



**ALKANE**  
RESOURCES LTD  
ABN 35 000 689 216

# **ANNUAL ENVIRONMENTAL MANAGEMENT REPORT**

for the

## **PEAK HILL GOLD MINE 2018**



Parker's cutback looking south. Photo taken 13 March 2018.



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## **PEAK HILL GOLD MINE**

### **2018**

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7 January 2019

**Peak Hill Gold Mine****Annual Environmental Management Report 1 January to 31 December 2018**

Name of Mine: Peak Hill Gold Mine

MOP Commencement Date: 1 July 2014

MOP Completion Date: 17 January 2022

Mining Authorisations (Lease / License No.): MLs1351, 1364, 6036, 6042, 6277, 6310, 6389, 6406, 1479, GL5884

Land Owner/Occupier: Alkane Resources Ltd

Tenure: Freehold (Lot 81) and leasehold

Pre-mining Landuse; Lot 81 – Agriculture with remainder mining 1889-1917 and easements in favour of Parkes Shire Council

Name of Authorisation / Authorisation holder(s): Alkane Resources Ltd

Name of Mine Operator (if different): N/A

Name and Contact Details of the Mine Manager (or equivalent):

Michael Sutherland

General Manager NSW

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Dubbo, NSW, 2830

Phone: (02) 6882 2866 Mob: 0427 691733

Name and Contact Details of Environmental Representative:

As above

Name of Representative(s) of the Authorisation Holder(s): Michael Sutherland

Title of Representative(s) of the Authorisation Holder(s): General Manager NSW

Signature of Representative(s) of the Authorisation Holder(s):



Due Date 1 March 2019

Final

Version: 1

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## **1. INTRODUCTION**

### **1.1. SCOPE AND FORMAT**

#### **1.1.1. Scope**

This Annual Environmental Management Report (AEMR) for the Peak Hill Gold Mine (“the Mine”) has been prepared by Alkane Resources Ltd (“the Company”) following the EDG12 Small Mine AEMR Guide (2012).

The reporting period for the Peak Hill Gold Mine AEMR is 1 January to 31 December.

A letter from NSW Planning & Environment (dated 8 May 2017) established a due date for reporting as 1<sup>st</sup> March.

The mine has an approved (30 March 2016) Mining Operations Plan 2014-2022 for the Peak Hill Gold Mine (MOP) to take the site through to relinquishment or renewal by 17 January 2022.

The Mine is located immediately east and northeast of the township of Peak Hill, in the Central West of NSW (**Figure 1** and **Plan 1A**).

The Mining Leases (MLs) were issued in 1993, 1994, 1995 and 2001. The key MLs for the Peak Hill Gold Mine were issued to Alkane by the Minister for Mineral Resources in 1993 (see **Plan 1C**). As additional resources were identified through exploration drilling, additional MLs were granted to form a contiguous area for mining and gold processing for the purpose of this document the area covered by MLs is referred to as the “Mine Site”. Freehold agricultural land (now Lot 81 DP 12155789) was purchased to accommodate the mine infrastructure

Consent Conditions Development Application 648/93, issued by the Parkes Shire Council on 2 September 1993 are contained in Appendix II of the MOP.

The MOP incorporates the Rehabilitation Management Plan as required under Condition 3(53) of new Project Approvals.

#### **1.1.2. History of Operations**

The Peak Hill Gold Mine operated as a drill and blast open cut gold mine between 1996 and 2002. Gold was extracted using heap leach cyanide technology until 2005 - when the last gold was poured on 20 December 2005.

The Waste Rock Emplacement, ROM Pad and haul roads were rehabilitated in December 2002 before the MacMahon Contractors mining fleet demobilised from site (**Plan 2**).

When gold production ceased from the heap leach in November 2005, that landform was reshaped and rehabilitated by McCutcheons Earthmoving and the Soil Conservation Service designed and built the downslope structures.

All but 8.5Ha of the mine site was rehabilitated by 2005 and the site has essentially been under care and maintenance since then. A site Supervisor, based in Peak Hill, maintains the mine site.

The final steps in rehabilitation of the site will be taken between 2021 and 2022 as outlined in the approved MOP (2015).

Gold Production from the Peak Hill gold mine from October 1996 to December 2005 was 153,657 fine ounces.

The Open Cut voids are a feature of a tourist mine, operated by Parkes Shire Council offering free access to the public during opening hours. A Tourist Mine Permit was issued by the Minister in 2003.

