.80*	*0.10*	*0.10*	*0.50*	*0.10*	*0.10*
Range (2019)	*0.73*	*0.97*	*0.06*	*0.10*	*1.42*	*0.06*	*0.17*

Figure 3 – Groundwater Levels (2018-2022)



6.7.2 RSF Piezometers

During the reporting period the RSF monitoring piezometeres were monitored on a monthly basis. The depth from TOC to water is recorded and water samples are taken where possible. During the reporting period, water samples were taken from piezometers RSFMP03A, RSFMP07, RSFMP08, and RSFMP11 each.

Piezometer RSFMP05 was decommissioned and buried in 2022 as part of further operational development. RSFMB01, RSFMB02, RSFMP03, RSFMP09 and RSFMP10 were decomissioned and buried in previous years as part of operational development.

RSFMP02, RSFMP04, RSFMP06, RSFMP09, and RSFMP10 were dry throughout the reporting period with no samples being able to be collected.

Upon completion of construction of RFS2, TGO will install several new piezometers around the perimeter of RSF1 and RSF2.

Results continue to show that water chemistry is consistant with the water coming from existing shallow aquifers that were intercepted during the RSF construction.

6.8 EA Predictions

6.8.1 Ground Water

The initial ground water modelling and assessment that accompanied the EA predicted some groundwater drawdown and ground water production in the pits. This has not occurred.

7 Rehabilitation

During the reporting period, new standard rehabilitation conditions on mining leases came into effect through an amendment to the Regulation under the Mining Act 1992. These include:

- Rehabilitation Risk Assessment,
- Rehabilitation Management Plan,
- Rehabilitation Objectives Statement,
- Rehabilitation Completion Criteria Statement,
- Final Landforms and Rehabilitation Plan,
- Forward Program, and
- Annual Rehabilitation Report

Upon commencement of the Regulation, TGO's existing MOP was superseded by the requirement for a Rehabilitation Management Plan (RMP). A copy of the RMP can be found on the company's website at (https://www.alkane.com.au/projects/tomingley-gold-project/tomingley-gold-operations/tgo-reports/environmental-reports/).

7.1 Rehabilitation During Reporting Period

During the reporting period, rehabilitation and land management activities comprised of ongoing monitoring and maintenance of the extensive rehabilitation work that was completed on WRE2 and 3. The majority of the site is still operational and as such opportunities for rehabilitation activities were limited to maintenance and of the existing rehabilitation that has taken place on WRE 2 and 3.

Progress against key rehabilitation performance indicators is shown in Table 13.

Table 13: Rehabilitation Status

Mine Area Type	Previous Reporting Period (Actual) FY 2021 (ha)	This Reporting Period (Actual) FY 2022 (ha)	Next Reporting Period (Forecast) FY 2023 (ha)
A. Total mine footprint	434.9	517.9	517.9
B. Total active disturbance	405.0	484.6	484.6
C. Land being prepared for rehabilitation	0.0	0.0	0.0
D. Land under active rehabilitation	113	113	113
E. Completed rehabilitation	0.0	0.0	0.0

Plate 1: Vegetation establishment on WRE 2

7.2 Post Rehabilitation Land use

TGOs approved post rehabilitation area is proposed to consist of the following land uses:

- Infrastructure - entrance roads and void safety berms;
- Water Management Areas - water bodies on floor of final voids;
- Grasslands – rehabilitated WRE outside batters;
- Woodlands - rehabilitated WRE outside batters;
- Rural Land – existing open buffer land;
- Final Void – residual open cut voids; and
- Conservation and Biodiversity Offset – registered offset areas under PVP.

These post-rehabilitation land uses are described in detail in the RMP and are shown in Figure 6.

7.3 Buildings, Infrastructure, and other Rehabilitation

All buildings and infrastructure were still operational during the reporting period and no decommissioning, removal or demolition was undertaken.

7.4 Completed Rehabilitation

No areas of final rehabilitation have received formal relinquishment sign-off from Regional NSW -MEG. Nor are any areas anticipated to do so in the next reporting period.

