



# Tomingley Gold Operations Annual Review 1 January – 31 December 2018





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# Definitions

Term	Definition
CaCO <sub>3</sub>	Calcium carbonate
Council	Narromine Shire Council
CCC	Community Consultative Committee
DSC	Dams Safety Committee
EEC	Endangered ecological community
EC	Electrical Conductivity
EPA	Environment Protection Authority
EP&A	<i>Environment Planning and Assessment Act 1979</i>
EPL	Environment Protection Licence
DP&E	Department of Planning & Environment
DRE	Division of Resources and Energy (Department of Trade and Investment, Regional Infrastructure and Services)
ha	Hectares
HVAS	High volume air sampler
LDP	Licensed discharge point
LFA	Landscape function analysis
LOI	Landscape Organisation Indices
LOR	Limit of Reporting
Mining Act	<i>Mining Act 1992</i>
MOP	Mining operations plan
ML	Mining Lease
NGERS	National Greenhouse and Energy Reporting Scheme
NMP	Noise Management Plan
NOW	NSW Office of Water
NSS	Noise and Sound Services
OEH	Office of Environment and Heritage
PM10	Particulate matter
RMS	Roads and Maritime Services
SEEC	Strategic Environmental and Engineering Consulting
TARP	Trigger action response plan
TEOM	Tapered Element Oscillating Microbalance
TGO	Tomingley Gold Operations
TGP	Tomingley Gold Project
TSP	Total suspended particulates
WAD	Weak acid dissociable cyanide
WAL	Water access licence
WHS	Workplace Health & Safety
TIM	Total Insoluble Matter
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 / project approval #	PA 09_0155 (MOD 3)
Name of holder of development consent / project approval	Alkane Resources Ltd
Mining lease #	ML 1684
Name of holder of mining lease	Tomingley Gold Operations Pty Ltd
Water licence #	WAL20270; WAL28643; WAL29266
Name of holder of water licence	Alkane Resources Ltd
MOP/RMP start date	1 October 2017
MOP/RMP end date	31 March 2021
Annual Review start date	01 January 2018
Annual Review end date	31 December 2018
<p>I, Ken Bermingham, certify that this audit report is a true and accurate record of the compliance status of Tomingley Gold Operations for the period 01 January to 31 December 2018 and that I am authorised to make this statement on behalf of Alkane Resources Pty Ltd.</p> <p>Note.</p> <p>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.</p> <p>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).</p>	
Name of authorised reporting officer	Ken Bermingham
Title of authorised reporting officer	Work Health, Safety, and Environment Manager
Signature of authorised reporting officer	
Date	28/02/19

## 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	NO

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	Relevant Section
PA 09_0155	Schedule 3, Condition 17	Exceedance of 24 hour average PM <sub>10</sub> criteria	Non-compliant	Reported Investigated and addressed	6.3

**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: <ul style="list-style-type: none"> <li>potential for serious environmental consequences, but is unlikely to occur; or</li> <li>potential for moderate environmental consequences, but is likely to occur</li> </ul>
Low	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>potential for moderate environmental consequences, but is unlikely to occur; or</li> <li>potential for low environmental consequences, but is likely to occur</li> </ul>
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 operational and environmental management activities undertaken at Tomingley Gold Operations Pty Ltd (TGO) during the calendar year 2018, and provides details on activities proposed for 2019. 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. TGO is a medium-sized gold project with approximately 412,000 ounces of gold in the current defined resource space. TGO aims to produce 20,000-25,000 ounces of gold per year, over the next 12 months, based on an annual ore throughput of approximately 500,000 tonnes.

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.

The current mining operations are focused on the area immediately north of the historic Myalls United Mine. Mining commenced in three open cut mines (Wyoming One, Wyoming Three and Caloma) in November 2013, with mining commencing in Caloma 2 in November 2016. The process plant, with associated residue facilities were commissioned between December 2013 and February 2014. During the second half of 2018 preparations also commenced to allow for the TGO underground operation to develop from the Wyoming 1 open pit in January 2019.

### 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
Simon Parsons	General Manager Operations	PO Box 59 Peak Hill, NSW, 2869 Phone: (02) 6867 9780
Jason Hughes	Underground Manager	PO Box 59 Peak Hill, NSW, 2869 Phone: (02) 6867 9780
Ken Bermingham	Work Health, Safety, Training, Environment and Community Manager	PO Box 59 Peak Hill, NSW, 2869 Phone: (02) 6867 9780
Community Information Line		(02) 6865 6116



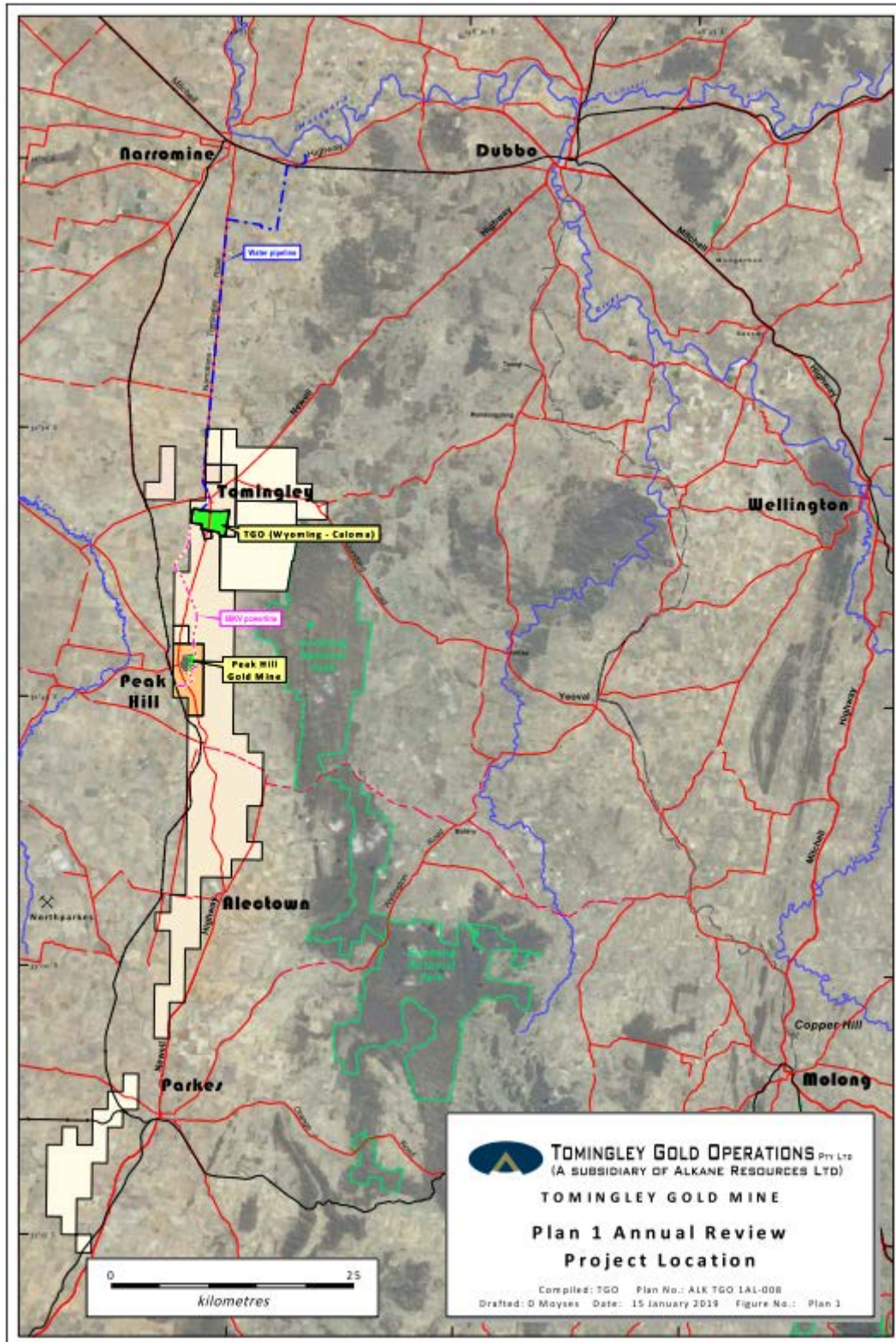


Figure 1: Tomingley Gold Operations – regional setting.