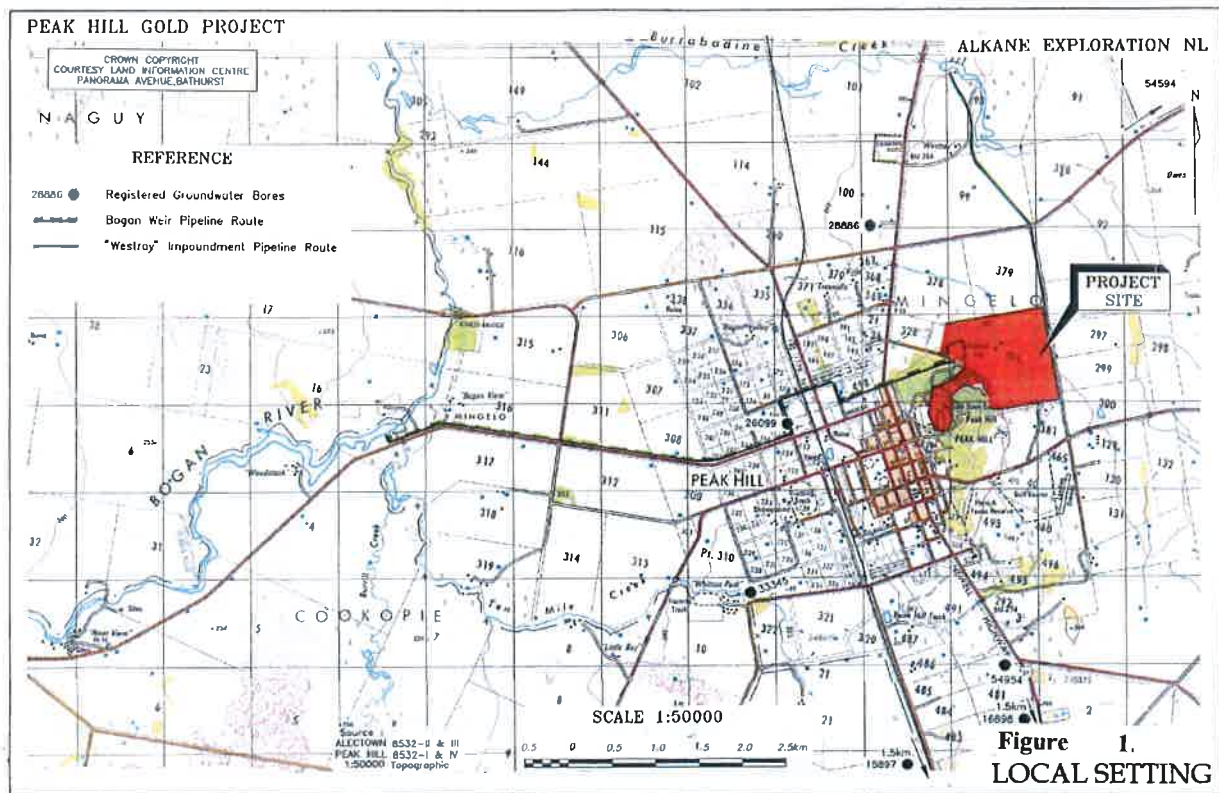
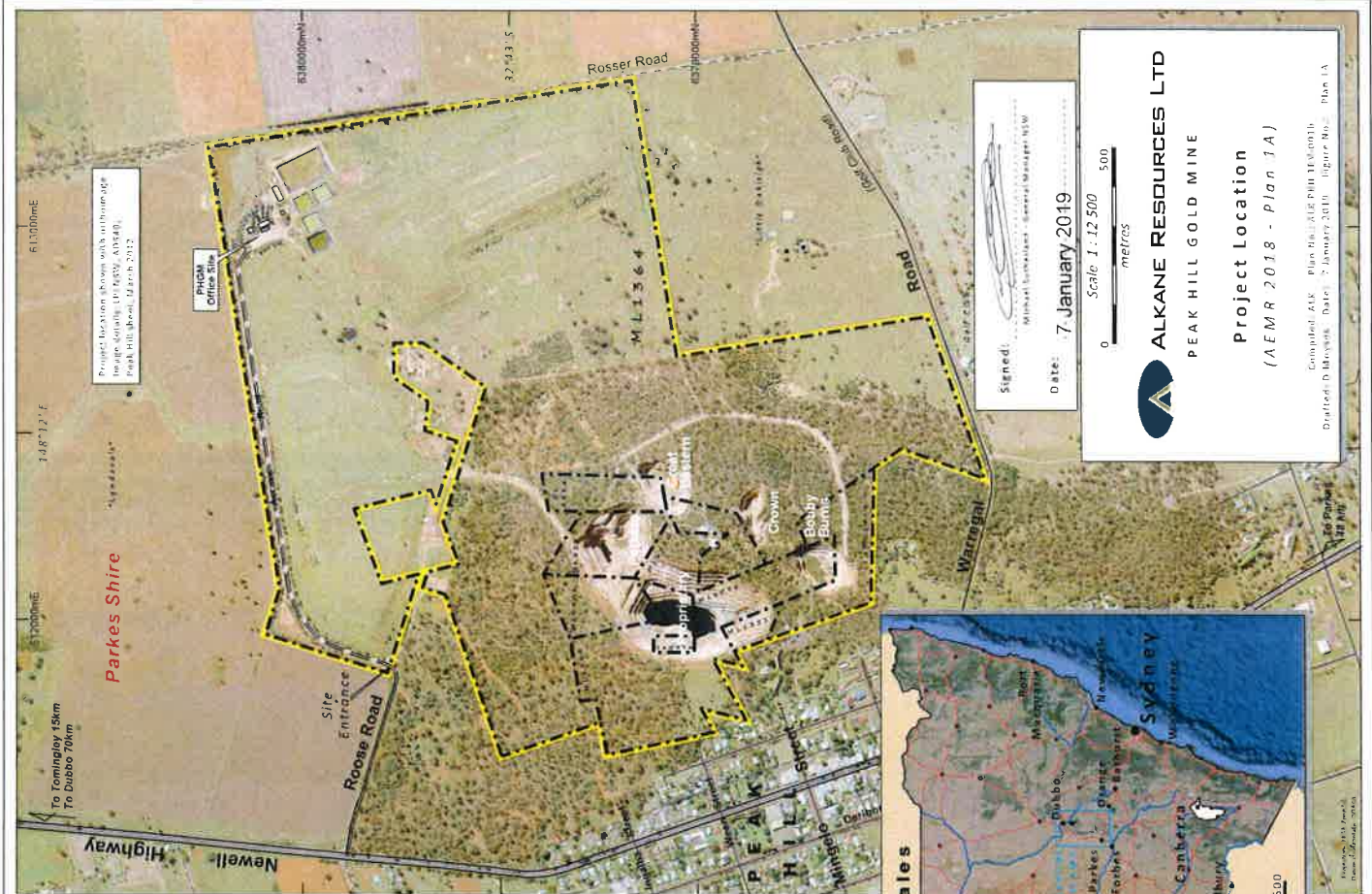
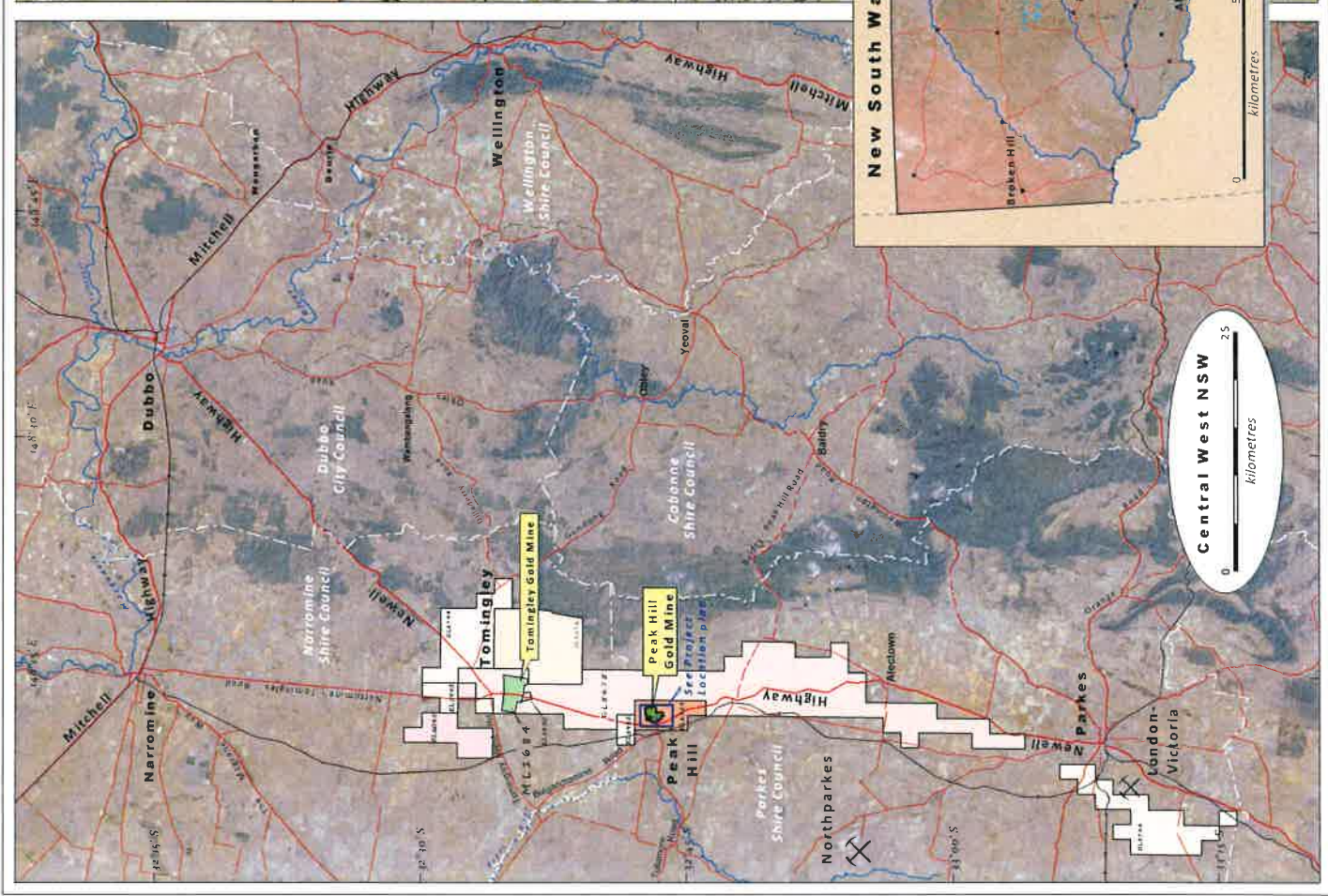