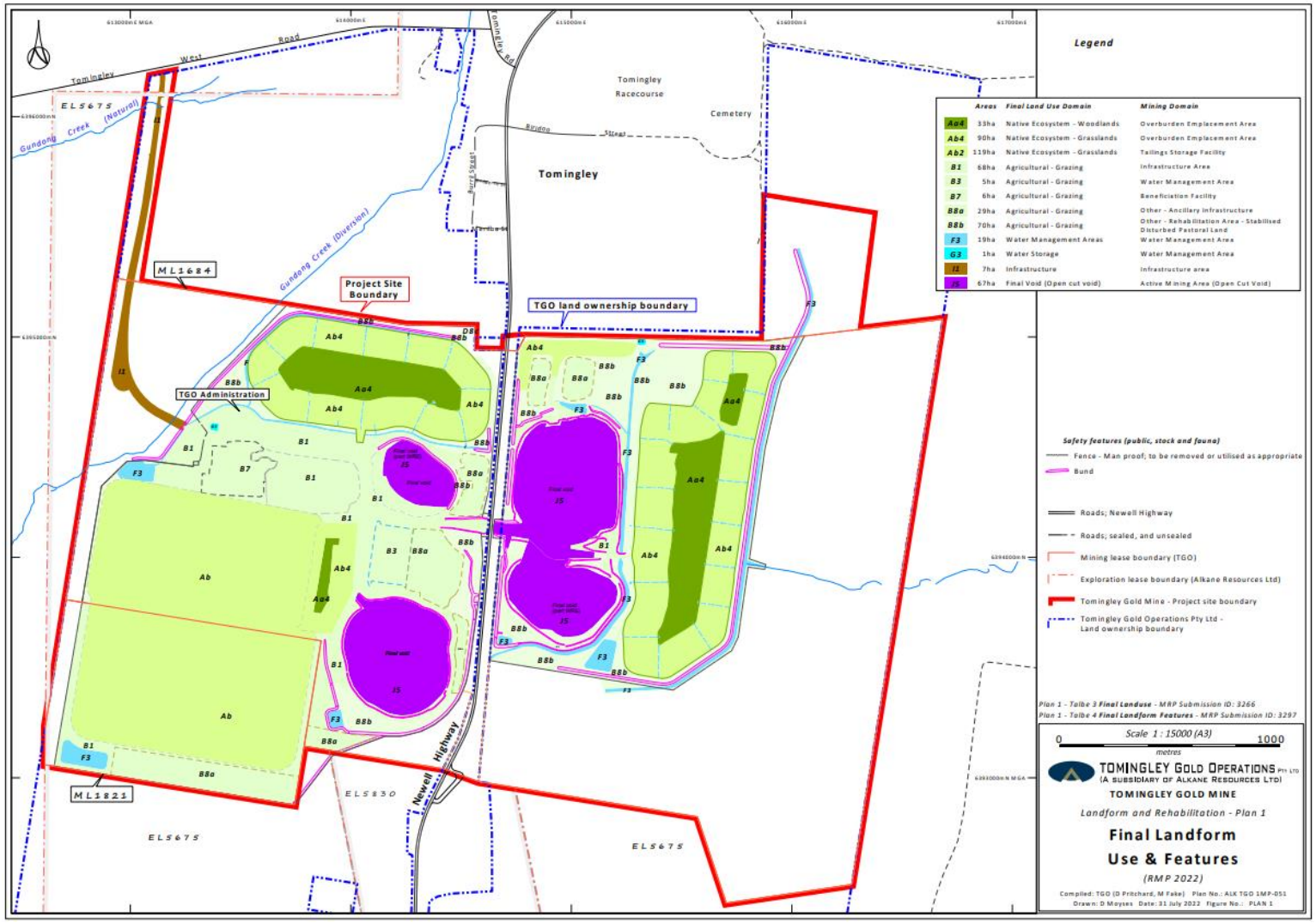


Figure 6 –Final land uses at TGO

7.5 Trials, Monitoring and Research

TGO invested significant time and resources in 2015 and 2016 to ensure the final landform design is constructed to protect the dispersive waste material and ameliorate the sodic topsoil used for vegetation establishment. TGO has continued to engage with soil and waste dump specialists from SLR Consulting with site visits during the 2020 reporting period to review civil works, remediation of a void in the northern end of WRE2 and vegetation establishment.