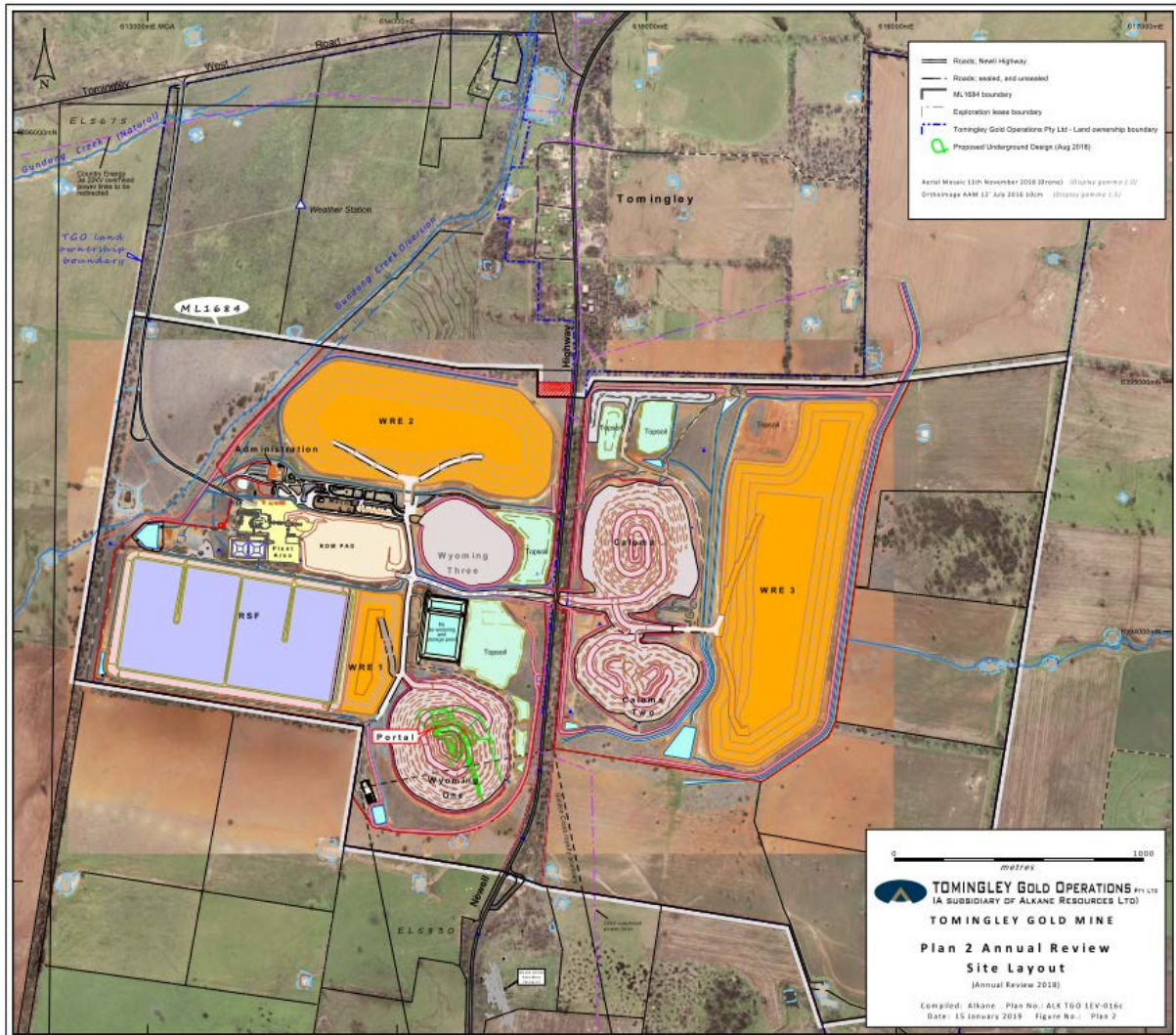


Figure 2: Tomingley Gold Operations – site layout



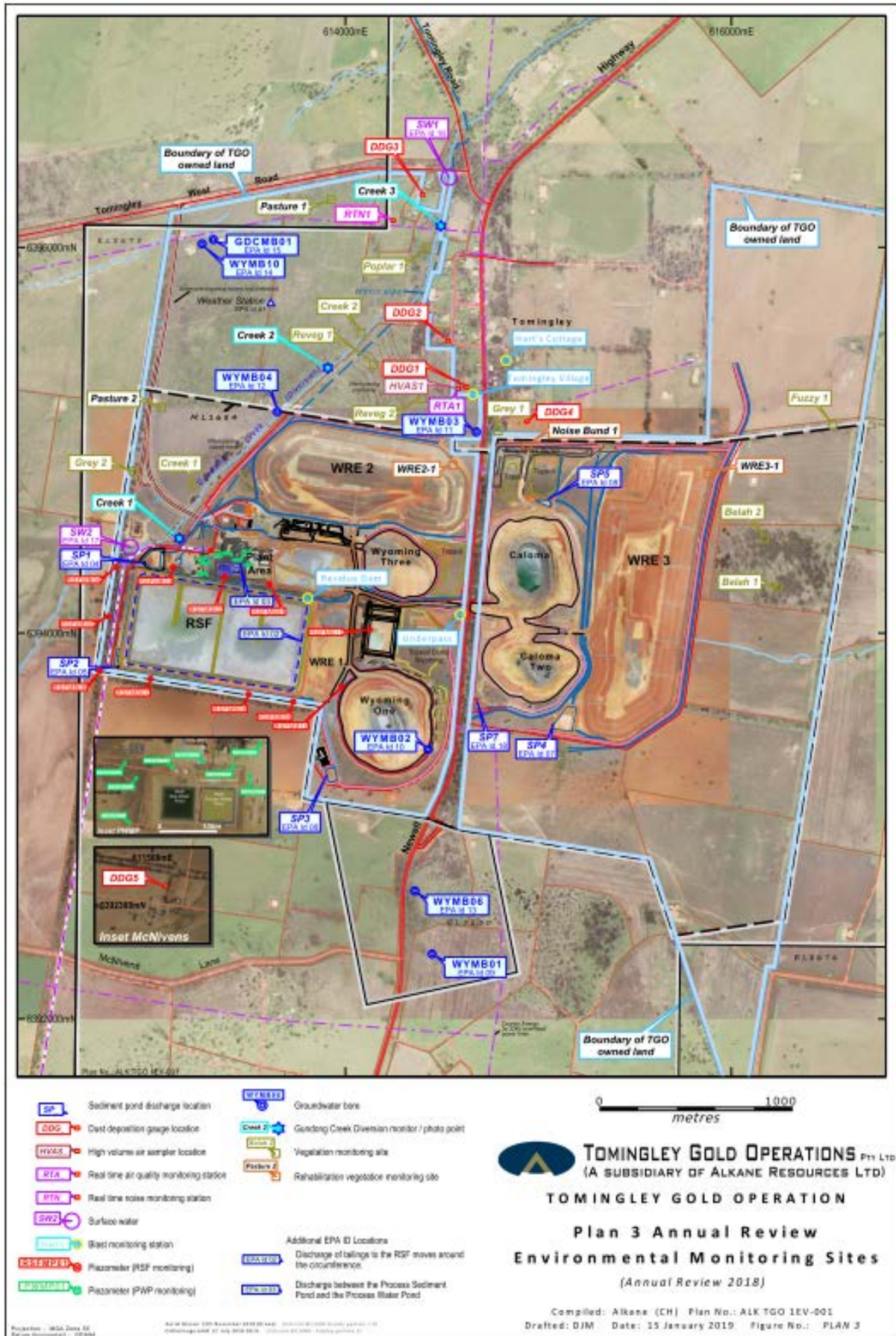


Figure 3: Tomingley Gold Operations – environmental monitoring locations.