Figure 1. LOCAL SETTING

Figure 1: Peak Hill Gold Mine Local Setting (source: EIS 1993)



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**PEAK HILL GOLD MINE**

**Project Location**  
*(AEMR 2018 - Plan 1A)*

Signed: Michael Schwanck - General Manager NSW  
 Date: 7 January 2019  
 Scale 1:12 500  
 metres

Computed: AEMR - Peak Hill Gold Mine  
 Drawn: AEMR - Peak Hill Gold Mine  
 Date: 7 January 2019  
 Figure No.: Plan 1A

Project location shown with infrastructure  
 Image courtesy of PEXS, AEMR  
 Peak Hill sheet, March 2012

To Tomingley 15km  
 To Dubbo 70km

Parkes Shire

PHGM  
 Office Site

Site  
 Entrance

Roope Road

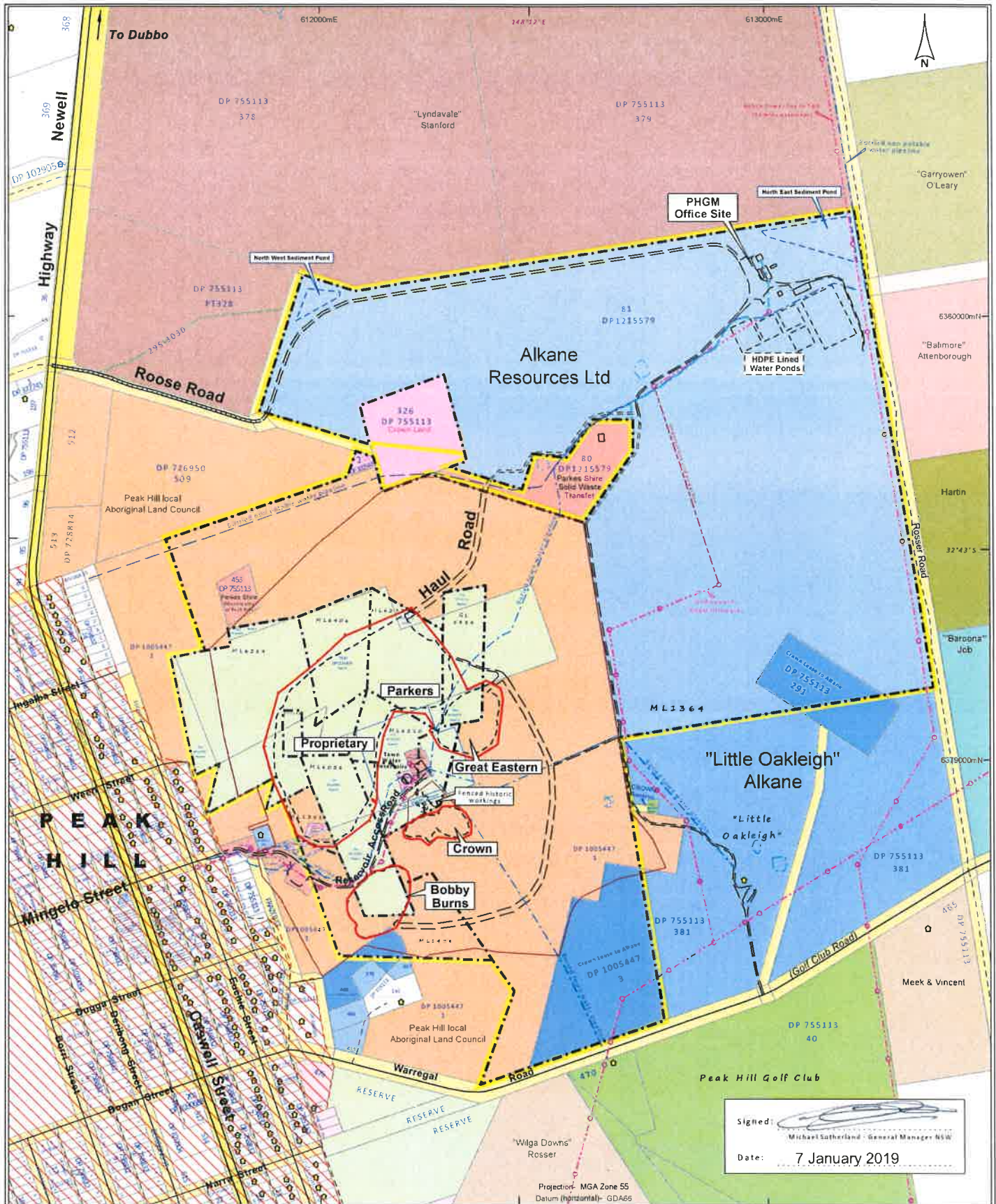
Rosser Road

New South Wales

Central West NSW

kilometres

metres



Signed:   
 Michael Sutherland - General Manager NSW  
 Date: 7 January 2019

Projection: MGA Zone 55  
 Datum (horizontal): GDA66

Scale 1 : 8 000  
 0 500 metres



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PEAK HILL GOLD MINE

**Mining Environment - December 2017**

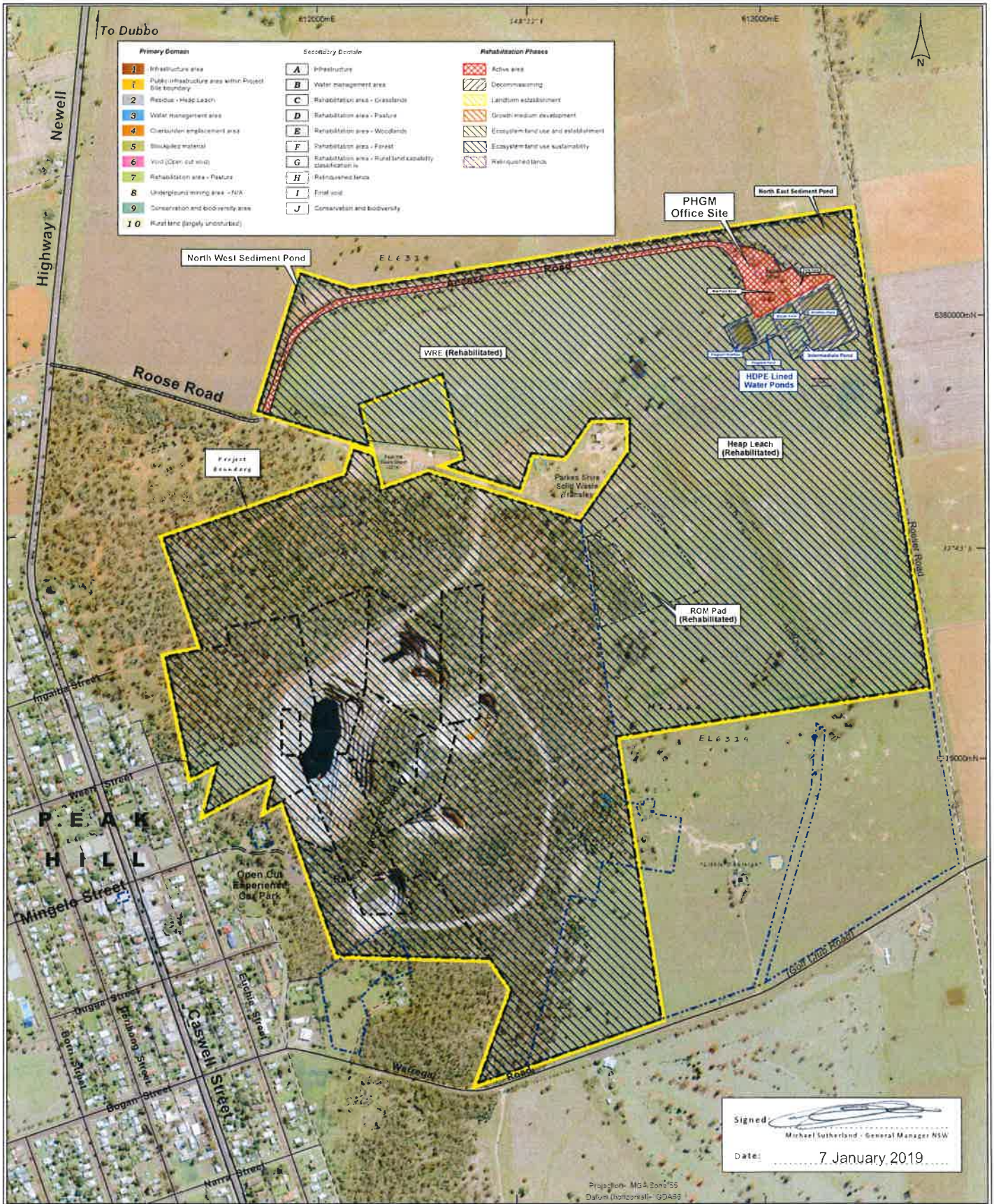
**Built Environment**

(AEMR 2018 - Plan 1C)


Compiled: ALK Drafted: D Moyses Plan No: ALK PKH 1EIV/002c  
 Date: 7 January 2019 Figure No: Plan 1C

- |  |  |   |
|--|--|---|
| <p> Built up area (penetration not indicated)</p> <p><b>Built environment:</b></p> <p> Casualty toll with lot and DP/Mineral to table same (no uncoloured unless next neighbour)</p> <p> Land owned by Alkane Resources (including look-alike)</p> <p> Road reserve (former place road)</p> <p> Crown land - various activities and vesting</p> <p> Crown land - various Reserve vesting</p> <p> Parkes Shire Council</p> | <p><b>Infrastructure</b></p> <p> Building (filled) area</p> <p> Neighbouring residences - primary building per council (EAL of highways)</p> <p> Access Road - Private Road (maintained for life logging and consistency of access)</p> <p> Buried - potable town water (non-potable water)</p> <p> Fencer line and poles</p> <p> Buried service (water/sewer/power to