As WRE landform areas are rehabilitated, monitoring plots are established and incorporated into the biodiversity monitoring program (see Section 5.4.2 for details).

During 2016 biodiversity monitoring, the first rehabilitation monitoring plots were established and monitored, along with two pasture reference sites. Two additional pasture montoring sites were established in 2017. In 2020 an additional pasture and woodland rehabilitation monitoring site was established on new areas of rehabilitation completed in February 2019 on WRE3 and WRE2 respectively.

Monitoring has been carried out annually by DNA Environmental with a comprehensive report tracking progress over time summarised in Section 5.4.2.

7.6 Actions for Next Reporting Period

During the next reporting period rehabilitation works will be undertaken on the northern and western buttresses of RSF1.

A geotechnical stability and erosion trial (GSET) will be undertaken for the Wyoming 1 ramp in accordance with the conditions of PA 09_0155 (MOD 7)

It is planned to undertake some revegetation work to reestablish and improve groundcover on areas of WRE 2 and 3 that have reduced groundcover. Routine maintenance will continue to control noxious weeds such as African Boxthorn.

8 Community

8.1 Consultation

The key strategy to ensure an effective passage of information between TGO and the surrounding community is the Community Consultative Committee (CCC). The CCC is an independently chaired eight member committee representing TGO, the local community, and the Aboriginal community. During the reporting period, the CCC met in:

- February
- May
- August and
- November

At CCC meetings, members are updated by TGO personnel on the progress of current and proposed mining operations and projects. Community representatives are given the opportunity to raise concerns regarding the project and to offer advice regarding TGO's consultation with the community. CCC meeting minutes are available via the Alkane Resources website (www.alkane.com.au). TGO resumed quarterly CCC meetings during the reporting period and will continue with quarterly meetings moving forward.

In addition to the CCC, TGO utilised a number of methods of communication/consultation with the community during the reporting period including;

- Making relevant information regarding mine approvals, operations and environmental monitoring available to the public on the Alkane Resources website;
- Distributing a community newsletter, to provide the Tomingley community with information on TGO operations;
- Providing a 24 hour community information line; and
- Write a column for the Narromine Star (newsletter)

These methods of community consultation will continue during the next reporting period.

8.2 Support

As per TGO's planning agreement in Appendix 3 of PA 09_0155 the following contributions to NSC are made annually.

- $53,750/annum to the Community Fund;
- $45,000/annum for road maintenance (except for Tomingley West Road) and
- $20,000/annum for NSC Environmental Management Expertise.

The Tomingley Gold Project Community Fund has been established to support projects within the Narromine Shire that promote the long term economic growth, community connectivity, education and training, or community infrastructure.

Allocation of funds is decided by a fund panel, consisting of two TGO representatives and two staff from NSC and a Councilor from NSC. TGO contribution for 2022 are publicly listed on its webpage. https://www.alkane.com.au/projects/tomingley-gold-project/tomingley-gold-operations/community-resources/tgo-community-fund/

8.2.1 Tomingley Village Water Supply

During the reporting period,TGO continued to provide raw water to the Narromine Shire Council (NSC) water supply dams for the Tomingley Village via the previously installed valves and pipe line. Upon mine closure the entire system will be handed over to the NSC.

8.3 Complaints and Enquiries

TGO manage complaints in accordance with the protocols and procedures contained in the EMS.

During the reporting period, zero (0) complaints were received via the community information line, other Alkane/TGO phone lines, or other method. TGO complaint history for the previous 5 years is presented in Table 14.