### 3 Approvals

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

Table 5: Consents, leases and licenses

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)	Environmental Planning & Assessment (EP&A) Act 1979	NSW Department of Planning and Environment (DPE)	31 December 2022
Mining Lease 1684	Mining Act 1992	NSW Department of Planning and Environment – Resources and Energy	11 February 2034
Environment Protection License (EPL) 20169	Protection of the Environment Operations (POEO) Act 1997	NSW Environment Protection Authority (EPA)	Ongoing until surrendered
Flood Works Approval 80FW723901 (Gundong CK levy)	Water Management Act 2000	NSW Office of Water (NOW)	02 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	NA

## 4 Operations Summary

### 4.1 Mining

Open cut mining operations continued in Caloma 2 and Wyoming 1 pits throughout the reporting period. Mining ceased in Wyoming 3 in late 2015 and, following approval of MOD3 to PA 09\_0155, mining commenced in Caloma 2 in November 2016. Waste rock was hauled to Waste Rock Emplacement (WRE) 1, 2 and 3. Ore was hauled to the Run-of-mine (ROM) stockpile pad for processing at the site processing plant. Process residue was emplaced in the onsite residue storage facility (RSF).

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 the MOD 3 Environmental Assessment (R.W. Corkery, November 2015) during the reporting period.

Table 6: Production Summary

Material	Approved limit (specify source)	Previous reporting period (actual)	This reporting period (actual)	Next reporting period (forecast)
Waste rock (m <sup>3</sup> )	-	6,660,971	1421464	125302
Ore (kt)	1,500 (PA 09_0155)	1,307	1,331	8
Process Residue (tailings) (t)	-	1,122,456	1027479	514
Saleable Product (Oz)	-	87,409	64514	16994

*Note: No course process waste produced at TGO*

### 4.2 Other Operations

In accordance with Schedule 3, Condition 4 of PA 05\_0155, vegetation clearing and topsoil stripping was confined to the hours of 6am-6pm and rehabilitation was undertaken between 7am and 10pm.

TGO employed 77 people onsite as at 31 December 2018, meeting Condition 9 of ML 1648, which requires that:

“The lease holder must: (a) ensure that at least 30 competent people are efficiently employed in relation to the mining process or mining operations on the lease area OR (b) expend on operations carried out in the course of prospecting or mining the lease area, an amount of not less than \$525,000.00 per annum whilst the lease is in force.”

### 4.3 Next reporting period

During the next reporting period, open cut mining will cease in the 1<sup>st</sup> quarter of 2019 and processing operations will enter into care and maintenance late in the 2<sup>nd</sup> quarter of 2019 and begin processing underground ore towards the beginning of the 4<sup>th</sup> quarter of the 2019 reporting period.

Preparation towards Underground development commenced during the 2018 reporting period with first ore expected to be delivered to the ROM around mid year.

## 5 Actions required from previous Annual Review

No formal review meeting of the 2018 TGO Annual Review was held during the reporting period. A summary of actions resulting from verbal comments or email responses from government agencies are presented in Table 7.

Table 7: Actions from review of 2017 Annual Review

Actions Required from review of previous Annual Review	Requested by	Action taken by Operator	Section where discussed
Reformatting aerial figures to ensure appropriate size for printing and viewing (A3 to A4).	DPE	Altered size immediately	2



## 6 Environmental performance

### 6.1 Noise management

Statutory attended noise monitoring (to meet the requirements of EPL 20169 Condition M4.1) was completed over a three evening and night periods (13-16 November 2018). (see Appendix 1) The monitoring indicated noise generated by TGO complies with DA noise limits at all six monitored locations, as shown in. In 2018 there was no exceedances reported.

To address PA 09\_0155, Condition 6 of Schedule 3 of the Project Approval, 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.

Currently, TGO has one unattended real-time monitoring terminal installed at the Brooklands property (nearest to R23). Figure 3 identifies the location of the monitor. It is noted that the Brooklands unattended monitor 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.

A comparison of mine noise contributions between attended and unattended noise monitoring demonstrates a general consistency between attended and unattended results (see Table 8).

As required by PA 09\_0155 Appendix 5, 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)

<http://www.alkane.com.au/operations/tomingley-gold-operations/tgo-environment/environmental-reports/> .

Nil exceedances of PA noise criteria were measured 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.

Table 8: Attended Noise Monitoring Summary

Night time noise at Residence	Approval criteria <sup>1</sup> LAeq 15 min (dBA)	2018 Noise levels (dBA)	2017 Noise levels (dBA)	2016 Noise levels (dBA)	Key management implications	Implemented/ proposed management actions
R2	36	- <sup>3</sup>	30-33	23-33	Compliance with PA 09_0155/ EPL 1684 noise limits	No additional new actions are proposed due to the current operations continually complying with requirements
R3/ 29	40	- <sup>3</sup>	- <sup>3</sup>	37-40		
R4	36	- <sup>3</sup>	<28	28-34		
R5	37	- <sup>3</sup>	28-30	23-28		
R6	36	29 - 31	<33 - 33	30-34		
R23	39	- <sup>3</sup>	- <sup>3</sup>	34-39		

Notes:

1. Approval Criteria from PA 09\_0155, Schedule 3, Condition 3, based on 2016 MOD 3 Noise Assessment Criteria
2. Location R4 not measured in 2015
3. Mine in inaudible. See full report for further details. (Appendix 1)

### 6.1.1 Management Measures

A program to acoustically assess and treat 18 residential dwellings in, or near, Tomingley village was completed early in 2016. Treatment of the dwellings included:

improved glazing to windows and doors including removal of existing elements, installation of awning style aluminium windows fitted with 6.38mm laminated glass; full asbestos assessments for any house assumed constructed prior to 1986; installation of Mitsubishi industrial air-conditioning including maintenance for life of open pit mining; painting, plastering, patching, recladding and removal of old air conditioner (where required); and

contribution to electricity for life of open pit mining. These electricity payments were made in July 2018.

As per the agreement with individual landowners, no further contributions to electricity payments or ongoing maintenance to the airconditioning units will be made after the cessation of open cut mining.

Evening and night time mining and waste rock emplacement practices were modified during the reporting period to reduce offsite noise impact, including:

- preferential operation of noise-generating plant in the deepest open cuts or as close behind acoustic bunds; and
- short-tipping of waste rock, with dozer pushing of short-tipped waste rock during day time.

### 6.1.2 Proposed Improvements

TGO has demonstrated ongoing compliance with the prescribed noise limits. With the completion of surface mining operations finalisation of the current open pit mining activities within the TGO open Pits and the commencement of the underground operation, and with no further tipping to be carried out on the waste rock emplacements on night shift, TGO will continue to monitor noise levels however it is not envisaged that any additional improvements will be required to maintain compliance.

### 6.1.3 Environmental Assessment Predictions

TGO's noise levels were consistent with and/or below those predicted in the EA for PA MOD 3 (2016).

## 6.2 Blasting

Blasting at TGO is managed in accordance with the Blast Management Plan (BMP), which was prepared to meet Schedule 3, Condition 14 of PA 09\_0155 and relevant conditions of EPL 20169.