Macdonalds sites/flow control)</p> <p><b>Safety features (public, stock and fauna)</b></p> <p> Fence - Main plot to be removed or replaced as appropriate</p> <p> Fence - to be removed or utilised as appropriate (unreliable)</p> | <p> Farm dam</p> <p> Lot boundary (topography)</p> <p> Historic windrows and waste rock dumps (1993 photography)</p> <p> Roads - Newell Highway</p> <p> Roads - sealed and unsealed</p> <p> Mining lease boundary</p> <p> Exploitation lease boundary (EOL330 revert to ground external of Mining Leases within plans)</p> <p> Peak Hill Gold Mine - Proposal site boundary</p> <p> Alkane Ltd. vld consented boundary</p> |
|--|--|---|





Primary Domain		Secondary Domain		Rehabilitation Phases	
1	Infrastructure area	A	Infrastructure	Active area	
2	Public infrastructure area within Project Site boundary	B	Water management area	Decommissioning	
3	Residue - Heap Leach	C	Rehabilitation area - Grasslands	Landfill establishment	
4	Water management area	D	Rehabilitation area - Pasture	Growth medium development	
5	Chemical/leach area	E	Rehabilitation area - Woodlands	Ecosystem land use and establishment	
6	Stockpiles material	F	Rehabilitation area - Forest	Ecosystem land use sustainability	
7	Void (Open cut void)	G	Rehabilitation area - Rural land capability classification	Requisitioned lands	
8	Rehabilitation area - Pasture	H	Requisitioned lands		
9	Underground mining area - N/A	I	Final void		
10	Conservation and biodiversity area	J	Conservation and biodiversity		
10	Rural land (largely unutilised)				

Signed:   
 Michael Sutherland - General Manager NSW  
 Date: 7 January 2019

-  Roads, Newell Highway
-  Roads, sealed and unsealed
-  Mining lease boundary
-  Exclosure lease boundary (EL6318 covers all ground external of Mining Lease work plan)
-  Peak Hill Gold Mine - Project site boundary
-  Alkane - Land ownership boundary (including leased land) June 2014

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 PEAK HILL GOLD MINE  
 Mine Domains at  
 31 December 2018  
 (AEMR 2018 - Plan 2)