A register of complaints and enquiries received from the community is maintained by TGO. A modified version of this register (excluding personal details of complainants) is published on the Alkane Resources website at https://www.alkane.com.au/projects/tomingley-gold-project/tomingley-gold-operations/tgo-reports/complaints-register/.

Table 14: TGO Complaint History

Year	Number of complaints	Complaint Type				
		Dust	Noise	Blasting	Traffic/ Road Safety	Other
2022	0	0	0	0	0	0
2021	0	0	0	0	0	0
2020	0	0	0	0	0	0
2019	0	0	0	0	0	0
2018	3	1	0	1	0	1 (radio signal affected)

9 Independent Audit

The current Independent Environment Audit (IEA) period for the TGO is 2021 to 2024, and as a result no IEA was conducted in 2022.

The previous IEA identified several minor non-compliances against conditions of Project Approval PA09_0155 MOD5 and other licences and approvals. Issues identified during the IEA related to low risk or administrative non-compliances.

The IEA report also provided a series of recommendations arising from a review of site documentation and identified non-compliances.

TGO will continue to address the non-compliances and recommendations ahead of the next IEA. It is noted that the applicability of non-complainces and recommendations may change following the approval of the TGEP and new conditions that apply.

The full audit report and responses to the recommendations are available on the TGO's website at http://www.alkane.com.au/operations/tomingley-gold-operations/ .

The next Independent Environmental Audit of the TGO is scheduled to be undertaken in the second quarter of 2024.

10 Incidents and non-compliances during reporting period

This section provides further detail on the incidents and non-compliances reported in Section 1 as well as any other official regulatory interaction that occurred during the reporting period.

10.1 PM_{10} exceedance over a 24 hour averaging period

This exceedance has previously been discussed in section 5.3.2.

10.2 Offsite Water Discharge

Discussed in detail in section 6.4.2

10.3 Submission of Revised Management Plans

TGO failed to submit a small number of revised management plans within the allocated timeframe required by Schedule 5. Condition 5(d) following the approval of Modification 6. Management Plan revision was completed internally with submission to the Secretary for approval outside of the required timeframe.

11 Activities to be Completed in Next Reporting Period

Environmental activities and initiatives to be implemented in the next reporting period will focus on continuity of the TGO monitoring program for noise, dust, vibration and water quality, continued management of all biodiversity offset areas, and monitoring of revegetation on WRE 2 and WRE3.

Details on these activities are shown in Table 15.

Table 15: Environmental Management Activities proposed for 2023

Proposed Activities	Location	Proposed Completion Date
Pest control program	TGO site & biodiversity offset areas	Ongoing
Weed management	TGO site & biodiversity offset areas	Ongoing
Regular monitoring of site water management structures for erosion and stability	TGO site	Ongoing
Continue monitoring and maintenance program for WRE 2 and WRE3 including progress of revegetation	Waste rock emplacements	Ongoing
Noise, air quality, blasting and water quality monitoring in accordance with EPL and PA.	TGO site and district	Ongoing
Determine location of new noise, dust, and groundwater monitoring stations for the Tomingley Gold Extension Project (TGEP if approved)	To be confirmed	2nd Quarter 2023
Install environmental monitoring stations for the TGEP	To be confirmed	2nd Quarter 2023