During the reporting period TGO fired 109 blasts. All blasts were below the prescribed levels for over pressure and vibration as presented in Table 9.

Table 9: Blasting Management

Aspect	Approval criteria* (dB (Lin Peak))	Approval criteria*(mm/s)	Airblast overpressure and vibration exceedances during reporting period	Key management implications	Implemented/ proposed management actions
Airblast Over-pressure	120	10	0	No change in blast management required.	No change proposed to current practices.

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

There was one complaint received during the reporting period, see Appendix 6 for further details. Prior to this, there were no complaints in 2017 and 2016 with three received in 2015 and two in 2014.

With regards to blast timing, TGO complied with:

- Schedule 3, Condition 8 of the DA, which restricts TGO to blasting between 9am and 5pm, Monday to Saturday (excluding public holidays); and
- Schedule 3, Condition 9 of the DA, which restricts TGO to three blasts per day.

### 6.2.1 Management Measures

Blasts are designed and scheduled to ensure air blast overpressure and ground vibration levels remain within DA 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 2018.

### 6.2.2 Proposed Improvements

Recommended modifications to TGO blast design and preparation procedures, resulting from the presplit blast over pressure investigation in 2016, were continued during the reporting period.

No exceedance of blast limits was recorded following implementation of these procedural modifications and accordingly TGO is not considering any further improvements.

### 6.2.3 Environmental Assessment Predictions

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

### 6.3 Air Quality

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

All five depositional dust gauges were below the long term assessment limit of 4g/m<sup>2</sup>/month (annual average). Dust results were generally low in 2018 (highest reading at DDG 2.8g/m<sup>2</sup>/month) and historically this is consistent.

During the reporting period, 30 results exceeded the 24 hour average limit for PM<sub>10</sub>, as measured at the RTA1 TEOM. Each of these exceedences were investigated and 1 reported to NSW government regulators (this reported exceedence is shown in Table 10). These exceedences were as a result of combinations of the ongoing drought conditions, unfavourable winds, farming activity in adjacent areas and were not as a result of mining related activity. Appendix 7 shows images of the regional dust that has lead to these recorded exceedences. This is an improvement from the three mining related exceedences recorded in 2017, three in 2016, ten in 2015, and twenty in the eight months of 2014 that the TEOM was operational.

Total Suspended Particulates (TSP), as measured via high volume air sampler (HVAS) at monitoring location HVAS1, are compared with the long term assessment limit of 90 µg/m<sup>3</sup> (annual average). The annual average for TSP was 57 µg/m<sup>3</sup>, which is below the long term assessment limit, a decrease from 58 µg/m<sup>3</sup> in 2017 and an increase from 38.32µg/m<sup>3</sup> in 2016 however significantly reduced from 59.4 µg/m<sup>3</sup> recorded in 2014.

Air quality monitoring results for the reporting year presented in Appendix 2.

Table 10: Air Quality Management

Date	Approval criteria* PM10 (ug/m3)	Performance during reporting period	Key management implications	Implemented management actions
PM <sub>10</sub> as measured at RTA1				
15 - 16 March 2018	50 µg/m <sup>3</sup>	67.7 µg/m <sup>3</sup>	Extreme weather conditions.	Section 6.3.1 and regulator notification

\*Approval Criteria from PA 09\_0155, Schedule 3, Condition 17, based on 2012 Project EIS Assessment Criteria

During the reporting period, TGO received one complaint relating to dust. Refer to Appendix 6 for further details. This is consistent with 2017 with dust complaints and 1 complaint in 2016.

#### 6.3.1 Management Measures

As is described in the Dust Site Specific Procedure, 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<sub>10</sub> 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.

The TGO Air Quality and Greenhouse Gas Management Plan and Dust SSP (incorporating the site dust Trigger Action Response Plan) were revised by an independent air quality consultant (Pacific Environment) during the 2016 reporting period to ensure consistency with industry leading practice.

TGO considers that the continual decline in the number of dust exceedences is as a direct result of these proactive management tools.

TGO further expects to see significant reductions in mine related dust during the next reporting period due to the cessation of open cut operations on the ongoing rehabilitation program.

### 6.3.2 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.

### 6.3.3 Environmental Assessment 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).

## 6.4 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.

### 6.4.1 Management Measures

#### Clearing Management

A pre-clearing survey was completed in accordance with PA 09\_0155 Schedule 3, Condition 35 and the BMP. No roosting or nesting sites were identified.

#### Offset Management

In accordance with the authorised activities and management actions required by the PVP, 6.4ha of broadcast seeding and cover slashing was carried out within the biodiversity offset area between the mine access road and Gundong creek. This activity was carried out in 2018 to extend remnant native vegetation communities. Plate 1 shows the area seeded. Plate 2 shows exclusion fencing constructed surrounding offset areas to the northern end of the eastern biodiversity offset.

Other management measures within biodiversity offset area included the spraying of African boxthorn (*Lycium ferocissimum*) throughout offset areas;

- trapping of feral predators;
- Installation of fencing to separate offset areas from cropping/grazing areas to allow stock to graze areas outside offsets;
- Continued exclusion of agricultural activities (including cultivation and livestock grazing from areas not fenced); and
- Ongoing slashing of pasture areas to reduce competition for replanted native tubestock.

### 6.4.2 Biodiversity Monitoring

TGO biodiversity monitoring is completed annually by DNA Environmental (see Appendix 3) to assess the condition and development of remnant and re-established native vegetation



communities. Monitoring methodology is based on Landscape Function Analyses (LFA) and ecosystem diversity / habitat value measurements adapted from the Biometric methodology. Ten monitoring sites were established in August 2014, consisting of six remnant woodlands sites, two EEC woodland revegetation sites and two riparian woodland sites along Gundong Creek. These sites were re-monitored in August 2016. Two pasture reference sites and one rehabilitation monitoring site were also established in 2016. Two new pasture rehabilitation sites were established on WRE2 and WRE3 in 2017. In 2018 there were no changes to the monitoring program. Key observations from the biodiversity monitoring program are summarised below:

#### 6.4.2.1 General Observations:

- The extreme seasonal conditions experienced over the past few years has had a significant impact on the composition and diversity of the vegetation communities at the TGO and these have been reflected in the ecological monitoring data.
- As a result of the drought conditions this year, there was a reduction from a total of 152 to 141 plant species recorded in the 10, 50 x 20m monitoring quadrants this year, with 39 (28%) of these being exotic species.
- In the woodland reference sites total floristic diversity declined as a result of the drought conditions with only 27 – 33 species being recorded in the 50 x 20m monitoring plot.
- In the enhancement and revegetation sites there was also a decrease in total species diversity across all sites except Reveg 1. Most sites contained an adequate and comparable diversity of species with up to 43 different species being recorded in Reveg 1. Sites Creek 1 and Belah 2 however a slightly low diversity with 26 and 25 species being recorded this year.
- Native species continued to be more prevalent than exotic species in all of the monitoring sites. However revegetation and enhancement sites had higher exotic species diversity compared to the reference sites.

#### 6.4.2.2 Remnant Woodland Areas (sites Fuzzy 1, Poplar 1, Grey 1 & Grey 2,):

- The woodland reference sites (Fuzzy 1, Grey 1 and Grey 2) were structurally and functionally different to each other but all had relatively high perennial plant components due to the mature eucalypts and established perennial grasslands.
- They had a well developed leaf litter layer and/or patches which had hard crusted soil surfaces which have been stabilised by cryptogams.
- This year there was a reduction in perennial ground covers and increased disturbances by animals as a result of the ongoing drought conditions however there continued to be high LOI and all reference sites continued to have 100% functional patch area.
- The soils within the reference sites were typically sandy clay loam and these were usually highly stable beneath the organic surface covers, but may be slightly unstable when exposed.