**1.2. CURRENT CONSENTS, AUTHORISATIONS AND LICENSES**

**Table 1** presents the consents, authorisations and licences held in relation to the Mine.

**Table 1 - Current Consents, Authorisations and Licenses**

Number	Granted by	Grant Date	Expiry Date	Purpose	
<b>Development Consent</b>					
DA 648/93	Parkes Shire Council	3 September 1993	NA	Development Consent – Open Cut Gold Mine and heap leach gold extraction plant	
DA 648/93	Parkes Shire Council	16 August 1994		Modification of Development Consent (Parkers Extension)	
DA 1033/97	Parkes Shire Council	15 July 1997	NA	Extension of Processing Operations	
DA 1049/97	Parkes Shire Council	5 August 1997		Garth Bore Pipeline	
DA 1080/97	Parkes Shire Council	6 February 1998		Main Tailings	
DA 99253	Parkes Shire Council	20 April 2000		Great Eastern	
DA 00174	Parkes Shire Council	8 December 2000		Bobby Burns Pit	
DA 01072	Parkes Shire Council	20 June 2001		Parkers Cutback	
DA 01162	Parkes Shire Council	20 November 2001		Crown Pit	
DA 15039	Parkes Shire Council	25 June 2015		Retention of Mine Buildings at PHGM	
Subdivision Certificate 15008	Parkes Shire Council	30 July 2015		Waste Transfer Station	
Special Purpose Conditions	Mineral Resources	27 February 2003		Permit to Conduct Tourist Activities	
Section 138 Approval	Parkes Shire Council	19 November 2018	30 January 2019	Permit to occupy Footpath & Public Street	
<b>Mineral Authorities</b>					
ML1684	Minister for Mineral Resources	11 Feb 2013	11 Feb 2034	Mining activities at the Tomingley Gold Mine	
EL5675		17 Jan 2000	16 Jan 2017 (renewal pending)	Exploration Activities	
EL5830		05 Apr 2001	04 Apr 2022		
EL5942		03 May 2002	03 May 2024		
EL6085		20 May 2003	20 May 2024		
EL6319		12 Oct 2004	11 Oct 2020		
GL5884		12 Dec 1969	17 Jan 2022		Mining activities at the Peak Hill Gold Mine
ML1351		15 Jun 1994	17 Jan 2022		
ML1364		14 Mar 1995	17 Jan 2022		
ML1479		18 Jan 2001	17 Jan 2022		
ML6036			07 Mar 1968	17 Jan 2022	
ML6042			21 Feb 1968	17 Jan 2022	
ML6277			12 Mar 1971	17 Jan 2022	

Number	Granted by	Grant Date	Expiry Date	Purpose
ML6310		27 Aug 1971	17 Jan 2022	
ML6389		06 Apr 1973	17 Jan 2022	

## 1.3.

**Current Consents, Authorisations and Licenses**

Cont.

Number	Granted by	Grant Date	Expiry Date	Purpose
ML6406		25 Jan 1974	17 Jan 2022	
<b>Licences – Environmental</b>				
EPL5473	Environment Protection Authority	5 September 1999	Renewed annually	Regulation of noise, dust and water emissions from the Mine Site (provided as Appendix 4).
EPL5473	Environment Protection Authority	7 November 2003	NA	Notice of Variation of Licence
EPL 5473	Environment Protection Authority	28 January 2011	NA	Licence varied by correction to DECCW region record
EPL 5473	Environment Protection Authority	17 June 2014	NA	Licence variation 1505946
EPL 5473	Environment Protection Authority	3 December 2018	NA	Licence Variation (reflecting excision of 4Ha of ML 1364)
Licence 451536	Trade & Investment – Crown Lands	23 Feb 2010	NA	Licence for pipeline and pump site
WAL 28643	NSW Office of Water	1993	NA	300ML Water Access Licence – Bogan Weir
Source: Alkane Resources Ltd				

Table 2 (Cont'd)

## 1.3. LAND OWNERSHIP AND LAND USE

**Plan 1A** provides an aerial photo of the Mine Site and its surrounds. Land uses within and surrounding the Mine Site include the following:

- Urban residential and rural residential;
- Agriculture;
- Transportation (Newell Highway);
- Water Supply Infrastructure on Peak Hill, Reservoir access road, communications towers, rising and gravity water mains;
- Peak Hill Solid Waste Transfer Station off Roose Road (Lot 80 DP1215579);
- Commercial main street of Peak Hill;
- Recreation (Open Cut Experience - Tourist Mine);
- Former mining operations - namely Crown workings and alluvial mine shafts; and
- Bushland owned by Peak Hill Local Aboriginal Lands Council.

### 1.3.1. Community Consultation

Consultation was undertaken with the local community, indigenous representatives and relevant government agencies throughout the operating life of the Peak Hill Gold Mine and during mine closure planning.

Establishing a tourist mine, post mine closure, was a voluntary commitment made by Alkane Resources as a demonstration of its commitment to sustainable development. The community has been keen to have continued access to the mining leases on the hill post mine closure.

The Tourist Mine, formerly operated as the *Open Cut Experience*, attracted 11,000 visitors in 2003.

A community information session was hosted by Alkane at the Peak Hill Ex-Services and Citizens Club on 24 October 2018 to explain Alkane's proposed diamond drilling program from December 2018 to January 2019.

### 1.3.2. Government Agency Consultation

The following government agencies were consulted during the preparation of the 2014-2022 MOP.

- Department of Resources & Energy
- Environment Protection Authority.
- Parkes Shire Council.

In addition, a final draft version (September 2014) of the MOP document was provided to the Department of Industry Resources & Energy and comments received were taken into account when finalising the document.

The EPA issued a licence variation for the Peak Hill Gold Mine (EPL5473) on 3 December 2018. The variation was simply a slight change to the premise identification.

Alkane notified the Resources Regulator on 12 February 2018 of a small grass fire that was started by lightning on the northern edge of the ROM Pad on the evening of 9 February 2018. Alkane staff managed to extinguish the fire before the Peak Hill Fire Brigade could find access to the site.

## 2. MINING ACTIVITIES

### 2.1. PROJECT DESCRIPTION

The Peak Hill Gold Mine includes the following components (**Plan 2**).

- Mine site access road (off Roose Road).
- Three-bedroom transportable house with carport (ultimately to be removed).
- Mine site office, crib room, and steel shed (slab floor).
- Core shed, sea container (exploration access and continuing use).
- Five HDPE lined ponds (awaiting re-use or final rehabilitation).
- Rehabilitated Final Landforms (waste rock emplacement, heap leach and ROM Pad).
- Open cut voids (fenced):
  - Proprietary and Parkers Open Cut (including Parkers Cut Back);
  - Great Eastern Open Cut;
  - Crown Open Cut;
  - Bobby Burns Open Cut (partially back filled); and
  - Historic (1890-1915) Crown Workings and alluvial workings (fenced).
- Bobby Burns to Proprietary Haul Road (fire break).
- Buried water pipelines from “Westray”, the Bogan Weir and Peak Hill Sewage Treatment Works.
- A transformer and electrical distribution network within the Mine Site.
- Grassed waterways and sediment ponds in the northeast and northwest corners of the mine site.
- Three groundwater monitoring bores around the northeastern perimeter of the mine site.
- Viewing platform and 22 interpretive signs around the Open Cut Experience.

Parkes Shire Council has provided additional built infrastructure to the Tourist Mine during 2016 to enhance the visitor experience. Additional improvements – a large fabricated gateway/shelter/interpretive signs and two bronze sculptures and a sound post were installed by PSC in 2017. These improvements were officially opened by the Minister for Tourism, the Hon Adam Marshall on 11 August 2017.