Appendix 1 Groundwater Bore Summary

		Field ID	WYMB01 (EPA9)	WYMB01(EPA9)	WYMB01(EPA9)	WYMB01 (EPA9)
		Date	28 Mar 2022	28 Jun 2022	29 Nov 2022	13 Dec 2022
	Unit	EQL				
Cyanides						
Cyanide (WAD)	mg/L	0.004	0.004	<0.004	<0.004	<0.004
Inorganics						
Nitrite + Nitrate as N	mg/L	0.01	0.07	0.27	0.06	<0.01
Alkalinity (Bicarbonate as CaCO3)	mg/L	1	398	353	358	412
Alkalinity (Carbonate as	mg/L	1	<1	<1	<1	<1
Ammonia as N	mg/L	0.01	0.12	<0.01	0.23	0.15
Chloride	mg/L	1	3,580	3,680	3,660	3,450
Cyanide (Free)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Cyanide Total	mg/L	0.004	<0.004	<0.004	0.013	<0.004
Electrical Conductivity	µS/cm	1	12,300	11,600	13,000	12,300
Ionic Balance	%	0.01	0.11	3.09	2.00	2.20
Nitrate (as N)	mg/L	0.01	0.07	0.26	0.05	<0.01
Nitrite (as N)	mg/L	0.01	<0.01	0.01	0.01	<0.01
pH (Lab)	-	0.01	7.20	7.12	7.01	7.12
Sodium (filtered)	mg/L	1	2,170	2,040	2,100	2,180
Total Dissolved Solids	mg/L	10	7,770	7,800	7,860	7,630
Hardness as CaCO3	mg/L	1	1,760	1,660	1,690	1,760
Total Suspended Solids	mg/L	5	19	<5	<5	9
Metals						
Arsenic	mg/L	0.001	0.006	0.004	0.003	0.010
Cadmium	mg/L	0.0001	<0.0001	0.0001	<0.0001	<0.0001
Calcium (filtered)	mg/L	1	277	275	268	289
Chromium (III+VI)	mg/L	0.001	0.002	0.004	0.001	0.005
Copper	mg/L	0.001	0.007	0.015	0.008	0.007
Iron	mg/L	0.05	1.61	0.77	0.16	2.35
Lead	mg/L	0.001	0.029	0.014	0.009	0.039
Magnesium (filtered)	mg/L	1	260	236	247	252
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.001	0.002	0.006	0.002	0.003
Potassium (filtered)	mg/L	1	6	6	6	6
Zinc	mg/L	0.005	0.032	0.063	0.032	0.033

		Field ID	WYMB02 (EPA10)	WYMB02(EPA10)	WYMB02(EPA10)	WYMB02 (EPA10)
		Date	28 Mar 2022	27 Jun 2022	28 Nov 2022	12 Dec 2022
	Unit	EQL				
Cyanides						
Cyanide (WAD)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Inorganics						
Nitrite + Nitrate as N	mg/L	0.01	0.67	0.72	0.83	0.74
Alkalinity (Bicarbonate as CaCO3)	mg/L	1	1,040	1,040	957	1,140
Alkalinity (Carbonate as	mg/L	1	<1	<1	<1	<1
Ammonia as N	mg/L	0.01	0.01	<0.01	0.11	0.03
Chloride	mg/L	1	6,230	6,590	7,330	6,060
Cyanide (Free)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Cyanide Total	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Electrical Conductivity	µS/cm	1	22,400	21,400	23,100	22,500
Ionic Balance	%	0.01	1.60	4.06	5.50	0.42
Nitrate (as N)	mg/L	0.01	0.67	0.71	0.83	0.73
Nitrite (as N)	mg/L	0.01	<0.01	0.01	<0.01	0.01
pH (Lab)	-	0.01	7.24	7.26	7.08	7.18
Sodium (filtered)	mg/L	1	4,590	4,330	4,450	4,420
Total Dissolved Solids	mg/L	10	14,600	14,600	14,800	14,700
Hardness as CaCO3	mg/L	1	2,170	2,000	2,120	2,100
Total Suspended Solids	mg/L	5	12	22	11	6
Metals						
Arsenic	mg/L	0.001	<0.001	0.002	0.001	0.001
Cadmium	mg/L	0.0001	0.0002	0.0003	0.0002	0.0013
Calcium (filtered)	mg/L	1	151	146	153	154
Chromium (III+VI)	mg/L	0.001	0.001	0.003	0.002	0.001
Copper	mg/L	0.001	0.022	0.031	0.019	0.051
Iron	mg/L	0.05	0.17	0.81	0.14	1.12
Lead	mg/L	0.001	0.004	0.014	0.004	0.006
Magnesium (filtered)	mg/L	1	436	397	423	416
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.001	0.002	0.004	0.002	0.003
Potassium (filtered)	mg/L	1	9	9	10	9
Zinc	mg/L	0.005	0.038	0.058	0.058	0.216