#### 6.4.2.3 Woodland Revegetation Areas (Reveg 1 & Reveg 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 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 and in these areas resources were being mobilised and potentially being lost.
- The ground cover vegetation and cryptogams have since continued to colonise the exposed soils and have significantly increased the functional patch areas to 100% in both revegetation sites. Creek 1 was also positioned within an old cropping paddock which was similar in composition to Reveg 1 and Reveg 2, with most of the rip lines now having a good grassy ground cover.
- This reporting period these sites had a reduction in perennial ground covers and increased disturbances by native animals, although the increasing litter layers continued to provide 100% functional patch area.

#### 6.4.2.4 Creek Revegetation Sites (Creek 1 & Creek 2)

- Sites Creek 1b and Creek 2 incorporated a flat upper floodplain which extended down the sloping creek banks.
- In these sites there were some bare and eroding areas due to a long disturbance history with compacted animal/vehicle tracks and some historic bank erosion.
- This year drought conditions resulted in little live plant cover and increased grazing by macropods reducing, thus slightly reducing the LOI to 95%.

#### 6.4.2.5 Belah Revegetation Sites (Belah 1 & Belah 2)

- Belah 1 and Belah 2 had also suffered a heavy and relatively recent grazing history with the ridges of the gilgais being predominantly bare and eroding and perennial plant cover was particularly low in 2014 and 2015.
- In Belah 1, the open clearings contained a patchy grassy understorey and cryptogam and litter covers which provided 86% functional patch area when monitoring first began.
- In Belah 2 there was little to no protective cover under the mature tree canopies in previous years with no functional patch area being recorded in 2014 and 2015.
- This year there has been a loss of integrity of the litter layers and other protective ground covers in both sites as a result of the drought and heavy macropod grazing. Subsequently there has been a decline in LOI with 65% and 32% LOI being recorded in Belah 1 and Belah 2 two respectively this year.

#### 6.4.3 Fauna Monitoring

Field survey for the fauna monitoring program is completed every two years and was not conducted in the 2018 reporting period. Fauna monitoring was previously completed in December 2016 (and reported in 2017) and will be completed next reporting period.

#### 6.4.4 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.

#### 6.5 Heritage

A Cultural Heritage Management Plan (CHMP), which outlines measures to manage Aboriginal and Non-Aboriginal heritage sites at TGO, was prepared during the 2013 reporting year, and reviewed during the 2016 reporting year, with no changes made. 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.

##### 6.5.1 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, management of the existing sites mainly consisted of weed control and ensuring appropriate signage remains in place.

##### 6.5.2 Proposed Improvements

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

Plate 1: Biodiversity offset seeding paddock where native seeds were broadcast



Plate 2: Improved fencing around northern end of the eastern Biodiversity Offset Area

## 6.6 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 project environmental assessment, also determined risk of land contamination onsite to be very low.

No newly identified areas of contamination were recorded. No remediation of hydrocarbon contaminated soil is carried out on site. All contaminated soil is placed in drums and disposed of off site by a licensed contractor.

During the reporting period 3 minor hydrocarbon spills was reported at TGO, including:

- 4/3/18 - Hydraulic oil spill as a result of hole in container after tough treatment. Approximately 8L onto hardstand area
- 29/4/18 – Engine oil spill in contractor’s laydown yard
- 3/9/18 – Hydraulic hose blown in pit. <20L of fluid lost

This compares to seven minor hydrocarbon spills in 2017, six hydrocarbon spills in 2016, four minor hydrocarbon spills reported in 2015. No major spill incidents were reported.

### 6.6.1 Management Measures

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 will assist in the prevention of land contamination.

### **6.6.2 Proposed Improvements**

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



## 7 Water Management

Following a substantial consultation and revision period, the TGO Water Management Plan (WMP) including water balance was updated in 2017 to include changes as a result of the downstream buttress construction on the RSF and the commencement of backfilling of the WY3 pit.

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 11 presents these measures and where each measure is addressed in this Water Management section.

Table 11: Water Performance Measures (PA 09\_0155, Schedule 3, Condition 27)

Feature	Performance Measure	Relevant Section
Water management - General	Minimise the use of clean water on site  Minimise the need for make-up water from external potable water supplies	7.1
Construction and operation of infrastructure	Design, install and maintain erosion and sediment controls generally in accordance with the series <i>Managing Urban Stormwater: Soils and Construction</i> including Volume 1, Volume 2A – Installation of Services and Volume 2C – Unsealed Roads  Design, install and maintain the infrastructure within 40 m of watercourses generally in accordance with the: <ul style="list-style-type: none"> <li>• <i>Guidelines for Controlled Activities on Waterfront Land (DPI 2007)</i>, or its latest version</li> <li>• <i>Guidelines for fish habitat conservation and management – Chapter 4 (DPI 2013)</i>, or its latest version.</li> </ul>	7.5
Clean water diversion & storage infrastructure	Design, install and maintain the clean water system to capture and convey the 100 year ARI flood  Maximise as far as reasonable and feasible the diversion of clean water around disturbed areas on site	7.3
Sediment dams	Design, install and maintain the dams generally in accordance with the series <i>Managing Urban Stormwater: Soils and Construction – Volume 1 and Volume 2E Mines and Quarries</i> .  Ensure the capacity of all sediment dams is sufficient to contain rainfall up to a 10 day 90 percentile rain event	7.5
Mine water management system, including residue storage facility and associated collection pond	<ul style="list-style-type: none"> <li>• No unlicensed or uncontrolled discharge of mine water off-site (except in accordance with condition 23)</li> <li>• Ensure that the capacity of the residue storage facility and associated collection pond is designed to meet the requirements of the <i>Environmental Guidelines – Management of Tailing Storage Facilities (Vic DPI, 2004)</i>, or its latest version, and that the floor and walls are lined to achieve a permeability standard of at least 1 x 10<sup>-9</sup> m/s, unless otherwise agreed by the EPA and the Secretary</li> <li>• Maintain adequate freeboard (i.e. minimum 500 mm) in the residue storage facility at all times</li> <li>• 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<sup>-9</sup> m/s, unless otherwise agreed by the EPA and the Secretary</li> <li>• Maintain adequate freeboard (i.e. minimum 200 mm) in the process water and raw water dams at all times</li> </ul>	7.4
Chemical and hydrocarbon storage	Chemical and hydrocarbon products to be stored in bunded areas in accordance with the relevant Australian Standards	6.6.1
Gundong Creek	Maintain or improve baseline channel stability	7.3



	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	
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## 7.1 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 licencing.

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 527 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 12: Water Supply

Water Licence	Water sharing plan, source and management zone (as applicable)	Entitlement (ML)	Passive take / inflows	Active pumping	TOTAL
WAL20270 (Narromine Pipeline)	Lower Macquarie Zone 6 Groundwater Source	1000	nil	566.5	566.5
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	403*	nil	403
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

## 7.2 Water Balance

As part of the WMP finalisation, the site water balance was reviewed during the last reporting period. The water balance indicates that TGO is dependent on raw water imported via Narromine pipeline which is expected to account for approximately 50% of TGO’s water supply. The modelling also predicts minimal risk of offsite discharge, although the risk always remains.

Given the end of open cut mining and the start of underground mining during the next reporting period, GHD has been engaged to review the WMP in Quarter 2 of 2019 and it is proposed that there will be physical changes to the site footprint that will require further review of the water balance.

### 7.3 Clean Water Management (Surface)

For reporting purposes, clean water management is divided into:

- Site Water;
- Gundong Creek; and
- offsite discharge.

#### 7.3.1 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. Site drains and sediment basins were remediated as discussed in Section 7.5.