**Table 2** below details the domains within the Mine Site, their size and major assets contained. Note that the areas detailed are based on maximum disturbance within the term of the MOP. A detailed description of each domain is provided in Section 5.1 of the MOP.

Table 2 - Major Assets per Domain

Domain	Size (approx. ha)	Assets	Use & Details
1 - Infrastructure Area	4.5	Roads: site access. Buildings: Including site office, house, crib room and amenities. Processing: Including shed, wet plant slab and man-proof fencing 5 HDPE-lined ponds (processing and overflow). A subdivision of 4 hectares of land from Lot 380 with former contractor infrastructure on it was approved by PSC and subsequently gifted by Alkane to PSC for use as a waste transfer station. A part cancellation (4Ha) of the Mining Lease 1364 took effect from 26 June 2017.	Roads provide access to open cuts, site entry and inspection to site areas. Buildings still in use and maintained. Wet plant structures removed from site in 2010 and only slab remains. Processing ponds contain rain water and pumped Bogan river water which evaporates during the year.
2 - Residue	24.2	5Mt of heap and dump leach (spent ore) contoured to direct runoff to a downslope rock-lined flume. Includes 0.6Ha dump leach trial area The crushed ore in the heap leach does have some commercial value as construction material. RMS used spent heap leach material for shoulder widening on Newell Highway in 1999.	Rehabilitated as a final landform. Well grassed with mixed pasture sward. Some natural regeneration of trees and shrubs.
3 - Water Management Area	1.5	Includes two sedimentation ponds, dam near former contractor's area and grassed table drains and waterways.	Table drains and grassed waterways are designed to manage rainfall runoff.
4 - Overburden Emplacement Area (Waste Rock Emplacement and ROM pad)	27.0	5 Mt of waste rock including 815,000 tonnes of sulphidic material (>1 g Au/t) which is encapsulated in oxide waste rock (<0.5g Au/t). Includes 4.5Ha Rom pad constructed from oxidised waste rock.	Shaped and rehabilitated WRE has maximum height of 25m and heap leach has a maximum height of 20m.
5 - Stockpiled Material	0.7	Top soil stockpile south of overflow pond.	Temporarily rehabilitated with pasture. Natural regeneration and mine openings provide habitat for bats, birds and possums.
6 - Void (Open Cut)	14.6	Includes four voids at the end of the MOP period.	Part of tourist mine attractions.
7 - Rehabilitation Area - Pasture	1.3	During the MOP period no areas will be rehabilitated to pasture.	Biodiversity asset.
8 - Underground Mining Area (SMP)	0	Underground mining was not part of this development.	N/A

9 - Conservation & Biodiversity Area	76	There was no biodiversity offset required for this mine site. However, it should be noted that biodiversity has increased as result of the PHGM.	Tourist Mine.
10 - Rural Land	47	Areas largely undisturbed by mining (49Ha) Grazing licence as part of "Little Oakleigh" Lease (8 Ha).	Biodiversity and Agriculture (grazing)
<p>Note: The WRE extends across 2.65Ha of Lot 326 which was used as a solid waste Depot by Parkes Shire Council up until 2017. This facility has been replaced by 4Ha of land subdivided off Lot 380. Source: Alkane Resources Ltd</p>			

## 2.2. ACTIVITIES OVER THE MOP TERM

### 2.2.1. Exploration

A ten hole diamond drilling exploration program was commenced immediately west of the Proprietary Pit in December 2018. The aim of the program is to establish whether sulphide resources below the current open cuts would be economically viable to mine from underground. The initial concept would be to truck ore to Tomingley Gold Mine for processing.

Regional exploration activity will continue during the 2019 MOP period. Exploration personnel will continue to access the core yard and site offices as part of their normal activities.

The Peak Hill Gold Mine MLs contain a known sulphide resource totalling 4.91Mt grading at 2.05g/t Au and 0.17%Cu (1.0g/t Au cut off).

Exploration activities may include the following:

- Geochemical sampling;
- Geological mapping;
- Geophysics; and
- Diamond and Reverse Circulation drilling.

The objective of the exploration program will be to further define the known resource, as well as identify additional resources within the Mine Site.

Environmental management of exploration activities will continue to be implemented to ensure the final rehabilitation of the exploration areas is consistent with the rehabilitation objectives identified in Section 5.2 of this document.

### 2.2.2. Construction

No construction is planned for the reporting period. The decommissioning of the HDPE lined process ponds is scheduled for 2021. This will allow ample time for rehabilitation of those landforms to achieve long term stable landforms.

### 2.2.3. Mining Operations during the Reporting period

No mining was undertaken on the PHGM MLs during the 2017 reporting period (1 January 2018 - 31 December 2018).

There are no plans to disturb previously rehabilitated areas during the MOP period.

There has been no land clearing, other than minor tree clearing for three diamond drill pads west of the Proprietary Open Cut, construction activity, ore extraction nor mineral processing during 2018 (none since 2005).



### **2.3. REHABILITATION DURING THE AEMR PERIOD**

There have been few active interventions on the mine site since the commencement of the MOP and due to this reporting period as most of the site was rehabilitated by 2005.

During this reporting period, approximately 70 tonnes of waste rock containing sulphides was removed from the southern edge of the ROM Pad and placed in Parkers Pit.

The (transportable) laboratory building was removed from site to Tomingley Gold Operations in 2014 where it is in current use as the mine rescue hut.

Boxthorn and other noxious weeds were controlled through spraying by the Site Supervisor.

Excessive macropod numbers were controlled under licence from OEHL by a licenced professional shooter.

The site continues to develop more ecological complexity each year as trees planted in 1996 are producing habitat for birds and other vertebrates and seed for new generations of trees.

Significantly, there was no noticeable erosion of the rehabilitated landform in 2016 through one of the wettest winter-spring seasons since records have been kept and then one of the driest autumn-winter periods in 2017. The 2018 calendar year was one of the driest on record but groundcover has been maintained.

#### **2.3.1. Further Development of Final Rehabilitation Plan**

A DA was approved by Parkes Council in 2016 to allow for the retention of the mine buildings (except the house) on site. This reduces the area requiring further rehabilitation on site by 5.2Ha.

A DA was approved by Parkes Council for the subdivision of four hectares of land from Lot 380 for use as a new solid waste transfer station. This land was transferred at no cost to council to satisfy consent condition 1.25 of Consent 648/93

The new Peak Hill Waste Transfer Station which has recycled the contractor's area (workshop shed, slab and washdown bay) opened for operations in 2018.

Alkane submitted a part relinquishment application to DRE on 6 November 2015 to excise the 4 hectares from the mining lease. Alkane received confirmation of the part cancellation of the part cancellation on 26 June 2017.