		Field ID	WYMB03 (EPA11)	WYMB03(EPA11)	WYMB03(EPA11)	WYMB03 (EPA11)
		Date	29 Mar 2022	28 Jun 2022	29 Nov 2022	13 Dec 2022
	Unit	EQL				
Cyanides						
Cyanide (WAD)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Inorganics						
Nitrite + Nitrate as N	mg/L	0.01	0.28	0.31	0.34	0.32
Alkalinity (Bicarbonate as CaCO3)	mg/L	1	1,020	1,210	1,130	1,320
Alkalinity (Carbonate as	mg/L	1	<1	<1	<1	<1
Ammonia as N	mg/L	0.01	0.02	<0.01	0.02	0.01
Chloride	mg/L	1	5,970	6,240	6,320	5,700
Cyanide (Free)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Cyanide Total	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Electrical Conductivity	µS/cm	1	21,600	20,700	22,200	22,000
Ionic Balance	%	0.01	3.16	4.09	2.21	1.66
Nitrate (as N)	mg/L	0.01	0.28	0.31	0.34	0.31
Nitrite (as N)	mg/L	0.01	<0.01	<0.01	<0.01	0.01
pH (Lab)	-	0.01	7.02	7.06	6.90	7.03
Sodium (filtered)	mg/L	1	4,410	4,040	4,120	3,950
Total Dissolved Solids	mg/L	10	14,400	14,500	14,200	14,500
Hardness as CaCO3	mg/L	1	2,710	2,470	2,610	2,430
Total Suspended Solids	mg/L	5	11	30	<5	<5
Metals						
Arsenic	mg/L	0.001	<0.001	0.002	0.002	0.002
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium (filtered)	mg/L	1	189	190	198	183
Chromium (III+VI)	mg/L	0.001	<0.001	0.003	0.002	0.004
Copper	mg/L	0.001	0.003	0.010	0.010	0.012
Iron	mg/L	0.05	0.18	0.49	0.37	0.45
Lead	mg/L	0.001	0.002	0.004	0.009	0.011
Magnesium (filtered)	mg/L	1	543	485	514	479
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.001	0.007	0.004	0.004	0.005
Potassium (filtered)	mg/L	1	16	15	17	14
Zinc	mg/L	0.005	0.010	0.020	0.030	0.043

		Field ID	WYMB04 (EPA12)	WYMB04(EPA12)	WYMB04(EPA12)	WYMB04 (EPA12)
		Date	28 Mar 2022	28 Jun 2022	28 Nov 2022	12 Dec 2022
	Unit	EQL				
Cyanides						
Cyanide (WAD)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Inorganics						
Nitrite + Nitrate as N	mg/L	0.01	0.06	0.13	0.19	0.16
Alkalinity (Bicarbonate as CaCO3)	mg/L	1	818	1,020	1,050	1,120
Alkalinity (Carbonate as	mg/L	1	<1	<1	<1	<1
Ammonia as N	mg/L	0.01	<0.01	<0.01	0.17	0.02
Chloride	mg/L	1	7,860	8,210	8,960	7,430
Cyanide (Free)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Cyanide Total	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Electrical Conductivity	µS/cm	1	27,400	26,100	28,100	27,800
Ionic Balance	%	0.01	3.12	4.36	4.26	1.20
Nitrate (as N)	mg/L	0.01	0.06	0.12	0.19	0.16
Nitrite (as N)	mg/L	0.01	<0.01	0.01	<0.01	<0.01
pH (Lab)	-	0.01	7.11	7.16	6.94	7.16
Sodium (filtered)	mg/L	1	5,460	5,000	5,140	5,060
Total Dissolved Solids	mg/L	10	18,700	18,800	19,300	18,800
Hardness as CaCO3	mg/L	1	3,570	3,190	3,580	3,510
Total Suspended Solids	mg/L	5	12	12	964	973
Metals						
Arsenic	mg/L	0.001	<0.001	<0.001	0.001	0.003
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	0.0001
Calcium (filtered)	mg/L	1	289	283	316	309
Chromium (III+VI)	mg/L	0.001	<0.001	0.001	0.011	0.020
Copper	mg/L	0.001	0.006	0.014	0.016	0.022
Iron	mg/L	0.05	0.15	0.45	10.4	26.1
Lead	mg/L	0.001	0.003	0.004	0.012	0.011
Magnesium (filtered)	mg/L	1	691	603	679	666
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.001	0.002	0.003	0.012	0.016
Potassium (filtered)	mg/L	1	17	17	18	16
Zinc	mg/L	0.005	0.014	0.035	0.087	0.097