#### 7.3.2 Gundong Creek

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

Gundong Creek did not flow or was dry due to prolonged drought conditions with no samples taken during the reporting period. These conditions have resulted in very dry and grazed low ground covers, with only some of the hardiest having some limited green stem growth. The integrity of the small leaky weirs had been compromised by fast flowing water in previous reporting periods.

With no results from the 2018 reporting period, the 2017 results are consistent with sampling from 2014, 2015 and 2016 which generally indicated levels of copper, lead and zinc at both SW01 and SW02 above the adopted EPL 20169 concentration limits.

#### 7.3.3 Discharge

During and following a heavy, un-forecasted rain event of severe intensity on 17 October 2018, dirty water was discharged off the mining lease from the Clean Water Drain as a result of limited erosion over a short distance on the internal bund between the Clean and Dirty Water Drains. This discharge occurred for approximately 18 hours.

The water is classified as being “dirty water” in the TGO WMP. The volume of the discharge is unknown. TGO activated its Pollution Incident Response Management Plan and notified the EPA. TGO installed a temporary patch over the area of erosion to prevent any further discharges from the area and engaged an independent consultant to provide a design to repair the area to prevent a re-occurrence. A full report was provided to the EPA, DPE and NSC.

During and following a subsequent heavy, un-forecasted rain event of severe intensity on 13 December 2018, dirty water was discharged off the mining lease from the Clean Water Drain as a result of limited erosion over a short distance on the internal bund between the Clean and Dirty Water Drains, upstream of the area covered by the patch in response to the events of 17 October 2018. Only a small amount of water was able to leave site and travelled approximately 50m from the mining lease.

The water is classified as being “dirty water” in the TGO WMP. The volume of the discharge is unknown. TGO activated its Pollution Incident Response Management Plan and notified the EPA. TGO installed a second, lengthened temporary patch over the area of erosion to prevent any further discharges from the area and adjusted the required repair to suit the larger area. This event was not related to the event on 17 October 2018 and was not as a result of any failures of TGO’s initial responses to that event. A full report was provided to the EPA, DPE and NSC.

## 7.4 Mine Water Management

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

- **Sediment Laden Water** - retained in sediment basins. If required, flocculated to promote the settlement of sediment load and/or pumped to Wyoming Central Dam (WyCD) large cell.
- **Open cut pit water** – retained onsite in the WyCD - large cell 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 Sediment Basin 1.
- **Onsite sewerage** - treated at an onsite treatment plant and used to irrigate site revegetation areas.

Table 13: Stored Water

Description and structure name	Storage Capacity m <sup>3</sup>	Start of Reporting Period m <sup>3</sup>	At end of Reporting Period m <sup>3</sup>
Raw Water Dam <sup>1</sup>	10,700	10,700	10,700
WyCD – small cell	14,000	9,520	10,000
WyCD – large cell	140,000	140,000	17,000
Residue Storage Facility	423,870 <sup>2</sup>	52,500	20,000
Process Water Dam <sup>1</sup>	9,200	7,500	8,004

<sup>1</sup> Operational water storage - volumes fluctuate frequently based on operational demand.

<sup>2</sup> Water storage capacity as at January 2019.

Decant water from the RSF is sampled twice daily during the reporting period for Weak Acid Dissociable (WAD) Cyanide, with no WAD Cyanide concentrations above the 90<sup>th</sup> percentile limit of 20 mg/L. This is consistent with the 2017, 2016 reporting period compared to two WAD Cyanide samples in 2015 and one sample in 2014 above 20mg/L (but still below the maximum limit of 30mg/L).

## 7.5 Erosion and Sediment Control

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

Works were carried out on a number of occasions throughout the reporting period to desilt culverts under the WRE3 haul road dirty water crossing and at the entrance to Sediment Pond 4.

Plans were put in place to remediate the areas of limited erosion over a short distance on the internal bund between the clean and dirty water drains and desilt the length of this drainage line. It is expected that these works will commence in early 2019

## 7.6 Groundwater

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

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

As shown in Table 14, three of the seven bores (WYMB03, WYMB04 and WYMB10) recorded relatively steady groundwater levels during the reporting period. WYMB01 and WYMB06 are to the south of site and are influenced from rain fall and surface water inflows into the historic McPhails underground workings. Levels and water quality are not influenced by site activities. WYMB04, WYMB03, WYMB04 and WYMB10 are deep bores around the perimeter of the mine and show very little movement in depth consistent with them 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.

Field and laboratory water quality measurements for the reporting period were also comparable to the previous reporting period. Water quality trigger values based on the 95% species protection recommended by ANZECC and ARMCANZ (2000a) have been adopted only for bore GDCMB01 due to its location within the alluvium. Due to the high electrical conductivity of water within the deep aquifers, and no registered production bores within 8km of TGO, trigger values for the deep water bores (WYMB01 – 04, WYMB06 and WYMB10) are based on community groundwater complaints. No groundwater complaints were received during the reporting period consistent with the previous reporting period. GDCMB01 exceeded the adopted water quality trigger values for Copper in four of the four monitoring rounds for 2018. Copper exceedances were also recorded in the 2015, 2016 and 2017 reporting period. Single round exceedances were also recorded for Nickel (March), double round exceedances for Iron and Lead (March and September). Exceedances for these metals were also recorded in the previous reporting period. Analytical results are shown in Appendix 4.

Table 14: Groundwater bore water levels during reporting 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)
March	-34.28m	-59.95m	-53.98m	-62.18m	-33.02m	-71.96m	-1.64m
June	-34.31m	-59.98m	-53.99m	-64.3m	-33.08m	-72.1m	-1.72m
September	-35.49m	-62.95m	-52.4m	-62.13m	-37.17m	-71.93m	-1.99m
December	-35.86m	-63.15m	-53.1m	-62.06m	-34.41m	-71.86m	-2.06m
Range (within period)	1.58	3.2	1.59	2.24	4.15	0.24	0.42

### RSF Piezometers

Monitoring piezometers RSFMB01, RSFMB02, RSFMB04 and RSFMB09, were dry throughout the reporting period with RSFMB 01 indicating a steady rise in depth during the reporting period.

During the reporting period, no samples were collected from RSFMB01, RSFMB02, RSFMB04 and RSFMB09. While other piezometers were pumped quarterly, no bore produced a quantity of water that was able to be sampled.

RSFMB03 was removed in the 2016 reporting year due to further operational development, and was not reinstated during this reporting period. No other improvements are proposed to groundwater management at TGO in the next reporting period.

Results show that water chemistry is consistent with it being water from existing shallow aquifers as were intercepted during the RSF construction, indicating that there is no seepage from the RSF.

## **7.7 Environmental Assessment Predictions**

### **7.7.1 Surface Water**

Through an ongoing process of continual improvement and review of the water catchments, the site continues to improve performance in relation to dirty water surface management. 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.

### **7.7.2 Ground Water**

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



## 8 Rehabilitation

The 2018 Annual Review reporting period was the fifth year of mining operations at TGO and largely overlaps with the 2017/18FY. To ensure the MOP tables align with the TGO FY based works schedule, the rehabilitation completion figures are now based on a FY rather than a Calendar Year. Whilst this conflicts with the timing of this report, it presents a more accurate record of the rehabilitation completed, commenced and planned. It should also be noted that the MOP 'year' was reset, 2017/18 FY is MOP Year 1.

The amended MOP progressive rehabilitation table (MOP Table 20), 101.6ha of final rehabilitation is scheduled to have been seeded by the end of the 2018/19 FY:

101.6 ha of Primary Domain 4 – *Waste Rock Emplacements / Secondary Domain C Woodlands*; TGO is ontrack to complete this work by 30 June 2019.