TABLE 3: Rehabilitation Summary

		Cumulative Area Affected (hectares)		
		To date	Last report	Next Report (estimated)
<b>A: MINE LEASE AREA</b>				
<b>A1</b>	<b>Mine Lease(s) Area</b>	194.8*		
<b>B: DISTURBED AREAS</b>				
<b>B1</b>	<b>Infrastructure area other disturbed areas to be rehabilitated at closure including house and processing ponds</b>	3.1	8.5	3.1
<b>B2:</b>	<b>Active Mining Area</b> excluding items B3 - B5 below	0	0	0
<b>B3</b>	<b>Waste emplacements,</b> active/unshaped/in or out-of-pit	0	0	0
<b>B4</b>	<b>Tailings emplacements,</b> active/unshaped/uncapped	0	0	0
<b>B5</b>	<b>Shaped waste emplacement</b> (top soil stockpile will be used during final rehab)	0.5	0.5	0.5
<b>ALL DISTURBED AREAS</b>		3.6	9.0	3.6
<b>C REHABILITATION PROGRESS</b>				
<b>C1</b>	<b>Total Rehabilitated area</b> (except for maintenance)	191.7	191.7	191.7
<b>DC: REHABILITATION ON SLOPES</b>				
<b>D1</b>	<b>10 to 18 degrees</b>	NA	NA	NA
<b>D2</b>	<b>Greater than 18 degrees</b>	NA	NA	NA
<b>E: SURFACE OF REHABILITATED LAND</b>				
<b>E1</b>	<b>Pasture and grasses (native and introduced)</b>	97.2	101.2*	97.2*
<b>E2</b>	<b>Native forest/ecosystems</b>	92.4	76.0	92.4
<b>E3</b>	<b>Plantations and crops</b>	0	0	0
<b>E4</b>	<b>Voids with some regeneration of trees</b>	14.6	14.6	14.6

\* Decrease in area from AEMR 2016 due to excision of 4Ha of ML for Waste Transfer Station

**TABLE 4: Maintenance Activities On Rehabilitated Land**  
(This period's activities and activities proposed in the next reporting period)

NATURE OF TREATMENT	Area Treated (ha)		Comment/control strategies/ treatment detail
	Report period	Next period	
<b>Additional erosion control works</b> (drains re-contouring, rock protection)	0	0	
<b>Re-covering</b> (detail - further topsoil, subsoil sealing etc)	0	0	
<b>Soil treatment</b> (detail - fertiliser, lime, gypsum etc)	0	0	
<b>Treatment/Management</b> (detail - grazing, cropping, slashing etc)	0	0	
<b>Re-seeding/Replanting</b> (detail - species density, season etc)	0	0	Five Currajong trees were transplanted during establishment of diamond drill pads on the west edge of the Proprietary Pit.
<b>Adversely Affected by Weeds</b> (detail - type and treatment)	194.8	194.8	Boxthorn, Bathurst burr, Devils Claw, Fierce thornapple. Spot spraying with glyphosate and wetter
<b>Feral animal control</b> (detail - additional fencing, trapping, baiting etc)	100	100	Macropod reduction under licence on Lot 380 only.

### 3. METEOROLOGICAL DATA

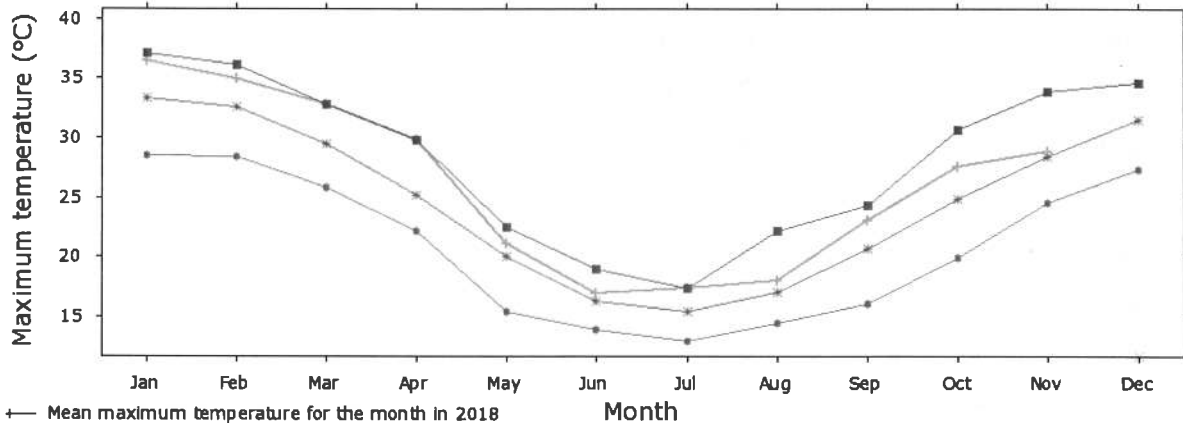
The Peak Hill Gold Mine no longer maintains a weather station at the mine site but rather relies on the registered BOM site at Peak Hill Post Office (within 500m of the site). The Peak Hill PO mean annual rainfall is 561.3mm.

2018 saw one of the driest autumn-winter periods in living memory with 76mm of rain falling compared to mean (since 1890) of 256mm.

The mine site rehabilitation performed as designed and no damage has been observed on any of the final landforms. The northeast sediment pond did not overflow during 2018 and thus there was no surface water monitoring conducted.

The charts below contain maximum and minimum temperatures for 2018 versus the long term mean and daily rainfall data for 2018.

Peak Hill Post Office (050031) 2018 maximum temperature

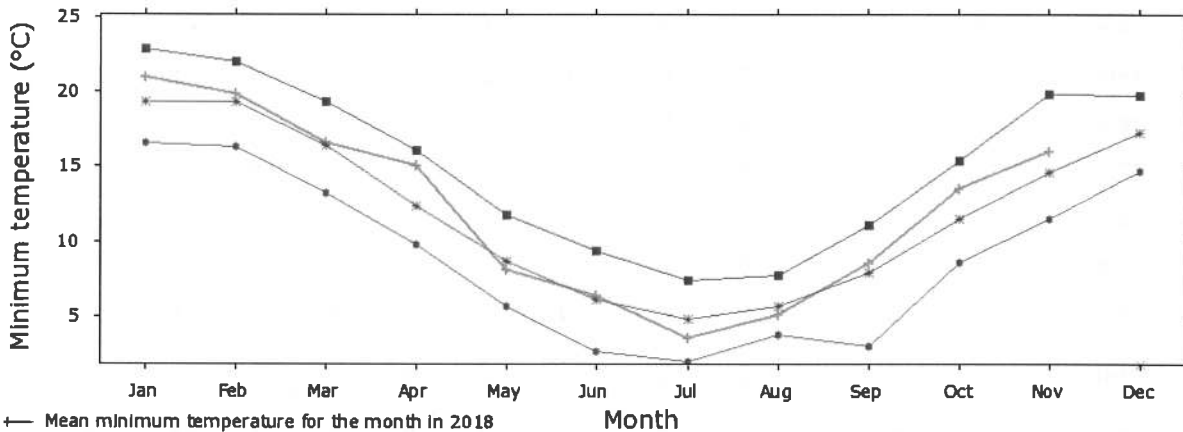


- + Mean maximum temperature for the month in 2018
- \* Mean maximum temperature over all years
- Highest monthly mean maximum temperature over all years
- ◆ Lowest monthly mean maximum temperature over all years
- ⋈ No data

Note: Data may not have completed quality control  
Observations made before 1910 may have used non-standard equipment

Climate Data Online, Bureau of Meteorology  
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Peak Hill Post Office (050031) 2018 minimum temperature



- + Mean minimum temperature for the month in 2018
- \* Mean minimum temperature over all years
- Highest monthly mean minimum temperature over all years
- ◆ Lowest monthly mean minimum temperature over all years
- ⋈ No data

Note: Data may not have completed quality control  
Observations made before 1910 may have used non-standard equipment

Climate Data Online, Bureau of Meteorology  
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Daily rainfall, measured at the Peak Hill Post Office is shown in the table on the following page.