		Field ID	WYMB06 (EPA13)	WYMB06(EPA13)	WYMB06(EPA13)	WYMB06 (EPA13)
		Date	29 Mar 2022	28 Jun 2022	29 Nov 2022	12 Dec 2022
	Unit	EQL				
Cyanides						
Cyanide (WAD)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Inorganics						
Nitrite + Nitrate as N	mg/L	0.01	0.03	0.54	0.16	0.10
Alkalinity (Bicarbonate as CaCO3)	mg/L	1	1,050	1,160	1,000	1,310
Alkalinity (Carbonate as	mg/L	1	<1	<1	<1	<1
Ammonia as N	mg/L	0.01	0.14	<0.01	0.04	0.06
Chloride	mg/L	1	2,970	2,280	3,150	2,940
Cyanide (Free)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Cyanide Total	mg/L	0.004	0.168	<0.004	0.145	0.160
Electrical Conductivity	µS/cm	1	13,700	10,600	14,300	13,600
Ionic Balance	%	0.01	0.07	4.85	1.79	2.24
Nitrate (as N)	mg/L	0.01	0.03	0.53	0.13	0.09
Nitrite (as N)	mg/L	0.01	<0.01	0.01	0.03	0.01
pH (Lab)	-	0.01	7.05	7.51	6.98	7.22
Sodium (filtered)	mg/L	1	2,720	2,100	2,620	2,600
Total Dissolved Solids	mg/L	10	9,510	7,480	9,180	9,250
Hardness as CaCO3	mg/L	1	1,710	1,230	1,740	1,720
Total Suspended Solids	mg/L	5	15	13	32	<5
Metals						
Arsenic	mg/L	0.001	0.014	0.057	0.009	0.015
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium (filtered)	mg/L	1	152	121	164	169
Chromium (III+VI)	mg/L	0.001	<0.001	0.002	0.002	<0.001
Copper	mg/L	0.001	0.010	0.016	0.008	0.007
Iron	mg/L	0.05	0.23	0.41	0.66	0.24
Lead	mg/L	0.001	0.011	0.008	0.004	0.004
Magnesium (filtered)	mg/L	1	323	225	322	314
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.001	0.012	0.012	0.006	0.009
Potassium (filtered)	mg/L	1	6	6	6	6
Zinc	mg/L	0.005	0.014	0.101	0.013	0.021