### 8.1 Rehabilitation during reporting period

During the reporting period, The Figure 4 shows land management activities completed for the reporting period. These works included:

- Completion of seed and ground cover application to WRE2, with the exceptions of ramp tie in areas to final land form design (Plate 3)
- Completed bulk shaping of WRE3 (Plate 4)
- Construction of down slope drains and berm drains on WRE2 and WRE3 (Plate 3 and 4)
- Completion of 'doming' of the dump top on WRE3 to ensure the dump top drains to the down slope drains
- Pushing out of topsoil to a nominal depth of 200mm on WRE2 and WRE3 (Plate 3 and 4)
- Aerial fertilising of completed rehabilitation areas on amenities bund, WRE2 and WRE3
- Stockpiling and sorting of waste rock for downslope drains, berm drains and rip-rap for future use on site.

Progress against key rehabilitation performance indicators is shown in Table 15. Mine disturbance and rehabilitation activities are shown on Figure 4.



Plate 3: Reshaping and rehabilitation works at WRE 2.





Plate 4: Reshaping and revegetation at WRE 3.

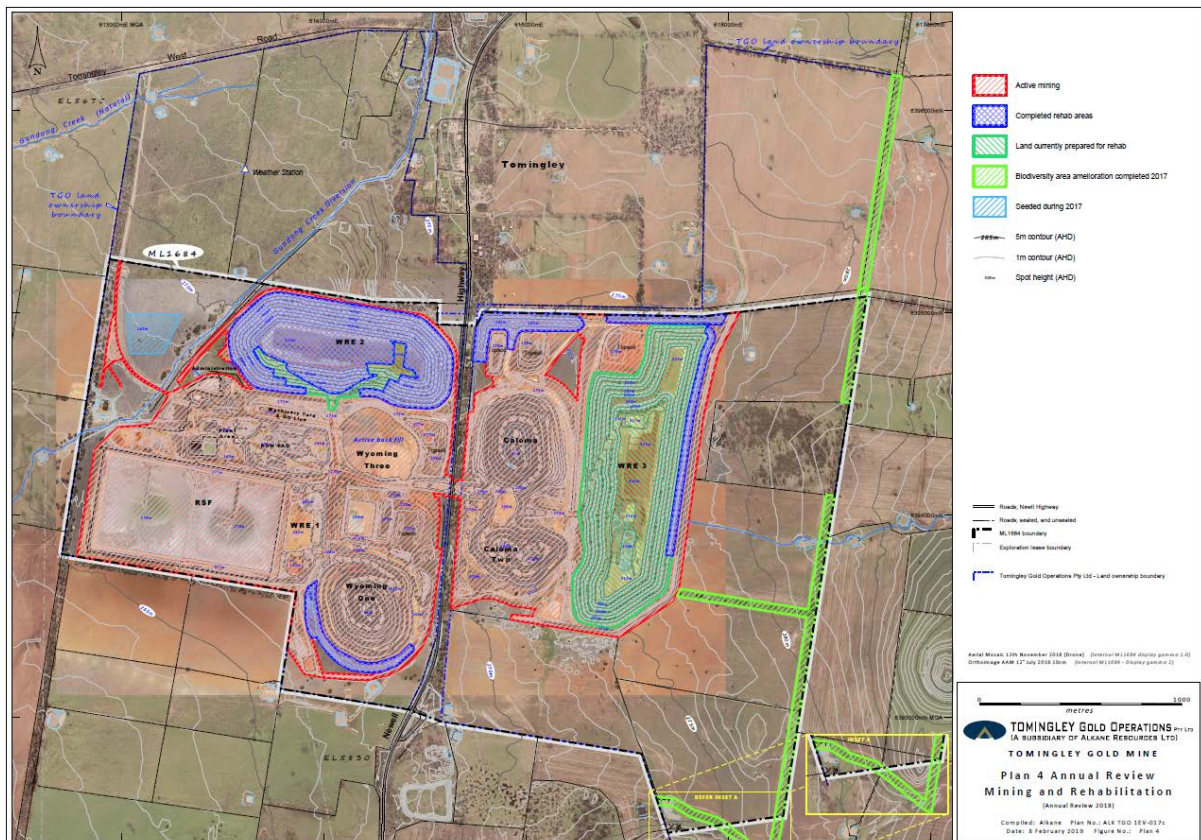


Figure 4: Rehabilitation and land management activities completed during the reporting period.

## 8.2 Post Rehabilitation Land use

As approved in the MOP, the TGO 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
- Conservation and Biodiversity Offset – registered offset areas under PVP.

These post-rehabilitation land uses are shown on MOP Plan 4, included as Figure 5.

## 8.3 Buildings, Infrastructure and other Rehabilitation

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

## 8.4 Completed Rehabilitation

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

Table 15: Rehabilitation Status

Mine Area Type	Reporting Period FY18/19 to date EOM December 2019	Next Reporting Period (Forecast)
	MOP Year 2 (ha)	MOP Year 3 (ha)
A. Total mine footprint	434.9	434.9
B. Total active disturbance	405	405
C. Land being prepared for rehabilitation	3.8	0
D. Land under active rehabilitation	18.5	0
E. Completed rehabilitation	95.4	135.6



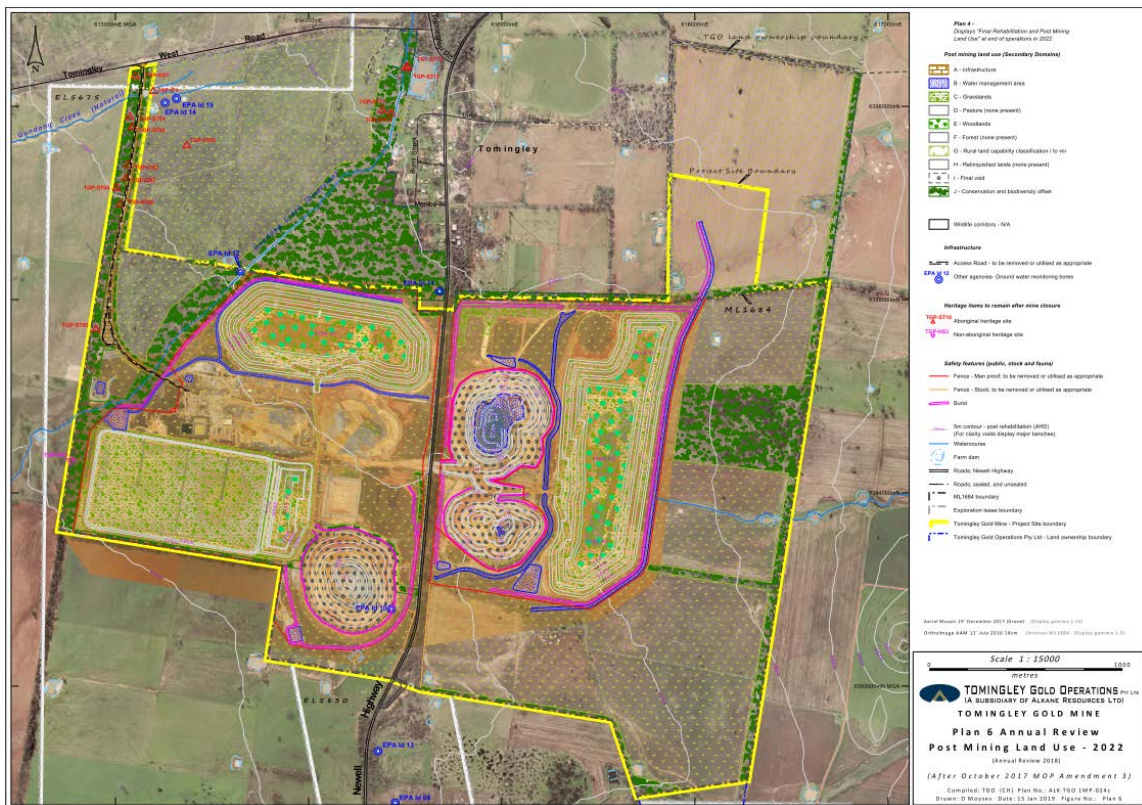


Figure 5: MOP Plan 4 showing proposed final land uses at TGO

## 8.5 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 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 6.4.1 for details).