2018	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1st	0	0	0	0	0	0	0	0	↓	0	1.4	0
2nd	0	0	0	0	0	0	0	0	↓	0	0	0.2
3rd	0	0	0	0	0	0	0	0	11.43 days	0	3.0	0
4th	0	0	0	0	1.2	0	0	3.0	1.6	4.4	0	0
5th	0	0	0	0	0	0	0	0	0	1.2	0	0
6th	0	0	0	0	0	0	0	6.2	0	0	0	0
7th	0	0	0	0	0	0	0	0.1	12.4	0	7.2	0
8th	4.8	0	0	0	0	0	0.8	0	0.2	0	7.8	0
9th	3.2	0	0	0	0	6.0	0.1	0	0	0	0	0
10th	3.4	0.2	0	0	0	3.0	0	0	0	0.2	0	0
11th	0	0	0	0	0.4	↓	0	0	0	0.6	0	2.2
12th	1.0	0	0	0	2.2	0.62 days	0	0	0	16.8	0	5.0
13th	0	0	0	0	0	0	0	0	0	0	0	17.4
14th	0	0	0	7.0	0	0	0	0	0	0	1.2	11.0
15th	0	0	0	0	0	0	0	0	0	0	0.8	0
16th	0	0	0	0	0	0.2	0	0	0	0	0	0
17th	0	0	0	0	0	1.0	0	0	0	9.8	0	0
18th	0	0	0	0	0	1.8	0	0	0	4.4	0	0
19th	0	0	0	0	0	0	0	0	0	0	0	0
20th	0	0	0	2.0	0	0	0	0	0	↓	0	8.2
21st	0	0	0	0	0	0	0	0	0	0.82 days	2.8	0
22nd	0	0	0	0	0	0	0	0	0	0	2.6	0
23rd	0	0	0.4	0.6	0	0	0	0	0	0	0	0
24th	0	0	↓	0	0	0	0	0	0	0	0	0
25th	0	0	↓	0	0	0	0	0	0.4	0	0	0
26th	2.6	1.0	6.23 days	0	0	0	0	13.0	0.8	0	0	0
27th	0	0	0	0	0	0	0	2.0	1.2	0	0	0
28th	0.4	0	0	0	0	13.4	0	0	0	0	39.0	0
29th	0		0	0	0	0	0.6	0	0	0	11.2	0
30th	0		0	0	4.2	0	0	0	0	0	0	0
31st	0		0		0		0	0		0		0
Highest Daily	4.8	1.0	0.4	7.0	4.2	13.4	0.8	13.0	12.4	16.8	39.0	17.4
Monthly Total	15.4	1.2	6.6	9.6	8.0	26.0	1.5	24.3	28.0	38.2	77.0	44.0

#### 4. ENVIRONMENTAL PERFORMANCE

Environmental control strategies (rehabilitation) have been undertaken as described in the MOP 2014-2022.

Three Landscape Function Analysis studies (14 transects across final landforms and two analogue site) have been undertaken to date by Graminus Consulting on August 2013, February 2014 and May 2014.

The analogue sites have not been disturbed by mining. Significantly “neither analogue site is any better or worse than any other transect”. The metric scores (May 2014) for stability, infiltration and nutrient cycling endorse a positive outcome for the rehabilitation techniques employed on the minesite.

There has been no soil amelioration work done during this reporting period. Small areas remain to be treated with lime on the ROM pad and the WRE and heap leach final landforms.

Surface water discharges (results reported on [www.alkane.com.au](http://www.alkane.com.au)) from the licenced discharge point (NE sediment pond) comply with EPA limits. There were no surface water discharges during 2018 from the PHGM.

Box thorn spraying is getting on top of the infestation with a decline in recruitment evident.

Macropod management is ongoing to ensure landforms are not overgrazed.

Establishment of the new waste transfer station on an excised portion of the mining lease is a very positive environmental outcome for Parkes Council and Alkane. This project has enabled recycling of mining assets for an ongoing use.

Photographs of the mine site infrastructure and rehabilitation progress are contained in Appendix I.

## **5. COMPLAINTS AND LIAISON**

There were no complaints received by Alkane relating to the Peak Hill Gold Mine during the reporting period.

A community information session was held to inform the community about Alkane's upcoming diamond drilling program on the Peak Hill Gold Mine leases. The aim of this drilling is to identify potential underground resources.

Liaison with neighbours was otherwise restricted to notification of the engagement of a professional kangaroo shooter prior to actions on the Mining Leases. Kangaroo numbers on the Mining Leases require control.

Alkane completes an annual return for the EPA and that is posted on the Company website.

**APPENDIX 1- PHOTOGRAPHS**





Great Eastern pit looking south east on 13 March 2018.



Looking east along former haul road to ROM Pad on 13 March 2018.



Peak Hill tourist mine (Proprietary Pit) seen from main lookout. Photo taken 13 March 2018.



A well camouflaged juvenile Lace Monitor (*Varanus varius*) amongst woody debris on Peak Hill.



Northeast sediment Pond looking north along 66kV ETL easement. Photo taken 17 December 2018.



Northwest sediment pond with natural recruitment of Myall, River Red Gum and Bimble Box in the sediment basin. Photo taken 17 December 2018.



The remaining infrastructure at PHGM seen from the top of heap leach landform. Photo taken 17 December 2018.



A well-functioning rock-lined drop structure on heap leach landform. Photo taken 17 December 2018.



PHGM screen plantings and WRE final landform looking east from Newell Highway. Photo taken 17 December 2018.



WRE cap looking east to Herveys Range. Premier Digit dominates the capping plant community.



Four hectares of mining lease was excised and donated to Parkes Council in 2017 for use as a waste recycling facility. Photo taken 17 December 2018.



PHGM site office, crib hut and exploration house (background). Photo taken 17 December 2018.



African Boxthorn (*Lycium ferocissimum*) is regularly sprayed across the minesite.



Small outbreaks of acid mine drainage and salt on heap Leach final landform will require lime and topsoil treatment. Photo taken 17 December 2018.