		Field ID	WYMB10 (EPA14)	WYMB10(EPA14)	WYMB10(EPA14)	WYMB10 (EPA14)
		Date	28 Mar 2022	28 Jun 2022	29 Nov 2022	12 Dec 2022
	Unit	EQL				
Cyanides						
Cyanide (WAD)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Inorganics						
Nitrite + Nitrate as N	mg/L	0.01	6.31	1.60	2.33	2.21
Alkalinity (Bicarbonate as CaCO3)	mg/L	1	911	912	893	927
Alkalinity (Carbonate as	mg/L	1	<1	<1	<1	<1
Ammonia as N	mg/L	0.01	0.05	0.02	0.03	0.03
Chloride	mg/L	1	1,050	434	810	654
Cyanide (Free)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Cyanide Total	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Electrical Conductivity	µS/cm	1	5,290	2,840	4,320	3,400
Ionic Balance	%	0.01	1.26	4.20	2.36	1.35
Nitrate (as N)	mg/L	0.01	6.31	1.59	2.33	2.19
Nitrite (as N)	mg/L	0.01	<0.01	0.01	<0.01	0.02
pH (Lab)	-	0.01	7.06	7.00	6.95	6.98
Sodium (filtered)	mg/L	1	1,120	637	886	819
Total Dissolved Solids	mg/L	10	2,740	2,040	2,650	2,260
Hardness as CaCO3	mg/L	1	258	82	221	178
Total Suspended Solids	mg/L	5	21	11	32	23
Metals						
Arsenic	mg/L	0.001	0.003	0.006	0.005	0.005
Cadmium	mg/L	0.0001	0.0001	<0.0001	<0.0001	<0.0001
Calcium (filtered)	mg/L	1	44	18	26	22
Chromium (III+VI)	mg/L	0.001	0.002	0.005	0.003	0.002
Copper	mg/L	0.001	0.041	0.037	0.019	0.024
Iron	mg/L	0.05	1.11	3.25	1.90	1.14
Lead	mg/L	0.001	0.002	0.004	0.002	0.001
Magnesium (filtered)	mg/L	1	36	9	38	30
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/L	0.001	0.004	0.004	0.004	0.003
Potassium (filtered)	mg/L	1	4	3	4	3
Zinc	mg/L	0.005	0.042	0.037	0.017	0.024

		Field ID	GDCMB01 (EPA15)	GDCMB01(EPA15)	GDCMB01(EPA15)	GDCMB01 (EPA15)
		Date	28 Mar 2022	28 Jun 2022	29 Nov 2022	12 Dec 2022
	Unit	EQL				
Cyanides						
Cyanide (WAD)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Inorganics						
Nitrite + Nitrate as N	mg/L	0.01	0.22	0.38	0.30	0.32
Alkalinity (Bicarbonate as CaCO3)	mg/L	1	101	110	83	88
Alkalinity (Carbonate as	mg/L	1	<1	<1	<1	<1
Ammonia as N	mg/L	0.01	0.05	<0.01	0.02	0.01
Chloride	mg/L	1	41	42	30	31
Cyanide (Free)	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Cyanide Total	mg/L	0.004	<0.004	<0.004	<0.004	<0.004
Electrical Conductivity	µS/cm	1	441	390	264	242
Ionic Balance	%	0.01	2.42	0.13		
Nitrate (as N)	mg/L	0.01	0.22	0.37	0.30	0.31
Nitrite (as N)	mg/L	0.01	<0.01	0.01	<0.01	0.01
pH (Lab)	-	0.01	6.83	6.89	6.85	6.69
Sodium (filtered)	mg/L	1	85	87	58	58
Total Dissolved Solids	mg/L	10	458	622	871	894
Hardness as CaCO3	mg/L	1	2	9	11	<1
Total Suspended Solids	mg/L	5	89	847	738	218
Metals						
Arsenic	mg/L	0.001	0.009	0.004	0.006	0.005
Cadmium	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Calcium (filtered)	mg/L	1	1	2	1	<1
Chromium (III+VI)	mg/L	0.001	0.013	0.017	0.030	0.028
Copper	mg/L	0.001	0.026	0.015	0.024	0.020
Iron	mg/L	0.05	12.8	14.4	23.8	27.2
Lead	mg/L	0.001	0.037	0.011	0.020	0.015
Magnesium (filtered)	mg/L	1	<1	1	2	<1
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	0.0001
Nickel	mg/L	0.001	0.020	0.010	0.016	0.016
Potassium (filtered)	mg/L	1	2	2	3	1
Zinc	mg/L	0.005	0.093	0.048	1.10	0.374