During 2016 biodiversity monitoring, the first rehabilitation monitoring plots was established and monitored, along with two pasture reference sites. 2 additional pasture monitoring sites were established in 2017. Monitoring is carried out annually by DNA Environmental with a comprehensive report tracking progress over time. (see Appendix 3)

## 8.6 Key rehabilitation risks

As mentioned in Section 8.5, the main threats to successful rehabilitation stem from the sodic properties of the subsoil and near surface overburden that dominate the TGO project area. The WRE design, devised to address this threat, has undergone review during the reporting period. No changes were made to the overall design however TGO is now using 63mm graded stone on the berm drains. It was necessary to review the berm drain treatment due to a deficiency of crusher dust on site.

SLR Consulting have also recommended that the pasture areas have a DAP fertiliser applied. This occurred on 17 April 2018 and was undertaken using a helicopter. This method has proven successful in producing strong growth and thus will be used going forward when required.

## **8.7 Actions for next reporting period**

During the next reporting period it is scheduled that WRE2 and WRE3 rehabilitation will be finalised by July 2019 subject to favourable weather conditions. It is also planned that all LFE will be finalised by January 2019 and LUE by June 2019 as is required.



## 9 Community

### 9.1 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 ten member committee representing TGO, the local community, the Aboriginal community. During the reporting period, the CCC met on the:

- 22 February;
- 24 May;
- 23 August; and
- 22 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](http://www.alkane.com.au)). Quarterly CCC meetings will continue in the next reporting period.

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;
- Sending issue-specific letters to the residents of Tomingley regarding TGO's approach to sensitive issues such as residential acoustic treatment.

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

### 9.2 Support

Over the life of the mine, TGO has committed to contribute (subject to annual CPI increases):

- \$430 000 to the Tomingley Gold Project - Community Fund
- \$360 000 for road maintenance and
- \$160 000 for Narromine Shire Council environmental 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 from Narromine Shire Council, based on annual applications from community members, groups or organisations.

#### 9.2.1 Tomingley Village Water Supply

A variation to the Voluntary Planning Agreement with Narromine Shire Council (NSC) was agreed in March 2016, prior to approval of MOD 3. A component of the varied agreement required TGO to fund a 'water supply options' report to investigate the practicalities of providing water to the township of Tomingley using the Narromine pipeline. GHD was commissioned to do the work with the draft report provided to Council in November 2017.

TGO installed valves and a pipeline connecting the Narromine – TGO borefield pipeline to the NSC water supply dams. This will ensure that the village has a reliable supply of raw water whilst ever the mine is operational. Upon mine closure the entire system will be handed over to the NSC.

### 9.3 Complaints and enquiries

TGO manage complaints in accordance with the protocols and procedures contained in the EMS. During the reporting period, 3 complaints were received. These complaints were received through the community information line or other Alkane/TGO phone lines. TGO complaint history is presented in Table 16, with complaint number and type for the current and previous reporting periods.

TGO staff responded to all complainants and conducted investigations into specific concerns. Investigation outcomes consisted of corrective action, where required, and follow-up communication with the complainant. All enquiries and complaints have been closed out for the reporting period.

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. A copy of the TGO community complaints register for the reporting period is included as Appendix 6.

Table 16: TGO complaint history

Year	Number of complaints	Complaint Type				
		Dust	Noise	Blasting	Traffic/ Road Safety	Other
2018	3	1	0	1	0	1 (radio signal affected)
2017	5	0	3	0	0	1 (use of TGO land)
2016	18	1	10	0	3	4 (lighting, TV reception)
2015	16	2	11	3	0	0
2014	53	11	35	2	4	1 (UHF radio misuse)
2013	9	4	0	0	3	2 (property damage)
2012	2	0	0	0	0	2 (property damage)

## 10 Independent Audit

An Independent Environmental Audit (IEA) of the TGO was conducted during March 2018. This is the second IEA since operation. Pitt & Sherry were commissioned by TGO to undertake the audit in accordance with the Project Approval conditions PA 09\_0155- MOD3 Schedule 5 Condition 8.

The audit team was approved by the Secretary for DP&E and included experts in the areas of rehabilitation, ecology and surface water. Before conducting the audit consultation with the relevant authorities was undertaken by Pitt & Sherry. A letter from the Department of Industry – Water was received which requested the audit consider compliance with the relevant water licensing requirements for the mining operation, specifically; assessment as to whether the project holds the required water entitlements and licences under the Water Management Act 2000 or Water Act 1912 (as applicable), compliance with the conditions of any water licences/approvals held, identification of all water storages for the mine and identification of their licensing. TGO was found to be compliant with the request from DoI Water.

The final IEA report along with TGO's responses to the recommendations was submitted to DP&E on 26 October 2018.

The IEA identified some non-compliances against conditions of Project Approval PA 09\_0155- MOD3 and other licences and approvals. The audit identified a total of forty-three non-compliances comprised of five issues. The non-compliances were risk ranked. Seventeen issues were identified as low risk and eighteen issues classified as administrative in nature. Seven were classified as medium and one as high risk. The high-risk non-compliance was in relation to the storage of all dangerous and hazardous goods across the site (and in particular in the compounds/ workshop).

The field inspection revealed environmental management activities observed during the site inspection were being carried out in a competent manner, with very few non-compliances identified by the Auditor. During the site inspection opportunities for improvement were identified in the Dangerous Goods / Waste storage area. An observation was made during the site inspection which included recently delivered oil drums that had been located on a non-compliant banded pallet. It is understood these drums were located this way temporarily due to them just being delivered to the site. Batteries were also observed being stored on the ground unbanded.

The IEA report also provided a series of recommendations arising from a review of site documentation and identified non-compliances. These recommendations along with TGO's responses to the recommendations are included in Appendix 8.

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 prior to the end of 2021..

## **11 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.

### **11.1 Exceedance of 24 hour average PM<sub>10</sub> and deposited dust criteria**

Monitoring of particulate matter at the nearest residence to TGO identified thirty exceedances of the 24 average PM<sub>10</sub> criteria as included in Schedule 3, Condition 17 of PA 09\_0155. Each of these exceedances were investigated and 1 reported to NSW government regulators. These exceedances were as a result of combinations of the ongoing drought conditions, unfavourable winds, farming activity in adjacent areas and were not as a result of mining related activity. Examples of the weather conditions that lead to these high readings can be seen in Appendix 7.

## 12 Activities to be completed in next reporting period

Environmental activities and initiatives to be implemented in the next reporting period will focus on reduction of offsite impacts such as noise and dust, management of biodiversity offset areas, refining WRE rehabilitation processes, and increasing the rate of rehabilitation. Details on these activities are shown in Table 17.

Table 17: Environmental management activities proposed for 2018

<b>Proposed Activities</b>	<b>Location</b>	<b>Proposed Completion Date</b>
Feral animal trapping program in offset areas	Offset areas	Ongoing
Control of boxthorn and other noxious weeds	TGO site and offset areas	2019
Carry out LFA monitoring of biodiversity and rehabilitation areas.	Biodiversity and rehabilitation areas	October 2019
Ongoing rehabilitation of WRE2 and WRE3	Waste rock emplacements	July 2019 WRE 2, July 19 WRE3
Noise, air quality, blasting and water quality monitoring in accordance with EPL and PA.	TGO site and district	Ongoing
Sorting of waste rock for down slope drains and future remediation and drainage works	WRE 3	Ongoing
Underground work commenced.	TGO site and district	Ongoing